THE EFFECTS OF HYPNOSIS ON FLOW AND PUTTING PERFORMANCE IN GOLFERS

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"I, Tien Dung Dao, declare that the PhD thesis entitled "The Effects of Hypnosis on Flow and Putting Performance in Golfers" is no more than 100,000 words in length, exclusive of tables, figures, appendices, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work."

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ABSTRACT

Csikszentmihalyi (1975) introduced the flow concept, involving total absorption in the task, confidence, and control, with effortless, automatic movement. Flow has nine dimensions that Stavrou and Zervas (2004) divided into five antecedents (challenge-skill balance, clear goals, unambiguous feedback, total concentration on the task, sense of control) and four concomitant dimensions (action-awareness merging, loss of self-consciousness, time transformation, and autotelic experience). Loss of self-consciousness and time transformation have similarities to phenomena often reported in hypnotic trance states. To examine whether the experience of these phenomena in hypnosis enhanced flow state, I performed three studies. In Study 1, I evaluated whether a hypnotic state facilitates flow and enhances performance via its concomitant dimensions and whether the trancework component of traditional hypnosis (TH), compared with neutral hypnosis (NH), is crucial, with 20 golfers, who performed putting under controlled conditions. In Study 2, I examined the effect of two hypnosis techniques, regression (RE) and future progression (FP) on golf putting performance and flow state with 25 golfers. Both studies had the same structure. I used the Waterloo-Stanford Group C Scale of Hypnotic Susceptibility (WSGC) to match participants into conditions. Golfers performed 56 4m test putts at pre-test and post-test. I measured radial error of each putt and number of putts holed. Then they completed the Flow State Scale-2 (FSS-2) at pre- and post-test. All participants undertook a 60-minute, face-to-face session, then listened to a recording of that session for seven days with different hypnotic suggestions in the RE and FP conditions. In Study 1, two-way mixed-design ANOVA revealed that TH reduced radial error and two dimensions of flow, sense of control and loss of self-consciousness, compared with NH. In Study 2, two-way mixed design ANOVA showed that the effect of FP was significantly larger than the effect of RE in facilitating global flow mainly due to the time transformation dimension, but performance was not enhanced. In

Study 3, I investigated the effect of FP on flow and putting performance in competitions. Three male golfers participated in a single-case design (SCD) study, comprising six competition rounds in the Baseline Phase (BP) and six rounds in the Intervention Phase (IP). I recorded number of putts per round, percentage distance error, strokes gained putting, global flow state, and flow dimensions. Visual inspection and split-middle technique analysis of individual graphs indicated improvement in performance and flow of two golfers. I used narrative analysis to examine social validation questionnaire responses. Participants reported superior performance with more confidence and greater concentration after the hypnosis intervention. The findings of these three studies indicate that RE and FP hypnosis can be useful techniques to promote flow and improve performance. Further study is warranted to identify the most effective combination of hypnosis techniques to enhance, global flow state, flow dimensions, and performance.

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I made 2 international conference presentations on studies from this thesis:

- The first study was presented at the World Congress of Sport and Exercise Psychology in Seville, Spain in July 2017.

- The second study was presented at the Asian South Pacific Association of Sport Psychology International Congress in Daegu, Korea, in July 2018.

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CHAPTER 1: INTRODUCTION

The Role of Sport Psychology in Successful Performance

In the modern sporting world, the margin between success and error is tiny, and the physical and technical difference in standard between a medallist and a qualifier are often small. Hence, the difference very often depends on athletes who have stronger mental characteristics, which can allow them to endure the competition pressure. Time and again, athletes are observed who, faced with an unfavorable situation during competition physically or mentally, are able to switch on their focus, stay in the moment and perform at their personal best.

How Flow Affects Performance and Description of Flow

Top athletes frequently mention that, during their best performance, they experience a heightened state of awareness with total absorption in the event. They often also find that they can be very focused while performing at ease. Csikszentmihalyi (1975) described this psychological state as flow. Flow can potentially facilitate athletes who seek peak experience because it is associated with enjoyment and intrinsic motivation. Jackson (2011) described flow as "an internal, conscious process that lifts experience from the ordinary to the optimal" (p. 331). Athletes who are in flow tend to exert more effort, and they are fully involved and absorbed in what they are doing to the extent that they exclude other thoughts and emotions. They can also experience a harmonious sense of enjoyment because the mind and body work together as a whole (Jackson & Csikszentmihalyi, 1999). Hence, it is useful for athletes, coaches, and applied sport psychologists to understand the factors that may create flow.

Flow and Its Nine Dimensions

In his theory of flow, Csikszentmihalyi (1975) identified nine dimensions of flow. The first dimension is *challenge-skill balance*, which involves the need for individuals to find the task challenging, but to have the skill to meet the challenge. The second dimension is

action - awareness merging. When athletes are wholly immersed in the activity, they feel at one with the movements they make. When the mind and body merge into one, intention and action become automatic, so individuals do not need to go through a conscious decision-making process. The third dimension is *clear goals*, which help athletes stay focused and avoid distraction. The fourth dimension is *unambiguous feedback*, which gives athletes a clear understanding of the result of their performance. The fifth dimension is *concentration on the task*. In flow state, athletes have total concentration on the moment and what they are doing, a critical component of optimal performance. The sixth dimension is *sense of control*, where athletes feel in control, confident, and calm. The seventh dimension is *loss of self-consciousness*. Athletes stop concerning themselves with how other people think about their performance and appearance and just focus on their sports activity. The eighth dimension is *transformation of time*. Time dependence can prevent people from immersing in what they are doing. In flow, time can seem to either slow down or speed up. The transformation of time is a by-product of total concentration. The final dimension is *autotelic experience*, which means the experience is performed for its own sake. Athletes genuinely enjoy the activities as a result of the first eight components.

Stavrou and Zevras (2004) proposed separating those nine dimensions of flow into two categories. The first category includes five dimensions, namely challenge-skill balance, clear goals, unambiguous feedback, concentration on the task at hand, and sense of control. These factors are proposed to be antecedents of flow because they help to induce flow (Stavrou & Zevras, 2004). The second category, which includes action-awareness merging, loss of self-consciousness, transformation of time, and autotelic experience, are considered as concomitants because they only happen once individuals are experiencing flow. Some researchers have argued that the antecedents can be manipulated, using psychological techniques to enhance those dimensions, thus, increasing the likelihood of experiencing flow,

whereas the concomitants arise automatically when people are in flow and cannot be manipulated. Researchers have explored various approaches ranging from goal-setting (Kingston & Hardy, 1994), relaxation (Jones, 1993), self-talk (Weinberg & Jackson, 1990), to imagery (Koehn, Morris, & Watt, 2013) to improve the antecedent dimensions. The advantage of these approaches is that they are simple, easy to use, cognitive behavior therapy techniques. Koehn et al. (2013) and Jeong (2012) proposed that there is no compelling evidence that the concomitant dimensions enhance flow.

Similarity Between Flow and Hypnosis

Uneståhl (1981) proposed the concept of "ideal performing state" which is a state in which athletes perform at their best, being in a high-functioning mental state. This mental state is similar to Hanin's (1978) "zone of optimum function." According to Morgan (2013), the main difference between these two states is whether athletes can recall it. While Hanin suggested that athletes can recall, Uneståhl argued that there is selective or total amnesia in athletes' minds, which prevents athletes from describing or analyzing the mental state after the event. Hence, Uneståhl used hypnosis to define this "ideal performance state" as well as to apply it to several thousand Swedish athletes whose experiences he researched (Railo & Uneståhl, 1979).

Hypnosis and flow are similar in that individuals who experience both these psychological states report perception of a change in the passage of time and reduction in self-consciousness, two of the concomitants of flow. Tellegen and Atkinson (1974) showed that absorption is the strongest correlate of hypnotisability, whereas Jackson (2011) suggested that absorption is a crucial component in flow. Furthermore, Gallwey (1974) and Uneståhl (1986) suggested a hemispheric shift during flow state. Hemispheric shift during hypnosis was also found in research by Orne (1959). Crawford, Clarke, and Kitner-Triolo (1996) reported significantly higher hemispheric brain wave activities in the right parietal region

during hypnosis in highly susceptible participants (highs) as compared with low susceptible participants (lows). Other investigators supported the concept of hemispheric shift, as measured by the EEG ((Edmonston & Moskovitz, 1990; MacLeod-Morgan & Lack, 1982; Gruzelier et al., 1984; Crawford, Crawford & Koperski, 1983). Despite this similarity, very little research has been conducted to explore the possibility of using hypnosis to facilitate or control flow. The use of hypnosis as a possible intervention to enhance flow may offer a viable and effective method to access and enhance flow state, which would be beneficial to athletes, coaches, and sport psychologists, as well as informative to researchers.

Definition of Hypnosis

The official definition of hypnosis, according to Division 30 (Society of Psychological Hypnosis) of the American Psychological Association (2014), is, "a state of consciousness involving focused attention and reduced peripheral awareness characterized by an enhanced capacity for response to suggestion" (Society of Psychological Hypnosis, para 2, p.1).

A hypnotic intervention comprises four parts: induction, deepening, trancework, and awakening. Suggestion is a significant component of trancework because it can be used to treat a presenting problem. Because of the strong connection between hypnosis and suggestion, many people have proposed that suggestion is an essential part of hypnosis. Depending on how a person responds to suggestion, such as arm catalepsy, auditory hallucination, their hypnotisability can be measured (for example, using the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A) or Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C)) (Kihlstrom, 2008).

Research on Hypnosis in Sport

In the past, hypnosis research in general, as well as applied to sports, has been approached critically and with caution (Taylor, Horevitz, & Balague, 1993). Taylor et al.

stated, “hypnosis is a valuable, powerful, and possibly dangerous tool for professionals in applied sport psychology. The potential benefits may be significant and, at the same time, the potential harm may be profound” (p. 73). Pates, Oliver and Maynard (2001) identified several challenges for research on hypnosis, such as a lack of adequately controlled research studies that focus only on sport, lack of qualified training and supervision for hypnotists, and confusion of different hypnotic techniques.

Since the late 1990s, two researchers, Pates and Barker have examined the use of hypnosis in sport. While Barker and colleagues focused on the effect of hypnosis on self-efficacy (Barker & Jones, 2005, 2006, 2008, 2010), Pates and colleagues (Pates, 2013; Pates & Cowen, 2013; Pates, Cummings, & Maynard, 2002; Pates & Maynard, 2000; Pates, Maynard, & Westbury, 2001; Pates, Oliver et al., 2001; Pates & Palmi, 2002) focused on the effect of hypnosis on flow state and performance. Barker and Jones found hypnosis improved self-efficacy in footballers, cricketers, and martial artists. Pates and colleagues found hypnosis promoted flow in badminton players (Pates & Palmi, 2002), basketball players (Pates et al., 2002), and golfers (Pates, 2013; Pates & Maynard, 2000; Pates, Oliver et al., 2001). Whereas research by Pates and colleagues clearly showed an increase in flow state using hypnosis, research by Lindsay, Maynard, and Thomas (2005) with cyclists and Vasquez (2005) with basketball players showed no significant effect of hypnosis on flow, although there was a significant improvement in performance in Vasquez’s (2005) basketball study. Although these researchers set the first steps in examining hypnosis and flow, no research has specifically explored the role of hypnosis in interacting with each dimension of flow.

Aims of This Thesis

Consequently, the primary goal of this research is to examine the effect of hypnosis on the concomitant dimensions of flow. Studying effects of hypnosis on flow dimensions in

more detail should increase knowledge about the role of these factors in the promotion of flow. Because there are several similarities between trance state characteristics in hypnosis and flow state, I examine the prediction that hypnosis is an effective intervention to create flow using the concomitant dimensions, particularly loss of self-consciousness and time-transformation. I also examine the effect of different hypnosis techniques on flow and performance. Finally, I examine whether the effects of hypnosis training on flow and performance occur in a real golf competition environment.

CHAPTER 2: LITERATURE REVIEW

In this literature review, I first evaluate the literature on flow, focusing on theory and research that is relevant to the present thesis, to provide knowledge of what researchers understand about flow in general, and more particularly in the context of sport. Next, I discuss the current literature and research about hypnosis that is relevant to the present thesis. From this understanding of flow and hypnosis, I discuss the aspects of flow that are related to the hypnotic trance state and present an argument why hypnosis is a promising way to promote and stimulate flow, especially in sports and examine research that has been conducted on hypnosis and flow in sport. Finally, I present the primary focus of this thesis and what I aim to achieve through three linked studies.

Flow

Definition

Researchers have found that when athletes performed at their best, they often reported experiencing a state of being completely focused, feeling in control and confident, while executing tasks automatically and effortlessly (Jackson, 1995, 1996; Jackson & Csikszentmihalyi, 1999). Csikszentmihalyi (1975, 1988) called this state of optimal experience "flow." Flow was defined by Jackson and Csikszentmihalyi (1999) as a "state of consciousness where one becomes totally absorbed in what one is doing, to the exclusion of all other thoughts and emotions." (p. 5). Jackson (1992) emphasized the internal reward aspect by considering flow as a "psychological process involving a state of total absorption in an activity with experiential characteristics that make the experience so intrinsically rewarding that the experience of flow becomes a goal in itself." (p. 185). In a sports context, Kimiecik and Stein (1992) defined flow as an "autotelic experience (performed for its own sake) accompanied by above average feeling states that begins when perceived challenges and skills are above average, and in balance" (p. 146).

The flow state of total immersion is often associated with high quality of experience (Csikszentmiahlyi, 1994), intrinsic motivation, enjoyment of the subject (Privette, 1983), and high quality of performance (Jackson, 2011; Jackson & Kimiecik, 2008), which increase participation rates, effort, and perseverance (Csikszentmihalyi, 1988, 2000b). According to Kimiecik and Harris (1996), enjoyment is closely related to flow experience because flow is associated with positive feelings and doing an activity purely for its own sake. Csikszentmihalyi (1975, 2000b) identified positive effects of flow in work, sport, and recreation contexts, while Jackson (1995) and Russell (2001) confirmed these positive effects in sports competition and training environments.

Peak Experience, Peak Performance, and Flow

Flow overlaps with two other constructs from the humanistic psychology literature, namely peak experience and peak performance. All three concepts describe intense, positive experience at the optimal level for individuals. While flow is similar to the success aspect of peak performance and the enjoyment element of peak experience, it does not always involve peak performance or optimal joy as Privette (1983) and Privette and Bundrick (1991) have pointed out. Researchers have defined peak experience slightly differently. Maslow (1962) defined it as “moments of highest happiness and fulfillment” (p.69), whereas Privette (1983) talked about an “intense and highly valued moment” (p. 1361). Laksi (1962) suggested that peak experience is “characterized by being joyful, transitory, unexpected, rare, valued, and extraordinary to the point of often seeming as if derived from a preternatural source” (p. 5). McInman and Grove (1991) conceptualized peak experience as involving feelings of bliss, great joy, and illumination.

Peak performance refers to superior achievements that surpass the normally expected potential of individuals (Privette, 1981, 1983). Kimiecik and Jackson (2002) echoed this concept by considering peak performance as a “release of latent powers to perform optimally

within a specific competition" (p. 503). Peak performance is considered the "prototype of superior use of human potential", which involves both physical and mental aspects (Jackson & Roberts, 1992, p. 156). One aspect that remains unclear from these definitions is whether peak performance refers only to objective outcomes or whether it also includes subjective experiences (Swann, Crust, Jackman, Vella, Allen, & Keegan, 2017). For example, golfers may produce an excellent performance for only part of the round and not necessarily perform consistently throughout the whole round or tournament, resulting in them not achieving the peak objective outcome (i.e., winning).

There are similarities and differences among these three constructs depending on intensity level, active versus passive modes, relational modes, sense of self, and motivation (Privette, 1983). While flow experience may range from a moderate to high intensity of joy or performance, peak experience and peak performance are both at the high end of intensity in joy or performance respectively. Privette argued that peak performance and flow may stimulate the person to actively participate in a task or interact with another person or the environment, whereas peak experience tends to be passive, receptive, and may not involve behavior at all, for example, listening to music or watching television.

Peak experience and flow are frequently reported when people are absorbed in the activity or the environment and experience a loss of self. Conversely, people encounter the event or environment with a strong sense of self in peak performance (Privette, 1983). Because of this strong sense of self, Privette and Landsman (1983) suggested that any involvement with other people may prevent, instead of facilitating, individuals from achieving their potential. There is no report or adequate discussion about other people's involvement in peak experience. In flow, there may be a place for companionship during the activity, although the degree of companionship varies depending on the activity. In terms of motivation, Maslow (1962) considered peak experience as meta-motivated or non-motivated.

Csikszentmihalyi (1975) suggested that there is intrinsic motivation and internal enjoyment within flow. Kimiecik and Harris (1996) concurred by suggesting that flow state leads to intrinsic motivation to do something without effort. Privette (1965) found strong motivation concerning effort in peak performance.

Jackson and Wrigley (2004) made a distinction between optimal experience as "an inner psychological state while engaged in an effortful and challenging activity" (p. 426) and peak performance "the outcome or accomplishment as a consequence of that person's effort and sustained concentration" (p. 426). According to Kimiecik and Stein (1992), flow and peak experience are subjective, while peak performance is primarily about objective outcomes. Privette (1983) proposed the following factors: absorption, joy, involvement, spontaneity, awareness, loss of time, and temporality as similar aspects of peak performance and flow. Jackson (2000) also listed several factors that are similar between flow and peak performance. She found that athletes in a peak performance state experienced a sense of confidence and highly energetic characteristics, heightened awareness and immersion in their activity, a narrow focus, and feeling in control. The similar or parallel factors in flow for these attributes were challenge-skill balance, action-awareness merging, concentration on the task, and sense of control, respectively. Despite this similarity, the main difference between peak performance and flow is whether the objective is focused on the outcome performance, in the case of peak performance, or the internal experience, in the case of flow.

There are certain differences among flow, peak experience, and peak performance. Flett (2015) suggested that flow is more function- and performance-oriented than just a reflection of optimal experience. His research on tennis players showed a correlation between increase of flow and increase of performance. However, Harmison (2011) considered flow to be a different concept from the outcome of peak performance because flow generally refers to internal enjoyment while "peak performance focuses more on the athletes' level of

functioning and their performance outcomes" (p. 234). Stavrou, Jackson, Zervas, and Karteroliotis (2007) agreed that people could be in flow without having reached their peak performance outcome. Because of the many overlapping characteristics between peak performance and flow (as mentioned above), flow might be an underlying psychological process of peak performance (Jackson & Roberts, 1992), but flow is focused on the subjective, internal experience. Athletes can experience flow during a competition break, at the end of the game, or during practice sessions, which is not possible for peak performance. Flow may not always lead to high performance in all sports. Schuler and Brunner (2009) found that flow was positively linked with higher training motivation, but was not associated with higher performance itself. They argued that marathon athletes might need to force the body to run through certain physical discomfort, especially after the 30km mark, and flow would hinder this conscious effort (Schuler & Langens, 2007).

Csikszentmihalyi's Flow Theory

Many researchers have conceptualized flow characteristics and dimensions. While there has been some overlap, there have also been some differences among authors' conceptualisations. Csikszentmihalyi (1975) was the first researcher who proposed nine dimensions of flow, based on his extensive, mostly qualitative research. He identified these dimensions as challenge-skill balance, action-awareness merging, clear goals, unambiguous feedback, concentration, sense of control, loss of self-consciousness, transformation of time, and autotelic experience. Trevino and Webster (1992) and Webster, Trevino and Ryan (1993) later suggested only four dimensions; control, attentional focus, curiosity, and intrinsic interest. Hoffman and Novak (1996) and Novak, Hoffman and Yung (2000) proposed five constructs; skill/control, challenge/arousal, focused attention, interactivity, and telepresence. Richard and Chandra (2005) suggested challenge, skills, and interactivity as the constructs underlying flow, whereas Siekpe (2005) proposed challenges, concentration, curiosity, and

control. In this dissertation, I will focus on Csikszentmihalyi's theory because it has clearly been the most popular and well-researched framework in the study of flow, especially in sport contexts.

Csikszentmihalyi (1975) proposed the first flow model, which he focused mainly on the balance between challenge and skill (Figure 2.1). In Figure 2.1, the horizontal axis represents skill level from low on the left to high on the right. The vertical axis represents perceived challenge level going from low at the bottom to high at the top. If challenge is high, but skill level is low, the task is difficult, which leads to anxiety. If challenge is low, but skill level is high, the task is too easy, which leads to boredom. According to this early model, flow happens when there is a balance between the level of perceived challenge and skill level (regardless of whether these two factors are low, medium, or high). Csikszentmihalyi (1987) later clarified that when both challenge and skill level are equal and high, flow state is more intense, ordered, and complex as compared with when both challenge and skill are equal and low.

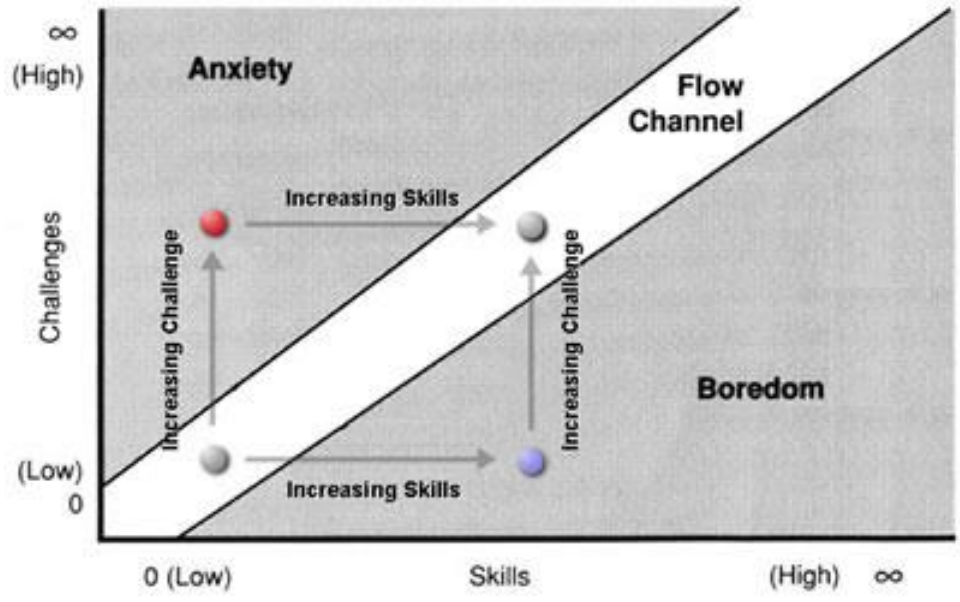

Figure. 2.1. Csikszentmihalyi's (1975) model of the flow state

Proposing an improvement to the first model, Csikszentmihalyi and LeFevre (1989) introduced the quadrant model. Similar to the first model, in the quadrant model depicted in Figure 2.2, the horizontal axis represents skill level ranging from low to high (0 value represents the weekly mean). The vertical axis represents perceived challenge level ranging from low to high (0 value represents the weekly mean). There are four mental states that are formed as quadrants depicted in Figure 2.2, anxiety, flow, boredom, and apathy. Compared with the first flow model, the quadrant model introduced an apathy state, when both challenge and skill level are equal and at a low level. Flow only occurs when both the perceived challenge and skill level are high and are in relative balance.

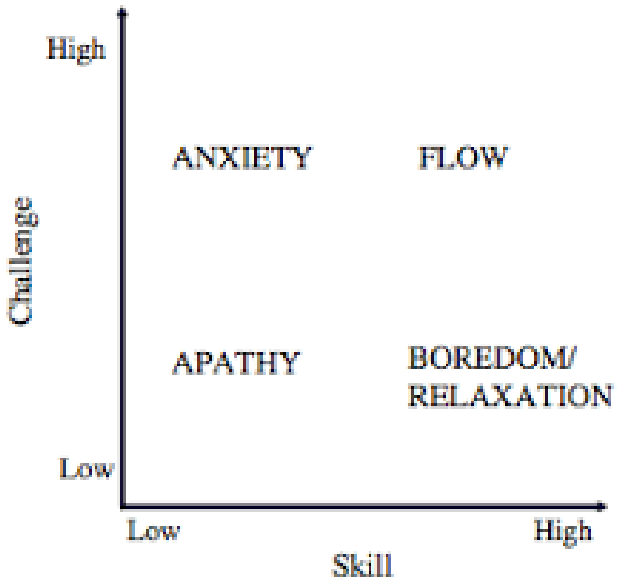

Figure. 2.2. Csikszentmihalyi and Lefevre's (1989) quadrant flow model

Massimini, Csikszentmihalyi, and Carli (1987) introduced the 8-channel model of flow. This model was later named the Experience Fluctuation Model (Delle Fave, Massimini, & Bassi, 2011). This model shows eight different main states based on different levels of perceived challenge and perceived skill. The emotions are, anxiety, arousal, flow, control, relaxation, boredom, apathy, and worry (Figure 2.3). The weekly mean (0 value) of both

skills and challenges are in the centre where all the lines cut each other, whereas the further away from the centre, the higher is the intensity of that state. Participants are in a flow state when their perceived challenge and skill level are both higher than the weekly average and are equal with each other.

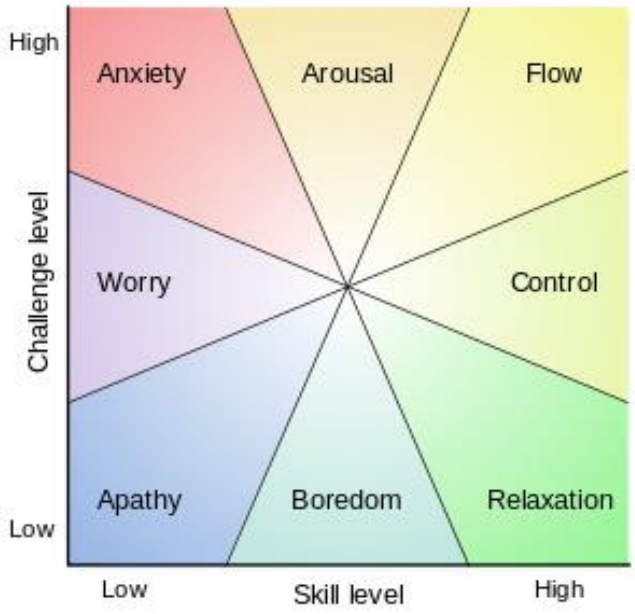

Figure 2.3. The Experience Fluctuation Model of flow (Massimini, Csikszentmihalyi, & Carli, 1987)

Csikszentmihalyi's Nine Dimensions of Flow

Csikszentmihalyi (1975) used an interview technique and the Experience Sampling Method (see explanations of these measurements approaches in the Measurement of Flow State section) to investigate the flow state in surgeons, music composers, chess players, basketball athletes and rock climbers. Based on these data, he proposed that there are nine dimensions of flow. They are challenge-skill balance, action-awareness merging, clear goals, unambiguous feedback, concentration on the task at hand, sense of control, loss of self-consciousness, transformation of time, and autotelic experience. Csikszentmihalyi (1990) and Jackson (1992) found evidence to support these dimensions both in general and in sport.

Challenge-skill balance. As mentioned in the Experience Fluctuation Model, it is necessary to have a balance between challenge and skills to achieve flow; however, both challenge and skill need to be higher than average. When perceived challenge is high and perceived skill is medium or low, this creates arousal or anxiety. When perceived challenge is medium or low, and skill is high, this leads to control or relaxation. Csikszentmihalyi (1975) stated that the essential principle of flow is having a balance between challenge and skill. In sports terms, for example, this equates to a match between the expectation about the result of performance and actual skill. What matters is not the objective level of challenge and skill, but the perceived level, which can be entirely different. Challenge can be the situational demand from an event, whereas skill is the perceived level of confidence and belief individuals possess about their skill in the task (Jackson & Csikszentmihalyi, 1999).

Action-awareness merging. When in flow, there is a sense of unity between action (be it physical or mental) and awareness. Athletes become fully absorbed in the activity, so that their action will likely feel effortless and automatic (Jackson & Wrigley, 2004). This immersion helps athletes to be mentally and physically at one with their action and performance (Jackson & Csikszentmihalyi, 1999). Csikszentmihalyi (1990) observed that people in day-to-day life tend to "keep interrupting what we do with doubts and questions…. We question the necessity of our actions and evaluate critically the reasons for carrying them out." (p. 54). Csikszentmihalyi (1988) argued that action-awareness merging is likely caused by concentration on the task. Because of a high level of concentration, there is no space for dysfunctional thoughts (doubt, distraction) in the conscious mind, which frees athletes to perform at their best. This dimension is one of the most frequently mentioned characteristics of flow by athletes during previous studies (Jackson, 2000).

Clear goals. Having clear goals means athletes know what they want to achieve when they perform an activity. Goals should be set in advance both for short and long-term.

Csikszentmihalyi (1990) found people in flow have a clear sense of what they are aiming to do, and what is expected of them both in the short- and long-term. According to Csikszentmihalyi (2002) goals need to be set to a challenging, yet attainable, level in order for flow to occur. In a similar manner to the challenge-skill balance dimension, goals that are too easily achieved will rarely lead to enjoyment or flow.

Unambiguous feedback. Athletes receive feedback about their performance through two different channels, internal and external feedback (Jackson & Wrigley, 2004). The internal feedback channel is through body movement, tactile, and kinesthetic senses. The external feedback channel can come from visual or auditory sensing of environmental cues by athletes or coaches, teammates, and audiences. For example, golfers rely on their tactile, and kinesthetic senses of how smoothly their body moves during the swing as a key source of internal feedback. They also rely on their visual sense to know where the ball ends its trajectory (external feedback) for each shot. Both these feedback channels offer critical information about the quality of golfers' performance, which will potentially affect their flow state.

Hein and Koka (2007) described feedback as information transmitted to athletes to let them know if their performance and behaviour meet expectations. This feedback is useful in helping athletes to make the necessary adjustment to continue heading toward their desired goal. Unambiguous feedback as a concept is closely related to clear goals because clear goals help to determine unambiguous feedback (Csikszentmihalyi, 1990; Jackson 2000). For example, if golfers have a goal of reaching the putting green in par on all 18 holes in a competition round, knowing the par for each hole, they can easily check whether they reach each green in the regulation number of shots. Having a continuous loop of setting clear goals and having clear feedback is useful for athletes because this increases awareness of how their actions lead to their goals being achieved or not through various sources of feedback.

Depending on the type of sports, feedback can be immediate (e.g., a golfer sees whether a putt goes into the hole) or feedback can be delayed for a while (e.g., figure skaters perform on ice and finish the routine before knowing their scores).

Total concentration on the task. Concentration is among the most frequently examined characteristics of flow, because the experience of total concentration is at the core of the flow experience. Athletes perceived concentration as the most reliable indication of being in flow state as mentioned many times in research, for example, by Jackson (2000) and Kimiecik and Jackson (2002). Vernacchia (2003) defined concentration simply as "the ability to perform with a clear and present focus." (p. 144). Sometimes concentration is used interchangeably with focus and attention. To put these different terms in relation to each other, an individual who is concentrating is said to have their attention focused clearly and presently on the task at hand. While individuals are in the concentration state, distraction is kept to the minimum level, whereas other dimensions (challenge-skill balance, clear goals, and unambiguous feedback) are also heightened and balanced (Csikszentmihalyi, 1997). Attention is considered a limited resource (Csikszentmihalyi, 1993) and may involve cues that provide either relevant or irrelevant information for performance. Moran (1996) proposed that a substantial task focus can block out performance irrelevant thoughts, such as distractions and preoccupation. Hence, concentration helps athletes focus on task-relevant cues, make the right decisions, and pay full attention to their action to achieve their goal. When athletes are in flow, they seem to have an absolute focus for an extended period with very little to no effort. The most appropriate type of focus is different between different sports, different moments in one sport, as well as different athletes (Liggett, 2000). For example, football or hockey athletes need to be hyper-alert to cues from the breadth of the environment, particularly focusing on the position of their teammates and opponents, whereas golfers or archers pay less attention to the location of opponents, focusing narrowly on their

target. Further, it may be easier to focus on a short duration activity like sprinting for 10 seconds, but the challenge to stay focused throughout a round of golf for nearly five hours is considerable.

Nideffer (1993) categorised attention focus along two dimensions: width (broad or narrow) and direction (external or internal). This produces four attentional styles, namely broad external, broad internal, narrow external, and narrow internal. In different sporting situations, athletes may shift their attention from one type (e.g., broad external to assess the environment situation) to another (e.g., narrow internal to focus on a single thought of what to do right now) continuously during performance.

Uneståhl (1979) suggested hypnosis can increase concentration. During the hypnotic process, clients' focus is narrowed down to only a few stimuli, such as a feeling in the body or the hypnotist's voice (Shor, 1959). Research by Robazza and Bortoli (1994) and Schreiber (1991) indicated that during hypnosis, athletes could increase their focus and prevent irrelevant stimuli from producing electrophysiological responses, thanks to the increase in focusing ability.

Sense of control. While in flow, athletes experience a sense of power, composure, confidence, and positive feelings (Jackson & Csikszentmihalyi, 1999). Because of this confidence, they feel a sense of being in control of their action and the situation without overly exerting effort. They are able to exercise control especially during stressful situations (Csikszentmihalyi, 1990; Jackson, 2000). This capability is especially important in high-risk sports, such as downhill skiing or rock climbing because the sense of control helps athletes to perform complicated moves without fear of failure. In challenging game situations, when athletes have self-doubts or lose confidence, they tend to push too hard to regain control of the situation consciously, typically leading to a loss of perceived control and flow itself (Chavez, 2008). Whereas, if they perceive themselves to have the ability to affect the game

outcome in their favour, this leads athletes to experience a feeling of being in control (Csikszentmihalyi, 2002).

Loss of self-consciousness. Athletes in flow focus entirely on what they need to do to the extent that they discard irrelevant thought about how they look, or how others are perceiving their performance or looks (Kimieceik & Jackson, 2002). Jackson and Csikszentmihalyi (1999) stated that when they are in flow, athletes focus on their skill, but not the evaluation. Csikszentmihalyi (2002) further elaborated,

> Loss of self-consciousness does not involve a loss of self, and certainly not a loss of consciousness, rather, only a loss of consciousness of the self. What slips below the threshold of awareness is the concept of self, the information we use to represent to ourselves who we are. Moreover, being able to forget temporarily who we are seems to be very enjoyable. (p. 64).

Because athletes can be free from the consciousness of self, which frequently contains negative self-concern or self-doubt, they can deeply concentrate on the task at hand, which helps them experience oneness and unity with their activity (Jackson, 1996). Justin Leonard, 12 times PGA tour winner, stated,

> The times when I have gotten into it [flow], I forget how many under par I am, or where I am in the tournament… And you are not thinking about those outside things that can be detractors. Your focus goes from the size of a basketball to a pin needle and nothing that goes on around you matters. You do not hear things that go on. Your focus gets so narrow on what you are trying to do… You are not fighting through thoughts like "what if I hit it here or there?" You do not fight through any of that. It all just disappears. (Valiante, 2013, pp. 41-42).

Nevertheless, qualitative (Jackson, 1992, 1996) and quantitative (Jackson & Marsh, 1996; Vlachopoulos, Karageorghis, & Terry 2000) research on loss of self-consciousness has not

supported its influence on flow state as much as other dimensions. The Neodissociation theory of hypnosis (Hilgard, 1977, 1991, 1992), may offer a possible explanation for the process of loss of self-consciousness. There are many co-existing cognitive control subsystems in the body, each of which is associated with a habitual action sequence with limited or no involvement of the Executive Ego. Once a cognitive control system is activated, the task is indirectly self-monitored. Hilgard proposed that lapses in consciousness because of the activation of well-learned habits is a type of dissociation. He defined dissociation as, "the splitting off of certain mental processes from the main body of consciousness, with various degree of autonomy (Hilgard, 1992, p. 45). This activation of habitual cognitions and movements is essential for sports performers and is the basis for "muscle memory" of movements. Uneståhl (1973) argued that any conscious thoughts that enter the mind will disturb and decrease results.

Transformation of time. Time seems to alter as athletes focus intensely and become absorbed in their activity. When in flow, they may experience time slow down or speed up more than usual. Bryce Molder, 2011 PGA tour winner, 4 -time NCAA All-American, stated,

> The zone is both fast and slow. While you are there, it seems slow and effortless. When I look back to that last round I was in the zone; it seemed like it took 45 minutes. In fact, everything moved really slowly; I was never rushed (Valiante, 2013, p. 9).

People who experience flow do not always report this transformation of time dimension (Jackson, 1996). One factor that needs to be considered is the type of sport. Jackson proposed that certain sports require athletes to pay full attention to how long it takes to finish a particular task, such as track athletes and swimmers, using the time as a source of feedback about their performance, so they might not experience a sense of time alteration. Researchers have found time transformation to be one of the least experienced dimensions in sport from

both qualitative (Jackson, 1996) and quantitative research (Jackson, Thomas, Marsh, & Smethurst, 2001). Time transformation also did not relate well to other flow dimensions as indicated by Brewer, Van Raalte and Linder (1991) and Vlachopoulos et al. (2000). Csikszentmihalyi (1988) argued that time transformation only happens during an intense flow state, which means time transformation might not be experienced as frequently as other flow dimensions.

Research on both loss of self-consciousness and time transformation dimensions has shown equivocal results. However, this does not mean these dimensions are irrelevant, or that Csikszentmihalyi's (1975) nine dimensions of flow are not important. Jackson and Marsh (1996) argued that these research results on loss of self-consciousness and time transformation may merely indicate that these two dimensions are not as crucial to some sports as are other dimensions. Vasquez (2005) suggested this could be due to the specific characteristic of the sport that requires athletes to manage their time (running, swimming) or be self-conscious of one's body and its position (figure skating, gymnastics). Hence, it is essential for researchers to conduct more studies that focus specifically on these two dimensions to draw clear conclusions.

Another mental state that can create similar alteration to the sense of time is hypnosis. Many people have reported a perception of time passing away quickly under hypnosis. In Neodissociation theory, Hilgard (1994) explained this phenomenon by proposing that the information about time is being recorded in the memory system, but it is blocked from the conscious part of the executive ego. It is worth considering the possibility of using hypnosis to create a time transformation sensation similar to flow state.

Autotelic experience. Csikszentmihalyi (1975) first introduced the term autotelic experience to describe a, "psychological state, based on concrete feedback, which acts as a reward in that it produces continuing behavior in the absence of other rewards" (p. 23). Taken

from the Greek language, auto means the “self” and telos means the “goal”. When put together, autotelic means doing the activity for its own sake (Csikszentmihalyi, 1990). This seems very similar to the meaning of the term intrinsic motivation, which is closely related to flow. When flow involves an autotelic experience, people find the activity that they are involved in to be motivating, intrinsically-rewarding, and it gives them a broad sense of enjoyment (Jackson, 1996). Even if there are external rewards, such as money or fame, athletes with a high level of autotelic experience can ignore or compartmentalise those extrinsic motives and be entirely focused on the satisfaction of doing the task itself.

Csikszentmihalyi (1975, 1990) also proposed the concept of autotelic personality, which refers to people’s dispositional tendency to engage in an activity for its own sake. Csikszentmihalyi (1990) suggested that people who have an autotelic personality are more likely to experience flow, that is, they have a propensity to experience the flow state (Asakawa, 2004).

The nine dimensions of flow are interdependent and interconnected of each other. Csikszentmihalyi (1993) suggested that when the other eight dimensions of flow are available, the activity of people becomes self-contained and a goal in itself, which will lead the experience to become an autotelic experience. Jackson and Csikszentmihalyi (1999) argued that autotelic experience could be considered a consequence of the other eight dimensions.

This nine-dimension model has proven stable within different cultures, classes, and genders (Nakamura & Csikszentmihalyi, 2002). It has also been confirmed in various areas, such as business (Csikszentmihalyi, 2004), music (Bakker, 2005), recreational activities (Havitz & Mannell, 2005), visual arts (Reynolds & Prior, 2006), and sport (Jackson, 1992, 1996; Swann, Keegan, Piggott & Crust, 2012).

Measurement of Flow

Due to its ephemeral characteristics, flow is difficult to measure objectively. Also, flow state is usually measured immediately or soon after performance, so it is possible that the subjective judgment of flow state will be affected by the performance result. With all the methods of measurement that have been developed to date, what is measured is the psychological experience indicative of flow. There are three main types of measurement available, namely the Experience Sampling Method (ESM), qualitative, in-depth interviews, and quantitative methods, using self-report questionnaires.

The Experience Sampling Method (ESM). Csikszentmihalyi and Larson (1987) introduced the ESM as a new way to measure flow, using both interviews and questionnaires. Participants carry a beeper, which rings eight times throughout the day to remind participants to fill in a brief questionnaire. This questionnaire consists of a Likert scale to measure participants' mood, concentration, sense of control, and self-consciousness level. There are also open-ended questions about the location and the activity that participants are doing. Csikszentmihalyi and Larson (1987) concluded that ESM is a valuable tool to understand the flow experience not only at the individual level, but also at the group level. There are, however, drawbacks to using ESM, especially in sport. One of the requirements for ESM is to have participants complete the questionnaire whenever the beeper sounds. There is a high potential that athletes will be in the middle of a training/competing activity, which they cannot stop. Furthermore, even if participants can stop to record, it is possible that the beeper/questionnaire disrupts their flow experience. Hence, there is a need for less intrusive methods.

Qualitative in-depth interview. Csikszentmihalyi (1975) has used in-depth interviews for many years with people from a wide variety of backgrounds, ranging from doctors to composers, astronauts to brain surgeons, and dancers to athletes, to explore flow

broadly. Knapik (2006) argued that the interview method gives access to a large pool of experiences that are not accessible by other measures, such as paper and pencil questionnaire assessment. Interview techniques are helpful for research to explore the flow experience in a group (Mugford, 2006; Sutton, 2005) or new aspects of antecedents and consequences of flow at work (Wright, Sadlo, & Stew, 2007). However, interviews are sometimes conducted a long time after individuals experienced flow, which can lead to either poor recall (Yarrow, Campbell, & Burton, 1970), or biased or distorted recall about the flow experience (Brewer et al., 1991). Jackson (1992, 1995) further explored the factors that may facilitate or disrupt flow, using in-depth interviews. A wide range of athletes in athletics, rowing, swimming, and cycling joined the studies, which make Jackson's work more valuable in generalizing her results for many sports. The in-depth interview allows researchers to have a richer understanding of the perception of participants.

Quantitative measures. Jackson and Marsh (1996) developed a questionnaire called the Flow State Scale (FSS), which measures the state component of flow. Flow state is the intensity of flow at any moment. A flow state can change from moment to moment. The FSS is based on Csikszentmihalyi's (1975, 1990) model of flow and comprises 36 questions, covering the nine dimensions of flow. There are four questions for each dimension, to help to evaluate flow intensity of athletes at one moment in time. Each question has a statement followed by a Likert response scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The FSS questionnaire has internal reliability in the range from .80 to .86 (with the lowest dimension being challenge-skill balance at .80, and the highest dimensions being unambiguous feedback at .85 and sense of control at .86)

Beside the FSS scale, which measures flow state, Marsh and Jackson (1999) also developed a similar questionnaire to measure the dispositional aspect of flow called the Flow Trait Scale (FTS). The FTS also has 36 items divided into four items that refer to each of the

nine dimensions, but it measures flow experience in general over a number of occasions. The FTS is administered away from the influences of specific, high-pressure competition situations, so it is less likely to be influenced by experiences during a particular performance. There are some questions that were designed to measure time transformation and loss of self-consciousness on the FSS and FTS that did not have strong relationships with global flow, that is, the sum of scores for all the nine subscales. Jackson and Eklund (2002) developed the Flow State Scale-2 (FSS-2) as a refined version of the FSS to measure state flow more sensitively. This involved changing the wording of some items. Jackson and Eklund (2002) also introduced the Dispositional Flow Scale-2 (DFS-2) to replace the Flow Trait Scale, to measure the frequency of flow that athletes experienced across sporting events in general. Both the FSS-2 and DFS-2 scales were designed to measure the experience of flow in physical activities, but they have also been used to measure flow in other areas. The amended version of the flow state scale, the FSS-2, has an internal consistency reliability range from .80 to .90 (Jackson & Eklund, 2002). The amended version of the dispositional flow scale, the DFS-2, has an internal consistency reliability range from .81 to .90. The nine dimension subscales of the revised scales have stronger relationships with the global flow score derived by summing all the subscales than the previous scales (Jackson & Eklund, 2002).

In addition to the scales mentioned above, researchers have proposed the need for a shorter version of the flow questionnaire for practical reasons (Jackson, Martin, & Eklund (2008). For example, short forms are more suitable for large-scale projects involving many measures, or when there is a time constraint. In order to convince athletes to fill in a questionnaire during their break between games, it is essential that the questionnaire is short and will take very little time to complete. Jackson (2011) also discussed the need to have a simpler flow questionnaire to suit large-scale research that involves administering many questionnaires. Jackson et al. (2008) and Martin and Jackson (2008) developed two short

scales that can be administered in less than two minutes: the SHORT Flow Scales and the CORE Flow Scale. Based on the FSS-2 and DFS-2, Jackson and colleagues developed the SHORT Flow State Scale-2 and the SHORT Dispositional Flow Scale-2. Each of these scales has nine items which represent the nine flow dimensions. There were two criteria for selection. First, these items were identified to best measure the intended construct, based on the size of their standardized factor loadings in previous confirmatory factor analysis. Second, where items representing the same dimension had equal or very close factor loading, ones deemed to have better face validity were chosen. Both of these short Flow Scales showed good reliability with internal consistency ranging from .73 to .84 (in work, sport, and music environments) (Jackson et al., 2008; Martin & Jackson, 2008). However, more research should be done to examine their measurement properties (Jackson, 2001).

While the SHORT Flow Scales were based on the existing quantitative FSS-2 and DFS-2, the CORE Flow Scales derived from qualitative research with elite athletes. Based on the work by Jackson (1992, 1995, 1996), Martin and Jackson (2008) came up with 10 descriptive statements about what it feels like to be in flow. The CORE Flow Scale uses a rating scale similar to other flow scales. The reliability score ranges from .91 to .93 in school and sports environments.

Despite all the best efforts to measure flow by the methods mentioned above, it is crucial to remember Csikszentmihalyi's reluctance to operationalize the flow state. He suggested that any measure of flow cannot fully reflect the human experience (Csikszentmihalyi, 1992). With the Flow State Scale, each question is scored out of 5, and each dimension is scored out of 20 (four questions for each dimension). With the range of scores from 36 to 180, it is not clear at which point it can be confirmed that individuals are or have been in flow. Also, it is difficult to determine whether a score of 18 on the scale for concentration is equal to a score of 18 on the scale for autotelic experience. Considering the

subjective, ephemeral characteristics of flow, which are highly susceptible to the challenges of the measurement methods, as well as Csikszentmihalyi's (1992) suggestion, it is essential to acknowledge that no one measurement method to date can give a full assessment of flow state. In fact, some researchers have proposed to combine qualitative and quantitative methods to produce a more detailed understanding of flow (Jackson, Kimiecik, Ford, & Marsh, 1998; Jackson & Marsh, 1996; Kimiecik & Stein, 1992).

Research Examining Flow in Sport

Flow antecedent dimensions and concomitant dimensions. The role of each dimension in global flow may not be of the same importance. Nakamura and Csikszentmihalyi (2002) proposed two concepts: flow conditions and flow characteristics. Flow conditions are dimensions that are crucial to getting into flow, including challenge-skill balance, clear goals, and unambiguous feedback. Flow characteristics are dimensions that reflect the phenomenological experience of flow, including action-awareness merging, concentration on the task at hand, sense of control, loss of self-consciousness, transformation of time, and autotelic experience. Based on this argument, interventions to induce flow state should target only the three flow condition dimensions: challenge-skill balance, clear goals, and unambiguous feedback.

Stavrou and Zevras (2004) proposed a different distinction between two categories of Csikszentmihalyi's nine flow dimensions with five flow dimensions (challenge-skill balance, clear goals, unambiguous feedback, concentration on the task at hand, and sense of control) proposed to be antecedents, which essentially means they promote flow. Stavrou and Zervas proposed that the other four dimensions (action-awareness merging, loss of self-consciousness, transformation of time, and autotelic experience) should be considered to be concomitants; which means they are experiential characteristics of flow that arise when flow is experienced, not factors that help create flow per se. Based on the canonical correlation

analyses of previous studies, the four most influential dimensions underlying flow were identified as challenge-skill balance, clear goals, concentration on the task, and sense of control (Koehn et al., 2013). Similarly, Jackson et al. (1998) found that challenge-skill balance, concentration on the task at hand, sense of control, and unambiguous feedback were the predominant dimensions of flow. In a follow-up study, Jackson et al. (2001) found challenge-skill balance, concentration on the task at hand, sense of control, and clear goals had the strongest correlation with other psychological variables, that is, goals were important, rather than feedback. Jeong (2012) found a stronger relationship between imagery and some characteristics of flow, including challenge-skill balance, clear goals, concentration, sense of control, and autotelic experience, rather than other dimensions. She proposed that to develop an effective and efficient intervention to enhance flow, researchers should focus on antecedent dimensions of flow, rather than concomitant dimensions that appear to emerge with or from flow. From the research by Koehn et al. (2013) and Jeong (2012), there is no compelling evidence that the concomitant dimensions enhance flow.

Personal and situational factors that affect flow. Kimiecik and Stein (1992) proposed that researchers should go beyond the point of describing various elements of the flow experience. Instead, they should focus more on the interaction between personal and situational variables (Jackson, 2011). Sorrentino, Walker, Hodson, and Roney (2001) shared this view about the importance of situational and personal characteristics of flow. They argued that without a match between situational and personal factors, there is likely to be a lack of perceived importance to athletes, which affects their motivation and information processing. For flow to appear, a match between these two factors is crucial.

Kimiecik and Stein (1992) designed a flow model that emphasized the interaction among personal and situational variables. They defined personal variables as general dispositions such as perceived competence and trait anxiety; and state variables such as self-

efficacy, goals and concentration). Situational variables include environmental factors such as the type of sport, opponent ability, coach behavior, competition importance, competitive flow structure, teammate interaction and behavior. Jackson (1992) supported this interaction model by confirming personal factors (positive affect, self-confidence and physical readiness) were linked to flow-like states. At the same time, situational factors (behavior of the crowd and other athletes) also contributed to the attainment of flow (Jackson, 1992). Many studies have found no significant difference in how gender affects flow state (e.g., Jackson et al., 2001; Jackson & Marsh, 1996; Russell, 2001; Vlachoplolous et al., 2000). A study by Grove and Lewis (1996) showed that gym circuit trainers with higher hypnotisability and prior experience were more likely to experience flow during training. Koehn, Langenkamp, and Morris (2004) examined the effect of action orientation and state orientation on flow in junior tennis players. They found action orientation was more strongly related to flow than state orientation, with strong effect sizes on global flow, concentration on the task at hand, and autotelic experience. Koehn (2007) further demonstrated that dispositional personality variables, action control, imagery use, and trait sport confidence have a moderate relationship with flow. Koehn also found significant and near-significant main and interaction effects between personal variables (trait sport confidence and action control) and situational variables (self-paced service task and externally-paced groundstroke task) on flow state. Among the personality variables, motivation and anxiety are two factors that have received the most research attention. This trend followed work by Csikszentmihalyi (1975, 1988), which suggested that intrinsic motivation is one of the main factors to facilitate flow (Jackson et al., 1998), while anxiety is a crucial factor that prevents flow from happening (Jackson et al., 1998; Stavrou & Zervas, 2004).

Koehn et al. (2013) carried out research on imagery use and confidence related to flow state in the different performance contexts of service and groundstrokes with junior

tennis players. Their results did not show a significant difference in flow states across performance contexts. The results seemed to contradict Kimiecik and Stein (1992), who argued that self-paced tasks, like the tennis service, should facilitate flow more than externally-paced tasks, like groundstrokes. While the findings lead to the hypothesis being rejected, they actually opened up a new area to consider, that being whether the difference between discreet and continuous performance has an impact on flow state. While the research on personal and dispositional interaction showed some encouraging results, Koehn (2007) suggested that the current measurement method of global flow may not be sensitive enough to detect the interaction effects between personal and situational factors. Koehn suggested closer consideration of participants and task characteristics to better understand the person x situation interaction effect.

Factors that improve or decrease flow. To further understand the effect of various personal and situational factors on flow, it is crucial to identify factors that may facilitate, prevent, disrupt, or control flow.

Facilitators of flow. Researchers have identified some factors that may facilitate flow. Having a better understanding of these factors and how to use them in practical settings is important for increasing the possibility of flow occuring for athletes. Jackson (1992) interviewed 16 elite figure-skating athletes and found that these athletes could enter a flow state more easily with the following factors present: positive mental attitude, positive pre-competitive and competitive affect, maintaining appropriate focus, feeling physically ready, and having unity with their dance partner. All these factors were similar to the flow characteristics suggested by Csikszentmihalyi (1990). All but one (partner unity) were perceived as controllable by the study's participants. To understand this topic further, Jackson (1995) interviewed 28 elite athletes from seven sports, track and field, rowing, swimming, cycling, triathlon, rugby, and field hockey. Besides positive attitude and focus factors, which

were mentioned by Jackson (1992), Jackson (1995) proposed motivation to perform, achieving optimal arousal, competitive plans and preparation, physical preparation and readiness, feeling good while performing, confidence, positive team play and interaction, experience, and optimal environmental and situational conditions as factors that facilitate flow. Among these factors, two factors were cited by the highest percentage of athletes. These were competitive plans and preparation, and confidence and positive attitude, to which 64% of the athletes referred. Two factors, optimal physical preparation and readiness, and optimal level of arousal were cited by 57% of the participants. The athletes in Jackson's qualitative studies claimed that flow could be attained by managing those controllable factors that facilitate flow. Young (2000) and Young and Pain (2005) explored the flow experience in professional tennis players. Similar to other research they found physical and mental preparation, positive mood, control of arousal, environmental conditions, motivation, positive feedback, and focus were factors that promoted flow. Russell (2001) researched both qualitative and quantitative factors that affect flow in 42 athletes from five team sports and four individual sports. He found nine factors that may facilitate flow. Some of the most common factors included optimal pre-competitive plans, optimal physical preparation, confidence, and positive thinking. Russell's sample emphasized being confident and being prepared for competition as essential factors that facilitate flow. This conclusion is similar to Jackson's (1995) conclusions. Furthermore, Jackson (1995) suggested that confidence and positive mental attitude are two key factors that facilitate flow in sport. Finally, Sugiyama and Inomata (2005) found a similar result in Japanese elite athletes, in which feeling relaxed, self-confident, highly motivated, entirely focused, lacking negative thoughts and feelings, and being extremely positive were factors that promoted flow.

It is interesting to note that these findings from various research groups overlap to some extent, resulting in a number of factors, including positive mental attitude, confidence,

focus, motivation, and excellent preparation for the competition that seem to be essential for the facilitation of flow. This conclusion also supports Jackson's (1995) finding that elite athletes considered flow as controllable because these factors are controllable with appropriate mental skill training.

Factors that prevent flow from occurring. Besides the need to understand how to facilitate flow, it is also essential to better understand how factors may prevent flow from happening. Jackson (1995) identified the following nine factors, the presence of which appeared to stop athletes from attaining flow, non-optimum preparation and readiness, lacking confidence or a negative attitude, non-optimal environment and situational conditions, inappropriate focus, lack of motivation, problems with pre-competitive preparation, non-optimal arousal level, negative team play and interaction, and poor performance. Of these nine factors, athletes reported non-optimal preparation and readiness as the most frequent factor, followed by non-optimal environment and situation conditions, lacking confidence and negative attitude, and inappropriate focus. Russell (2001) reported similar factors, non-optimal environment/situation, non-optimal physical preparation and readiness, inappropriate focus, non-optimal confidence and positive thinking. Young (2000) also found three factors, inappropriate focus, non-optimal mood, and preparation problems, appeared to prevent flow from occurring. It is clear from these studies that three factors, in particular, play an important role in preventing flow from happening; non-optimal preparation/readiness, non-optimal confidence and positive thinking, and inappropriate focus.

Factors that disrupt flow. Once flow happens, it does not mean that athletes will necessarily experience flow throughout the entire match or event. Numerous factors have been identified as disrupting flow. Jackson (1992, 1995) identified six factors that cause disruption, including problems with environmental and situational conditions, team performance or interactions, physical readiness or physical state, inappropriate focus,

performance errors, doubting or placing pressure on oneself. Russell (2001) and Young (2000) found the most crucial factor that could disrupt flow was the environmental and situational conditions. However, this factor is very wide and may include many specific factors (environmental factors may include the weather or the crowd, situational factors may include a negative decision by coach or umpire or equipment malfunctions). It would be useful for the understanding of factors that disrupt flow for more research to be conducted on specific environmental and situational factors that disrupt flow. During a competition, athletes' perception of high levels of psychological pressure may disrupt their flow experience. For example, they might feel anxious and analyse their movements or the result of the competition critically. These flow disruption processes might affect motor processing and, thus, performance, e.g., the choking phenomenon (Baumeister & Steinhilber, 1984; Beilock & Carr, 2001).

Recent research on flow and sport performance. Some recent research on flow has moved in a new direction. Swann, Keegan, Crust and Piggott (2016) explored the psychological states underlying excellent performance in 10 professional golfers. Swan et al. found that these golfers reported two different psychological states during their peak performances, namely "letting it happen" and "making it happen". They proposed that "letting it happen" corresponded with the definition and description of flow, whereas "making it happen" reflected a more effortful and intense experience that involved a heightened awareness of the situation. Six out of the 10 golfers reported experiencing "letting it happen", whereas the other four golfers experienced "making it happen". There were a number of differences between these two states. First, making it happen tended to involve more structured and fixed demands and fixed outcomes, whereas flow was more exploratory and self-referenced. Second, making it happen occurred more suddenly when individuals realized the demand of a situation, normally toward the end of the round. Conversely, letting

it happen tended to happen more gradually, and would normally appear at the beginning or middle of the round. Third, the players' position in the tournament and whether they could win the rounds played a role. Making it happen tended to occur when golfers were in contention to win, whereas letting it happen could happen regardless of whether golfers were in a position to win or not. In making it happen, golfers reported making the extra effort, to "step up" their performance to meet the challenging demand of the round. During the letting it happen experiences, flow seemed to appear after a "build-up" of performing well. Swann et al. suggested that the reports of golfers in the making it happen state were similar to the definition of clutch performance that was mentioned by Hibbs (2010).

Swann, Piggott, Schweickle, and Vella (2018) pointed out several issues in the current research of flow. First, Swann et al. claimed that there is some terminology used by Csikszentmihalyi's flow conceptualization that is imprecise and open to interpretation. For example, the type of goals in the clear goals dimension is unclear. Schweickle, Groves, Vella, and Swann (2017) suggested that clarification of the goal types necessary for flow is essential. Second, Swann et al. argued that there is a lack of coherence between the conceptualization of flow and other constructs in sport psychology due to overlapping and missing constructs. For example, three dimensions: challenge-skill balance, clear goals and sense of control are already included in the confidence concept (Jackson & Csikszentmihalyi, 1999). Also, the nine flow dimensions do not explicitly outline core constructs such as confidence, arousal and motivation which are often reported during flow. Third, Swann et al. pointed out that there is little support for the loss of self-consciousness and time transformation dimensions. Fourth, Swann et al. proposed that there is no agreement about the number of dimensions that need to be present for individuals to be classified as being in flow. Other researchers have recently suggested two different types of flow, namely telic flow and paratelic flow (Houge Mackenzie, Hodge, & Boyes, 2011, 2013; Wright, Wright,

Sadlo, & Stew, 2014), which are related to different metamotivational state phases and appeared to have different manifestations. Houge Mackenzie et al. (2011) proposed that telic flow occurs in a challenging activity with clear/distinct outcome goals, and is characterized by an achievement focus; intensity; immersion in the task; seriousness; trying to do what was planned; and having higher performance expectations. Furthermore, attentional narrowing is required to complete the challenging task and enjoyment is generally reported afterwards rather than during the activity, as a result of successfully completing the task. Paratelic flow is undertaken without a clear outcome goal, and a lack of importance attributed to performance outcomes and future concerns. It is sensation oriented, exciting, and/or playful; with a heightened sense of immersion; less intense than telic flow; employs a wider attentional field; and depends less on successful completion of clear tasks, and more on participation in an engaging activity. Research by Swann and colleagues (Swann et al., 2017; Swann et al., 2016) reported that flow may only comprise part of the 'picture', and athletes have qualitatively reported two distinct psychological states during excellent performances. The second state is the clutch state that shares certain characteristics with flow, but is also different in several aspects. Clutch performance has been defined as "any performance increment or superior performance that occurs under pressure situations" (Otten, 2009 p. 584). The psychological state underlying clutch performance is characterised by complete focus, heightened awareness, and intense effort - in contrast to flow which is characterised by effortless attention and an automatic experience. Flow and clutch state share experiences of enjoyment, enhanced motivation, perceived control, altered perceptions of time and the environment, absorption, and confidence (Swann et al., 2017). These new directions for the study and refinement of the flow concept represent an interesting direction for researchers to explore. However, they were published well after the present thesis was conceptualized and the studies in this thesis were completed. Thus, I have recorded them because they appear to

be the main recent research publications of flow. However, I consider that they do not bear directly on the research question in the present thesis, so I now focus this literature review on the proposed research question in this thesis.

In the foregoing review, I reported the recognised importance of flow as a positive phenomenological state that is associated with enjoyment of the activity in the performance of which it is experienced and increased intrinsic motivation for the activity. Research has demonstrated that such enjoyment and intrinsic motivation lead to increased practice and competition of sports for their own sake, leading to enhanced persistence and effort. Given these desirable consequences of flow state experiences, athletes, coaches, and sport psychologists aim to increase the occurrence of flow experiences. One promising way to achieve this appears to be through the use of hypnosis. Research has been conducted that has shown positive outcomes of hypnosis interventions in terms of increased global flow state and improved performance (Lindsay et al., 2005; Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pates, Maynard, & Westbury, 2001; Pates, Oliver et al., 2001; Pates & Palmi, 2002, Vasquez, 2005). This research is reviewed in a later section of the literature review.

In this thesis, my focus is to examine the possibility of using hypnosis to increase flow state. The most recent research on the relationship between hypnosis and flow in sport was the studies by Pates (2103) and Pates and Cowen (2013). Neither that research, nor the earlier hypnosis and flow in sport research examined in detail what mechanisms might underlie the way in which hypnosis influences flow. In the following section, I review theory and research on hypnosis, leading to the potential links between hypnosis and flow that form the basis of the research in this thesis.

Hypnosis

In this section, I first introduce various definitions of hypnosis and explain the challenge of finding a general definition of hypnosis that satisfies both theorists and practitioners. Next, I discuss in detail different hypnosis theories and how they clash with or complement each other to widen knowledge of hypnosis. Subsequently, I describe various questionnaires that have been used to measure hypnotic suggestibility. Finally, I review different studies that have examined the relationship between hypnosis and sports performance, including studies that examined the effect of hypnosis on flow and performance.

Definitions

In the early 19th century, James Braid proposed the term hypnotism after he combined his method of mesmerism with his medical practice. The term hypnotism came from the Greek word hypnos, which means sleep. Braid later on understood that hypnosis was actually not similar to sleep, but a state of consciousness between wakefulness and sleep (Braid, 1853). Since then, various theories and definitions of hypnosis have emerged, but none of them has been accepted as the unanimous definition.

Elkins, Barabasz, Council, and Spiegel (2015) explained that a definition of hypnosis is fundamental for scientific study, but it has been very challenging to define hypnosis due to the distinctions between different theoretical perspectives. Elkins et al. (2015) suggested that the definition needs to offer clear terms that are important to advancing both research and clinical practice. They also pointed out the two main challenges that often cause disagreement in defining hypnosis. The first cause of debate is the nature and the mechanisms of hypnosis effects, which are still relatively unknown. The second cause is that theoretical bias can lead to arguments about the accuracy of claims made by proponents of different theories. Division 30 of the American Psychological Association (APA), called the Society of Psychological

Hypnosis, invited a group of well-known hypnosis experts to form a committee to come up with a definition that "would serve to demystify hypnosis and encourage its use by both consumers and providers" (Green, Barabasz, Barrett, & Montgomery, 2005, p. 261). This committee's efforts produced three different versions of the hypnosis definition in 1993, 2003, and 2014.

The 1993 version proposed by the Division 30 committee identified hypnosis as a procedure "during which a health professional or researcher suggests that a client, patient, or subject experience changes in sensations, perceptions, thoughts, or behaviour" (Kirsch, 1994b, p. 143). Hypnosis is used for "treatment of pain, depression, anxiety, stress, habit disorders, and many other psychological and medical problems" (Kirsch, 1994b, p. 143). This definition, however, was faced with many criticisms, which included that it is too long and that it has significant limitations. For example, the concept of self-hypnosis was not addressed; or there was no clear distinction between hypnosis and hypnotic induction (Elkins et al., 2015). Furthermore, this definition did not mention the "state" concept, so it was considered biased toward preconceived social-cognitive mechanisms (Elkins et al., 2015). The concepts of hypnosis induction, state and social-cognitive mechanism will be discussed later on in this section.

To address these issues, a new Hypnosis Definition Committee was formed in 2002 with 13 well-known hypnosis experts. Together, they came up with the 2003 version of the definition of hypnosis,

> Hypnosis typically involves an introduction to the procedure during which the subject is told that suggestions for imaginative experiences will be presented. The hypnotic induction is an extended initial suggestion for using one's imagination, and may contain further elaborations of the introduction. A hypnotic procedure is used to encourage and evaluate responses to suggestions. When using hypnosis, one person

> (the subject) is guided by another (the hypnotist) to respond to suggestions for changes in subjective experience, alterations in perception, sensation, emotion, thought, or behaviour. Persons can also learn self-hypnosis, which is the act of administering hypnotic procedures on one's own. If the subject responds to hypnotic suggestions, it is generally inferred that hypnosis has been induced. Many believe that hypnotic responses and experiences are characteristic of a hypnotic state. While some think that it is not necessary to use the word hypnosis as part of the hypnotic induction, others view it as essential (Green et al., 2005, p. 262).

Further, the 2003 Committee stated,

> Details of hypnotic procedures and suggestions will differ depending on the goals of the practitioner and the purposes of the clinical or research endeavour. Procedures traditionally involve suggestions to relax, though relaxation is not necessary for hypnosis and a wide variety of suggestions can be used including those to become more alert. Suggestions that permit the extent of hypnosis to be assessed, by comparing responses to standardized scales, can be used in both clinical and research settings. While the majority of individuals are responsive to at least some suggestions, scores on standardized scales range from high to negligible. Traditionally, scores are grouped into low, medium, and high categories. As is the case with other positively scaled measures of psychological constructs, such as attention and awareness, the salience of evidence for having achieved hypnosis increases with the individual's score (Green et al., 2005, p. 263).

Despite the effort of the Committee to come up with a definition that was "restricted to procedures that are used in research and clinical practice" (Green et al., 2005, p. 262), there were still some short-comings in this version. Besides being excessively long with two full paragraphs (Heap, 2005), this version was criticized for contradictions in places

(McConkey, 2005), and lack of coherence (Heap, 2005). This definition omitted any reference to states of consciousness (Barabasz, 2005/2006; Yapko, 2005/2006) or that hypnosis can occur spontaneously (Elkins et al., 2015). In British literature on hypnosis, a different view about the definition of hypnosis is presented with less of a descriptive approach and more focus on the interaction between the hypnotist and the client than the APA Division 30 definition. Heap and Aravind (2002) defined hypnosis as,

> The term "hypnosis" is used to denote an interaction between two people (or one person and a group) in which one of them, the hypnotist, by means of verbal communication, encourages the other, the subject or subjects, to focus their attention away from their immediate realities and concerns and on inner experiences such as thoughts, feelings, and imagery. The hypnotist further attempts to create alterations in the subject's sensations, perceptions, feelings, thoughts, and behaviour by directing them to imagine various events or situations that, were they to occur in reality, would evoke the intended changes (p. 55).

This British definition was also criticized for being too broad and too descriptive (Nash, 2005). Understanding that hypnosis is a multidimensional experience about which there are many different views and theories, the APA Division 30 Committee (Green et al., 2005) suggested that their definition and description of hypnosis should not be considered as the final definition. The definition should continue to evolve due to the concern of various hypnosis organisations and researchers who challenge, critique, and update the Division 30 description. Among the recommendations for improvement of the APA Division 30 definition (2003), Nash (2005) suggested that researchers should consider two elements of the hypnotic situation, "hypnosis-as-procedure" and "hypnosis-as-product". When a hypnosis procedure is administered to clients, they do not always achieve the hypnotic state (hypnosis-as-product) due to their low hypnotisability, unwillingness, or other factors. According to

Nash, a hypnotic procedure must have two components: the introduction part, and the first suggestion as induction. All the unsuccessful attempts by the Division 30 committee as well as other researchers and theorists to develop a generally acceptable hypnosis definition can be summarized by the title of the article, “Hypnosis: Seventy Years of Amazement, and Still Don’t Know What It Is!” (Watkins, 2009). Watkins is one of the earliest pioneers of modern clinical hypnosis (Yapko, 2012).

In 2013, a new Hypnosis Definition Committee was formed by the APA Division 30 to come up with a hypnosis definition that has a concise description that identifies the object of interest and its characteristics. The committee considered that the definition should be heuristic to allow alternative theories of the mechanisms (Elkins et al., 2015). In 2014, Division 30 offered the following definitions, Hypnosis is “a state of consciousness involving focused attention and reduced peripheral awareness characterized by an enhanced capacity for response to suggestion” (Elkins et al., 2015, p. 6). Hypnotic induction is “a procedure designed to induce hypnosis” (Elkins et al., 2015, p. 6). Hypnotisability is “an individual’s ability to experience suggested alterations in physiology, sensations, emotions, thoughts, or behaviour during hypnosis” (Elkins et al., 2015, p. 6). Hypnotherapy is “the use of hypnosis in the treatment of a medical or psychological disorder or concern” (Elkins et al., 2015, p. 7).

To understand hypnosis further, it is important to have a clear view of the different stages within hypnosis and the role of each stage. Unfortunately, this is one area in which there are many variations, depending on the practitioners and theorists. Because of that, there is not a great deal of research that discusses each of these stages. Alladin (2008) offered one way to categorize hypnotherapy into eight sequential stages: preparing the patient for hypnosis, hypnotic induction, deepening of hypnosis, therapeutic utilization of hypnosis, ego-strengthening, post-hypnotic suggestions, self-hypnosis, and termination of hypnosis. During the first stage of preparing the participant, the hypnotist gathers information, builds rapport

with participants, assesses hypnotic suggestibility, and clarifies any misconception about hypnosis. In the hypnotic induction stage, the hypnotist uses different procedures and suggestions to induce hypnosis in the participant. Spanos (1981) reported at least 25 induction techniques that are frequently used in hypnosis. According to a definition by Taylor et al. (1993),

> An induction is a set of instructions and suggestions that usher in the hypnotic state (or, from a social psychological perspective, alert clients to the need to shift their behaviour to fit the instructions). Hypnotic inductions share several common factors: (a) receptive mindset by the client; (b) an intention on the part of the professional to guide the focus of attention of the client and shape it toward the trance state; and (c) a recruitment of naturally-occurring, but seldom noticed, physical and mental states, for example, surprise, novelty, fatigue, boredom, and linking them together to capture the client's attention (pp. 64-65).

Once the trance state is initiated through the induction, the deepening stage helps intensify and heighten involvement in the hypnotic experience. The deepening techniques help increase relaxation, enhanced sense of comfort, richer imaginative involvement, and alterations in time and space perception in clients (Taylor et al., 1993). The need to use deepening methods was derived from depth of trance metaphors that suggest there are various levels of trance within a hypnosis state. Horevitz (1986) pointed out that whether deepening techniques can help improve outcome has not been established, except in a few situations when hypnosis is used for anaesthesia purposes. Hammond (1998) suggested that the induction and deepening stages are not separate phases, but "simply refer to the process of increasing the focus and concentration of attention by the patient" (p. 71). From the definition by the APA Division 30, it is clear that hypnosis is not therapy, which means that the hypnotic induction and deepening alone do not produce lasting clinical benefits (Alladin,

2008).

The fourth stage is the therapeutic utilization of hypnosis. Taylor et al. (1993) called this stage the trancework stage. In the trancework stage, the hypnotist can use any of the various hypnotic techniques, such as suggestive therapies, imagery training, reframing, and double bind procedures (Braun & Horevitz, 1986), cognitive-behavioural techniques (Sandford, 1986), and psychodynamic approaches (Nigro & Vidic, 1986). These techniques are used to help participants deal with their challenges.

Taylor et al. (1993) described three different approaches to intervention. The first approach is symptomatic hypnotherapy, which focuses on short-term treatment to alleviate symptoms. Within this approach, hypnotists may combine other techniques, for example, systematic desensitization (Wolpe, 1969) and Progressive Muscle Relaxation (PMR) (Jacobson, 1938). The second approach is supportive ego-strengthening hypnotherapy, which is similar to stage-five mentioned by Alladin (2008). Hartland (1971) popularized this technique by using generalized supportive suggestions to help increase clients' confidence, coping abilities, positive self-image, and interpersonal skills. Hartland proposed that ego-strengthening suggestions can help remove tension, anxiety, and gradually restore clients' confidence in themselves. Alladin and Heap (1991) agreed with Hartland's conclusion and suggested ego-strengthening used the positive experience of hypnosis to develop a sense of confidence, optimism, and improved self-image. Various authors have suggested that the repetition of positive suggestions can embed these suggestions in the unconscious mind, which leads to their automatic influence on feelings, thoughts, and behaviour. The third approach by Taylor et al. is dynamic hypnotherapy or hypnoanalysis. This approach is based on psychoanalytic theory and involves using hypnosis to explore unconscious conflicts and past trauma that have been repressed in memory (Wolberg, 1964). Brown and Fromm (1986) and Nigro and Vidic (1986) described three popular techniques within this approach, namely

mental imagery, hypnotic dreaming, and age regression. Age regression or regression (RE) is discussed in more detail in a later subsection of this literature review.

The sixth stage of the hypnosis process is about post-hypnotic suggestions. Hypnotists frequently give clients post-hypnotic suggestions that they suggest clients will experience or act upon sometime after the hypnosis session has finished. The suggestions might be activated soon after the session, weeks or months later, or perhaps never, if they are conditional upon an event that does not eventuate. Post-hypnotic suggestions are often tied to a stimulus, which might be a specific situation, event, or object. For example, a suggestion for clients trying to quit smoking might be that, when offered a cigarette in a social situation, they will politely decline. The stimulus or trigger that activates the post-hypnotic suggestion could also be an internal somatic sensation, such as a pounding heart or shortness of breath in clients using hypnotherapy to help them cope with anxiety attacks, and the suggestion might be to focus on slow, deep breathing, a technique often taught in hypnosis. Alternatively, the internal stimulus could be a particular thought, for example, the urge to have an eating binge in a person with bulimia. A post-hypnotic suggestion in this case might be to think about a pleasant place or a loved person that has previously been identified and linked to positive associations in hypnosis sessions in place of the urge to eat. Post-hypnotic suggestions are an essential part of hypnotherapy to help participants to carry new possibilities into future experience (Yapko, 2003).

The seventh stage is about self-hypnosis training. After the first hypnosis session with the hypnotist, participants often receive an audiotape of self-hypnosis, which they are instructed to listen to frequently and to adapt part of the self-hypnosis suggestions to day-to-day situations. Alladin (2008) suggested three benefits of listening to the self-hypnosis audio files: to create a positive frame of mind, to offer ego-strengthening suggestions, and to provide post-hypnotic suggestions. Maldonado and Spiegel (2003) proposed that the

intervention could be presented as a lesson in self-hypnosis that participants can learn to use to reduce their symptoms. These so-called self-hypnosis sessions are actually self-managed hypnotist led hypnosis sessions, compared with self-hypnosis sessions in which the participant guides their own progress into trance through a hypnotic procedure, involving verbal self-talk, thoughts, or images. Kihlstrom (2008) argued that there is no difference between the TH with a hypnotist and the self-hypnosis because,

> In a very real sense all hypnosis is self-hypnosis. The hypnotist can recite an induction procedure and make suggestions for various experiences, but it is the subject who must actively participate in the process; without that active participation, nothing happens (p. 24).

The last stage is termination of hypnosis, in which the hypnotist will count either forward or backward, normally from one to five or ten, or from five or ten to one, to bring participants out of the hypnotic trance state. The termination count is more commonly forward because backward counting is widely used to increase the depth of trance, for example, in Ericksonian staircase-style deepening techniques and imagery of an elevator dropping from floor to floor. The count can also be punctuated with various comments that might be designed to reinforce post-hypnotic suggestions or as ego-strengthening devices, for example, emphasizing that individuals will feel refreshed, relaxed, and confident when they emerge from the trance.

While the above-mentioned stages of hypnosis follow one after another, Alladin (2008) suggested that a hypnotist can choose the sequence of treatment according to the need of each client. Within this thesis, I use the term introduction to describe the first stage of preparing clients for hypnosis. I use the name hypnosis induction for Stage 2, and for Stage 3 I employ the established term, namely hypnosis deepening. I combine Stages 4 to 6, within the term trancework. Thus, as is common in the literature, trancework means all the

therapeutic work that occurs when clients are in a trance state. I include self-managed hypnosis in this thesis. For termination, I use the term awakening from hypnosis, which is also commonly used by writers and practitioners.

To conclude, in this section, I have presented various definitions of hypnosis, focusing mainly on the definitions by APA Division 30. Despite having many different views and definitions, a hypnosis session still has a similar structure of stages with some variations. In the next part, I discuss the type of suggestions that are used within hypnosis. Then I explain different types of hypnosis which are used within this thesis.

Hypnosis versus Placebo Effect

Researchers who have examined hypnosis have discussed whether there is a link between hypnosis and the "placebo effect" (Baker & Kirsch, 1993; Hilgard & Hilgard, 1975; Shapiro, 1964a, 1964b), especially when people who were exposed to hypnosis induction or placebo seem to have a positive therapeutic response (Frischholz, 1997, 2007; Shapiro, 1964 a, 1964b). Kirsch (1994a) considered hypnosis as a non-deceptive placebo, because it affects client expectancy, while not delivering any active substance to affect the body or mind of clients. In contrast, Sliwinski and Elkins (2013) concluded that cognitive expectancies alone may not completely explain the benefit of clinical hypnosis.

Frischholz (2014) raised a valid conflict in the understanding of the hypnosis and placebo processes. There is no generally accepted definition of hypnosis among theorists (Araoz, 2005/2006; Barabasz, 2005/2006; Frischholz, 2005, 2007; Yapko, 2005/2006), but there is a consensual agreement that differences in subject hypnotisability can be reliably measured (Hilgard, 1965; Spiegel & Spiegel, 2004). On the other hand, there seems to be agreement about definition of the placebo effect (Enserink, 1999; Moerman, 2002; Raz, 2007; Shapiro, 1964a, 1964b), yet there is no consensual agreement about the way to reliably measure differences in placebo response (Raz, 2007).

Frischholz argued that there is a difference in expectancy between "placebo response" and "psychotherapy response" and stated "when given a placebo, a patient passively expects some type of positive treatment response" (Frischholz, 2014, p. 166). For example, doctors give people placebo pills that have no pharmacological effect, yet patients believe that these placebo tablets have created some effect, which in fact they have not. On the other hand, the purpose of hypnotic suggestions is only to create a subjective experience, based on participants' imagination. The language used in a hypnotic suggestion often includes words or terms, such as "imagine that…" or "it is as if…". Hypnotists do not attempt to convince clients that "fake" experiences are real. Instead, they ask clients to imagine and make it "as if" it is real. Therefore, people who follow a psychotherapy treatment process will have an active expectancy due to their commitment to be part of the therapeutic process.

Types of Suggestion

Kihlstrom (2008) proposed that "suggestion is central to hypnosis" (p. 26). During a hypnosis session, suggestions are used in various parts: suggestion during induction and deepening to facilitate relaxation, focused attention, and eye closure. Hypnotic suggestion is a significant component of trancework because it can be used to treat a presenting problem. Depending on how individuals respond to hypnotic suggestion, such as arm catalepsy or auditory hallucination, their hypnotisability can be measured (for example, using the HGSHS:A or the SHSS:C) (Kihlstrom, 2008). Because of the strong connection between hypnosis and suggestion, hypnosis researchers have commented on how these two domains interlink with each other (Braffman & Kirsch, 1999; Kirsch & Braffman, 2001; Weitzenhoffer, 1953).

Kihlstrom (2008) stated that suggestion, hypnosis, and hypnotisability are inextricably linked, however, "not all suggestions, or forms of suggestibility, belong in the domain of hypnosis" (p. 26). For example, a suggestion by a student in the school suggestion box to ask

for wifi to be installed throughout the school is not a hypnotic suggestion. This type of suggestion is commonly called “waking suggestions” to separate it from hypnotic suggestions (i.e., suggestions given within hypnosis). Although suggestibility and hypnotisability are frequently mixed up as the same domain, Tasso and Perez (2008) pointed out that, “the suggestion-hypnosis (or suggestibility-hypnotisability) relationship is a controversial and perhaps misunderstood one” (p. 283). They further suggested that, “at this moment, there is little agreement on the independence of non-hypnotic everyday suggestions and hypnotic responsiveness” (p. 284).

Eysenck and Furneaux (1945) made a distinction between two types of suggestion: the primary ideomotor suggestion that involves direct verbal suggestions to move certain body parts, and the secondary suggestion, which involves indirect, nonverbal suggestions for sensory perceptual experiences. Direct suggestion is given to the subconscious mind to influence participants’ behaviour, thoughts, feelings, and action. Indirect hypnotic suggestion uses metaphor and non-specific language as the primary approach to generate change from the unconscious mind. Eysenck (1947) proposed a tertiary suggestion type, which covers persuasion effects in changing attitude. However, research in social psychology found tertiary suggestion, involving conformity and persuasion, to be unrelated to hypnotisability (Moore, 1964).

Within ideomotor suggestions during hypnosis, there are direct suggestions that facilitate motor behaviour, such as eye closure or arm catalepsy, and challenge suggestions that inhibit motor behaviour, such as arm rigidity or arm immobilization. Within the secondary suggestion, there are also two different types of perceptual-cognitive suggestions. The first type involves the production of percepts and memories, such as in positive auditory hallucination situations, for example, clients hear the Jingle bell tune even though no sound was played during the WSGC test. The second type inhibits perception and memories, such

as negative visual hallucination, for example, in WSGC, clients are shown three coloured balls, but later, following hallucination suggestions, they can only recall seeing two coloured balls (Kihlstrom, 2008). Although these categories might help in understanding the different types of hypnotic suggestion, Gheorghiu et al. (1989) and Schumaker (1991) suggested that more studies are needed to define more clearly the relationships among the various forms of suggestibility and their underlying mechanisms.

Neutral Hypnosis

Most research on hypnosis has not considered the concept of NH, which is an induced state that does not involve the use of explicit instructions to influence participants, that is, there is no trancework. NH typically involves three parts: induction, deepening, and awakening. Advocators of NH include Ludwig and Levine (1965), Kihlstrom and Edmonston (1971) and Edmonston (1977, 1981). Edmonston (1977) concluded that NH is equivalent to relaxation. According to him, during the induction stage, both verbal and physical suggestion of relaxation are presented to individuals. Hence, individuals are responding to, and having perceptions of, the process of hypnosis as relaxation. In a critical review of research in hypnosis, Barber (1966) concluded that hypnosis without performance-enhancing suggestions, that is, NH, did not influence muscular strength or endurance. However, research about NH is limited and inconclusive, so further study on NH is warranted.

Hypnosis with Suggestion

According to Taylor et al. (1993), there are three different approaches to trancework intervention. One approach is symptomatic hypnotherapy, which focuses on symptom relief and short-term treatment. Suggestions for this approach include removing, transferring, or substituting problematic symptoms. The second approach is supportive ego-strengthening hypnotherapy. Because this approach comes from ego psychology, its suggestions include fostering self-esteem, building self-confidence, and enhancing clients' strengths, all of which

promote well-being. Some hypnotherapists have used an abbreviation, PREM, to indicate the way suggestion is used in ego-strengthening: P- positive, R- repetitive, E- ego-strengthening, M-motivational. During PREM, hypnotherapists frequently use a technique called FP to enhance clients' self-confidence and self-esteem further. FP techniques require clients to imagine a point in the future when they will do the skill efficiently and see themselves enjoying it. The third approach is hypnoanalysis, which derives from psychoanalytic theory. In this approach, hypnotists use suggestions to uncover unconscious conflicts and to identify repressed memories (Wolberg, 1964), or to recall positive experiences from the past (Pates & Palmi, 2002). Frequently-used techniques include RE and mental imagery (Brown & Fromm, 1986; Nigro & Vidic, 1986; Pates, 2013). The main difference between suggestion in RE and FP is the focus in RE being on the past and the focus in FP being on the future. Each of these suggestions is frequently used together with a trigger control procedure (anchoring) in which an action or a stimulus is used to help individuals recall their ideal performance state (Pates, Maynard, et al. 2001; Pates, Oliver et al. 2001; Pates et al., 2002; Pates & Maynard, 2000; Pates & Palmi, 2002). It is important to note that RE can be used to address a past negative problem or traumatic event in a positive way, which helps clients to believe in themselves again. On the other hand, FP ignores past negative issues and focuses mainly on building positive future experiences from the present point.

There has been a mixed result comparing the effect of suggestion under hypnosis and suggestion under non-hypnotic control conditions. Nicholson (1920) found suggestion given during hypnosis trance was much more effective than suggestion given in the normal conscious state without hypnosis. There is also evidence from Barber (1966) and Morgan (1997), which showed that suggestion without hypnosis could lead to enhanced muscular performance. Morgan and Stegner (2008), after reviewing previous research, suggested that suggestion given during hypnotic trance is more effective than suggestion administered in a

waking state for selected physical task in highs. Further study is needed to clarify these findings as well as the effect on low and moderate hypnotisability participants.

Regression Hypnosis

Hypnosis practitioners commonly refer to hypnosis using RE technique as age regression. Yapko (2012) defined RE as "an intensified absorption in and experiential utilization of memory" (p. 345). Kihlstrom (1985) supported the idea that during RE subjects receive suggestions to travel back mentally in time to a previous event that they relive vividly. Hilgard (1986) agreed that RE implies a backward movement in time for subjects. Parrish, Lundy, and Leibowitz (1969) suggested the following criterion for RE, "when responses typical of children but not of adults are produced by [hypnotic] age regression, and when these same responses are not produced under a waking suggestion" (p. 699)

Yapko (2012) distinguished between two categories of RE. The first category is revivification, which is to take clients back in time to re-experience a past event, as if it were happening in the here-and-now. The second category is hypermnesia, which is to have clients remember the past event as vividly as possible. Kihlstrom (1985) and McConkey (1992) considered these two concepts slightly different. They considered revivification as the recovery of previously forgotten events or information, while hypermnesia is the improvement of clients' memory or recall for events that clients have gone through without being in a hypnotic state.

Vasquez (2005) suggested two processes that might happen during the RE experience. First, there is a temporary subtraction of memory, which leads to a functional loss of knowledge acquired after the point of time to which clients were instructed to go back. After that, there is a reinstatement process to bring clients back to a previous mode of psychological functioning. Kihlstrom (1985) pointed out that these two processes had not been researched adequately.

There are two ways in which clinical practitioners use RE for therapy purposes. The first strategy is to regress clients back to traumatic or negative events in the past to help,

> release pent-up feelings (catharsis) while simultaneously providing new ways of looking at that situation (reframing) that may help them release or redefine whatever negative influences lingering from that experience still affect their life (Yapko, 2012, p. 348).

The second strategy is to help clients identify and rediscover specific problem-solving skills and abilities that clients possessed in the past to manage the current challenges more positively and adaptively. Yapko's conclusion confirmed Nideffer's (1976) proposition that hypnosis can be used to let go of negative feelings that are associated with a past traumatic experience, and strengthen recall and reliving past successes to increase self-confidence. Yapko (2012) concluded that RE "is one of the most widely used and beneficial applications of clinical hypnosis" (p. 353).

There are various ways that RE is used in sports. RE can be a useful tool to establish a zone of optimal anxiety (ZOA). It is then possible to reproduce this ZOA using different hypnotic procedures, such as autohypnosis or post-hypnotic suggestion (Morgan, 2013). RE has also been applied to analyze errors in athletes' techniques, as well as to retrieve repressed material through the heightened recall state. Johnson (1961a) described the case of a baseball player who suffered a long period of batting slump. Through RE, the baseball player was able to explore a multitude of timing, coordination, and position problems. These insights helped him to improve his performance significantly. Pulos (1979) presented a similar case with a world-class athlete in the 100m track event who could not perform to the same high standard that she used to achieve. The knowledge she gained after the hypnotic RE session about how she performed in her peak performance helped her to be undefeated for the rest of the season. Johnson (1961b) reported a case of another baseball player who frequently experienced rage

and guilt feelings following a successful pitch, which affected his performance. When he went through the hypnotic RE process to uncover repressed material, he revealed the incident in his childhood when he had severely injured his younger brother and was not punished for what he did. This knowledge helped explain his pattern of rage after a successful pitch followed by an unconscious guilt reaction. From there, the player was able to move on emotionally and pitched consistently throughout the rest of the season.

Pates and colleagues (Pates, 2013; Pates & Cowen, 2013; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates et al., 2002; Pates & Maynard, 2000; Pates & Palmi, 2002) utilized the RE technique successfully in hypnosis interventions in basketball, badminton, golf putting, and golf chipping to improve flow and performance. Pates and colleagues used RE suggestions to allow athletes to relive their past performance success with total dissociation from any reference to present or future. Hammond (1990) suggested that the reviving of athletes' experiences tends to be more kinaesthetic and emotive, the concept which Pates and colleagues used successfully to condition positive emotions associated with athletes' ideal performance state through triggers. I present Pates and colleagues work in the Research on Hypnosis in Sport section of this literature review.

Future Progression Hypnosis

FP is a hypnotherapeutic technique which involves directing subjects toward the future so that they can experience themselves there (Edgette & Edgette, 1995). Various terms are used to describe the same process, including age progression, pseudo-orientation in time, and time projection (Edgette & Edgette, 1995). Yapko (2012) defined FP as,

> a utilization of projections of the future. Age progression involves guiding clients experientially into the future, where they may have the opportunity to imagine and experience the consequences of current or new choices, integrate suggestions at deeper levels, rehearse new patterns of thought, feeling, or behaviour, and, in general,

obtain a greater overview of their life than a narrower focus on day-to-day living typically affords (p. 354).

Alfred Adler was a well-known and well-respected theorist in the early 20th century who gave credit to the effect of the future on the present (Adler, 1927). Adler suggested that people are more motivated by their expectation of the future as compared with their experiences of the past. In his theory, which was called individual psychology, he stated, "individual psychology insists absolutely on the indispensability of finalism for the undertaking of all psychological phenomena. …The final goal alone can explain man's behaviour" (Adler, 1927, p. 400).

After Adler, Milton Erickson was an important contributor to the use of FP techniques in hypnotherapy. Erickson used the term pseudo-orientation in time (Erickson, 1954/1980). Erickson guided clients to imagine going forward to the future, and while they are there (as if in the present time), he would ask them how they solved their problem. Specifically, clients identified what Erickson did or told them, or what they learned through working with Erickson, that helped them find the solution. From the information that clients told him, Erickson then came up with the therapy directly to help them to actually address their problem (Yapko, 2012). Havens (1987) strongly suggested that most, if not all, Ericksonian interventions, including metaphor, task assignments, and describing consequences of actions, were future-oriented. In the same vein, Zeig (1987) and De Shazer (1985) came to a similar conclusion about Erickson's future orientation usage.

Commenting on Erickson's technique to create a vivid and positive reality of the future, Edgette and Edgette (1995) argued that this is potentially more curative than focusing on the past. They distinguished Erickson's view about the past from the views of other researchers. When Erickson discussed clients' past, it was to gather personal resources and crucial information to use in present and future situations. It was not because Erickson

believed that dwelling on clients' past could be a good approach to therapy, which is what theorists, supporting other approaches believe (Blume, 1990; Fredrickson, 1992). To Erickson, letting clients experience their future in their mind created a personal historical event, which helped them "respond effectively psychologically to desired therapeutic goals as actualities already achieved" (Erickson, 1954/1980, p. 397). Zeig and Gilligan (1990) had a similar view about the advantage of guiding clients toward a future event because it helps the unconscious mind to begin to organize and direct its energies. FP also has a neurological link as research by Luria (1973) on prefrontal lobe development showed. Luria found that goal setting, planning, and hypothesizing about a future experience have an organic reality. The psychological term that describes functions that are done by the prefrontal cortex area is Executive function. Some of the roles of the Executive function relate to future consequences of current activities, working toward a defined goal, prediction of outcomes, and expectations based on actions (Barkley, 2012), which agrees with Luria's (1973) suggestions.

There are two ways that FP is normally used in clinical settings, namely as a therapeutic intervention or as a validation of the hypnotist's clinical work. In application of FP in therapeutic interventions, which utilize the concept of self-fulfilling prophecy, clients' expectations of change through experiencing success in the future becomes the foundation for them to adopt new strategies and behaviours. In application of FP in the validation of hypnotists' work with clients, the hypnotist facilitates clients to project themselves into the future to consider how they look and feel after the change. This helps clients to evaluate which areas of their life appear to have improved and/or which have deteriorated, so the hypnotist can adjust or replan the intervention accordingly.

Theories of Hypnosis

There are currently two major groups of theories about hypnosis that are competing to explain hypnotic phenomena (Nash & Barnier, 2008). Each of these theories presents

different assumptions, applies different methods, and uses different sets of data to support its arguments (Lynn & Rhue, 1991). Most of these theories can be categorized under state and non-state, intrapersonal and interpersonal, or single and multifactor theories (Yapko, 2003). In this section, several of the popular theories of hypnosis and the evidence cited in their support are described and evaluated.

Altered states of consciousness theories. There are several distinct characteristics that state theories share in common. Researchers who support the altered state, intrapersonal, and single characteristic theories include Edmonston (1981), Hilgard (1965), Nash and Barnier (2008), and Spiegel and Spiegel (1978). According to these researchers, people participating in hypnosis will experience an altered state of consciousness, which creates heightened suggestibility. The intrapersonal characteristic emphasizes the subjective and inner states of hypnotized individuals. The single characteristic aspect focuses on the essential role of a single variable like relaxation or dissociation during the induction stage that has an impact on hypnosis.

Neodissociation theories. Janet (1901, 1907) proposed a mechanism underlying both hypnosis and hysteric disorders, which he called dissociation. This process constricts individuals' awareness to the material of which they are typically aware. Furthermore, suggestions create a lack of awareness of the change of behaviour caused by this material. Subsequent works by other authors that aimed to justify Janet's concept of dissociation have not come to a positive result. For example, Hull (1933) could not find two simultaneous mental processes that function independently in the hypnotic dissociation phenomenon.

Developing from Janet's work, Hilgard (1977) proposed his Neodissociation theory. Using the Neo prefix, Hilgard wanted to distinguish his theory from Janet's ideas that people who are dissociated under hypnosis have a mental deficit or weak-mindedness. In this context, West (1967) proposed that dissociation is a psychological process in which

information (incoming, stored, or outgoing) is split off from its usual associations (conscious awareness) to create alteration in thoughts, feelings, or actions for a period of time. Hilgard (1977, 1991) proposed a hierarchical model of control mechanisms to explain hypnotic phenomena. Hilgard (1973) first presented his model (Figure 2.4) in a form in which he suggested that there are a number of cognitive control structures (1, 2, 3 or more) that occur at the same time. All these systems are subordinate to a higher executive system called the Executive Ego. The Executive Ego is a limited capacity system that monitors and coordinates the activation and interaction of the sub-systems. These control systems work under conscious control, so they require attentional resources. The subsystems are in charge of actions, such as habits, perception, attitude, interest, pain, or movement (Hilgard, 1986). They also have some levels of autonomic function. Not all the actions in the subsystems are controlled tightly by the Executive Ego.

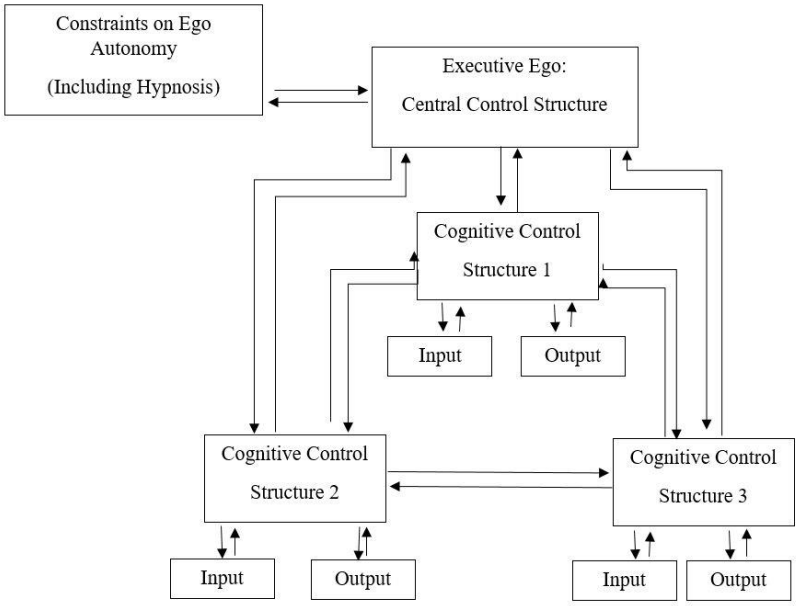

Figure 2.4. Hilgard's hierarchical model of cognitive control. From "A neodissociation interpretation of pain reduction in hypnosis," by E. R. Hilgard, 1973, *Psychological Review, 80*, p. 405. Copyright 1973 by the American Psychological Association.

The Executive Ego is in charge of selecting the suitable cognitive control systems for any required task. When the control systems are selected and working, the Executive Ego is no longer needed to conserve the limited attention capacity. The control system can operate with a considerable automatic level to execute behaviours according to environmental cues. When individuals perform well-learned activities, such as playing musical instruments, driving cars, or playing sports, there seems to be a lapse in consciousness in the Executive Ego system. These activities require minimum conscious control, which can be self-maintained throughout the activities by the control systems. Hilgard (1991) proposed that hypnosis alters the function of the Executive Ego and its relationship with the control systems,

> Effective suggestions from the hypnotist take much of the normal control away from the subject. That is, the hypnotist may influence the executive functions themselves and change the hierarchical arrangements of the substructures. This is what takes place when, in the hypnotic context, motor controls are altered, perception and memory are distorted, and hallucinations may be perceived as external reality (p. 98).

Overall, Hilgard proposed three effects of hypnosis on the executive system. First, hypnosis affects the Executive Ego by creating fractionation within the ego to reduce its planning and initiative functions, which means "the hypnotized person does not independently undertake new lines of thought or action" (Hilgard, 1979, p. 50). Second, hypnosis reduces the monitoring function of the executive system that leads to individuals being unaware of their volition in the hypnotic behaviour. Third, hypnosis disrupts the balance between the monitoring and executive control functions. As a result, the monitor fails to correct the control function, which leads to individuals being confused between imagination and external reality (Hilgard, 1992).

Hilgard further proposed two terms “amnesia-like barrier” (Hilgard, 1994) and “hidden observer” (Hilgard, 1977) to explain the hypnosis mechanism of dissociation. Due to the fractionation effect of hypnosis, the executive control is divided into two different parts, with one part operating as normal, while the second part (the dissociation part) is blocked from awareness because of the amnesic barrier (see Figure 2.5).

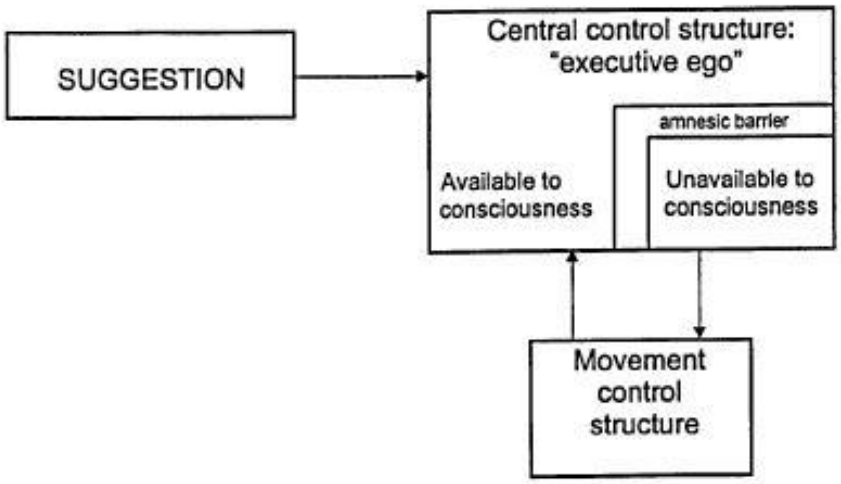

Figure 2.5. The explanation of non-volitional responding in Neodissociation theory. Adapted from “The altered state of hypnosis: Changes in the theoretical landscape,” by I. Kirsch and S. J. Lynn, 1995, *American Psychologist, 50*(10), p. 851.

The dissociated part still functions as usual, but its control is blocked from representing itself to consciousness by the amnesia. Hence, due to the hypnotist’s suggestions about the cognitive hierarchy, cognitive control systems are dissociated from the control of the Executive Ego. Their selection or inhibition depends on the hypnotist’s suggestion. Because it has autonomous ability, once a cognitive control system is selected, it can operate automatically as usual. Hypnotic subjects are only aware of the resultant change in behaviour and experience, without being consciously aware of the cognitive process that initiated them, so they perceive those behaviours and experiences as involuntary.

Hilgard (1977) discovered the “hidden observer” during a classroom demonstration of hypnosis. After successfully hypnotizing and giving subjects hypnotic deafness suggestions,

he asked subjects if part of their mind could still hear the usual conversation to them. If part of them could do so, then subjects could give an ideomotor response by raising a finger. With the confirmation of the finger-raising and the recall of what was said to them, Hilgard argued that these hypnotized individuals were aware at the unconscious level of what they could not hear (due to the hypnotic deafness suggestion). Hilgard also found that, in some analgesic participants, it is possible to explain the presence of a "hidden observer," which makes a part of the body experience the presence of pain, while other parts do not. This was the foundation for Hilgard to suggest that various streams of consciousness can happen at the same time, and they are separated only by the amnesic barriers.

The principle underlying how RE suggestions affect individuals can be explained by the Neodissociation theory (Hilgard, 1973). Hypnosis may create a constriction of awareness due to an amnesic barrier and often called fractionation (Hilgard, 1992). Hilgard suggested the monitoring function of the Executive Ego to the Cognitive Control Structures is partially fractionated throughout RE. Because the monitoring function takes care of absorbing information, both internal and external to the body, when it is partially fractionated, it will accept a distortion of reality uncritically as undistorted. Hence, subjects experience no internal challenge to regress to a previous life event.

The concept of hidden observer from Neodissociation theory has been researched empirically, and these studies have yielded mixed results. Knox, Morgan, and Hilgard (1974) found a positive result when seven out of eight participants displayed the hidden observer phenomenon. The attempt to replicate this result has been rather modest. Research by Hilgard, Morgan, and Macdonald (1975) and Perry and Laurence (1980) showed that only about 40 to 50% of highs exhibit hidden observer effects. Studies by Spanos and colleagues (Spanos, Flynn, & Gwynn, 1988; Spanos, Gwynn, & Stam,1983; Spanos & Hewitt, 1980) also suggested that the hidden observer phenomenon might be extremely sensitive to the

manipulation of situational demands with different instructions. Nogrady, McConkey, Laurence, and Perry (1983) examined the hypnotic dissociation (with hidden observer), duality in age RE, and the potential impact of situational cues in 12 highs and nine lows. They found that the hidden-observer effect could not be explained solely by the demand characteristics of the situation. They also pointed out that many early studies (which had a high ratio of hidden observer effects) used instructions that might have implied the hidden observer effect as an expected, desired effect of the experiment. Instructions as such would surely affect the likelihood of subject compliance.

Hilgard was considered ahead of his time for being able to link hypnosis with the concept of consciousness (Alladin, 2008). However, his Neodissociation theory appears to be incomplete in some areas. Woody and Sadler (2008) argued that amnesic barrier and hidden observer phenomena are metaphors that do not belong to either the cognitive or the physiological domain. So, what they mean is not entirely clear. They also pointed out Hilgard's tendency to mix incomplete explanations across unclear defined levels. Questions, such as how many cognitive systems exist in individuals, or how many of them are involved in a hypnosis process, remain unanswered. The role of social compliance (such as explicit instructions to hypnosis subjects about hidden observer effects, mentioned earlier) was ignored. However, Woody and Sadler (1998) applauded Neodissociation for providing a provisional framework despite being incomplete. Hilgard (1991) also accepted the shortcomings in his theory, "I regret to leave the theory in this incomplete form, so that it is more of a promise than a finished theory" (p. 98).

Stepping up from Hilgard's conceptualisation of the theory, Bowers (1990, 1992) reformulated the Neodissociation theory into two distinct yet complementary constructs, dissociated experience and dissociated control. Dissociated experience is about the changes in how people under hypnosis experience their behaviours. Due to the effect of hypnosis on the

executive system, the effort and volition that are used to create the hypnotic behaviours are hidden or dissociated from consciousness. The cognitive effort in successful hypnotic responding is high, but wrongly experienced as low effort. On the other hand, dissociated control refers to the changes in the underlying control of behaviour. During hypnosis, the cognitive control systems (lower systems) are activated directly by suggestions, while ignoring the higher Executive Ego together with the process of volition and effort that normally comes with control by the Executive Ego. Hence, the cognitive effort in hypnotic responding is rather low and hypnotic subjects experience it as low.

Kihlstrom (2005) argued that part of the reason that hypnosis is not considered an altered state of consciousness is the lack of a physiological indicator. The current understanding about neural correlates of ordinary waking consciousness is still limited (Metzinger, 2000). Some researchers have proposed skin-conductance and alpha brainwave activity as the psychophysiological indices of response, but these factors can be accounted for by relaxation and are not specific to hypnosis. Maquet et al. (1999) suggested that there might not be any physiological correlates of hypnosis with an induction and without any suggestion, simply because there are a wide variety of responses displayed by people under hypnosis. There is, however, a possibility for a physiological correlate to exist following specific hypnotic suggestions, similar to changes measured in brain imaging work after hypnotic visual hallucination suggestions (Kosslyn, Thompson, Constantini-Ferrando, Alpert, & Spiegel, 2000). Kihlstrom (2013) pointed out the reason why physiological data about hypnosis and hypnotisability are not decisive yet could be because measurement of biological markers needs to be checked against subjective reports about whether the persons being monitored are in an altered state of consciousness.

Ego-psychological theory. Fromm (1979, 1992) proposed the ego-psychological theory, which is one of the most influential psychodynamic accounts of hypnosis.

Psychoanalytic theory considers mental functions have two processes: primary and secondary. The primary processes are emotional, holistic, illogical, unconscious, developmentally immature, and are considered to be the seat of intuition. The secondary processes are affect-free, analytical, logical, conscious, developmentally mature, and based on sequential logic and reason. Fromm proposed that these two processes are two extremes of a continuum of ego functioning that represents the difference between conscious and unconscious. During hypnosis, this balance becomes subject to change. Normal adult functioning leans more to secondary processing. During hypnotic induction, individuals enter a state of "ego receptivity" (Deikman, 1971), which reduces the normal orienting functions and facilitates the relaxation of defensive barriers. This process leads to hypnosis subjects letting go of some secondary process activity. How deep individuals are in a hypnotic trance depends on the level of losing awareness of the distinction between imagination and reality, termed the "generalized reality orientation" (Shor, 1959). The ego-psychological theory suggests that individuals' increase in hypnotic suggestibility is caused by a reduction in critical thought accompanied by extremely focused attention and a state of ego-receptivity.

Neuropsychophysiological model. Crawford and Gruzelier (1992) proposed the neuropsychophysiological model, in which they considered hypnosis as an altered state of awareness in which highs experience a shift in cognitive and physiological activity, involving the reallocation of attention. As individuals become more intensely absorbed in the induction process, they experience a shift from an analytical, sequential type of processing to a holistic and imaginal type of processing. This shift supports the reduction in generalized reality testing (Shor, 1959), while increasing the dissociative feeling of the hypnotic experience.

Graham (1970, 1975) found that, during hypnosis, highs experience a reduction in attention ability in the peripheral area of the visual field. Crawford, Brown, and Moon (1993) and Crawford (1994) supported Graham's finding and suggested that highs have a superior

ability to maintain their focus of attention to attend exclusively to events that are suggested during hypnosis. Crawford (1990, 1991) found an increase in high-range theta wave power in both highs and lows. Highs have stronger theta than lows across various parts of the brain: frontal, temporal, occipital, and parietal regions. Gruzelier and Brow (1985) showed similar results after hypnotic induction with highs, but not lows. Highs increased their habituation of the orienting response and showed higher focal attention.

A number of researchers have supported the laterality hypothesis of brain activity during hypnosis. Gruzelier, Hancock, and Maggs (1991) found a distinguishable difference of generalized delta, theta, and alpha activity, mostly in the right hemisphere for both highs and lows. McCormack and Gruzelier (1993) found a significant visual processing improvement in the right hemisphere only in highs, but not in lows, during hypnosis. Gruzelier, Brow, Perry, Rhonder, and Thomas (1984) found that, during hypnosis, the shift toward holistic, right brain oriented processing corresponds with inhibition of the critical part of the left-hemisphere. Gruzelier and Warren (1993) found inhibitory effects of hypnotic induction only to the left-hemisphere, but not the right hemisphere, using a design fluency task.

Combining knowledge from the research just reported, Crawford and Gruzelier (1992) and Gruzelier (1996, 1998) proposed a three-stage hypnotic process. In the hypnotic induction stage, clients focus their attention on the hypnotist's suggestions and do not attend to extraneous stimuli, while the suggestions occupy the supervisory attentional system (SAS) of the frontal lobe, especially on the left side. In the second stage, clients' attention is fully engaged, so the hypnotist's relaxation suggestions lead to the inhibition of the left-frontal lobe. This process explains the "letting go" of critical thought and reality testing by clients because they give up executive control. The third stage involves the process of hypnotic suggestions that employ posterior cortical sites, especially in the right brain for passive imagery. Despite its clear explanation about hypnosis, the neuropsychophysiological model

still has some short-comings. Brown (1999) pointed out that many studies in this area did not have appropriate control conditions, so it is not certain that the physiological changes recorded during hypnosis are specific to that situation only. Furthermore, this model hardly mentioned the influences of social factors on hypnotic responses.

Conditioning and inhibition theory. Barrios (2001) proposed a theory focused mainly on principles of conditioning and inhibition, which covers three aspects: hypnotic induction, hypnotic phenomena, and post-hypnotic phenomena. The whole theory is proposed with three initial postulates and seven subsequent hypotheses. Barrios proposed that the "induction process is put in a conditioning paradigm." (p. 163). Barrios explained further that hypnotic induction is the, "conditioning of an inhibitory set, a set which increases responsiveness to suggestion by inhibiting stimuli and thoughts incompatible with a suggested response" (p. 164). Other hypnotic and post-hypnotic phenomena are also explained by this set. To further explain post-hypnotic behaviour changes, Barrios argued that there is a process of higher-order conditioning in which hypnosis facilitates this conditioning by suppressing any interfering stimuli. Barrios concluded that his theory is broad enough to cover not only hypnosis, but also phenomena, including persuasion, placebo effect, and faith.

Non-state theories. Authors who advocate the non-state, interpersonal, and multifactor theories, or socio-cognitive theories, include Coe and Sarbin (1991), Kirsch (1991), Spanos (1986), and Lynn and Rhue (1991). In these theories, the authors suggest that hypnosis experience is created by a variety of interacting social and cognitive factors that are similar to everyday behaviours, such as suggestions, situational factors, and the imaginative ability of each individual. The interpersonal models attribute more emphasis to social contact or relational aspects, such as individuals' expectancy, attitude, beliefs, imagining, and interpretation of suggestions, which influence how clients react to hypnosis, than to altered states and associated phenomena. A number of social cognitive theories are presented in this

section. While they may be different in terms of emphasis and focus, they share a major assumption that hypnosis is similar to other social behaviours in a number of ways. People who are under hypnosis behave according to their aims, point of view, and interpretation of appropriate behaviour and feelings, similar to those who are not hypnotized (Lynn & Rhue, 1991). Hypnotized people respond with a clear goal or goals, based on their self-perception, needs, and intentions, which can change to realize goals.

Contrary to the Neodissociation theory (Hilgard, 1973), in which individuals passively receive instructions, in social cognitive theory individuals act to comply with their culturally-derived and situationally-reinforced beliefs about the expectations of a hypnotic situation. Coe and Sarbin (1991) emphasized that the combination of situational variables, individuals' motivation, expectation, ability to engage in the hypnotic role, and their sensitivity to contextual demands lead to different levels of hypnotic response. For this reason, individuals' susceptibility level is not fixed, which is the total opposite to state theorists' point of view. State theorists propose that hypnotisability is a stable personality/cognitive trait, with almost no influence by external factors (Kirsch & Council, 1992).

Sarbin (1950) was one of the pioneers of the social psychological approach to hypnosis, which he proposed in Role Theory. According to Sarbin, hypnosis is a dramatic act between two characters, the hypnotist and the hypnotized client. It depends on the client's perception about their roles, as well as their belief about the appropriate behaviour while they are hypnotized. In the role of client, individuals have to want to play that role of a hypnotized person. When in that role, their experiences are formed by their perception of the role, while their behaviours reflect their belief about what is the correct response. In Role Theory, Sarbin emphasized that, in taking the role of the client, individuals are not role-playing to distinguish the role-taking behaviour from the misunderstanding that clients are faking their reaction.

Together with Coe, Sarbin suggested five factors that can affect how individuals respond hypnotically: knowledge of what is required during the hypnosis experience, self, and role-related perceptions, expectations, imaginative skills, and situational demand characteristics (Coe & Sarbin, 1991; Sarbin & Coe, 1972). However, Sarbin's theory has been criticized for focusing too much on overt behaviours, while mentioning very little about the subjective experience of individuals under hypnosis. Orne (1959) pointed out that people do not behave "as if" they were hypnotized, they believe that they experience a special phenomenon.

Influenced by Sarbin, Barber (1969) developed an operational approach based on logical positivism and neobehaviourism. Barber and colleagues (Barber, 1969; Barber & Calverly, 1964; Barber et al., 1974) explored the variables that might be related to hypnotic behaviour. They found eight antecedent variables that related to hypnotic procedure and test suggestions: attitudes, expectancies, the wording and tones of suggestions, motivation, the definition of the situation as hypnosis, suggestions for relaxation, the wording of the inquiry with which the response is assessed, and the behaviour adopted by the experimenter, as a hypnotist. Barber's initial research focus was to compare the effect of hypnosis conditions versus a condition in which subjects received "task motivational instructions". In the "task motivational instructions" condition, participants were told that they were going to be tested on their imagery skills. They were strongly urged to co-operate because others had done so successfully. The resultant effect in this "task motivational instructions" condition was comparable with the effect in the hypnosis condition. Based on this observation, Barber suggested that hypnotic response was not unusual, so it should not be considered an unusual state of consciousness (Lynn, Kirsch, & Hallquist, 2008). Lynn et al. pointed out a shortcoming of Barber's questionnaire, which used high pressure to force compliance in clients. Statements such as, "If you don't try to the best of your ability, this experiment will

be worthless and I'll tend to feel silly" or "everyone passed the test when they tried" (Barber, 1969, p. 46) clearly gave strong indications that clients needed to obey the suggestion.

Extending from Sarbin's role theory and Barber's theory with "task motivation instructions", Bower and Davidson (1991) proposed that, at the time they were writing, Spanos was one of the most influential and most prolific among the contemporary social-psychological theorists. His focus was on the essential psychological processes, such as attitudes, beliefs, imaginings, attributions, and expectancies, as well as the role of goal-directed activities in hypnosis (Spanos, 1986, 1991; Spanos & Chaves, 1989). While Barber suggested hypnotic subjects were role-taking, Spanos (1991) used the term "strategic role enactment" instead, to highlight the effort of individuals to fulfill the perceived requirement of being a hypnotic subject. It was not a fake or pretending effort; rather they had to attempt to turn into reality what they thought, imagined, or were feeling about what a hypnotic subject should experience and how that person should behave.

One of the arguments that distinguishes state and non-state theorists concerns whether individuals' hypnotic behaviours are the product of involuntary cognitive processes. The dissociative theorists or state theorists argue that individuals' sense of non-volition is because hypnosis is a special state. Spanos rejected that argument and suggested instead that the feeling of involuntariness is the result of a misattribution from hypnotic subjects. He proposed that such subjects have an expectation that involuntariness is a key feature of hypnotic behaviour, and this expectation is enhanced by the situational cues of the hypnotic suggestion wording. Subjects would consider their overt response to suggestion as involuntary when they are absorbed in goal-directed fantasies (Spanos, 1971). Spanos defined goal-directed fantasies as "imagined situations which, if they were to occur, would be expected to lead to the involuntary occurrence of the motor response called for by the suggestion" (Spano, Rivers, & Ross, 1977, p. 211). When subjects are administered the arm

levitation suggestion, “your hand is rising by itself”, there is an implicit request to experience any arm movement as being involuntary (Spanos, 1982). The hypnotic situation creates a role-demand on subjects to feel and behave as if they were robots, while they are engaging in effortful, intentional behaviour without awareness of this fact (Lynn & Rhue, 1991). Subjects exhibit a goal-directed fantasy report, if they report their action is a result of imagining a helium balloon lifting their hand. The use of suggestions related to imagining and being absorbed in the content of what they are imagining distracts subjects’ attention away from the volitional responding cues and leads to cues that suggest a non-volitional process (Spanos & Coe, 1992). Spanos (1986) used these attention-diversion strategies to explain more complex phenomena like hypnotic amnesia and analgesia.

An addition to the social learning theory explanation of hypnotic phenomena is response expectancy theory (Kirsch, 1985, 1991, 1994a). Kirsch argued that expectancies for changes in clients’ experience can impact their experience directly and create non-volitional responses. This response expectancy in clients is their anticipation to experience and behave in a certain way when some specific situational cues are received. The automatic response created by this expectation is similar to the placebo effect. The placebo effect is known for changing affect in people with pain, anxiety, depression, or tension. Kirsch further argued that induction suggestions create changes in expectation that produce placebo effects without the use of placebos (Lynn et al., 2008). Therefore, hypnotic response expectancy can lead to hypnotic experience. When individuals are in hypnosis settings, they experience generalized response expectancy to follow hypnotic suggestions and produce actions or behaviours that are experienced as involuntary (Kirsch & Lynn, 1997). As a result, individuals attribute their hypnotic behaviours to external cause and consider those hypnotic behaviours as involuntary. Kirsch (1991) and Braffman and Kirsch (1999) found two independent factors, expectancy, and motivation as determinants of hypnotic suggestibility. Expectancy and suggestibility are

moderately correlated, with the correlation contributing around 10 percent of the variance in responding.

In an attempt to incorporate situational, interpersonal, and intrapersonal variables to explain individual differences in hypnotic responses, Lynn and Rhue (1991) proposed an integrative model. This model integrates social, cultural, cognitive, and neurophysiological variables and their dynamic interaction as determinants of the hypnosis process (Lynn, Laurence, & Kirsch, 2015). Lynn et al. (2015) defined hypnosis as,

> A situation in which imaginative suggestions for changes in thoughts, feelings, and actions are provided to a person in a context defined as "hypnosis", with the expectation that the participant will respond to them in a compelling manner consistent with his or her beliefs about hypnosis, often derived from the broader sociocultural context (p. 316).

Similar to other social cognitive theories, Lynn's integrative model rejected the idea that hypnosis creates a special state called "trance". Both the normal state and the so-called hypnotic state are not static, but constantly change in terms of awareness, emotions, thoughts, sensations, and action tendencies, so it is very difficult to separate into discrete states (Lynn, Green, Elinoff, Baltman, & Maxwell, 2016). There is a vast difference between how different people experience hypnosis, and there are also differences within the same person in different contexts, such as different mood states. These differences come from many sources, including what people are told about hypnosis, their attitudes, beliefs, expectancies about hypnosis, the suggestions they receive, how they construe particular suggestions, as well as how comfortable and secure they are with the hypnotist and the overall situation. All these factors will help contribute to the unique response and experience in hypnosis (Sheehan & McConkey, 1982). Lynn et al. (2008) identified five factors that affect how clients interpret their actions as involuntariness: pre-conceptions and expectancies that hypnotic behaviour

will be experienced as involuntary (Lynn, Nash, Rhue, Frauman, & Sweeney, 1984; Spanos, Cobb, & Gorassini, 1985); the structure and wording of induction and test suggestions that facilitate passive responses (Spanos & Gorassini, 1984); patterns of imaginative activity, with goal-directed fantasies, that come with response to test suggestions (Spanos & Barber, 1972); attribution of self-response to the hypnotist's ability and efforts, rather than their own initiated actions (Lynn, Snodgrass, Hardaway, & Lenz, 1984); and self-observation that hypnotic responses, when considered introspectively, have an involuntary quality similar to many non-hypnotic actions (Kirsch & Lynn, 1998).

Recently, Accardi, Cleere, Lynn, and Kirsch (2014) explored the difference in attitudes, expectancies, hypnotic responses, and experiences between a placebo rationale condition and a standard hypnosis rationale condition. Participants were 188 students who were assigned randomly to one of the two conditions: one group that participated in the HGSHS:A, another group that also participated in the HGSHS:A, but they were informed in advance that hypnosis effects were similar to placebo effects. Accardi et al. (2014) found results that showed that the effects in both conditions were highly comparable in terms of "hypnotic attitudes, pre-hypnotic expectancies, objective, subjective, and involuntariness measures of hypnotic responding; as well as a variety of subjective experiences during hypnosis" (p. 103). In fact, they even concluded that it is possible to define hypnosis as a placebo and still not to lose the effect of hypnotic responsiveness. However, these findings supported neither the altered state model nor the socio-cognitive model.

As discussed earlier in this chapter, the common denominator for all the social cognitive theories is the argument that hypnotic experiences and behaviours are the result of normal processes or normal suggestions that are expressed as unusual due to subjects' expectancy and situational/contextual cues. A lot of research effort has been put into demonstrating the value of understanding how these social factors influence the

determination of hypnotic responses. However, there are still critics who argue that social cognitive theories have not fully addressed the questions of what suggestion, hypnotic or non-hypnotic, actually is, and how it works. Brown (1999) argued that social cognitive theories are too descriptive to offer a particularly serviceable account of the extremely complex phenomenon. While Spanos suggested some explanatory concepts, such as "misattribution" (Spanos, 1986) and the "tacit interpretation of implicit contextual demands" (Spanos & Coe, 1992), there are no clear explanations of how this process operates, or what exactly is "tacit interpretation".

From an empirical perspective, there are also some studies that conflict with the argument made by social cognitive theorists about goal-directed fantasies. Hargadon, Bowers, and Woody (1995) compared two conditions: a standard analgesia-invoked counterpain imagery condition and an imageless analgesia proscribed imagery condition. A strain-gauge pain stimulator created pain stimulus by using a sharpened edge to press down on the exposed finger. Hargadon et al. found that participants in the no-imagery condition experienced fewer images than those in the imagery condition, while the level of pain-reduction was the same for both conditions. They concluded that imagery is not essential for hypnotic analgesia. Lynn, Nash, Rhue, Frauman, and Stanley (1983) studied the experience of hypnosis and non-volition. Participants were divided into three conditions: hypnosis, imagination, and stimulating condition. Participants in the stimulating condition were told to convince the hypnotist that they were excellent hypnotic individuals or they would be eliminated. Participants in the other conditions were not aware that stimulating participants were in the same groups. Participants in the imagination condition were tested separately and received only imaginative suggestions with no hypnotic induction. Both the hypnotic and stimulating participants received counter demand instructions after the deepening stage, which required them to listen carefully, but not to act on any suggestions. These results and

other research led Brown (1999) to suggest that theorists need to go beyond the descriptive language of social psychology to come up with explanations that are based on explicit cognitive processes.

Despite their various strengths and weaknesses, none of the above-mentioned theories have satisfactorily explained all the phenomena and all aspects of hypnosis. They are, however, helping to broaden the knowledge pool related to hypnosis. Evaluating the necessity of having multiple angles to explain hypnosis, Yapko (2003) wrote,

> With a subject as complex as hypnosis, the inadequacy of a single theory's ability to explain the broad range of responses on so many different dimensions of experience becomes glaringly apparent. The complexities of the subject of hypnosis, and even greater complexities of the human being capable of hypnosis are so great that it seems highly improbable that a single theory can evolve to explain its origin and character (p. 61)

Agreeing with Yapko's comment, as a well-known state theorist, Spiegel (2005) also discussed the difficulty of choosing just one theory to be the sole explanation for hypnosis,

> Multilevel explanations are an absolute necessity in understanding human mind/brain/body phenomena because we are both neurally-based and social creatures who experience the world in mental phenomenal terms. To choose one of these domains as the complete explanatory context is to be by definition wrong (p. 32).

Sutcliffe (1960) rejected both the state and non-state arguments. Instead, he proposed that hypnosis involves a quasi-delusional alteration in self-awareness created by the combination of the hypnotist's suggestions and the client's interpretation of those suggestions. Kihlstrom (2008) suggested future research should consider a hybrid model with hypnosis as both a state of profound cognitive change and as a social interaction, with both the hypnotist and client working together toward a specific goal within a wider socio-cultural context.

Measurement of Hypnotisability

A noteworthy characteristic of hypnosis is the different levels of participants' response with various suggestions. There is a wide continuum of hypnotic responsiveness among people (Killeen & Nash, 2003; Laurence, Beaulieu-Prevost, & duChene, 2008; Vasquez, 2005). Nideffer (1976) suggested that around 10% of the population does not respond at all to hypnotic suggestions. Some people may respond strongly to ideomotor suggestions, such as arm movement or eye closure, but respond poorly to the suggestion of post-hypnotic amnesia or age RE. Others may struggle to respond to most suggestions. Hilgard (1965) considered assessing hypnotisability to be very important to understand the nature of hypnosis. Even among competing theorists of hypnosis, there is still a general consensus to use some form of hypnotisability measure in their experimental designs (Frischholz, 2005, 2007).

Unlike with other mental states like anxiety, hypnotisability measurement is not accurate using traditional paper-and-pen questionnaires. Instead, researchers have measured hypnotisability by actual hypnotic performance, using instruments, such as the individually administered SHSS:C (Weitzenhoffer & Hilgard, 1962) or the group version Harvard Group Scale of Hypnotic Susceptibility (HGSHS) (Shor & Orne, 1962).

Kihlstrom (2012) argued that hypnotisability score is roughly normally distributed, so most participants' scores are in the moderate range. At one extreme, a small proportion of individuals produce high scores, which indicates an ability to respond to every suggestion. At the other extreme, an equally small proportion of individuals produce very low scores, showing little or no responsiveness to hypnosis. Kihlstrom proposed that it is crucial for researchers to study hypnosis effects only in participants who can experience hypnosis, as demonstrated by moderate to high scores on hypnotic suggestibility scales.

Spiegel (2013) suggested using hypnotisability scales is a good way to introduce hypnosis into therapy. He argued that knowing clients' level of hypnotisability is helpful to design an appropriate treatment. Hypnotisability level seems to be an essential moderator variable in exercise responses to hypnotic suggestion (Morgan, 1993). Research by Piccione, Hilgard, and Zimbardo (1989) showed a test-retest correlation of .7 for hypnotisability over a 25-year interval. There are also high correlations among different hypnotisability scales and their item contents (Perry, 1977; Perry, Nadon, & Button, 1992). Thus, hypnotisability is considered a stable trait because it shows more stability than intelligence over a similar period. However, these arguments about hypnotisability as a stable trait were mainly supported by the state theorists. Non-state theorists explained the high correlations arose because, "participants in these studies are rarely exposed to information that changes their attitudes and interpretations of the hypnotic experience, which accounts for the stability of hypnotisability over long periods of time" (Laurence et al., 2008, p. 233). Cognitive skill training programs like the Carleton Skills Training Program (CSTP; Spanos, 1986) showed some improvements in hypnotisability level. However, the size of the effect was not as high as the expectation on this program. Only about half of the lows could be trained successfully into highs (Gorassini & Spanos, 1986; Spanos, Robertson, Menary, & Brett, 1986; Spanos, de Groh, & de Groot, 1987). Woody, Barnier and McConkey (2005) summed the stability issue up nicely, arguing that social-cognitive learning can help low hypnotisability participants increase their outcomes on ideomotor and challenge items. However, these individuals need specific hypnotic ability in order to pass the cognitive-perceptual challenges, which are the more difficult items in the hypnotisability scales.

Hilgard (1970) proposed that people who have a high suggestibility level are capable of focusing their attention on suggestions they are given and ignoring information that may not be relevant. In his Neo-dissociation theory, Hilgard (1986) suggested highs have the

ability to dissociate or block certain information from reaching their consciousness. Crawford and colleagues argued similarly that highs are able to dis-attend from certain information to focus on other information (Crawford et al., 1993; Crawford & Gruzelier, 1992).

Bernheim (1886/1964) and Liebeault (1889) were pioneers in developing a hypnotic scale, using different numbers as an estimation of the manifestation of hypnotic response. An example of Liebeault's work is a 6-point scale to measure hypnotic depth, ranging from drowsiness to profound somnambulistic sleep. Since then, many different scales have been developed. Popular scales are listed in Table 1.

Table 2.1

A Chronological Listing of Hypnosis Scales

Author	Date of publication	Name of Scale
Bernheim	1888	No name of scale
Liébeault	1889	No name of scale
Davis & Husband	1931	No name of scale
Friedlander & Sarbin	1939	No name of scale
LeCron & Bordeaux	1947	No name of scale
Watkins	1949	No name of scale
Weitzenhoffer & Hilgard	1959	Stanford Hypnotic Susceptibility Scale, Forms A & B (SHSS:A & B)
Orne	1959	Diagnostic Rating Scale
Weitzenhoffer & Hilgard	1962	Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C)
Shor & Orne	1962	Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A)
Weitzenhoffer & Hilgard	1963	Stanford Profile Scales, Forms I & II (SPS)
Barber	1965	Barber Suggestibility Scale
Spiegel & Bridger	1970	Hypnotic Induction Profile
Barber & Wilson	1978	Creative Imagination Scale
Hilgard, Crawford, & Wert	1979	Stanford Arm Levitation Induction and Test
Spanos, Radtke, Hodgins, Bertrand, & Stam	1981	Carleton University Responsiveness to Suggestion Scale (CURSS)
Bowers	1993/1998	Waterloo-Stanford Group C Scale of Hypnotic Susceptibility (WSGC)
Elkins	2014	Elkins Hypnotizability Scale (EHS)

Weitzenhoffer and Hilgard (1959) proposed some significant changes to the way hypnosis scales should be constructed. First, they suggested a simple pass/fail scoring scheme instead of a ranking number. Second, they included some easier test suggestions to create two forms: SHSS:A and SHSS:B. One advantage that these two scales have compared with previous scales was the addition of relatively easy suggestion tests, which creates an approximately normal distribution of scores from participants. While the older scales were skewed to the low extreme, which suggested that most people had negligible hypnotisability, SHSS:A and SHSS:B (with their normal distribution score) resembled other widely recognized psychological scales (Woody & Barnier, 2008). Despite the improvement of these SHSS:C, with the inclusion of easier suggestion tests, they lack some difficult questions like hallucination and age RE. To adapt to this need, Weitzenhoffer and Hilgard (1962) developed the SHSS:C, which has greater inclusion of these difficult suggestions. Since then, these Stanford scales have regularly been used in scientific research. The SHSS:C is regarded to be the gold standard for evaluating hypnotisability (Balthazard, 1993; Bowers, 1981; Hilgard, 1965, Nash, 2001). All the three Stanford Scale forms contain 12 suggestion tests that are progressively more challenging. Each item is scored as a plus when participants perform the expected behaviours. Respondents' score is the total number of items they score a plus from 0 to 12, which represents their general level of hypnotisability. These scales are administered by the hypnotist and take about one hour to complete. On these scales with 12 tests, participants who score in the range of 9 to 12 are considered highs. Those participants that score in the range of 0 to 3 are considered lows. The middle group of people scoring from 4 to 8 are considered moderate hypnotisability people (Woody & Barnier, 2008)

However, one single score may not be suitable for research that focuses on only certain aspects of hypnosis. A person's hypnotisability can be conceptualized by various distinguishable abilities. To address this need, Weitzenhoffer and Hilgard (1963, 1967)

created the Stanford Profile Scales, Forms I and II (SPS). These scales were used together with the SHSS:A to generate scores on six subgroups of suggestibility: Agnosia, Positive Hallucinations, Negative Hallucinations, Dreams and RE, Amnesia and Post-hypnotic Compulsion, and Loss of Motor Control. Unlike the SHSS scales, these SPS scales did not have a notable impact on subsequent hypnosis research (Woody & Barnier, 2008).

Stepping up from the above-mentioned scales, there is a practical need for a large-scale, group administration type of hypnotisability measure. For research purposes, it is more cost effective and time-saving to be able to determine participants' hypnotic suggestibility level for sample selection by testing them in groups. Two group scales were introduced based on this demand. Shor and Orne (1962) created the HGSHS:A, HGSHS:B as a group adaptation from the SHSS:A and SHSS:B. Bowers (1993, 1998) developed the WSGC. The advantage of the HGSHS:A is that it can be used with large groups of participants, up to hundreds of people, whereas the WSGC caters only for smaller groups of up to around 12 people. The WSGC was developed as a group scale based on the SHSS:C scale to add further criterion validity. Bowers (1993) reported a correlation of .85 between the WSGC and the SHSS:C, which suggested that the WSGC is a valid instrument to measure hypnotic suggestibility in small groups. The internal consistencies of the WSGC are comparable with those of the SHSS:C, with a high range of .81 using the KR20 (Vasquez, 2005). These scales (the SHSS:A & B, HGSH:A & B, WSGC) shared many similarities in outcomes with high reliability and correlations, besides having some detailed differences (Bowers, 1993; Council, 1999; Hilgard, 1973). Barnier and McConkey (2004) conducted a study to examine the use of the hypnosis scales in 119 experimental and clinical articles published between 1992 and 2001 in the *International Journal of Clinical and Experimental Hypnosis.* They found 69 percent of articles used the HGSHS:A, 29 percent of articles used the SHSS:C and 7 percent of articles used the WSGC in laboratory research. In sports, the only study that

measured participants' hypnotisability was conducted by Vasquez (2005). He used the WSGC to test and divide participants into two groups with comparable hypnotisability level, but did not exclude participants with low hypnotisability.

Similar to the individual version of the SHSS forms, the HGSHS Forms and WSGS include 12 suggestibility items with progressing levels of difficulty. They require roughly an hour to administer, which can be a challenge to apply in clinical situations. To cope with this demand from clinical practice, some shorter hypnosis scales have been introduced. Morgan and Hilgard (1978-79) proposed the Stanford Hypnotic Clinical Scale, Adults (SHCS:A) with five test suggestions. Hilgard, Crawford and Wert (1979) developed the Stanford Hypnotic Arm Levitation Induction and Test (SHALIT) with just one suggestion. For group evaluation, Spanos et al. (1983) developed the Carleton University Responsiveness to Suggestion Scale (CURSS) with seven items. One challenge with these short hypnosis scales is that they are on the edge of being too short psychometrically (Woody & Barnier, 2008). A typical practice of laboratory research is to use a hypnosis scale to pre-select participants for research. Sometimes, researchers may use a second hypnosis scale following the HGSHS:A. The purpose of double testing is to confirm hypnotisability levels before selecting participants, as well as giving participants more experience with hypnosis, which helps their performance to reach a plateau before the actual experiment. When conducting double testing, either the SHSS:C or the WSGC is normally used as the second test after the HGSHS:A. Woody and Barnier (2008) described a 4-step basic structure of hypnotic scales as work-sample instruments. First, hypnotists create an appropriate context using hypnotic inductions and suggestions. Second, hypnotists provide suggestions for test items that involve participants' experiences and behaviours. Third, the response is recorded, either by a hypnotist (e.g., SHSS:C) or by the participants after they have awoken (e.g., WSGC). Finally, the records are translated into test output. The score is typically marked as either yes (1 point) or no (0

points), depending on whether participants experience or behave as suggested by the hypnotist. With 12 test items, participants who score within the range of 9-12 are considered highs, while those who score within the range of 0-3 are considered lows. Individuals who score between 4 and 8 are considered to display moderate hypnotisability (Woody & Barnier, 2008).

Research on Hypnosis in Sport

Given the diversity of theories that I have reviewed, the complexity of the research overall is more likely to cause confusion than clarity. Compared with research on hypnosis in other areas, hypnosis in sports is still in the early stage. Morgan and Stegner (2012) pointed out that early research on hypnosis were mainly using quasi-experimental designs to explore if the human physical performance can be enhanced with hypnosis. There is, therefore, a need to explore the potential of flow state and flow dimensions as a possible mediator for performance using hypnosis. In the below section, I first discuss the Inner Mental Training designed by Uneståhl as the foundation. Then I describe research on hypnosis, flow, and performance in sports as the recent direction of research about hypnosis in sports.

Inner mental training. In the past, hypnosis research in general, as well as hypnosis applied to sports, has been approached critically and with caution (Taylor et al., 1993). Taylor et al. stated, "hypnosis is a valuable, powerful, and possibly dangerous tool for professionals in applied sport psychology. The potential benefits may be significant and, at the same time, the potential harm may be profound" (p. 73). Pates, Maynard et al. (2001) identified several challenges for research on hypnosis, including lack of adequately controlled studies that focus only on sport, lack of certified training and supervision for hypnotists, and confusion of different hypnotic techniques. One of the pioneers in using self-hypnosis to apply in sport was Uneståhl, who conducted research applied work using a technique he called Inner Mental Training (IMT). Uneståhl developed IMT between 1973

and 1979 (Uneståhl, 1983, 1986). Jenkins (2009) described in details the IMT method. Athletes who attended IMT programs received three audio-cassettes, which guided them to learn relaxation, positive suggestion, concentration, goal programming, anxiety reduction, self-confidence and assertiveness training, mental rehearsal for competition, and activation and psyching up. The first two cassettes comprised the basic program that would take athletes three months to train with the frequency of five days a week, 10 to 25 minutes a day. The third cassette focused on activation training and psyching up, along with mental rehearsal, which focused mainly on mental training for competition. At the beginning of the IMT, athletes were trained in relaxation skill, using the Progressive Muscle Relaxation (PMR) technique developed by Jacobson (1929). PMR requires individuals to tense and relax each major muscle group in the body, following a specific order. Jacobson proposed that when muscles were relaxed, individuals' bodies would not hold any more anxiety and tension. Sometimes IMT training would involve using autogenic training developed by Schultz (Schultz & Luthe, 1959) as another form of relaxation training. Once athletes finished the relaxation training, Uneståhl administered the visual imagery training, with the purpose of linking positive suggestions with associated imagery. The next part was the dissociation and detachment training, which athletes learned so they could deal with distraction, using a mental room as a metaphor. After this, they learned the ideomotor training and problem-solving techniques. In the last few weeks, they were trained to develop self-confidence, assertiveness, and concentration, using two types of triggers. The first type of trigger was a movement or act, which was part of athletes' pre-performance routine, whereas the second type of trigger (a movement, a deep breath, a specific word, image) was used when the normal induction of concentration did not work.

Uneståhl examined the effect of systematic training with self-hypnosis through his PhD entitled, "Hypnosis and post-hypnotic suggestions" with various studies (Uneståhl,

1973). Dobbin (2006) summarised Uneståhl's findings, including, "regular, systematic and long-term self-hypnotic training was superior to hetero-hypnosis (using a hypnotist) in a variety of measured dimensions" and "a positive emotion like the ideal performing feeling could be borrowed from a previous event and then conditioned to a future event (for instance a future competition)" (p. 112).During the 1980's, Uneståhl developed his program into the first university course in "Mental Training" before popularizing this technique in to work-life, business, relationships, etc.

Hypnosis, flow, and performance in sport. Since the late 1990s, two researchers have brought hypnosis more to applied sport psychologists' attention, namely Pates and Barker. Barker and colleagues found hypnosis improved self-efficacy in footballers, cricketers, and martial artists (Barker &Jones, 2005, 2006, 2008). Pates and colleagues (Pates, 2013; Pates & Cowen, 2013; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates et al., 2002, Pates & Palmi, 2002) conducted seven studies, using the SCD study design, focusing on the effect of hypnosis on sport performance and flow in badminton, basketball, and golf. Across all these seven studies, the hypnosis intervention structure was similar, comprising one hypnosis session with the hypnotist followed by seven sessions listening to a pre-recorded audio file of the live session (40 to 60 minutes) at home every day for seven consecutive days. The content of the hypnosis session started with PMR, followed by deepening, using the staircase method. In the trancework stage, Pates and colleagues used RE in combination with creating a trigger for future recall.

The first study was conducted by Pates and Maynard (2000). This study explored the chipping skill of the golf game using hypnosis. Three golfers joined the study in which they had to chip 12 shots from 20 m to the target hole in each trial. The BP consisted of seven trials over five weeks. The IP was introduced when performance stabilized, and also consisted of seven trials over five weeks. The BP of the same format and duration was

reinstated after withdrawal of the intervention. There were 21 trials in total over 15 weeks. With a single-case ABA study design, Pates and Maynard used a trigger which was personal music that participants chose in advance. Participants' level of motivation was enhanced by a prize given to the golfer who produced the best average performance over the 21 sets of trials. Results showed that all three golfers increased their mean golf-chipping performance from the A1 baseline to the B intervention and two golfers' scores dropped back to their A1 baseline performance level at A2, the second BP. For intensity of flow, two out of three golfers experienced higher flow during Phase B, the intervention, while having lower flow during Phases A1 and A2, the first and second baselines respectively. The qualitative result indicated that all three participants maintained their effort and motivation throughout the study. A strength of the ABA SCD is that A2 provides additional evidence that the change in the B phase is a result of the intervention because the effect disappears when the intervention is removed in A2. There was evidence of this for two golfers' performance and flow in this study.

Pates, Oliver et al. (2001) explored the influence of hypnosis on flow state and golf-putting performance, using a single-case, multiple-baseline AB study design. Five competitive golfers were given a hypnosis intervention, using RE and a natural trigger, the grip of the golf putter, to trigger participants to recall a multi-sensory experience of their best performance. The research results showed an improvement in mean golf-putting performance and an increase in mean flow scores from baseline to intervention for all five golfers. This research was a "laboratory" style study in which golfers were asked to putt on a carpet 4 m away from a target hole 11.5cm in diameter. The standard size of a golf hole is 10.795cm, so the hole used in Pates' study was slightly larger in diameter than competition holes. In addition, putting on a carpet is different to putting on a golf course green because the carpet has a consistent surface and the putting surface is flat, whereas a golf course green has

variable grass and an undulating surface. This means that the difficulty level was reduced for amateur golfers and was considerably less difficult than competition putting for high-skill level golfers. The ecological validity of this study was lower than that of studies conducted on golf courses.

In basketball, Pates, Maynard et al. (2001) used a single-case, replication-reversal (ABA) design to explore the effect of hypnosis on set- and jump-shooting performance in three players. The hypnotist used RE suggestions and an artificial trigger, a cue word, to recall the players' best performance. The hypnotist asked the golfers to choose a word that best described their ideal performance state. The results showed that all three players improved their mean jump- and set- shooting performance from Phase A1 to Phase B. Their performance score returned to baseline level at Phase A2. This is noteworthy because there is often a residual effect of giving and then removing an intervention, so that, although performance decreases once the intervention is removed in the A2 phase, it does not return to pre-intervention levels, staying higher (Nicholls, Polman, & Holt, 2005).

In another single-case, multiple-baseline, across subjects AB design study, Pates et al. (2002) researched the influence of hypnosis on flow and 3-point shooting performance with five basketball players. However, unlike the Pates, Maynard et al. (2001), in which cue words were used as the trigger, Pates et al. (2002) used a natural trigger, which was the basketball, to trigger a past poly-sensory experience of individuals' best performance. The overall results showed that all five participants increased both their mean flow score and 3-point shooting performance from baseline to intervention.

Pates and Palmi (2002) explored the effect of hypnosis on flow and short-serve badminton performance, using a single-case, multiple-baseline, across subjects AB study design with four University-team level female players. The hypnosis intervention process was similar to the previous study by Pates, Oliver et al. (2001), Pates et al. (2002) except the

trigger used was holding the badminton racket. Short serve assessment was a method created by Goode and Magill (1986) in which athletes serve to the other side of the net into a predefined section with distances of 10, 20, 30, 40, and 50cm from the intersection of the centerline and the short service line. The distances were scored 5, 4, 3, 2, and 1, respectively, that is the closer to the service and centre line the shuttle landed, the higher was the performance score. Each athlete completed 20 services, and the average score of these 20 services was the average score of a trial. Participants completed 11 trials in both BP and IP. Pates and Palmi applied the intervention in a staggered fashion across the participants, with the first to the fourth individuals received intervention after four, six, seven, and nine baseline trials respectively. Similar to Pates and Maynard (2000), Pates and Palmi used a prize for the person who finished with the highest average score across the 11 trials as a way to increase participants' motivation, efforts, and create a simulated competitive environment. The results indicated that all four players improved their mean short-serve performance, while three out of four players improved their mean flow scores from BP to IP. Although the qualitative result indicated that three out of four participants were more relaxed, calm, determined, and focus, Pates and Palmi did not consider the potential effect of motivation and competition pressure that might affect the overall result on flow and performance.

Pates (2013) expanded his research on golf and hypnosis by following an elite senior golfer during 11 Senior European Tour golf events over 16 weeks. Using a single-subject AB design, Pates measured stroke average of each event (the average score taken from two or three rounds of stroke-play golf in one of the 11 events) and mean flow score, using the FSS-2. The hypnosis intervention was introduced immediately after the completion of the 8-event BP. The participant was given a 40-minute live session and an audiotape recording which he listened to daily for seven days before the IP (three events). This intervention structure was similar to previous research by Pates and colleagues (Pates & Cowen, 2013; Pates &

Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001). There was no mention of when flow score was obtained. The results supported Pates' previous research in which the "mean stroke average" (sic) in each trial decreased and mean flow scores increased from BP to IP. The strength of this study was it had greater ecological validity compared with previous field studies, but the weakness was that there was only one participant.

In a similar study, Pates and Cowen (2013) used the same method as Pates (2013) to study a 22-year-old, elite European Tour male golfer. Using the same single-subject AB design, Pates and Cowen collected data during 11 competitive golf events. Pates and Cowen found two overlapping data points between BP and IP. for stroke average and one overlapping data point for intensity of flow state. The results reported by Pates and Cowen supported the hypothesis that hypnosis can improve performance and increase flow, as found in Pates (2013) and Pates and Maynard (2000). The Pates (2013) and Pates and Cowen (2013) studies were the first to conduct research on hypnosis during actual competition, namely golf tour events.

While research by Pates and colleagues (Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pates, Oliver et al., 2001, Pates & Palmi, 2002) clearly showed an increase in flow state using hypnosis, Lindsay et al. (2005) found a less persuasive result in a study with cyclists. Lindsay et al. employed a nonconcurrent, multiple-baseline design with two males and one female elite cyclists. The study was conducted in 12 tests. The first 4, 5, and 6 tests were baseline for cyclists 1, 2, and 3, repectively. Lindsay et al., measured cyclists' race performance using the British Cycling Federation Points gained and measured flow state using the FSS questionnaire. The unique approach about this study was that Lindsay et al. included a first stage of conscious recall for all participants right before the hypnosis intervention. The cyclists were asked to recall consciously specific times that they felt relaxed, and then they recalled a past optimal performance in cycling. The

hypnotist recorded detailed descriptions of the cyclists to feed these words and phrases back to the cyclists during the hypnosis intervention. Lindsay et al. assisted the cyclists to associate a natural trigger to their optimal experience. The triggers were feelings, sights, or sounds that the cyclists experienced during every race, incluing the feeling of the handlebars, the sight of the finish line, or the ticking sound of the cassette on the rear wheel of the bike as the rider free wheeled. The cyclist chosed unique triggers to themselves. Overall, Lindsay et al. found one cyclist improved positively with performance, one cyclist improved sporadically, and one cyclist's performance did not improve at all. Only one out of three cyclists reported increased FFS scores during the intervention.

Vasquez (2005) used hypnosis to enhance athletes' basketball skills and ability to attain flow, using a pre-test, intervention, post-test study design. He matched 43 participants into two conditions (hypnosis and relaxation), within a scoring range of +/-1, based on their hypnotisability test score on the WSGC. Participants in the hypnosis condition went through six intervention sessions with a focus on using RE to recall their last experience in the state of flow, whereas participants in the control condition went through six sessions of Progressive Muscle Relaxation. Using one-way analysis of covariance (ANCOVA) and paired-sample t-tests, Vasquez found significant improvements in the performance of participants in the hypnosis condition compared to those in the relaxation condition as measured by three tasks, dribbling, defensive skill, and three-point shooting. Participants in the hypnosis condition also significantly enhanced their all-around basketball performance scores, as measured by the dribbling, defensive, and close-range speed shooting skill at post-test compared to pre-test. Vasquez reported no improvement for the relaxation condition. Vasquez did not find any significant difference between the hypnosis condition and the relaxation condition in terms of the FSS-2 flow scores, nor did the hypnosis intervention enhance athletes' attainment of the flow state as measured by the FSS-2.

There were three differences in Vasquez's approach compared to Pates and colleagues' research (Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates & Palmi, 2002). First, Vasquez used six face-to-face intervention sessions and no self-managed hypnosis audiotape. Second, Vasquez used a similar approach to Lindsay et al. (2005) by asking participants to recall their best performance before guiding them into relaxation and hypnosis. Vasquez recorded information based on participants' description about their past successful event. Vasquez then used these words, and sentences to feed back to the participants by integrating them into the trancework suggestions to enhance the participants' recall of their past successful event. Third, Vasquez administered a hypnotisability scale to assign participants to the two conditions in a balanced way, which was a variation from the studies by Pates and colleagues (Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates & Palmi, 2002).This is appropriate to control for pre-study differences between conditions in the key variable of hypnotisability in an independent groups field study with different participants in two conditions. All of Pates and colleagues' studies (Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates & Palmi, 2002) used the SCD design, which means individuals were matched only with themselves from the BP to IP. Also, none of these studies tested hypnotisability level of their participants, so Pates and colleagues did not know if participants had adequate hypnotisability level to be able to do the hypnosis intervention. Furthermore, because the knowledge of participants' hypnotisability was neglected, it was not possible to generalize the study results to the population (in which about 10% of people have low hypnotisability). Although Vasquez' study was useful in testing hypnotisability, he did not use that result as a selection criterion to choose participants who were able to be hypnotized. The WSGC mean

of the hypnosis group was 4.07 (*SD* = 2.12) with scores ranging from 1 to 9. The WSGC mean of the relaxation group was 3.88 (*SD* = 2.42) with scores ranging from 0 to 9. Both groups' hypnotisability scores were located at the lower end of the hypnotisability scale (median = 4, mode = 4). This means that some participants had very low hypnotisability levels in both conditions, so they might have had limited potential to benefit from hypnosis in relation to their performance and flow state.

Although results from studies by Pates and colleagues (Pates, 2013; Pates & Cowen, 2013; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates et al., 2002, Pates & Palmi, 2002) supported the contention that using hypnotic RE and trigger control techniques can help to access or promote global flow state, no researchers have explicitly examined how hypnosis affects each flow state dimension. All the research of flow in sports to date (including all Pates and colleagues' studies (Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates & Palmi, 2002), and Vasquez study have only measured and analyzed global flow state. How the antecedent and concomitant dimensions react with hypnosis training, as well as information about which dimensions specifically facilitate or inhibit flow are useful information for researchers and practitioners. In addition, many studies used the original version of the Flow State Scale (FSS), rather than the updated version, FSS-2 (Lindsay et al., 2005; Pates & Maynard, 2000; Pates, Oliver et al., 2001; Pates et al., 2002; Pates & Palmi, 2002) because the FSS-2 was only published in 2002 (Jackson & Eklund, 2002). As mentioned earlier, some questions that were designed to measure time transformation and loss of self-consciousness on the FSS did not have strong relationships with global flow, that is, the sum of scores for all the nine subscales. By using the FSS scale, there was a possibility that the scale was not sensitive enough to detect changes in the time transformation and loss of self-consciousness dimensions, which are key concomitant dimensions. Only three studies

of hypnosis and flow in sport used the FSS-2 to measure global flow state (Pates, 2013; Pates & Cowen, 2013; Vasquez, 2005). Both Pates and Maynard (2000) and Pates, Oliver et al. (2001) carefully selected only participants who had experienced flow before and had achieved performance levels greater than their handicaps (HC) indicated. These selection criteria could have skewed the results of these two studies, making it difficult to generalize for other athletes.

The connection between hypnotisability of participants and different suggestion types that may potentially affect the effectiveness of hypnosis interventions has not been examined. All the Pates and colleagues' studies (Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates & Palmi, 2002) and Vasquez's study used a similar suggestion type during the trancework stage. This was to use RE back to an earlier successful event, then create a trigger to recall the successful performance in the context of present competition. There is a need to explore other suggestion types and their effect on flow and performance. Finally, research by Pates before 2013 (Pates et al., 2002; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates & Palmi, 2002), and Vasquez (2005) focused mainly on laboratory tasks, with golf putting conducted on an artificial carpet or basketball shooting in a controlled environment. The only fieldwork study conducted on hypnosis, flow, and performance was Pates and Maynard's (2000) study carried out on a specially prepared section of a golf course, consisting of a fairway and target green for chipping. Golfers chipped to the same target hole from a distance of 20m. More recently, the studies by Pates (2013) and Pates and Cowen (2013) focused their data collection on actual golf competition events, but each was limited to one participant.

Similarity between Flow and Hypnosis

Uneståhl (1979, 1983) proposed the concept of Ideal Performance State (IPS) after interviewing elite athletes who experienced peak performance. He found that these elite athletes experienced an altered state of consciousness, total concentration on the task at hand. Uneståhl reported that athletes also experienced a change in perception of time. These characteristics of the IPS fit well with the characteristics of the trance state in hypnosis, as well as several of the key dimensions of flow state, so there may be some overlap among these terms. Some of the similarities include perceptual changes (e.g., slow motion) and dissociation (e.g., pain detachment) (Pates & Maynard, 2000). Uneståhl stressed that athletes usually find it difficult to describe or analyze the IPS after the event because they may experience selective or total amnesia (Morgan, 2002). Because of the amnesia characteristics, Uneståhl used hypnosis to define this state and promote the IPS with many Swedish athletes (Railo & Uneståhl, 1979).

In addition, research to date has shown that absorption is the strongest correlate of hypnotisability (Tellegen & Atkinson, 1974). Absorption is the experience of becoming absorbed in various sensory, cognitive, and imaginative experiences. Absorption is also an important factor in flow because, "flow involves total focus, involvement, and absorption in what we are doing, to the exclusion of all other thoughts and emotions" (Jackson, 2011, p. 331)

Another strong supporting argument for the similarity between flow and hypnosis comes from Gallwey (1974) and Uneståhl (1986). They reported studies that suggested flow state as a hemisphere shift, which is the activation of the right hemisphere and deactivation of the left hemisphere of the brain. Flow state is identified with right hemispheric dominance, with the shift in dominance from the left hemisphere, which is usually the dominant side of the brain in most people, to the right hemisphere, which is usually the non-dominant side of

the brain, allowing greater access to the parts of the brain that facilitate athletic performance (Gallwey, 1974; Uneståhl, 1986). The laterality hypothesis of hypnosis was based on the notion that the cerebral hemispheres could be divided into "the creative, intuitive, holistic right and the logical, sequential, analytical left" (Kihlstrom, 2013, p. 367). On the same note, Flor-Henry, Shapiro, and Sombrun (2017) suggested that "the normative end of the altered states of consciousness spectrum (to which trance experiences belong) involves alterations in the autobiographical sense of self, from expanded states of absorption (such as creative flow and meditative practice) to hypnotic trance" (p. 3), and "the normal autobiographical self is identified with the dominant linguistic hemisphere (left in dextral population)" (p. 4). According to Persinger (1993), there is evidence that the altered state may be caused by the intrusions of non-dominant right hemispheric content into waking awareness. In the theory of cortical inhibition, Orne (1959) proposed that absorption in the hypnosis process leads to the inhibition of activity of the dominant cerebral hemisphere (left brain), while allowing the non-dominant hemisphere (the right brain) to take over control. This left to right hemisphere shift associated with hypnosis happens as reflected in neuropsychological laterality measures (Crawford & Allen, 1983; Gruzelier et al., 1984) and in electrophysiological laterality measures (Gruzelier et al., 1984, Meszaros & Revesz, 1990).

Several research using electroencephalographic (EEG) measurement to detect changes in electrical charges of different regions of the brain during hypnosis supported the similarity between hypnosis and flow with regards to hemispheric shifts (Edmonston & Moskovitz, 1990; MacLeod-Morgan & Lack, 1982; Gruzelier et al., 1984; Crawford, Crawford & Koperski, 1983). To measure EEG, electrodes are placed on participants' scalps to record electrical changes produced by the brain. The signals are recorded and decomposed into frequency components (bands or waves). The most common bands are theta (4-8Hz), alpha (8-13 Hz), beta (17-32Hz), and gamma (30-60Hz) (Barabasz & Barabasz, 2008). It was

reported that under hypnotic state, subjects' EEG patterns showed a shift from left- to right-hemisphere (Edmonston & Moskovitz, 1990; MacLeod-Morgan & Lack, 1982), while Gruzelier et. al (1984) found lateral asymmetries in electrodermal responding (EDR) suggesting an inhibition of left-hemisphere activity. Crawford and colleagues (1983) found that there was a dramatic increase in cerebral blood flow in the right hemisphere following hypnotic induction in hypnotizable (but not insusceptible) subjects, before they received a suggestion for analgesia. Crawford et al. (1996) reported that highs had significantly more hemispheric alpha, theta, and beta activity in the right parietal region than lows. They also found that the higher theta power helped participants to improve their attention. Some studies failed to produce congruent results (Morgan, MacDonald & Hilgard, 1974; Morgan, MacDonald & MacDonald, 1971; Graffin, Ray & Lundy, 1995) or reported broader patterns of activation involving both cerebral hemispheres (Maquet et al., 1999; Rainville, Duncan, Price, Carrier, & Bushnell, 1999). Gruzelier's review (2006) supported the idea that there is a particular asymmetry in brain function, and in hypnosis left hemispheric activity is reduced, leaving the right to predominate in highs. Barabasz and Barabasz (2008) proposed that theta activity in an eye-closed record is positively associated with hypnotisability. These pieces of evidence suggest that both hypnosis and flow may play a role in the hemispheric shift from left to right. This means that hypnosis training might facilitate flow state, which in turn could enhance performance

The Present Thesis

Flow state can potentially facilitate athletes who seek peak performance because it is associated with enjoyment and intrinsic motivation. Athletes who are in flow tend to exert greater effort. They are fully involved and absorbed in what they are doing to the extent that they can exclude other thoughts and emotions. Hence, it is useful for athletes, coaches, and applied sport psychologists to understand which factors have the potential to create flow and

enhance performance. A possible way to increase flow is through promoting its nine dimensions. Understanding how each dimension plays a role in promoting flow is essential knowledge that will allow researchers to design more precise interventions by targeting dimensions in a specific way to achieve particular outcomes. This is a direction that appears to have promise for strengthening capacity to understand and manage flow. In terms of enhancing flow dimensions, certain flow dimensions seem to have a lot in common with the hypnotic state, particularly time transformation and loss of self-consciousness. These two dimensions are the two concomitants of flow that are frequently reported by individuals when they describe their experience of hypnosis. Thus, there seems to be value in examining the way in which hypnosis influences flow state and performance. Despite these observed similarities between flow and hypnosis, there has been a limited amount of research conducted to explore the possibility of using hypnosis to facilitate or control flow state and performance. Pates and colleagues (Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates et al., 2002) were pioneers in exploring the link between the two experiences. Although their research set the first steps in examining hypnosis and global flow, they did not explicitly explore the role of hypnosis in interacting with specific dimensions of flow. Furthermore, Pates and colleagues did not test level of hypnotisability of participants. Pates and Maynard (2000) and Pates, Oliver, et al. (2001) used only carefully selected participants who had previous experience of flow, which means that their results might not be broadly generalizable. Stavrou and Zervas (2004) proposed that five flow dimensions that can be manipulated to enhance flow state are antecedents of flow state. These are challenge-skill balance, clear goals, unambiguous feedback, total concentration on the task, and sense of control. Stavrou and Zervas proposed that the other four flow dimensions are concomitants that emerge once individuals are in flow. Koehn et al. (2013) and Jeong (2012) argued that because concomitants only occur when individuals are in flow,

they cannot be used to enhance flow state. However, based on the similarity between hypnosis and flow, especially in relation to the loss of self-consciousness and time transformation dimensions, it might be possible to alter several of the concomitant flow dimensions by inducing a hypnotic state. This has not been studied to date because Pates and colleagues only examined global flow state. One focus of the current thesis is to examine how the trancework component of hypnosis may affect specific flow dimensions, rather than just global flow. All previous studies on hypnosis and flow have only used the RE technique in the trancework component, which is not the only technique that could be effective to enhance flow and improve performance. Hence, another focus of the current thesis is to evaluate whether the FP technique can be an equally or even more effective hypnotic method to enhance flow and improve performance. Thus, the aim of this research is to focus on the influence of hypnosis on the concomitants of flow, global flow state, and performance, as follows:

1. To test the effects of hypnosis with trancework on flow dimensions, flow state, and sports performance compared with neutral hypnosis (Study 1)

2. To test the effects of hypnosis using a regression suggestion technique on flow dimensions, flow state, and sports performance compared with hypnosis using a future progression suggestion technique (Study 2).

3. To test the extent to which a hypnosis intervention increases flow dimensions, flow state, and sports performance in highly-skilled athletes in actual competition (Study 3).

CHAPTER 3: COMPARISON OF THE EFFECTS OF TRADITIONAL AND NEUTRAL HYPNOSIS ON FLOW STATE AND GOLF PUTTING PERFORMANCE

Introduction

In this study, I focused on comparing the effects of TH and NH on global flow state, flow dimensions, and performance. There are five main stages of a TH procedure namely: introduction, induction, deepening, trancework, and awakening. The main difference between TH and NH is that TH includes the trancework stage. During this stage, the hypnotist gives the subject suggestions that focus on performance improvement and getting into the flow state.

Edmonston (1977) explained that the effect of NH was equal to relaxation. In NH, the induction and deepening stages are the processes that lead to an altered state of consciousness. Performance suggestion can be effective in this altered state. Because NH doesn't have trancework, but includes the other four stages, it can easily create a false expectation of the effect of hypnosis. The question is whether this altered state of consciousness can be associated with loss of self-consciousness and time transformation - two subjective phenomena associated with hypnosis that are also part of the flow state. If NH can create the experience of loss of self-consciousness and time transformation that are commonly reported in TH, then it is possible that the elements of introduction, induction, and deepening in NH could lead to increases in those two concomitants of flow, thus, increasing global flow state, primarily through the flow dimensions of loss of self-consciousness and time transformation.

According to social-cognitive theories, hypnotic experience is a product of many factors, including attitudes, beliefs, expectancies, attributions, and interpretation (Lynn et al., 2008). The client experiences an effect similar to the placebo effect simply because they expect it to happen. To counter this argument, I used NH as a comparison condition to

minimize the possibility that the improvement gained by subjects was the result of their expectation.

In this study, I aimed to examine differences between the effects of a TH condition and a NH condition. My hypothesis was that differences would be direct results of the trancework stage, which includes performance and flow-related suggestions. The effect NH creates may not be as long lasting and effective as TH due to the lack of post-hypnotic suggestion during the trance stage.

Method

Participants

I invited participants to attend the study through recruitment at local golf clubs in Melbourne, as well as through the Golf Victoria website. From 38 interested golfers, I rejected six people for having previous experience with hypnosis. Based on a power analysis with the same alpha of 0.05, power of 80% and large effect size, the minimum number of participants needed is $n = 25$. Twenty-five people signed the consent form to be part of the study. One participant was rejected because his score on the WSGC fell below the threshold of four. During the study, four participants dropped out due to either family or work-related issues. The sample size was adequate when I started the study, but five participants dropped out or were excluded. The overall sample ($n = 20$) consisted of 17 male and 3 female golfers between 18 and 60 years of age ($M = 46.80$; $SD = 10.54$), who played club competition round at least once a week and practiced at least once a week at the time they participated in the study. The range of their golf experience was from 3 to 45 years ($M = 20.25$; $SD = 11.40$). Their HC range was from +2 to 20 ($M = 11.35$; $SD = 6.35$). The skill level of these participants varied widely with two golfers of plus HC level, who played frequently in their club's Pennant team. The majority of the participants only played at their club's weekly competition.

Study Design

In Study 1, I used a two-group, pre-test, intervention, post-test comparison experimental design to compare the effect of a TH intervention, including the trancework stage, and a NH intervention, without the trancework stage, on flow dimensions, global flow state, and performance of experienced golfers. An advantage of this independent groups experimental design was that it minimized order effects (such as practice, fatigue, or learning from the first condition tested) that can occur in a repeated measures design, because individuals only participated in one condition. The NH condition was used as a control to check for a placebo effect.

Measures

Demographic information form. I gathered demographic information (Appendix C) about participants' age, gender, years of golfing experience since they started playing golf, HC, any previous experience with hypnosis, any prescription drug, their self-rating as a golf putter (rank from 1 = *poor skill* to 7 = *excellent skill*) (M = 4.15; SD = 0.98). I described to them what flow is and the kind of phenomena people experience when they are in flow. I also explained the nine dimensions of flow before asking participants if they had experienced flow before. I also asked which golf course/practicing area they would like to do the putting test on.

Waterloo-Stanford Group C Scale of Hypnotic Susceptibility (WSGC; Bowers, 1993, 1998). This scale was developed as a group adaptation of the SHSS:C, which is considered as the gold standard for measuring individual hypnotisability (Bowers, 1981; Kihlstrom, 2008). There were two reasons why I chose the WSGC instead of the HGSHS:A. First, it has been reported that the HGSHS:A lacked sensitivity at the upper end of suggestibility (Council, 2002; Perry et al., 1992). The second reason was I expected to

conduct a group susceptibility test to save time. However, in the actual process of data collection, it proved difficult to arrange for participants to do the test at the same time.

The WSGC includes 12 items of progressing difficulty. Each item is a separate test of hypnotisability (Appendix D, E). Participants sat in a comfortable armchair and followed my direction while I read out from the script. To start with, I guided them through an induction technique with eye closure. Next, I tested them with various skills, including hand lowering, moving hands together, mosquito hallucination, taste hallucination, arm rigidity, dream, arm immobilization, RE, music hallucination, negative visual hallucination, post hypnotic suggestion (doodle), and amnesia. After the amnesia test, I guided them through the awakening stage by counting from 1 to 20 while they came back to normal awareness. After that, I gave them the answer sheet and they answered the questionnaire based on their experience during the test. The whole WSGC test took around 1 hour to finish. The obtained score from the WSGC represents a single overall summary of individual level of aptitude to produce a hypnotic state (Weitzenhoffer, 2002). The WSGC has internal consistency of alpha = .80, with test-retest reliability of r = 0.86. Singh (1997) reported a correlation of the WSGC with the SHSS:C of r = .85. The range of hypnotic suggestibility is from 0 to 12 out of 12 questions. Barnier and McConkey (2004) found 7% out of 119 experimental and clinical articles published in the *International Journal of Clinical and Experimental Hypnosis* (during the period of 1992-2001) used the WSGC to measure hypnotisability. One study on sports performance that used the WSGC as a measure of hypnotisability was conducted by Vasquez (2005). Kirsch, Milling, and Burgess (1998) suggested that the WSGC is suitable for screening and categorizing individuals. Participants with a score from 0 to 3 are considered low on hypnotic suggestibility, while scores from 4 to 8 are considered to reflect moderate susceptibility, and scores from 9 to 12 are considered to indicate a high level of hypnotisability. In this thesis, all individuals with low scores from 0 to 3 were excluded.

Golf putting performance. I chose golf putting as the performance task to be completed at pre-intervention and post-intervention. Golf is a sport in which there are many starts and stops. The golf game is mostly based on individuals' pace. Since there is no direct opponent, golfers can control their pace and rhythm. Also, their flow state and performance are largely dependent on the golfers themselves. With the HC system, golfers can play the same course in a group with players of higher or lower than their standard, yet are able to compete with scores posted by other players in different playing groups. Hence, it is possible for golfers to match the challenge to their skill, a crucial factor that facilitates the experience of flow state, according to Csikszentmihalyi (1975). Another reason for choosing golf is the requirement to be in control and stay focused. Despite having many starts and stops, golfers need to be very focused on their shots and be in control in the process to make them accurate. When golfers stand behind the ball, they need to stay focused, then imagine how the ball will travel and where it will stop. Finally, golfers need to adopt the correct stance in relation to their ball position, relax, and make the shot. Concentration, imagination, and relaxation are all parts of a hypnosis trance state. I chose golf putting skill for this study for several reasons. First, unlike other shots, golfers always use their putter to perform the shots. For other skills, including hitting from sand holes/bunkers, chipping, and pitching, golfers have multiple options to use different clubs. Having the same club to perform the putt is helpful to make sure the putting task is as consistent as possible. Second, all golf clubs have at least one practice green for members with many holes to putt to. This availability was critical to make sure that participants and I did not disturb other members when they wanted to practice, which gives participants peace of mind. Third, golfers are used to practicing their putting on the practice green, performing multiple shots over a period of 15 or 30 minutes or more. Thus, it is not a strange activity for them when having to putt 56 putts in a row. Being familiar with the environment (practice green), with the equipment (the same putter), and the

same activity (multiple putts on one occasion) means that golfers could perform close to their actual ability with minimal impact of various external factors.

Golfers performed putts from a distance of 4m on a prepared grass practice putting green of a local golf course. The green was, thus, very similar to the greens of the competition course. Golfers had 10 warm-up putts, followed immediately by 7 trials of 8 putts each (56 test putts in total). I measured a 4m radius circle around the hole and marked eight points divided by 45-degree angles as putting positions. Golfers putted from the eight points around the hole in a random order. I calculated the score of each putt based on radial error, which was the distance from the centre of the hole to the centre of the ball when it stopped after each putt. The performance score was the mean of the 56 post-putt distances. If the ball went into the hole the radial error was zero and I noted successful putts from the 4m distance. Golfers took around one hour to one hour and a half to finish their 56 putts with a short two minutes break after they putted 28 putts.

Flow State Scale-2 (FSS-2). The FSS-2 (Jackson & Eklund, 2002) (Appendix F) is the most widely-used measure of flow state in sport and physical activity research. The FSS-2 scale comprises 36 items that measure the nine dimensions of flow, according to Csikszentmilhalyi's model (1990, 1993). Each dimension is measured by four items. Instructions are for respondents to indicate how strong their experience of flow was in the activity they just completed. Responses are made on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The FSS-2 is an updated version of the original version of the Flow State Scale (Jackson & Marsh, 1996) with modifications on several items that measure loss of self-consciousness and transformation of time. The FSS-2 has shown good reliability with alpha coefficients ranging from 0.76 to 0.92 (Jackson & Eklund, 2002; Jackson et al., 2008). Because flow is a state that is transient, it changes from time to time, so test-retest reliability is not measured. The internal consistency reliability of the FSS-2 is acceptable for

use in the measurement of flow state in this study and it is the conventional measure used in studies of flow in sport, which permits comparison with results of similar studies (Koehn et al., 2013; Pates, 2013; Pates & Cowen, 2013, Pates, Cowen, & Karageorghis, 2012)

Diary of self-managed hypnosis. I handed out a hypnosis training log to the golfers to keep track of the times and dates when golfers listened to the pre-recorded audio file. The training log provided golfers space to note the time and date of each session and to comment on their hypnosis experience, regarding how relaxed and how deep they perceived their experience was during the self-managed hypnosis sessions. I present this diary in Appendix I. The diary acted as a manipulation check.

Brief social validation assessment. This social validation assessment (Appendix N) is designed as a manipulation check in SCD studies. Although this was not a SCD study, I used brief social validation interviews to acquire information about the importance of the study to participants, their subjective experience of the hypnosis intervention, and the effect they perceived it had on flow and performance. Questions that I asked included: Did you perceive the task to be important? Were the procedures of the study acceptable? Were you satisfied with the results? (Hrycaiko & Martin, 1996; Pates, 2013). I followed these open-ended questions by clarification probes to clarify any statements that I considered to be unclear and elaboration probes to elicit more details related to interesting comments that participants did not expand upon. This material provided an additional manipulation check.

Research Conditions

Neutral Hypnosis condition. Participants in this condition received the same intervention process as participants in the TH condition, except for removal of the hypnotic trancework. The NH condition comprised of the introduction to hypnosis; hypnosis induction, using the progressive muscle relaxation (PMR) technique; hypnosis deepening, using the Ericksonian staircase technique; more relaxation suggestion based on the PMR

technique; and awakening in which I counted up from 1 to 10. The additional PMR after deepening ensured that the NH intervention lasted 60 minutes, the same time as the TH condition. NH acted as a comparison condition in which content and time were the same, except for additional PMR replacing trancework. Hence, the difference in scores between the two conditions was likely to be due to the effect of trancework and not a placebo effect associated with conduct of a hypnosis process. The NH script is available in appendix G.

Traditional Hypnosis condition. At the beginning of the intervention, participants in this condition received one live 60-minute guided hypnosis session, which was also recorded onto a digital audio file. I guided participants through five stages. During the introduction stage, I introduced the concept of hypnosis, explained the stages and how applied hypnosis is different from hypnosis entertainment shows that participants may have seen on TV. In the induction stage, I used the PMR technique to guide participants to relax different muscle groups. Jacobson (1938) introduced this technique, which requires participants to alternate tensing and relaxing parts of their body, while maintaining deep breathing to achieve a state of physical relaxation of their whole body, associated with mental relaxation. In the deepening stage, I used the 10-step Ericksonian staircase technique outlined by Hammond (1990) to bring participants' mindset to a deeper state of relaxation. In the trancework stage, I used suggestion specifically to address the change needed for golfers to improve their putting performance. I asked golfers to imagine themselves on the putting green performing multiple perfect putts with confidence and sense of control. As a result of imagining their perfect putts, they could see, hear, and feel how their body was able to make those perfect putts, so they could program those sensations to their muscle memory. To enhance the effects, I gave golfers multiple positive, repetitive, ego strengthening, and motivational suggestions during this trancework stage. In the awakening stage, I counted from 1 to 10 to bring the hypnotized person back to the awake and alert state.

After the initial live session, I introduced self-managed hypnosis, based on the audio recording. I asked participants to listen to the audio digital file of the 60-minute live session once a day for 7 days. I asked them to complete a diary at the end of each session, logging the quality of their trance experience and any feedback about the session. This process helped golfers to become familiarized with the trance state, be able to relax and stay calm, while allowing them to apply the suggestions I gave for more consistent and confident putting. During the 7-day hypnosis practice, I sent e-mails to participants once every two days in the morning to remind them to perform the session and complete the diary. The TH script is available in appendix H.

To ensure the highest standard possible in conducting the hypnosis aspects of this thesis, I successfully undertook the diploma training and advanced diploma training in hypnosis at the Australian Academy of Hypnosis. The total training time of this thorough, in-depth preparation for research and practice of hypnosis was more than a year to complete all the courses and practical requirements.

Procedure

After approval from the Victoria University Human Research Ethics Committee, I recruited participants from local clubs through posters, web postings, word of mouth, and an advertisement on the Golf Victoria website. I approached club managers or team captains to introduce the study and asked for permission to display recruitment posters on the notice boards. I also posted advertisements on my Facebook page. Additionally, I approached Golf Victoria and they agreed to display information of the study on their website.

Golfers sent me an email to indicate their interest in the study. Upon receiving their emails, I sent a reply email with the Information Statement of the study and an Informed Consent Form for them to read before making an appointment. In the first information session, I provided potential participants with clear information about the study, details of

what they would be asked to do, and the commitment level being asked of participants. Potential participants had the opportunity to ask any questions and clarify any concerns. I informed them about confidentiality and how data would be handled. Then they signed the Informed Consent Form, if they were willing to volunteer for the study. Participants then completed the WSGC with me in a private room (either at their house or mine).

In the second session, participants performed putting, following a random order of the eight positions on the putting green. Most participants arranged this putting session right before their allocated time slot of a golf round to avoid extra traveling time to the club. Participants started by performing 10 practice putts before they continued with the official 7 sets of pre-test trials of 8 putts each, a total of 56 test putts. After they performed the 7 sets of trials, participants completed the FSS-2 questionnaire with reference to their flow state during the putting test trials. Then I assigned them to the Traditional or NH condition, based on their WSGC result, to balance suggestibility between the two conditions. In the third session, participants completed their face-to-face intervention session with me, which was hypnosis with or without trancework. After this session, participants received an email from me with a link to download the digital audio file, and the diary. I explained to participants the purpose of the diary and how they should fill it in after each self-managed hypnosis session. Participants listened to the recorded digital audio for the next seven days. In the fourth session, participants performed 10 practice putts before doing 7 sets of post-test trials each consisting of 8 putts. Participants then completed the FSS-2 questionnaire followed by answering the Brief Social Validation interview. They also handed me back their diary, which they filled in after each of their self-managed hypnosis sessions.

Analysis

First, I calculated means and standard deviations for the two performance indicators, radial error and number of putts holed, as well as for global flow state and each of the nine

flow dimensions, of both hypnosis conditions for pre-test and post-test. I compared the means to observe their trends. I then conducted two-way, mixed-design ANOVA, examining the independent groups factor, main effect of conditions (TH, NH), the repeated measures factor, main effect of occasions (pre-test, post-test), and the conditions x occasions interaction effect. In studies testing the effects of interventions, the interaction effect is the factor that identifies any difference in the effect of the conditions. For performance, I also conducted 2-way, mixed-design ANOVA with the same independent groups, repeated measures, and interaction factors, and with two dependent variables radial error and number of putts holed out of 56. Partial Eta Squared (η_p^2) scores provide information about the magnitude of these effects. I refer to this as a measure of effect size, with scores of 0.14 or more reflecting large effects, 0.06 or more indicating medium effects, and 0.01 or more representing small effects (Cohen, 1988).

Results

I present the results in three parts. In the first part, I describe participant demographics, hypnotisability, and indications that participants followed the procedure of the study derived from the diary of self-managed hypnosis and the brief social validation interviews. In the second part, I examine the effect of the hypnosis intervention on putting performance. In the third part, I analyze the influence of the hypnosis intervention on global flow state and the nine flow state dimensions.

Demographic Information

Demographic information I collected, included age, gender, years of golfing experience, HC, experience with hypnosis before or not, any prescription drug used, self-rated putting skill, whether participants experienced flow before, for the entire sample (N = 20). The sample consisted of 17 males and 3 females, which makes it unrealistic to compare results between the two genders. Participants' age range was widely spread from 18 to 59

with a mean age of 46.80, *SD* = 10.54. The majority of participants were middle-aged men who had a full-time job and played golf casually at the weekend. Participants had a wide range of golfing experience from 3 to 45 years with the mean, *M* = 20.25, *SD = 11.4*. Quite a few golfers had been serious golfers when they were younger. For different reasons, they did not pursue golf to the professional level. The participants' HC range was from +2 to 22 with a mean of *M* = 11.35, *SD* = 6.36. In terms of self-rated putting skill, the mean was *M* = 4.20, *SD* = .051 with a range from one golfer who scored the lowest score 2 and one golfer who scored 6 out of 7. The majority of golfers rated their putting skill as either 4 or 5. Out of 20 participants, 12 golfers reported that they had experienced flow before, while 8 others claimed they had never been in flow before. The demographic information for participants in each condition is demonstrated in Table 3.1. I conducted a two-sample t-test to compare the means between the TH condition and the NH condition for each of the demographic variables, including age, years of golf experience, HC, and putting self-rating. The two-sample t-test results indicated no difference between the two conditions, with all the *p*-values above 0.05, which means there were no significant differences in the demographic variables between the two research conditions.

Table 3.1

Demographic information of participants in TH condition and NH condition

Condition	Neutral Hypnosis		Traditional Hypnosis		t value	*p*-value of 2-sample t-test between two conditions
	M	SD	M	SD		
Age	46.70	11.94	46.90	9.61	-0.04	0.73
Years of golf experience	19.20	10.69	21.30	12.56	-0.40	0.76
Handicap	13.41	6.88	9.29	5.35	1.50	0.60
Putting self-rate	4.00	0.82	4.40	1.08	-0.94	0.46

Waterloo-Stanford Group C Scale of Hypnotic Susceptibility (WSGC)

Participants completed the WSGC, a multidimensional measure of hypnotisability, to ensure they had sufficient skill in hypnosis to benefit from the intervention. Participants' scores ranged from 2 to 11 out of 12 items. As stated in the Measures sub-section, scores from 0 to 3 are considered low and participants with these scores were eliminated from the study. One potential participant's score was 2 out of 12, so I eliminated this golfer from the beginning. Scores from 4 to 8 are considered moderate. Scores from 9 to 12 are considered high with 12 being the highest possible score (Kirsch, Milling, & Burgess, 1998). The mean WSGC score was 6.70, *SD* = 2.45. In this study, 15 participants were in the average range and 5 participants were in the high range. The mean WSGC score for participants in the TH condition was *M* = 6.50, *SD* = 2.88. The mean WSGC score for participants in the NH condition was *M* = 6.90, *SD* = 2.08. I conducted a two-sample t-test to compare the difference in mean between the two conditions. The two-sample t-test result indicated no significant difference between the two conditions with a *p* value of 0.33. The questions about previous experience with hypnosis and any prescription drug use were part of the selection criteria. I did not recruit golfers who had experience with hypnosis before and those who

used prescription drugs that might affect the hypnosis process in any way.

Diary of Self-managed Practice of Hypnosis

I asked participants to log the dates and times when they listened to the digital audio recording of the live hypnosis session in their diary after each occasion when they listened to the mp3 file at home. Six participants reported some improvements in their capability of listening to the mp3 and going into a deep zone of absorption. They typically indicated that the first two sessions were hard and they struggled to stay focused. As the sessions progressed, staying focused became easier and participants reported that they could go much deeper into trance by the sixth and seventh sessions. All participants reported completing seven sessions listening to the audio recording, although five golfers in the NH condition and six golfers from the TH condition took more than seven days to finish. They generally reported in the interview that it was hard to be able to dedicate an hour each day for seven days consecutively, because of other commitments. Two participants from each condition also reported that there were portions of a session during which they might not have paid full attention or they might have been distracted by the need to do other things. From the brief social validation interview, participants in both conditions reported that they understood and were able to follow the instructions given during the audio-recording and that their skill increased across sessions. Thus, I concluded that this manipulation check supported the effectiveness of both the Traditional and the NH conditions.

Golf Putting Performance

First, I performed a one-way ANOVA at pre-test for each performance variable to check whether there is any significant difference between the two conditions at pre-test for radial error and number of putts holed. Results of the one-way ANOVA at pre-test for radial error showed no significant difference (p = .05) between the two hypnosis conditions. Results of the one-way ANOVA at pre-test for number of putts holed showed no significant

difference (p = .05) between the two hypnosis conditions. Thus, I conducted two-way, mixed design ANOVAs for radial error and number of putts holed to test for any significant main effect of conditions, any significant main effect of occasions, and any significant conditions x occasions interaction effect for radial error and number of putts holed.

Radial error. The radial error mean scores for the TH condition and the NH condition at pre-test and post-test are illustrated in Figure 3.1, which shows an ordinal interaction. There is an increase in mean from pre-test (M = 37.77, SD = 10.81) to post-test (M = 47.47, SD = 9.6) in the NH condition, indicating that putting became less accurate at post-test. On the other hand, there is a reduction in mean from pre-test (M = 37.46, SD = 10.28) to post-test (M = 28.72, SD = 10.92) in the TH condition, indicating that putting became more accurate.

A two-way, mixed-design ANOVA showed a main effect of condition between the TH condition and the NH condition, F (1,18) = 6.37, p = 0.021, η_p^2 = 0.26, a very large effect size. Given that there was virtually no difference between the means for the two hypnosis conditions at pre-test, this significant difference appears to be a result of the large difference between the means for the two conditions at post-test. There was no main effect of occasion, F (1,18) = 0.03, p = 0.86, η_p^2 = 0.002, a very small effect size. The absence of a main effect of occasion appears to be due to the large increase in radial error for the NH condition cancelling out the equally large reduction in radial error for the TH condition. Thus, the mean for the whole sample at pre-test was, M = 37.615, whereas the mean for the whole sample at post-test was, M = 38.095, a change of just 0.48. The two-way, mixed design ANOVA revealed a significant interaction effect between the hypnosis conditions (TH, NH) and occasions (pre-test, post-test) for radial error, F (1,18) = 11.52, p = 0.003, η_p^2 = 0.39. The η_p^2 indicates a very large effect size. This interaction effect indicates that the TH condition showed a much larger decrease in radial error, that is, this condition showed an improvement

in performance, from pre-test to post-test, whereas the NH condition increased, that is, performance deteriorated from pre-test to post-test.

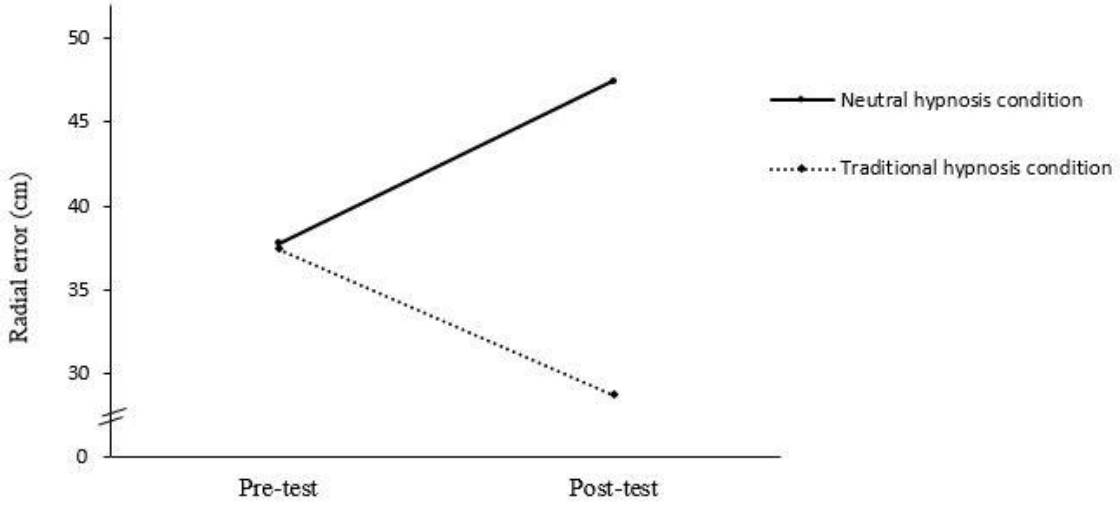

Figure 3.1. Change in radial error from pre-test to post-test

Number of putts holed. The changes from pre-test to post-test in number of putts holed between the TH condition and the NH condition are illustrated in Figure 3.2. In the NH condition, there was a slight drop from pre-test score (M = 9.5, SD = 5.13) to post-test score (M = 9.0, SD = 3.53), that is, a reduction in performance. In the TH condition, there was a substantial increase from pre-test score (M = 8.6, SD = 3.1) to post-test score (M = 12.4, SD = 4.27), that is, an improvement in performance. Figure 3.2 shows a disordinal interaction between the condition and the NH condition.

A two-way, mixed-design ANOVA showed no main effect of condition between the TH condition and the NH condition, F (1,18) = 0.91, p = 0.35, η_p^2 = 0.05, with a small to medium effect size. The ANOVA showed no main effect of occasion, F (1,18) = 1.7, p = 0.21, η_p^2 = 0.09, with a medium effect size. The effect size suggests that the mean for the whole sample at post-test (M = 10.7) was meaningfully higher than the mean for the whole sample at pre-test (M = 9.05). This appears to be a result of the notable increase in the TH condition mean at post-test. The two-way, mixed-design ANOVA revealed no significant interaction effect between hypnosis conditions (TH, NH) and occasions (pre-test, post-test)

for number of putts holed, F (1,18) = 2.88, p = 0.11, η_p^2 = 0.14. The η_p^2 indicates a large effect size. This result of no interaction effect indicates that the TH condition did not show a significant increase in number of putts holed compared with the NH condition. However, the large effect size suggests a meaningfully larger change in the TH condition mean (3.4) than the NH condition mean (-0.9) from pre-test to post-test. The absence of a significant ANOVA interaction effect, although Figure 3.2 shows a clear disordinal interaction might be related to a relatively high level of variance in the number of putts holed data.

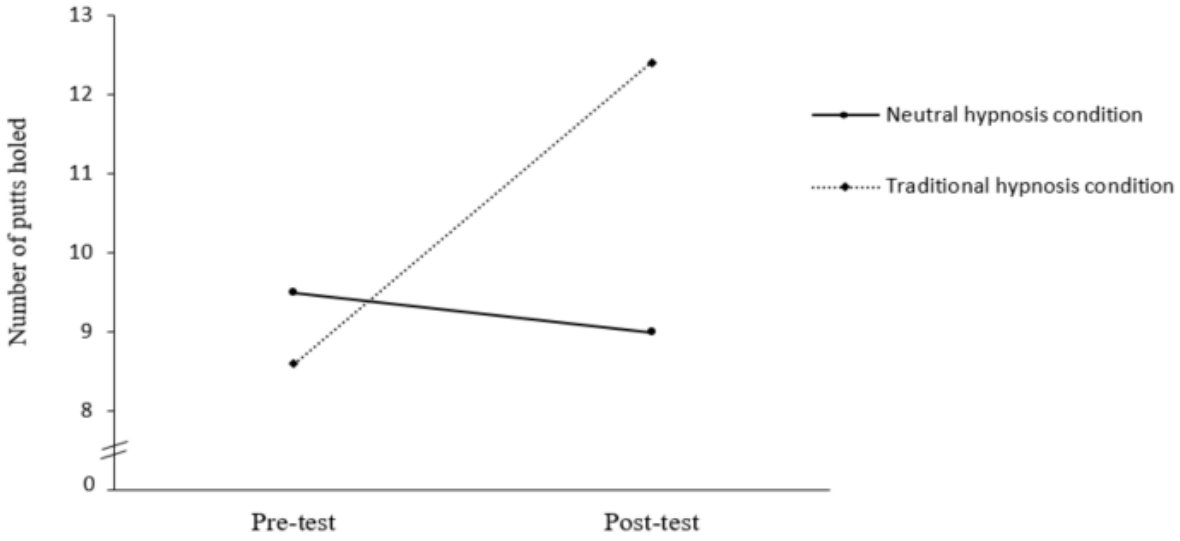

Figure 3.2. Change in number of putts holed from pre-test to post-test

Global Flow State and Flow State Dimensions

Means, standard deviations, and 2-way mixed-design ANOVA analyses for global flow state and for each flow dimension are presented in Table 3.2. First, I performed a one-way ANOVA at pre-test for each flow state variable to check whether there was any significant difference between the two conditions at pre-test for global flow and each flow dimension. Results of the one-way ANOVAs at pre-test showed no significant difference between the Tradition Hypnosis and NH conditions. Thus, I conducted two-way, mixed design ANOVAs for global flow state and the nine flow state dimensions. For global flow state and for each flow dimension, the independent groups factor is condition (TH, NH), the

repeated measures factor is occasion (pre-test, post-test) and the interaction effect is condition x occasion.

For global flow state scores, there was an increase in the mean from pre-test to post-test for both the TH condition and the NH condition. A two-way, mixed-design ANOVA showed no main effect of condition between the TH condition and the NH condition, F (1,18) = 0.12, p = 0.73, η_p^2 = 0.01, with a small effect size. The ANOVA showed a main effect of occasion, F (1,18) = 15.97, p = 0.001, η_p^2 = 0.47, with a very large effect size. The two-way, mixed-design ANOVA revealed no significant interaction effect between hypnosis condition (TH, NH) and occasion (pre-test, post-test) for global flow, F (1,18) = 2.57, p = 0.126, η_p^2 = 0.13. The η_p^2 indicates a medium to large effect size.

There was an increase in the means for all nine dimensions of flow state in the TH condition. There was also an increase in the means for seven dimensions of flow state for the NH condition (means declined from pre-test to post-test only for sense of control and loss of self-consciousness). Overall, there was no main effect of condition for any flow dimensions between the TH condition and the NH condition. There was a significant main effect of occasion from pre-test to post-test for eight dimensions as presented in Table 3.2. The only dimension that showed no significant main effect of occasion from pre-test to post-test was the unambiguous feedback dimension. There were significant interaction effects between hypnosis condition (TH, NH) and occasion (pre-test, post-test) for the sense of control dimension, F (1,18) = 5.77 p = 0.027, η_p^2 = 0.24, with a very large effect size. The interaction effect for the sense of control dimension is presented in Figure 3.3. The figure shows a strong, disordinal interaction effect. In this case, the TH condition showed a much larger increase from pre-test to post-test, whereas the NH conditions shows a clear decrease. There were significant interaction effects between hypnosis condition (TH, NH) and occasion (pre-test, post-test) for the loss of self-consciousness dimension, F (1,18) = 10.14, p = 0.005, η_p^2 =

0.36, with a very large effect size. The interaction effect for the loss of self-consciousness dimension is presented in Figure 3.4.

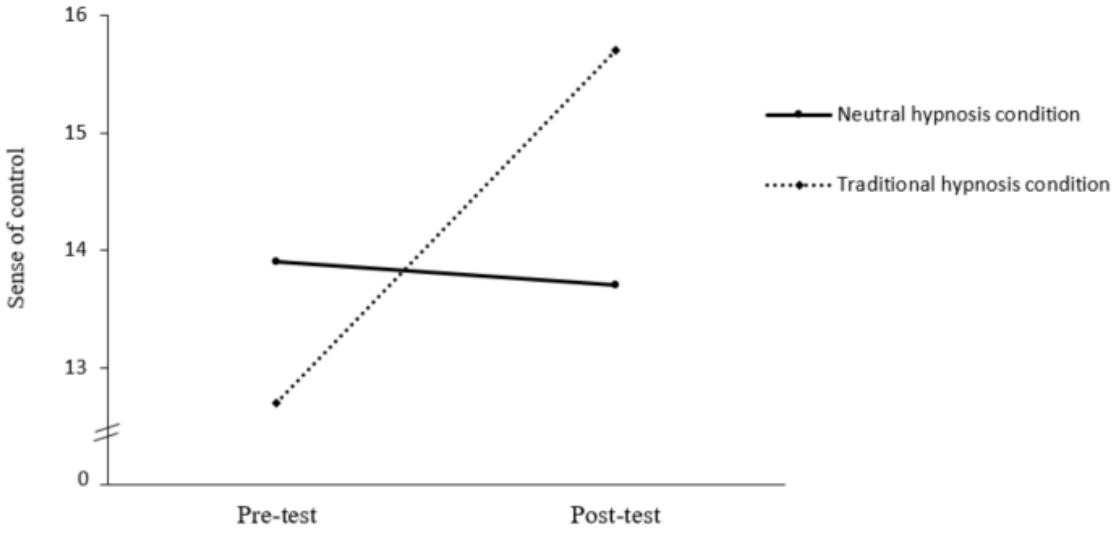

Figure 3.3. Change in the sense of control dimension from pre-test to post-test

The figure shows a strong, disordinal interaction effect. In this case, the TH condition showed a much larger increase from pre-test to post-test, whereas the NH conditions shows a clear decrease. These interaction effects indicate that the TH condition showed a significantly larger increase in the sense of control dimension and the loss of self-consciousness dimension from pre-test to post-test compared with the NH condition, which decreased.

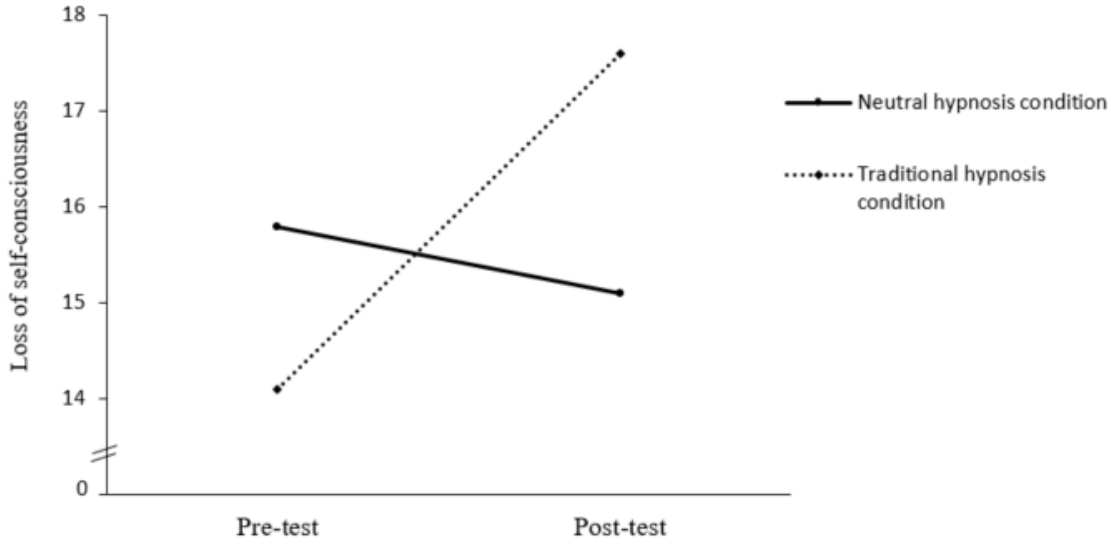

Figure 3.4. Change in the loss of self-consciousness dimension from pre-test to post-test

Table 3.2

Means, standard deviations and 2-way mixed-design ANOVA scores for each flow dimensions from pre-test to post-test

Flow Dimension	Pre-test				Post-test				Main effect of condition			Main effect of occasion			Interaction effect		
	Traditional Hypnosis		Neutral Hypnosis		Traditional Hypnosis		Neutral Hypnosis										
	M	SD	M	SD	M	SD	M	SD	F	p	η_p^2	F	p	η_p^2	F	p	η_p^2
Challenge -Skill balance	13.30	0.79	13.50	1.13	15.30	3.27	14.30	2.54	0.11	0.745	0.01	5.71	0.028	0.24	1.05	0.320	0.06
Action-awareness merging	11.40	1.05	12.00	1.43	14.60	3.57	14.40	3.27	0.02	0.890	0.01	11.29	0.003	0.39	0.23	0.640	0.01
Clear goals	15.80	1.02	16.00	0.94	18.20	2.10	16.60	2.17	0.48	0.499	0.03	5.75	0.028	0.24	2.07	0.167	0.10
Unambiguous feedback	14.80	1.02	16.50	0.76	15.10	2.69	16.70	3.09	2.31	0.146	0.11	0.13	0.720	0.01	0.01	0.943	0.00
Concentration	13.00	0.80	14.40	0.96	15.90	3.25	15.10	2.77	0.09	0.771	0.01	4.92	0.040	0.22	1.84	0.192	0.09
Sense of Control	12.70	0.88	13.90	1.05	15.70	2.54	13.70	3.06	0.12	0.728	0.01	4.42	0.050	0.20	5.77	0.027	0.24
Loss of Self-Consciousness	14.10	1.14	15.80	1.09	17.60	3.72	15.10	2.69	0.09	0.773	0.01	4.51	0.048	0.20	10.14	0.005	0.36
Time transformation	10.20	1.07	11.40	1.04	14.10	2.73	13.90	2.38	0.19	0.671	0.01	24.03	0.001	0.57	1.15	0.298	0.06
Autotelic experience	13.10	0.71	14.85	1.37	16.00	2.71	15.80	2.25	0.40	0.536	0.02	12.57	0.002	0.41	3.23	0.089	0.15
Global flow	118.40	4.91	128.30	8.41	142.50	18.12	138.60	24.29	0.12	0.733	0.01	15.97	0.001	0.47	2.57	0.126	0.13

Discussion

In this section, I first discuss the performance results of the present study and the flow state results, especially with reference to several flow dimensions that showed significant differences between the NH condition and the TH condition. Next, I comment on methodological considerations, including limitations of the study. Then, I propose some ideas for future research that are suggested by the present results. Finally, I make some concluding remarks about the present study.

Conclusions

Performance results. From the performance perspective, TH clearly improved performance more than NH, based on the significantly larger improvement in putting radial error from the hole. Two-way mixed-design ANOVA showed a significantly greater decrease in radial error for TH compared to NH. Figure 3.1 indicates an ordinal interaction, in which golfers in the two conditions performed at the same level at pre-test, but after the intervention those in the TH condition reduced their radial error, that is, they showed a substantial increase in putting accuracy, whereas golfers in the NH condition increased their radial error, so their performance deteriorated. There was a large effect size for radial error, which indicates that the effect was meaningful. Two-way mixed design ANOVA showed no significant difference between the TH condition and the NH condition for number of putts holed. Figure 3.2 shows a disordinal interaction in which number of putts holed was smaller for the TH condition than for the NH condition at pre-test, but number of putts holed increased substantially for the TH condition at post-test, while number of putts holed decreased for the NH condition. Although the interaction was not statistically significant, the effect size was large, suggesting that the difference between the NH condition and the TH condition was meaningful. This is consistent with the claim that many golfers would consider the number of putts holed to be more important than the result for radial error in practice. The

reason for this is that golfers are more interested in how many putts go in the hole, rather than how far their unsuccessful putts miss by, given that the objective of a golf round is to complete the round in the smallest number of strokes, including putts, possible (The United States Golf Association, 2012). The performance results of this study support research by Pates (2013), Pates and Cowen (2013), Pates and Maynard (2000), and Pates, Oliver et al. (2001) that hypnosis can improve performance in golfers. The present results also support research by Pates, Maynard et al. (2001), Pates et al. (2002), Pates and Palmi (2002), and Vasquez (2005), who reported that hypnosis interventions lead to improvement of performance in other sports, including basketball and badminton.

Many of the previous studies that examined the effect of hypnosis on flow state and performance used the SCD (Lindsay et al., 2005; Pates, 2013; Pates & Cowen, 2013; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates et al., 2002; Pates & Palmi, 2002). The only study using experimental designs to compare between hypnosis and relaxation conditions was conducted by Vasquez (2005). In SCDs, there is rarely a comparison between two or more conditions. This limits the extent to which SCDs can lead to conclusions about what aspect or aspects of hypnosis contribute to any observed effects. The experimental study design provides the tool to compare changes between different conditions from pre-test to post-test. In the present study, I demonstrated that TH had a bigger effect on putting performance than NH. There were significant effects for two flow dimensions, both in favour of TH. The results of this study supported finding by Vasquez (2005) in that Vasquez found hypnosis improved performance, but did not necessarily increase global flow.

Global flow and flow state dimension results. From the perspective of global flow and flow dimensions, TH did not create significantly greater improvement in global flow state compared to NH from pre-test to post-test. Two flow dimensions, sense of control and

loss of self-consciousness showed a significant difference between the two hypnosis conditions. I hypothesized that TH would improve global flow state and flow dimensions more than NH by improving primarily concomitant dimensions, especially loss of self-consciousness and time transformation. Because the results showed that TH influenced an antecedent dimension, namely sense of control and a concomitant dimension, namely loss of self-consciousness, relative to NH, they partially supported the hypothesis. The results of the present study also showed that there was a main effect of occasion (pre-test, post-test) for eight out of nine flow dimensions. The only dimension that showed no significant main effect of occasion from pre-test to post-test was the unambiguous feedback dimension. With a main effect of occasion for these eight flow dimensions, these results partially support previous research by Pates (2013), Pates and Cowen (2013), Pates et al. (2002), Pates and Maynard (2000), Pates, Oliver et al. (2001), Pates and Palmi (2002), and Lindsay et al. (2005) that found a hypnosis intervention increased global flow state.

However, a challenge for the present study was that I am not aware of any studies that have examined the effect of hypnosis on flow dimensions, so there is no research with which to compare the flow state dimension results. I can only base comments for the effect of hypnosis on flow dimensions on theoretical arguments. Stavrou and Zervas (2004) proposed to divide flow dimensions into antecedents and concomitants. They further suggested that antecedents are essential factors that lead to flow, whereas concomitants can only appear after flow has occurred. Based on Stavrou and Zervas's argument, there would be no reason to suggest that hypnosis interventions should improve flow state, because similarities between the hypnosis trance and the flow state are mainly in reports of loss of self-consciousness and time transformation phenomena that are common to research on flow and hypnosis. In this section, I first discuss the effect of the hypnosis intervention in the present study on the two flow dimensions that have a significant difference between the two

conditions. Then I comment on the remaining flow dimensions with significant main effects of occasion.

Change in the loss of self-consciousness dimension. The loss of self-consciousness dimension score for the TH condition increased from 14.1 at pre-test to 17.6 at post-test, an increase of 3.5 or 24.8%. The loss of self-consciousness dimension score for the NH condition dropped slightly from 15.8 to 15.1, a decrease of 0.7 or 4.4%. Based on the social validation interviews, three participants from the TH condition and two participants from the NH condition reported that they were under pressure to perform well during the post-test. They told me that their friends in the golf club knew about these golfers' participation for the present study, so these participants stated that they felt a need to perform effectively. This sentiment might be a common feeling for other participants, although they did not specifically say so in the social validation interviews. Self-consciousness involves an imagined audience, a projection of others as viewing the self (Ryan & Kuczkowski, 1994). Fenigstein, Scheier and Buss (1975) defined public self-consciousness as the awareness of oneself as a social object and deemed it reasonable for anxiety to be a by-product of self-consciousness. Carver and Scheier (1981), and Plant and Ryan (1985) added that high public self-consciousness equals significant concern with how one is viewed by others and more susceptibility to conformity and loss of autonomy. In the TH condition, it is possible that the increase in loss of self-consciousness was caused by the trancework suggestions. The trancework script not only included suggestions that participants feel confident and execute the putts well, but also be their own spectator and competitors, and observe themselves from a distance. From these public eyes, participants saw themselves as confident, self-assured, and successful players. The suggested positive image of the self as viewed by others could have been an explanation for the substantial increase in the loss of self-consciousness flow dimension in the TH condition. Conversely, in the NH condition, there were no trancework

suggestions to help participants deal with the pressure of being viewed by the audience or opponents. Hence, the lack of trancework suggestions could explain why the score on the loss of self-consciousness dimension declined marginally in the NH condition.

Change in the time transformation dimension. Time transformation is one of the two concomitant dimensions that I predicted would be positively influenced by hypnosis. Overall, time transformation increased from pre-test to post-test for both conditions, but there was no significant difference between the two conditions. In the TH condition, the mean of the time transformation dimension increased from 10.2 at pre-test to 14.1 at post-test, an increase of 3.9. This was a big increase of 38.24% from the pre-test mean on a scale that goes from 4 to 20. In the NH condition, the mean of the time transformation dimension increased by 2.5 from 11.4 to 13.9, which was also a notable increase of 21.93%. There were noteworthy increases in time transformation for both the TH and NH conditions, hence, the difference between the two conditions was not significant. A possible explanation for the lack of difference could be the trancework script. In this study, the trancework script of the TH condition focused on improving both flow and performance by enhancing self-confidence. This trancework script did not focus specifically on the time transformation dimension. Therefore, the lack of specific suggestions in trancework might be one of the reasons why there was no significant difference between the two conditions.

I am not aware of previous research that directly addressed the theoretical explanation for the occurrence of time transformation. In previous research, subjects did not always report the experience of time transformation and this dimension might be dependent on characteristics of the activity. Csikszentmihalyi (1990) argued that transformation of time may not always occur in flow because there are situations where awareness of time is necessary to successful execution of the activity, for example, a surgeon needs to be able to keep track of time in order to execute his task well. In some sports, the awareness of time is

also important for successful performance, for instance, swimmers often use their stroke tempo to obtain feedback about their performance, which means they are fully aware of the passage of time (Jackson, 1996). Similarly, Jackson (1996), Jackson et al. (2001), and Vlachopoulous et al. (2000) agreed that, among the nine dimensions, time transformation might be the least experienced flow dimension by athletes. Vlachopoulous et al. examined 1,231 aerobic dance exercisers to assess the factor structure, and the internal consistency of the FSS, using confirmatory factor analysis to analyze their results. Vlachopoulous et al. argued that the time transformation dimension might be inappropriate to the demands of their task, which involved aerobic exercisers. Vlachopoulous et al. proposed a plausible explanation that the rhythmic elements of the music may have controlled the sense of time in participants because the workout was designed to be synchronised with music. The efforts to move in time with music might create a worry in participants to keep up with the tempo, and to follow the choreography of the aerobics instructor, while they might be evaluated by fellow group members.

Despite the lack of support in previous research for the time transformation dimension, the fact that there was a main effect of occasion from pre-test to post-test in the present study suggests that hypnosis might be a useful technique to enhance the time transformation dimension.

Change in other flow dimensions. Eight out of the nine flow dimensions showed a main effect of occasion, which suggested that there were some effects of hypnosis on participants in general. The only dimension that did not have any effect of occasion was unambiguous feedback. Several participants gave comments that during the study, they focused more on the process of putting, rather than the consequence of the action. This could be one explanation why the unambiguous feedback dimension did not increase.

The eight dimensions with a main effect of occasion could be divided into two subgroups. The first subgroup included the action-awareness merging and the time transformation dimensions. In these two dimensions, the score for both conditions increased substantially, with the score for the TH condition higher than the score for the NH group. For example, in the TH condition, the mean of the action-awareness dimension increased from 11.4 at pre-test to 14.6 at post-test, an increase of 3.2. This was a big increase of 28% from the pre-test mean. In the NH condition, the mean of the action-awareness dimension increased from 12.00 to 14.40, an increase of 2.4 or 20%. These increases could explain why there was no significant difference between the TH condition and the NH condition, because both facilitated a noteworthy increase in action-awareness merging.

The second subgroup includes challenge-skill balance, clear goals, total concentration, sense of control, loss of self-consciousness, and autotelic experience. As can be seen in Table 3.3, the percentage increase for these dimensions in the TH conditions is much higher than the increase of these dimensions in the NH.

Table 3.3

Changes in flow score for nine dimensions from pre-test to post-test between the TH and NH condition

Flow dimension	Traditional Hypnosis				Neutral Hypnosis			
	Pre-test	Post-test	Pre- and post-test difference	% increase	Pre-test	Post-test	Pre- and post-test difference	% increase
Challenge -skill balance	13.30	15.30	2.00	15.04	13.50	14.30	0.80	5.93
Action-awareness merging	11.40	14.60	3.20	28.07	12.00	14.40	2.40	20.00
Clear goals	15.80	18.20	2.40	15.19	16.00	16.60	0.60	3.75
Unambiguous feedback	14.80	15.10	0.30	2.03	16.50	16.70	0.20	1.21
Concentration	13.00	15.90	2.90	22.31	14.40	15.10	0.70	4.86
Sense of control	12.70	15.70	3.00	23.62	13.90	13.70	-0.20	-1.44
Loss of self-consciousness	14.10	17.60	3.50	24.82	15.80	15.10	-0.70	-4.43
Time transformation	10.20	14.10	3.90	38.24	11.40	13.90	2.50	21.93
Autotelic experience	13.10	16.00	2.90	22.14	14.85	15.80	0.95	6.40

There could be an explanation for the similar changes in the first subgroup with the action-awareness merging dimension and the time transformation dimension. Perhaps these two flow dimensions, which are considered to be two concomitants of flow, are more closely related to the hypnosis trance state than the trancework that is done in it. In the present study, the NH condition increased the score of the action-awareness merging dimension and the time transformation dimension, but the NH script included no trancework. The results of 2-way mixed-design ANOVA confirmed a main effect of occasion from pre-test to post-test for these two dimensions. Such a result might mean that for those dimensions the relaxed or

trance state, which is created by the induction and deepening stage, is enough to create an effect.

For the six dimensions in which the TH condition increased significantly more than the NH condition, including challenge-skill balance, clear goals, total concentration, sense of control, loss of self-consciousness, and autotelic experience, the trancework component of hypnosis is important. It is possible that the trancework suggestions, which focused on improving golf putting performance and enhancing self-confidence, might also have a positive benefit on these six dimensions. By comparison, for the unambiguous feedback dimension, there was no significant increase from pre-test to post-test for either hypnosis condition and no main effect of occasion. Thus, there was at least one flow dimension that was unaffected by either the TH condition with trancework or the NH condition without trancework. This suggests that the increases in flow observed for other dimensions were not simply expectation or placebo effects. I consider the implications of this for research in the Future Research section that follows.

Change in the sense of control dimension. A significant difference between the TH condition and the NH condition was found for sense of control, which is an antecedent flow state dimension, according to Stavrou and Zervas (2004). Sense of control increased significantly more in the TH condition than it did in the NH condition. Sense of control is a phenomenon that is not widely reported as an experience of being in hypnosis, rather it is a state that helps individuals to achieve flow. Sense of control can be described as a combination of a feeling of confidence and calmness or relaxation. Jackson (1995) found confidence to be one of the key factors that facilitate the occurrence of flow. Because confidence is part of the sense of control dimension, which is one of the nine dimensions of flow proposed by Csikszentmihalyi (1975), it may play a role in explaining the results of this study. When athletes have high self-confidence, they have a belief in their ability to achieve

their task, which minimizes fear of failure, creating a strong sense of being in control of the situation and the challenge they face (Jackson, 2011). Self-confidence seems to be increased either directly, or as a major by-product, of hypnosis in research that uses hypnosis to increase performance (Liggett, 2000; Stanton, 1983). It is the content of the trancework component of the TH condition that was designed to increase self-confidence in golfers. In the trancework stage, I asked golfers to imagine themselves on the putting green performing multiple perfect putts with confidence and sense of control. As a result of imagining their perfect putts, they could see, hear, and feel how their body was able to make those perfect putts, so they could program those sensations into their muscle memory. To enhance the effects, I gave golfers multiple positive, repetitive, ego strengthening, and motivational suggestions during this trancework stage. It was possible that those specific suggestions in trancework improved self-confidence in participants. Part of having a high level of sense of control is a feeling of relaxation and calmness, as well as confidence. In the present study, it is possible that the feeling of relaxation was enhanced by the induction and deepening stages of hypnosis. In that case, NH should create a sense of relaxation similar to TH. This would mean that there would not be a great difference between the effects of the two conditions for the sense of control flow dimension. The present results showed that the TH condition was associated with a significantly larger increase in sense of control than the NH condition. This indicates that NH did not have as large an impact on sense of control as TH, despite including even more direct relaxation in terms of PMR. Crucially, having a high sense of control involves individuals experiencing fewer worrying thoughts and a stronger feeling of self-confidence. Because the hypnotic trancework suggestions, which were only present in the TH condition, included content that was likely to enhance golfers' self-confidence, the results suggest that it was the hypnotic trancework stage in the TH condition and not the induction or deepening stages, which were in both conditions, that created the significant

difference between the TH condition and the NH condition in the sense of control dimension. Perhaps a feeling of calmness provided a basis for sense of control to increase in both conditions, but, crucially, an increase in self-confidence, resulting from the trancework component in the TH condition, actually produced the observed increase in sense of control reported in FSS-2 means for that dimension.

Methodological Considerations

There are some limitations to the present study. First, I discuss the issue of sample size and whether increasing number of participants would make any difference to the results. Second, I talk about the characteristics of the sample. Third, there is a challenge with the self-managed hypnosis sessions for participants to finish listening to the audio file seven times in seven days. Fourth, an advantage of this study design was the use of NH as a comparison condition. Fifth, I comment on the timing of the pre-test and post-test sessions, which might affect the outcomes, particularly on the time transformation dimension. Sixth, I explain an emerging issue from my growing understanding of the golf putting skill, which is the difference between putts that stop short (PSS) of the hole and putts that run on past (PRP) the hole.

Sample size. Based on a power analysis with the same alpha of 0.05, power of 80% and large effect size, the minimum number of participants needed was $n = 25$. I recruited twenty-five people to be part of the study. The sample size was adequate when I started the study, but five participants dropped out due to personal commitments or were excluded due to their low scores on the WSGC. However, with the current study design, even if the sample size had been larger, it would have been unlikely to make a difference to the significance of the other flow dimensions, except, possibly, for the autotelic experience dimension. The other six flow dimensions had much smaller F values and p values that were considerably

larger than 0.05, so it is unlikely that they would have changed substantially with an increase in sample size.

Characteristics of the sample. In the present study, the sample was predominantly male, so it was not possible to make a comparison between genders. It would be valuable to replicate the study with a sample that represents both genders equally to permit testing for gender differences in the effect of hypnosis on performance, global flow state, and flow state dimensions. Furthermore, the participants in this study were mainly older adults, therefore, the results might not be generalizable to younger adults.

Self-managed hypnosis sessions. Another limitation with the study design and conduct is that I did not have control over how long participants spent listening to the audio file in the 7-day, self-managed hypnosis part of the intervention. This was a shortcoming that I only realized during conduct of the study. Comments made in the social validation interviews suggested that because all the participants were working full time and had family commitments, it was hard for them to sit down for 60 minutes every day for a week continuously to listen to the audio file. Shorter audio file, created by reducing the length of the script to a more suitable time for the participants, such as 30 minutes, would be a way to increase the attention paid to self-managed hypnosis sessions. Nonetheless, as noted in the Results section, participants all confirmed in their diaries that they did listen to the audio file seven times during the week. It is also possible that participants might have listened to the audio file more than seven times. There was no reporting of this in participants' diaries, but participants could consider that listening to the session more frequently than instructed would give them an advantage in terms of putting performance at post-test. With the involvement of self-managed hypnosis sessions, researchers will inevitably find it difficult to maintain tight control of the frequency, duration, and timing with which participants listen to audio file.

Developing strong rapport, so participants are highly motivated to follow the researcher's instructions is probably the most effective way to encourage compliance.

Benefit of using Neutral Hypnosis as a comparison condition. Reflection on the design and conduct of research should not focus only on limitations. Studies often introduce design elements that appear to be effective and these should be noted for researchers' consideration in the future. Here, the introduction of NH as a comparison condition to TH was new to sport psychology research on the impact of hypnosis on performance and flow state. This appears to be a promising innovation because the NH condition helped to clarify at least two issues. First, in several aspects of performance and flow, the NH condition did not show the level of positive change (improvement in performance, increase in flow state) that was shown by the TH condition. This added to the plausibility of the conclusion that these effects resulted from the trancework component of the TH condition. Second, for a number of flow dimensions, examination of the changes underlying significant main effects of occasion indicated that the NH condition was associated with noteworthy increases from pre-test to post-test that contributed to the main effect. This suggests that the induction and deepening components of hypnosis might have an active effect on certain dimensions of flow state. Closer examination of the dimensions of flow that the present results indicate could be influenced by induction and deepening should lead to predictions that can be tested to refine understanding of the mechanisms operating in hypnosis to enhance flow state.

Timing of the pre-test and post-test putting. A characteristic of the putting test in this study that could have reduced the effect of time transformation is the timing of the pre-test and post-test sessions. Most participants arranged to meet me for the pre-test and post-test putting sessions before or after their scheduled time to play a round of golf, so they could save time traveling to the golf course. Hence, they might have been highly conscious of time because they needed to make sure they would not miss their tee-off time. For some golfers,

conducting the putting test after their golf round could mean that they were tired and these participants could have had residual emotional impact from their games.

Difference between PSS and PRP. One issue raised in this putting study, by talking to the participants informally, is the difference that golfers perceive between a PSS of the hole and PRP the hole. For example, if golfers' putts stop 20cm short of the hole (PSS) or if they putt 20cm past the hole (PRP), this is the same result, in terms of radial error and number of putts holed. However, in actual practice, the meaning of PSS and PRP putts is very different to golfers. Most golfers consider that if a ball does not travel past the hole, that is, it is a PSS, it has absolutely no chance to go in the hole. If it runs past the hole, that is, it is a PRP, it has some chance to go in. From my own observation, the PSS pattern seems to come from a fear in golfers that they do not want to have a long return putt, which would result from over-hitting the putt or misreading the slope or run of the green beyond the hole. Hence, many golfers hold back and hesitate on their putts. As a result, their putts either stop short of the hole or do not hold their line due to lack of pace. It can be proposed that the trancework suggestions in the TH condition should have helped strengthen participants' self-confidence in their putting. Hence, golfers should have become more trusting of their putting skill and putted with more conviction. As a result, their putts would have been more likely to pass the hole or keep their line and go in the hole, since the pace was strong enough. This should have led to an increase in performance in terms of radial error and number of putts holed in the TH condition compared to the NH condition, because the number of putts sunk increased whereas the number of PRP decreased. I did observe such an increase in performance, but I could not relate it to PSS and PRP because I did not systematically record whether putts that did not go in the hole stopped short or rolled past the hole. In further research, it would be appropriate to record PSS and PRP putts at pre-test and post-test to determine whether hypnosis interventions do affect the proportions of short and long putts.

Further Research

One of the primary aims was to evaluate the hypnosis effect on the nine flow dimensions. To date, all previous research on hypnosis to improve flow and performance that I am aware of only examined global flow state. However, focusing on global flow state alone might not really illuminate the mechanisms by which hypnosis enhances flow because it is a conglomerate of the nine dimensions. Examining the effect of hypnosis on the nine flow state dimensions might shine more light on how hypnosis influences flow. From the results of the present study, there are several directions for future research that can explore further the various aspects of hypnosis and their effect on the nine flow dimensions, as well as global flow state. First, I talk about the effect of trancework suggestions on flow and performance and how it is a new approach for future research in sport. Second, there is a need to compare effectiveness between hypnotist-led sessions and self-managed sessions. Third, I discuss how testing the effect of NH in other sports may help our understanding of NH on certain flow dimensions. Fourth, I suggest that research with golfers of different HC can enlighten the understanding of how hypnosis affects flow state and performance. Fifth, I comment on the challenge to explore the causal relationship between flow and performance in future research.

Effect of trancework suggestions on flow and performance. An important question underpinning the present study was the extent to which the trancework component of TH is responsible for the impact of hypnosis on performance and flow state in sport. The results for radial error indicated that the TH condition produced a significantly larger improvement from pre-test to post-test, clearly suggesting that the content of the trancework component did have an impact on performance. Although the results for number of putts holed were not significant, there was a large effect size and the graph showed a disordinal interaction, further suggesting that the trancework component of the TH condition had an effect on performance. Results were less clear-cut for global flow state and the flow dimensions. Trends were

largely in the direction of larger changes for the TH condition than the NH condition and, for two flow dimensions the differences were significant. From the perspective of identifying the mechanisms by which hypnosis influences flow and performance, these findings are encouraging. Nonetheless, further research is needed to probe suggestive results further. These include deeper exploration of the elements of hypnosis trancework that actively affect performance and flow state, as well as the question of whether the induction and deepening components of hypnosis have an impact on certain flow dimensions.

In order to explore the elements of hypnosis trancework that may actively affect performance and flow state, future research may consider different types of script that aim separately at performance and flow. In this study, I use a script that combined performance and flow factors. There was a significant difference between the two hypnosis conditions on performance, which indicated that the performance part of the script worked well. However, the flow part of the script did not produce significant differences between two hypnosis conditions on most flow state dimensions, which suggests that this part of the script might need to be modified. I propose future research to consider two conditions, one condition is having a script that focuses purely on performance, another condition focuses on flow state and flow dimensions, especially the two concomitants time transformation, and action-awareness merging. Having a script focusing mainly on the flow dimensions should clarify whether customized hypnosis interventions can affect specific flow dimensions directly. The comparison between a hypnosis condition focusing on flow dimensions and flow state with a hypnosis condition focusing on performance might further explain the relationship between flow and performance. In this case, both performance-focused and flow- dimensions-focused conditions would be tested for flow and performance similar to the study design in Study 3. If there is a causal relationship in which higher flow state leads to higher performance, the result should show that the flow-focused condition significantly improves performance,

whereas the performance-focused condition may not improve performance or would improve very little on performance.

Another question that has potential to be examined in future research is whether the induction and deepening components of hypnosis have an impact in certain flow dimensions. In the present study, the action-awareness merging dimension and the time transformation dimension showed a strong increase in both conditions. These results suggest that the action-awareness merging dimension and the time transformation dimension might depend on the induction and deepening stages of hypnosis. Future studies could consider including an alternative induction technique to test if the effect on flow dimensions remains the same or changes.

Hypnotist-led sessions and self-managed hypnosis sessions. Another topic of interest for further research is whether there is any difference between the hypnotist-led sessions and the self-managed sessions. Research by Pates and colleagues (Pates, 2013, Pates and Cowen, 2013, Pates & Maynard, 2000, Pates, Maynard et al., 2001; Pates, Oliver et al., 2001) included one face-to-face session and seven self-managed sessions as a standard study design. Vasquez (2005), however, used six hypnosis sessions and they were all hypnotist-led sessions. While hypnotist-led sessions might have an advantage in that the hypnotist can adjust the delivery style of the suggestions based on participants' response, self-managed sessions might have an advantage of allowing participants to have full control of their experience, and not having any pressure to perform because of the presence of the hypnotist. In the brief social validation interviews in the present study, three participants reported that they enjoyed the hypnotist-led session more because they perceived that they could go deeper into trance. To examine this issue, I propose that future research should compare interventions comprising all hypnotist-led sessions, with interventions comprised of all self-

managed sessions, and interventions in which half of the sessions are hypnotist-led and half of the sessions involve self-managed hypnosis.

Effect of Neutral Hypnosis in other sports. Based on the results of the present study, NH seemed to have some effects on several flow dimensions, including time transformation and action awareness merging, which led to there being a significant main effect of occasions, but no significant difference between the NH condition and the TH condition. Future studies should consider using the same study design on other closed-skill, self-paced sports, such as ten-pin bowling, archery, or pistol shooting to evaluate whether the effects of NH are similar to the results of the present study. The purpose of testing using the same study design in other sports is to evaluate if the results of the present study are specific to golf putting skill, or if similar results are produced with other closed skill, self-paced sports activities. From the results of the present study, there were six dimensions that showed a significant main effect of occasions. Two dimensions, action-awareness merging and time transformation, stood out because both conditions showed big increases. If the research on different sports produced similar results, that would strengthen the evidence for an effect of NH on certain dimensions, especially action-awareness merging and time transformation.

Research with golfers at different skill levels. The sample I worked with in the present study represented a wide range of skill levels, as reflected in the diversity of HCs. It was not possible to draw a conclusion based on the relationship between skill level and hypnosis because there was such a range of skill levels in the sample and only a few golfers representing each skill level. To examine differences related to skill level would require systematic selection of substantial numbers of participants to represent clearly different skill levels, such as low, moderate, and high skill levels in the context of the sport being examined. For example, to maximize the likelihood of finding significant differences, if there are real variations between golfers with different HCs, I propose that studies should leave

gaps between skill levels. So, one condition may include low HC golfers with HCs from 1 to 9, and in another condition all participants might have mid HCs from 13 to 18. By leaving a gap of HCs from 10 to 12 it is more likely that studies would detect significant skill level differences in the effects of hypnosis on flow state and performance.

Another issue regarding golfers' HCs is whether changes, as a result of hypnosis interventions, are noteworthy and consistent in highly-skilled golfers, around the scratch HC, than in less-skilled golfers. The putting skills of higher HC (less skilled) golfers, might not be as consistent and correct technically. Some golfers in this study were not sure how to read the green in some situations. Others were still struggling with technique issues, such as the right grip strength or if their putting lines were correct. By having higher-skill golfers in research, it would be possible to eliminate most of these technical issues, so that the focus of the research could be more on psychological aspects that hypnosis could target to improve performance. Also, golfers with HCs close to scratch (zero HC) generally compete more frequently than leisure golfers, which means they are more likely to be motivated to use a technique like hypnosis to enhance flow state and improve performance.

Causal relationship between flow and performance. An issue related to further research concerns the relationship between flow and performance. The sample size in the present study was much too small to examine causal relationships between hypnosis, flow, and performance. A common problem affecting most research on flow in sport is that flow state is usually measured immediately after performance, which means that it is difficult to control for the possible effect of the performance result on the experience of the psychological flow state (Brewer et al., 1991). Yet, a persistent claim in the literature has been that high levels of flow during performance have a positive influence on the process and outcome of performance (Jackson & Roberts, 1992; Jackson et al., 2001; Martin & Cutler, 2002; Nakamura, 1991; Schiefele & Rheinberg, 1997). To address this issue, causal

modelling research is required. Structural equation modelling (SEM) has gained strength as a statistical technique to examine causal relationships (Bollen & Pearl, 2013). However, SEM is research that requires large samples, which rely on substantial time and resources. This is an issue that is beyond the remit of this thesis, but it is to be hoped that, in the future, established researchers can attract the large amounts of funding needed to undertake such research on hypnosis, flow, and performance.

Conclusion

Based on the results of the present study, it may be possible to conclude that TH helped golfers to improve their putting performance compared with NH. TH also seemed to have some influence on golfers' ability to experience flow compared with NH. The results of this study have some practical implications for athletes beyond golf. It is possible for athletes in self-paced, closed-skill sports to improve performance and capability to experience flow, using TH. This information is particularly useful for hypnosis practitioners to help golfers to improve their putting performance. Nonetheless, more research is needed on the structure, content, and aspects of the delivery of hypnosis in sport contexts. It is also important for researchers to continue to delve into the mechanisms by which hypnosis enhances flow state.

CHAPTER 4: COMPARISON OF THE EFFECTS OF FUTURE PROGRESSION SUGGESTIONS AND REGRESSION SUGGESTIONS ON FLOW STATE AND GOLF PUTTING PERFORMANCE

Introduction

In this study, I focused on comparing the effects of FP suggestions and RE suggestions on flow and performance. There are five main stages of a TH procedure, namely introduction, induction, deepening, trancework, and awakening. During the trancework stage, hypnotists have a choice to use various types of suggestions to create therapeutic effects. If hypnotists use FP suggestions, they guide participants to travel mentally to a time in the future and experience themselves performing successfully (Edgette & Edgette, 1985). On the other hand, if hypnotists use RE suggestions, they guide participants to travel back mentally in time to a previous successful event that the participants relive vividly (Kihlstrom, 1985). From time to time, hypnotists may use RE suggestions to remove negative emotion associated with a past unsuccessful event or a particular emotional block, to help participants regain confidence. Both RE and FP are practical and frequently used by applied hypnotists. However, there has been no study to date examining the efficacy of these different suggestions related to performance and flow in sport. In this study, I aimed to examine differences between the effects of FP suggestions and RE suggestions. My hypothesis was that FP suggestions would create a stronger effect on flow and performance than RE suggestions because FP suggestions help clients experience their future success in advance, which boosts their confidence and belief in achieving the expected result.

Method

Participants

I invited participants to attend the study through recruitment at local golf clubs in Melbourne, as well as through the Golf Australia website. From 42 interested golfers, I

rejected five people for having previous experience with hypnosis. Twenty-seven people signed the consent form to be part of the study, so 10 golfers who expressed interest did not sign consent. No participant was rejected because of none had a WSGC score lower than 4, that is moderate hypnotisability. During the study, two participants dropped out due to either family or work-related issues. Based on a power analysis with the same alpha of 0.05, power of 80% and large effect size, the minimum number of participants needed is $n = 25$. The overall sample ($n = 25$) consisted of 18 male and 7 female golfers between 30 and 76 years of age ($M = 60.32$; $SD = 11.34$), who played their club competition round at least once a week and practiced at least once a week at the time they participated in the study. The range of their golf experience was from 5 to 53 years ($M = 27.46$; $SD = 14.94$). Their handicap range was from HC +1 to HC 25 ($M = 11.56$; $SD = 7.41$). The skill level of these participants varied widely with one golfer of plus handicap level, who played frequently in their Club's Pennant team. The majority of the participants only played at their club competition weekly.

Study Design

In Study 2, I used a two-group, pre-test, intervention, post-test comparison experimental design to compare the effect of FP suggestions and RE suggestions during the trancework stage of hypnosis, on flow dimensions, overall flow state, and performance of experienced golfers. An advantage of this independent groups experimental design compared to a repeated measures design was that it minimized order effects (such as practice, fatigue, or learning from the first condition tested) because individuals participated in one condition only.

Measures

Demographic information form. I gathered demographic information (Appendix C) about participants' age, gender, years of golfing experience, handicap, if they had any previous experience with hypnosis, any prescription drug use, their self-rating as a golf putter

(rank from 1 = *poor skill* to 7 = *excellent skill*) (*M* = 3.92; *SD* = 1.038), and if they had experienced flow before. I also asked which golf course/practicing area they would like to do the putting test on.

Waterloo-Stanford Group C Scale of Hypnotic Susceptibility (WSGC; Bowers, 1993, 1998). See Study 1 Measures section.

Golf putting performance. See Study 1 Measures section.

Flow State Scale-2 *(*FSS-2; Jackson & Eklund, 2002). See Study 1 Measures section.

Diary of self-managed hypnosis. See Study 1 Measures section.

Brief social validation assessment. See Study 1 Measures section.

Research Conditions

Future Progression suggestions condition. At the beginning of the intervention, participants in this condition received one live 60-minute guided hypnosis session, which was also recorded onto a digital audio file. I guided participants through five stages. During the introduction stage, I introduced the concept of hypnosis, explained the stages and how applied hypnosis is different from hypnosis entertainment shows that participants may have seen on TV. In the induction stage, I used the Progressive Muscle Relaxation technique to guide participants to relax different muscle groups. Jacobson (1938) introduced this technique, which requires participants to alternate tensing and relaxing parts of their body, while maintaining deep breathing to achieve a state of physical relaxation of their whole body, associated with mental relaxation. In the deepening stage, I used the 10-step Ericksonian staircase technique outlined by Hammond (1990) to bring participants' mindset to a deeper state of relaxation. In the trancework stage, I used FP suggestion specifically to guide participants to bring themselves to the future in one week, one month, three months, six months, and a year from now to experience themselves putt with confidence and achieve

excellent results. In the awakening stage, I counted from 1 to 10 to bring the hypnotized person back to the awake and alert state. The FP script is available in Appendix L.

After the initial live session, I introduced self-managed hypnosis, based on the audio recording of the live hypnosis session (Appendix L). I asked participants to listen to the audio digital file of the 55-minute live session once a day for seven days. They completed a diary at the end of each session logging the quality of their trance experience and any feedback about the session. This process helped golfers to become familiarized with the trance state, be able to relax and stay calm, while allowing them to apply the suggestion I gave for more consistent and confident putting. In Study 1, several participants mentioned the preference to have a shorter version of the audio recording. In order to do that, I would need to change to a shorter induction technique instead of using the standard PMR. Also, I would need to shorten the trancework suggestions that I would give participants. Because an induction similar to the PMR is used as the induction part of the WSGC, it would be more likely that the participants were more familiar with the PMR induction and thus were more likely to get into trance. Furthermore, both RE and FP script required substantially more description to lead participants back in time or forward in time. Therefore, it was not possible to condense the amount of descriptive suggestions significantly. As a result, the audio recording for the present study was 55-minute-long, five minutes shorter in length to the recording of Study 1. During the 7-day of self-managed hypnosis, I sent e-mails to participants once every two days in the morning to remind them to listen to the audio file and log the diary.

Regression suggestions condition. Participants in this condition received the same intervention process as the FP condition, except for the RE suggestions during the trancework stage. The RE suggestions condition comprised of the introduction to hypnosis, hypnosis induction using the progressive muscle relaxation (PMR) technique; hypnosis deepening using the Ericksonian staircase technique. In the trancework stage, I gave

participants RE suggestions that took them back to a time in the past when they performed their putting skill really well. I instructed them to recall all the senses and how they felt as they performed their putting successfully. I then asked them to bring that sensation and feeling back to the present, so that they could have the belief and confidence to be able to putt well. In the awakening stage, I counted up from 1 to 10. Because the only difference between the two conditions was in the content of trancework suggestions, differences in flow dimensions and performance are likely to be due to the effects of the different trancework suggestions. The RE script is available in Appendix M.

A difference about the script for Study 2 compared with the script for Study 1 was that I removed the PREM suggestions in the trancework of Study 2. The only reason for this removal was to ensure the script, and the audio recording did not last more than an hour. By removing the PREM, I was able to reduce the audio recording time to 55 minutes in total, which might help participants to commit to listen to the audio file as frequent as expected.

Procedure

After approval from the Victoria University Human Research Ethics Committee, I recruited participants from local clubs through posters, web postings, word of mouth, and an advertisement on the Golf Australia website. I approached club managers or team captains to introduce the study and asked for permission to display recruitment posters on the notice boards. I also posted advertisements on my Facebook page. Additionally, I approached Golf Australia and they agreed to display information of the study on their website.

Golfers sent me an email to indicate their interest in the study. Upon receiving their emails, I sent a reply email with the Information Statement of the study and an Informed Consent Form for them to read before making an appointment. In the first information session, I provided potential participants with clear information about the study, details of what they would be asked to do, and the commitment level being asked of participants.

Potential participants had the opportunity to ask any questions and clarify any concerns. I informed them about confidentiality and how data would be handled. Then they signed the Informed Consent Form, if they were willing to volunteer for the study. Participants then completed the WSGC with me in a private room (either at their house or mine).

In the second session, participants performed putting following a random order of the eight positions on the putting green. Taking feedback from the Study 1 in which some participants felt a rush to finish the putting in order to start their golf game on time, I arranged to meet each participant on days that they did not schedule for a golf round, to avoid the rush in time. Participants started by performing 10 practice putts before they continued with the official 7 sets of pre-test trials of 8 putts each, a total of 56 test putts. After they performed the 7 sets of trials, participants completed the FSS-2 questionnaire with reference to their flow state during the putting test trials. Then I assigned them to either the FP suggestions or RE suggestions condition, based on their WSGC result, to balance suggestibility between the two conditions. In the third session, participants completed their face-to-face intervention session with me, which was hypnosis with trancework using FP suggestions or RE suggestions. After this session, participants received an email from me with a link to download the digital audio file, and the diary. I explained to participants the purpose of the diary and how they should log it after each self-managed hypnosis session. Participants listened to the recorded audio file for the next seven days. In the fourth session, participants performed 10 practice putts before doing 7 sets of post-test trials each consisting of 8 putts. Participants then completed the FSS-2 questionnaire followed by answering the Brief Social Validation interview. They also returned the diary which they logged after each of their self-managed hypnosis sessions.

Analysis

First, I calculated means and standard deviations for the two performance indicators, radial error and number of putts holed, as well as for global flow state and each of the nine flow dimensions, of both hypnosis conditions for pre-test and post-test. I compared the means to observe their trends. I then conducted two-way, mixed-design ANOVA, examining the independent groups factor, main effect of conditions (FP, RE), the repeated measures factor, main effect of occasions (pre-test, post-test), and the conditions x occasions interaction effect. In studies testing the effects of interventions, the interaction effect is the factor that identifies any difference in the effect of the conditions. For performance, I also conducted 2-way, mixed-design ANOVA with the same independent groups, repeated measures and interaction factors and with two dependent variables radial error and number of putts holed out of 56. Partial Eta Squared (η_p^2) scores provide information about the magnitude of these effects. I refer to this as a measure of effect size, with scores of 0.14 or more reflecting large effects, 0.06 or more indicating medium effects, and 0.01 or more representing small effects (Cohen, 1988)

Results

I present the results in three parts. In the first part, I describe participants' demographics, hypnotisability, and indications that participants followed the procedure of the study derived from the diary of self-managed hypnosis and the brief social validation interviews. In the second part, I examine the effect of the hypnosis interventions on putting performance. In the third part, I analyze the influence of the hypnosis interventions on global flow state and the nine dimensions of flow state.

Demographic Information

Demographic information I collected for the entire sample (N = 25) includes age, gender, years of golfing experience, Handicap, previous experience with hypnosis, any

prescription drug use, self-rated putting skill, and whether participants experienced flow before. The sample consisted of 18 males and 7 females, which makes it unrealistic to compare results between the two genders. Participants' age range was widely spread from 30 to 76 with a mean age of 60.32, *SD* = 11.34. The majority of participants played golf competitively in the club competition on the weekend. Participants also had a wide range of golfing experience from 5 to 53 years with the mean, *M* = 27.46, *SD* = 14.94. Quite a few participants had been serious golfers when they were younger. For different reasons, they did not pursue golf to the professional level. Their handicap range was from +1 to 24.9 with a mean of *M* = 11.56, *SD* = 7.42. In terms of self-rated putting skill, the mean was *M* = 3.92, *SD* = 1.04. Out of 25 participants, 14 golfers reported that they had experienced flow before, while 11 others have never been in flow before. Six golfers who had experienced flow before were assigned to the RE condition, while eight golfers who had experienced flow before were assigned to the FP condition.

The demographic information for participants in each condition is presented in Table 4.1. I conducted a two-sample t-test to compare the means between the RE condition and the FP condition for each of the demographic variables, including age, years of golf experience, Handicap, and putting self-rating. The two-sample t-test results indicated that all the *p*-values were above 0.05, which means there were no significant differences in the demographic variables between the two research conditions.

Table 4.1

Demographic information of participants in RE condition and FP condition

Condition	Regression		Future Progression		t value	*p*-value of 2-sample t test between two conditions
	M	SD	M	SD		
Age	61.08	9.33	59.62	13.28	0.32	0.28
Years of golf experience	25.63	13.91	29.15	16.20	-0.58	0.74
Handicap	12.61	6.62	10.60	8.23	0.67	0.41
Putting self-rate	3.83	0.94	4.00	1.16	-0.39	0.37

Waterloo-Stanford Group C Scale of Hypnotic Susceptibility (WSGC)

Participants completed the WSGC, a multidimensional measure of hypnotisability to ensure they had sufficient skill in hypnosis to benefit from the intervention. Participants' scores ranged from 4 to 11 out of 12 items. As stated in the Measures sub-section, scores from 0 to 3 are considered low and participants scoring in that range should be eliminated from the study. However, none of the participants scored in the 0 to 3 range, so no potential participants were excluded from the study. The score range from 4 to 8 is considered to reflect an average level of hypnosis skill. Scores from 9 to 12, with 12 being the highest possible score (Kirsch et al., 1998) are considered to reflect a high level of skill in hypnosis. The mean WSGC score was 7.56, *SD* = 2.08 with 14 participants scoring in the average range and 11 participants scoring in the high range. The mean WSGC score for participants in the RE condition was *M* = 7.92, *SD* = 1.62. The mean WSGC score for participants in the FP condition was *M* = 7.23, *SD* = 2.45. I conducted a two-sample t-test to compare the difference in means between the two research conditions. The two-sample t-test result indicated no significant difference between the two conditions with a *p* value of 0.42. The

questions about previous experience with hypnosis and any prescription drug use were part of the selection criteria. I did not recruit golfers who had previous hypnosis experience and those who used prescription drugs that might affect the hypnosis process in any way.

Diary of Self-managed Hypnosis

I asked participants to log the dates and times when they listened to the digital audio recording of the live hypnosis session in their diary after each occasion when they listened to the audio file at home. Participants in both conditions reported completing seven sessions as required, although many participants took more than seven days to finish. One person in each condition listened eight times instead of seven times as required. Some participants verbally commented that it was difficult to listen at the same time each day, so they had to listen at the most convenient time they could find. Overall, they felt some improvement in their capability of listening to the audio recording and getting more and more relaxed. One person in each condition admitted that they struggled to remember the content of the hypnosis intervention, because they went so deep into the hypnotic trance and could not remember anything. In their diary, several participants marked their later sessions from the fourth sessions onward as "easy to relax" and "deep in trance state". From the brief social validation interview, participants in both conditions reported that they understood and were able to follow the instructions given during the audio-recording and that their skill increased session by session. Thus, I concluded that this manipulation check supported the effectiveness of both the RE and the FP conditions.

Golf Putting Performance

First, I performed a one-way ANOVA at pre-test for each performance variable to check whether there was any significant difference between the two conditions at pre-test for radial error and number of putts holed. Results of the one-way ANOVA at pre-test for radial error showed no significant difference (p = .05) between the two hypnosis conditions. Results

of the one-way ANOVA at pre-test for number of putts holed showed no significant difference (p = .05) between the two hypnosis conditions. Thus, I conducted two-way, mixed design ANOVAs for radial error and number of putts holed to test for any significant main effect of conditions, any significant main effect of occasions, and any significant conditions x occasions interaction effect for radial error and number of putts holed.

Radial error. The changes in mean radial error for RE and FP conditions are illustrated in Figure 4.1. Both conditions showed a decrease in radial error from pre-test to post-test, which is a positive trend. The two-way, mixed-design ANOVA identified no significant main effect of condition with F (1, 23) = 0.12, p = 0.73, η_p^2 = 0.005, with very small effect size. There was no significant main effect of occasion, F (1, 23) = 1.45, p = 0.24, η_p^2 = 0.06, with medium effect size. There was also no significant interaction effect in radial error for FP compared to RE with F (1, 23) = .07, p = 0.80, η_p^2 = 0.003, which is a very small effect size. Although RE and FP both showed a decrease in radial error from pre-test to post-test, there was no significant main effect of occasion because the decreases was not large enough. However, there was a medium effect size, indicating that the decrease in radial for the whole sample was meaningful in practical terms.

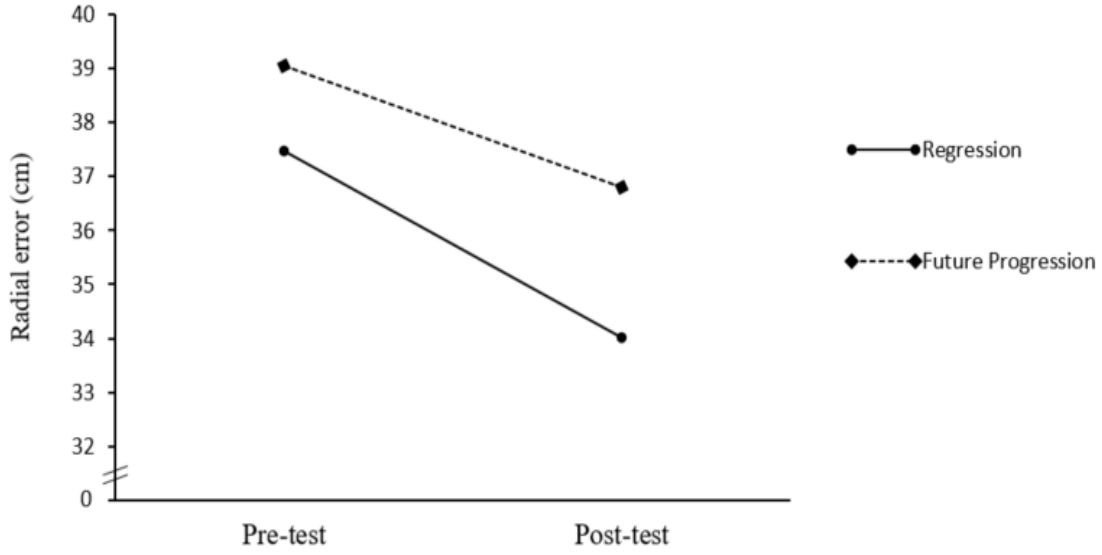

Figure 4.1. Change in radial error from pre- to post-test

Number of putts holed. The changes in number of putts holed are depicted in Figure 4.2 for the RE and FP conditions. Both conditions showed an increase in putts holed from pre-test to post-test, which is a positive trend. The two-way, mixed-design ANOVA identified no significant main effect of condition with F (1,23) = 1.13, p = 0.3, η_p^2= 0.05, a small to medium effect size. There was a significant main effect of occasion from pre-test to post-test with F (1,23) = 7.23, p = 0.01, η_p^2= 0.24, with very large effect size. The large effect size suggests that the mean for the whole sample at post-test (M = 11.37) was meaningfully higher than the mean for the whole sample at pre-test (M = 8.54). There was no significant interaction effect between condition and occasion with F (1,23) = 0.41, p = 0.53, η_p^2= 0.02, with a small effect size. Thus, both the RE condition and the FP condition significantly improved number of putts holed from pre-test to post-test.

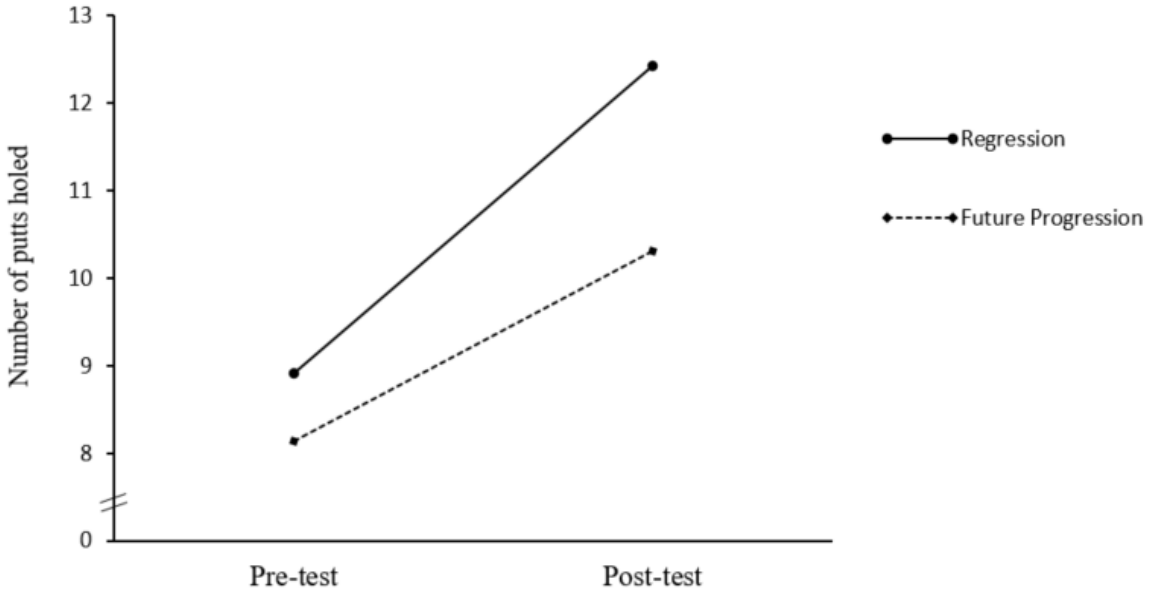

Figure 4.2. Change in number of putts holed from pre-test to post-test

Global Flow State and Flow State Dimensions

First, I performed a one-way ANOVA at pre-test for each flow state variable to check whether there was any significant difference between the two conditions at pre-test for global flow and each flow dimension. Results of the one-way ANOVAs at pre-test showed no

significant difference between the RE and FP conditions for any flow variable. Thus, I conducted two-way, mixed design ANOVAs for global flow state and the nine flow state dimensions.

Means, standard deviations, and 2-way mixed-design ANOVA analyses for global flow state and for each flow dimension are presented in Table 4.2. For each flow dimension, the independent groups factor is condition (RE, FP), the repeated measures factor is occasion (pre-test, post-test) and the interaction effect is condition x occasion. There was an increase in the mean for seven dimensions in the RE condition (means declined from pre-test to post-test only for unambiguous feedback and time transformation). There was also an increase in the mean for all nine dimensions of flow state for the FP condition.

Table 4.2

Means, standard deviations and 2-way mixed-design ANOVA scores for each flow dimensions from pre-test to post-test

Flow dimension	Regression		Future Progression		2-way ANOVA/ Main Effect of Condition			2-way ANOVA/ Main Effect of Occasion			2-way ANOVA/ Interaction Effect		
	Pre-test	Post-test	Pre-test	Post-test									
	M	M	M	M	F	p	η_p^2	F	p	η_p^2	F	p	η_p^2
Challenge-skill balance	15.00 (*SD* = 0.73)	16.67 (*SD* = 0.64)	13.77 (*SD* = 0.7)	16.31 (*SD* = 0.62)	0.83	0.380	0.04	31.76	0.001	0.58	1.37	0.255	0.06
Action-awareness merging	12.25 (*SD* = 3.14)	13.00 (SD = 3.54)	10.77 (*SD* = 2.68)	14.31 (*SD* = 2.72)	0.01	0.940	0.00	12.97	0.002	0.36	5.48	0.028	0.19
Clear goals	17.75 (*SD* = 0.71)	17.92 (*SD* = 0.53)	16.69 (*SD* = 0.68)	17.85 (*SD* = 0.51)	0.59	0.450	0.03	2.03	0.168	0.08	1.13	0.298	0.05
Unambiguous feedback	16.67 (*SD* = 0.74)	16.25 (*SD* = 0.51)	15.00 (*SD* = 0.71)	16.31 (*SD* = 0.49)	1.40	0.250	0.06	0.64	0.431	0.03	2.40	0.135	0.10
Concentration	14.67 (*SD* = 0.98)	16.00 (*SD* = 0.83)	12.15 (*SD*= 0.94)	16.00 (*SD* = 0.79)	1.34	0.260	0.06	17.01	0.001	0.43	4.00	0.057	0.15
Sense of control	13.92 (*SD* = 0.94)	16.25 (*SD* = 0.70)	13.46 (*SD* = 0.90)	15.77 (*SD* = 0.67)	0.22	0.650	0.01	17.82	0.001	0.44	0.00	0.982	0.00
Loss of self-consciousness	16 (*SD* = 0.98)	16.83 (*SD* = 0.95)	14.46 (*SD* = 0.94)	16.31 (*SD* = 0.91)	0.69	0.420	0.03	7.84	0.010	0.25	1.12	0.301	0.05
Time transformation	14.33 (*SD* = 2.61)	13.25 (*SD* = 3.75)	12.23 (*SD* = 1.96)	14.92 (*SD* = 2.87)	0.05	0.830	0.00	1.84	0.188	0.07	10.14	0.004	0.31
Autotelic experience	15.08 (*SD* = 0.82)	16.83 (*SD* = 0.73)	13.62 (*SD* = 0.78)	17.00 (*SD* = 0.70)	0.43	0.520	0.02	40.54	0.001	0.64	4.11	0.054	0.15
Global flow	135.67 (*SD* = 18.60)	142.92 (*SD* = 13.22)	122.15 (*SD* = 12.58)	144.92 (*SD* = 15.00)	1.11	0.300	0.05	37.01	0.001	0.62	9.89	0.005	0.30

The two-way mixed-design ANOVAs identified no significant main effects of condition for global flow or any of the flow dimensions. There were significant main effects of occasion for six flow dimensions, challenge-skill balance, action-awareness merging, total concentration on the task, sense of control, loss of self-consciousness, and autotelic experience, all with very large effect size. The significant main effect of occasion for six flow dimensions indicates increases in the flow dimension at post-test. There were significant interaction effects for two flow dimensions, action-awareness merging and time transformation, both with very large effect size. In all cases, these interactions indicated a greater increase in the flow dimension for the FP condition than the RE condition. The interaction effect for action-awareness merging is presented in Figure 4.3. The figure shows a moderate disordinal interaction, with a much larger increase from pre-test to post-test for the FP condition than the RE condition. However, the RE condition also shows an increase from pre-test to post-test

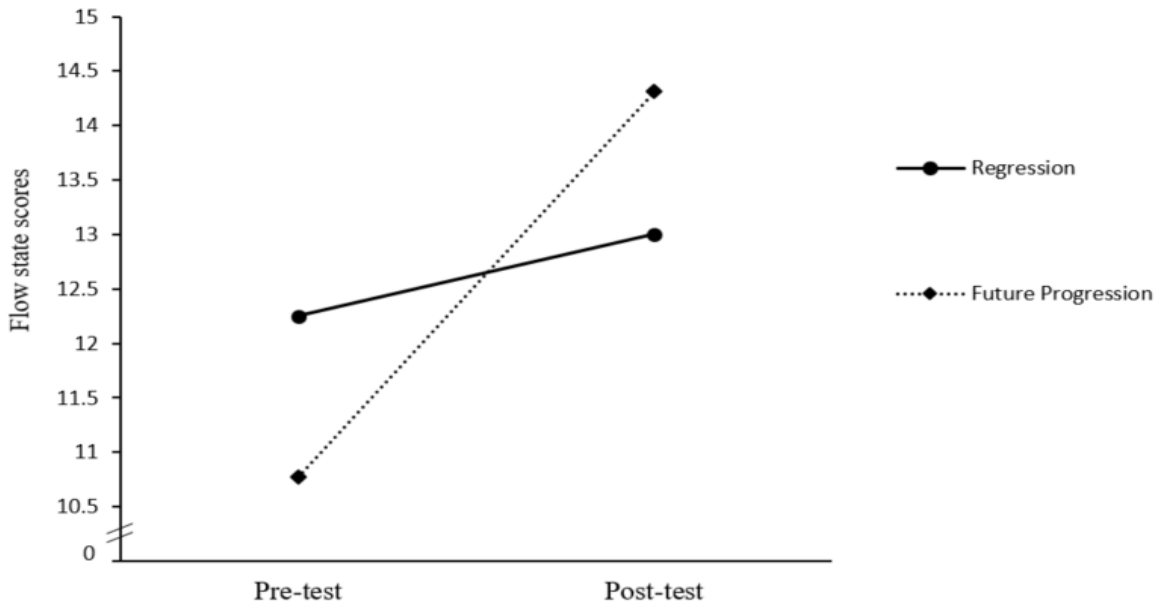

Figure 4.3. Change in flow state scores for the action-awareness merging dimension from pre- to post-test

The interaction effect for the time transformation dimension is depicted in Figure 4.4. It shows a strong, disordinal interaction effect. In this case, the FP condition shows a large increase from pre-test to post-test, whereas the RE condition shows a clear decrease.

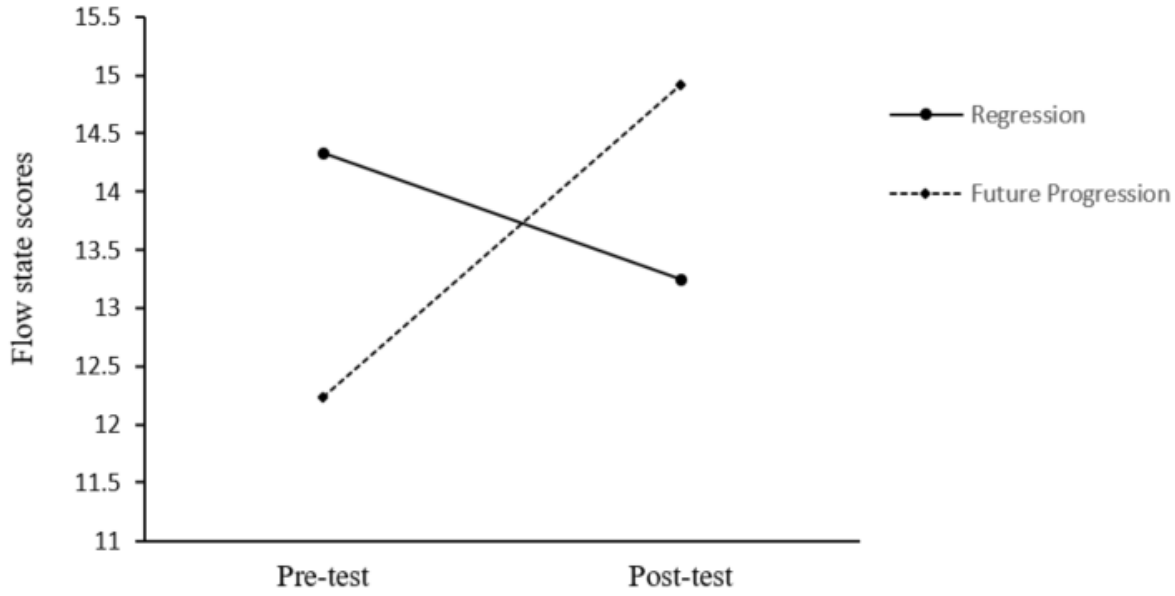

Figure 4.4. Change in flow state scores for the time transformation dimension from pre- to post-test

Discussion

The aim of this study was to compare the effectiveness of RE and FP hypnosis trancework interventions for enhancing global flow state and flow state dimensions, and improving golf putting performance in a field study setting. In this section, I first discuss the results of the present study from the performance aspect and the flow state aspect, especially with reference to several flow dimensions that showed significant differences between the RE condition and the FP condition. Next, I consider methodological considerations and limitations. Then, I propose ideas for future studies related to the present results. Finally, I make some concluding remarks about the present study.

Conclusions

Performance results. From the performance perspective, both conditions led to a reduction in mean putting radial error, and an increase in number of 4m putts holed, both of which indicated an improvement of performance. The performance results of this study support research by Pates (2013), Pates and Cowen (2013), Pates and Maynard (2000), and Pate, Oliver et al. (2001) that hypnosis can improve performance in golfers. Two-way, mixed-design ANOVA showed no significant difference between conditions for putting radial error and number of putts holed. However, there was a significant main effect of occasion from pre- to post-test for number of putts holed, which indicates that both hypnosis conditions led to improvement of number of putts holed with no significant difference between conditions. The improvement in radial error of 3.46cm in the RE condition and 2.26cm in the FP condition from a 4m putt may not be of primary interest to golfers. However, the improvement of 3.5 putts holed with RE and 2.16 putts holed with FP out of 56 putts is clearly of interest to golfers, coaches, and applied sport psychologists. This is because, if this kind of improvement could be replicated in real competition, it would move golfers quite a few places up the leader board. Participants in the RE condition improved more in terms of performance compared to participants in the FP condition. Yet, it was the FP condition in which global flow state significantly improved. This suggests that the improvement in putting performance might not necessarily relate to the improvement in global flow state.

Similar to a point I made in the Study 1 discussion section, the present study is only the second study of which I am aware that has used an experimental design to compare the effect of two conditions of hypnosis on flow and performance. The first one was Vasquez (2005), which focused on the intervention effect of hypnosis on flow and performance of basketball players, comparing a regression hypnosis condition with a relaxation condition.

Other studies on hypnosis in flow and performance used SCD (Lindsay, Maynard, & Thomas, 2005; Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pate, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates & Palmi, 2002). The advantage of the experimental study design over SCD is that the experimental design helps to compare changes between different conditions from pre-test to post-test. In the present study, I demonstrated that the RE condition had a bigger effect on number of putts holed performance than the FP condition. There were, however, significant effects for two flow dimensions, both in favour of FP.

Global flow and flow state dimension results. I found that FP created a significantly greater increase in global flow state compared to RE from pre-test to post-test. This change came mainly from significant increases in two concomitant dimensions, action-awareness merging and time transformation. Because two concomitant dimensions showed significantly greater increases in flow for FP than RE, the results partially supported my prediction that FP would increase overall flow more than RE by enhancing concomitant dimensions. However, one concomitant dimension, loss of self-consciousness, which I expected to increase did not respond as anticipated. In the previous study, loss of self-consciousness was the only concomitant dimension that increased significantly. Another dimension that increased significantly in the previous study, but did not show an increase in this study was the sense of control dimension.

Difference between FP and RE scripts. There were several distinctions in the scripts of RE and FP that might explain the significant difference between flow state results for the RE and FP conditions. In the RE script, I instructed participants to travel back in time to a specific event of their choice where they had performed their putting really well. Because I was not able to know which event, and how well they performed, it was up to the participants to decide which event was deemed suitable. In hindsight, this was a possible shortcoming

because an event when they performed their putting really well did not necessarily mean an event in which they experienced high flow state due to at least two reasons. First, golfers might have a round when they putted really well, but they did not score well because other shots were performed poorly. Because they did not score well, they might potentially have a low score on flow state, which makes the event not ideal to be used for RE. Second, an event where golfers scored well in putting could have been equal to the golfers' peak performance. While peak performance and flow state overlap in some ways, as described in Chapter 2, these two states are not identical. Consequently, in the RE condition, the script might have focused on performance success more than increasing flow state, resulting in a lower global flow score compared to the FP condition.

Conversely, in the FP script, I asked participants to focus on a time in the future, when they will perform the post-test putting. Because that event had not happened, I was able to give participants more trancework suggestions to focus on both performance and flow state. In the RE, I was careful to not give suggestions that the participants did not experience. I felt that if I had given them suggestions that they had not experienced, they could have been confused because their experiences were not consistent with the hypnosis script. Having full control of the script for participants in the FP, I was able to describe flow dimensions and what individuals should see, hear, and feel in those moments when they perform well. Unlike the RE script, in which a substantial part of the instructions was spent on guiding participants to find the moment when they had performed well, the FP script could quickly go to the future event of post-test putting. This means I had more time to instruct participants to replay that future successful putting scene repeatedly in their mind. In my opinion, this repetition is one of the crucial factors that could explain the superior flow state result for participants in the FP condition. The more repetitions individuals practice in their mind, the more likely they would be able to perform those skills in real life situations. Furthermore, the usual practice of

the FP technique is to have multiple future points of reference. In the present study, I used future points in which golfers finish their 20th and 30th putt as cue points to remind themselves about the flow state sensations and their ability to perform their putting well.

Unlike the FP script, which repeated the same situation of future post-test putting again and again, the script for RE was more open for individuals to explore various moments. The RE script invited participants to travel along a corridor with multiple doors at the side, each representing a moment of successful putting, and open one door. Because of the options, participants could choose different events on the seven different occasions when they listened to the self-managed hypnosis session. It could be more beneficial to have different experiences to supplement the first one, but it could also dilute instead of strengthen the first event they chose. More research is needed in this area to confirm these effects.

Change in the action-awareness merging dimension. There was a difference in hypnosis effect on the action-awareness merging flow state dimension between Study 1 and Study 2. In Study 1, there was a main effect of occasion for action-awareness merging, which suggested that both NH and TH conditions increased on this dimension. In particular, the score of action-awareness merging for the TH condition increased from 11.4 to 14.6 or 28%, whereas the score for NH increased from 12.0 to 14.40 or 20%. Because both conditions increased on the action-awareness merging flow dimension, it is possible that the effect of the induction and deepening stages in both hypnosis conditions played a role in the increase in the action-awareness merging dimension in the first study. In Study 2, there was a significant interaction effect between RE and FP. The mean of the action-awareness merging dimension for RE increased from 12.25 to 13.00 or 6.1%, whereas in the FP condition, the score for action-awareness merging increased from 10.77 to 14.31 or 32.87%. Despite having the same induction and deepening stage as the NH condition in Study 1, the RE condition only increased by 6% on the action-awareness merging dimension, compared with the 32.87%

increase for FP. This difference might mean that, in Study 2, the trancework content of the script played a role in influencing the action-awareness merging dimension, which was a different conclusion from the result in Study 1.

There is currently a lack of research on hypnosis and the action-awareness merging dimension that could help explain this result. Based on the literature, I propose that imagination might be a factor to explain the difference in results between the two conditions in the present study. In RE, clients were guided to go back in time and re-experience the past, that is, to recall based on memory, whereas in FP, the hypnotist guides clients into the future, allowing them to "imagine and experience the consequences of current or new choices" (Yapko, 2012, p. 354), that is, to create new reality based on imagination. Hilgard (1970, 1974) defined imaginative involvement as the involvement in some forms of sensory stimulation, imagery, and imagination (such as daydreaming, drama, religion, creativity). Imaginative involvement could help facilitate absorption (Lynn & Rhue, 1988; Tellegen & Atkinson, 1974). Merging of action and awareness comes through "being totally absorbed in an activity that we cease to be aware of ourselves as separate from our actions and experiences of the activity" (Jackson, 2001, p. 333). Therefore, I propose that imaginative involvement in the FP condition facilitated absorption, which explains the higher increase in action-awareness merging in FP compared to RE. The results of Study 2 somewhat contradict those of Study 1. Further research is needed before a conclusion can be made on which component of hypnosis might affect the action-awareness merging dimension.

Change in the time transformation dimension. The present study suggests that time transformation can occur in golf putting, especially with FP hypnosis. One of the reasons might be that the golf putting task is not inherently highly time sensitive. The exception is when the the putting task is affected by contextual situations, for example in Study 1 where participants had to play an actual golf round immediately after the putting task. Researchers

have found that time transformation did not occur in other tasks where performing within a tight timeframe might be important (Csikszentmihalyi, 1990; Jackson, 1996; Jackson et al., 2001; Vlachopoulous et al., 2000). For this reason, at the end of Study 1, I proposed that Study 2 sessions avoid the time slots right before or after golfers play their competition round. This was to make sure that participants did not have to be conscious about finishing the session to start their golf round on time. In addition, it removed the potential for the golfers to be reflecting on a round they just played or anticipating a round that was coming up while in the putting session, which might have helped them focus more on the putting with post-hypnotic suggestion effect. The reduction in time-consciousness might have promoted the time transformation factor. Based on feedback from Study 1, I also condensed the content of the audio files, so that they were slightly shorter (55 minutes instead of the 60 minutes in Study 1), which would be slightly easier for participants to commit to listen to self-managed hypnosis sessions.

Another fundamental difference between Studies 1 and 2 that might help to explain why there was effect of the hypnosis interventions, especially FP, on time transformation in Study 2 and not in Study 1 was the script content. In Study 1, the hypnosis script focused on strengthening the level of confidence and belief generally, while golfers were on the putting green. In the two scripts I developed and delivered in Study 2, there was a strong emphasis on the temporal factor of the past (RE condition) or toward the future (FP condition). Golfers were instructed to go back to their past success to draw on how they felt and how well they performed, using RE, or they were instructed to go forward to the future to create success in an important future event and experience it in FP. This change in the focus of the suggestions, shifting from guiding the golfers to feel confident and believe they could putt well in Study 1 to imagining being successful at a specific time in their life in Study 2, might partially explain why the participants in Study 2 did not report a significant improvement in the sense

of control dimension (that links with self-confidence), as I observed in Study 1. Instead, they reported a significant increase of the time transformation dimension, which was the main focus of the scripts in Study 2. The question raised by this result related to the effectiveness of RE and FP suggestions on each flow dimension should be examined by researchers in the future.

Change in other dimensions. The results of 2-way, mixed-design ANOVA showed main effects of occasions for six dimensions, including challenge-skill balance, action-awareness merging, total concentration, sense of control, loss of self-consciousness, and autotelic experience, as illustrated in Table 4.2. Because there were main effects of occasions for both sense of control and loss of self-consciousness, this result supports the finding of Study 1, in that, both hypnosis conditions in the present study increased sense of control and loss of self-consciousness from pre-test to post-test. As illustrated in Table 4.3, there was a relatively comparable increase in score for both conditions with four out of six dimensions with main effects of occasions, including challenge-skill balance, sense of control, loss of self-consciousness, and autotelic experience. In addition to the two dimensions with significant interaction effects, namely action-awareness merging and time transformation, there was quite a strong increase in the total concentration dimension for FP compared with RE.

Table 4.3

Changes in flow score for nine dimensions from pre-test to post-test between the RE and FP condition

Flow dimension	Regression				Future Progression			
	Pre-test	Post-test	Pre- and post-test difference	% increase	Pre-test	Post-test	Pre- and post-test difference	% increase
Challenge -skill balance	15.00	16.67	1.67	11.11	13.77	16.31	2.54	18.44
Action-awareness merging	12.25	13.00	0.75	6.12	10.77	14.31	3.54	32.87
Clear goals	17.75	17.92	0.17	0.94	16.69	17.85	1.15	6.91
Unambiguous feedback	16.67	16.25	-0.42	-2.50	15.00	16.31	1.31	8.72
Concentration	14.67	16.00	1.33	9.09	12.15	16.00	3.85	31.64
Sense of control	13.92	16.25	2.33	16.76	13.46	15.77	2.31	17.14
Loss of self-consciousness	16.00	16.83	0.83	5.21	14.46	16.31	1.85	12.76
Time transformation	14.33	13.25	-1.08	-7.54	12.23	14.92	2.69	22.00
Autotelic experience	15.08	16.83	1.75	11.60	13.62	17.00	3.39	24.86

I was one of the first researchers to examine the effect of different trancework suggestion conditions on flow state and performance in a sport context. More studies are needed to conclude whether FP really helps increase flow state more than RE, whereas RE might improve performance more than FP. People may not be able to imagine successful performance in a future event (especially if nothing like this has happened before) as readily as they can generate the memory of a previous successful performance. Also, it is potentially

harder for individuals to create the successful sensations, e.g., winning an Olympic gold medal, when they have had no prior experience of that occurrence or the belief that they could win Olympic gold. Therefore, although FP might make people feel more positive overall, leading to higher flow scores, it might not necessarily improve performance in the same way as RE does.

Difference between Study 1 and Study 2 scripts. Another difference between the scripts of Study 1 and Study 2 was the removal of PREM suggestions in Study 2 for two reasons. First, PREM suggestions are ego-strengthening, and motivational suggestions that help to improve self-confidence on golfers. In Study 2, my focus was only on the effects of the RE and FP techniques. Having PREM suggestions might confound the results, making it difficult to draw clear conclusions about whether it was the RE and FP techniques that produced significant effects, or increases in self-confidence. Second, having PREM suggestions means the total length of the audio recording would have been more than an hour. Based on the feedback from participants in Study 1, it seemed to be crucial to keep the audio file as short as possible to ensure participants' commitment to listening. For these two reasons, I decided not to have any PREM suggestions in Study 2.

Methodological Considerations

There are some limitations to the present study. First, I discuss the issue of sample size, and whether increasing sample size could make any difference. Second, I explain the shortcoming of not having a control condition. Third, I discuss the characteristics of the participants in the present study. Fourth, I explain the reason why I did not examine the difference between PSS and PRP, an issue I raised in Chapter 3. Fifth, I discuss the issue of depth of trance, which could potentially affect the effectiveness of the self-managed hypnosis sessions in particular.

Sample size. Based on a power analysis with the same alpha of 0.05, power of 80% and large effect size, the minimum number of participants needed is $n = 25$. In the present study, I received 42 emails from interested golfers. However, only 27 golfers continued to sign the consent form. During the process, no participant was rejected because none had a WSGC score lower than 4, that is, moderate hypnotisability. Two participants dropped out due to family or work-related issues. The final sample includes 25 golfers, which satisfied the minimum requirement of the power analysis. Increasing the sample size might lead to significant interaction effects for the total concentration dimension, which had a *p*-value that approached significance at, $p = 0.057$, and for the autotelic experience dimension, with $p = 0.054$.

Absence of a control condition. Reflecting further on Study 2, one shortcoming of this study was not having a control condition, as I implemented with the NH condition in Study 1. This would have allowed a direct comparison in terms of improvement among different conditions that involved trancework and a condition that did not involve any trancework suggestions. Having a control condition would be essential to compare the effect of various flow dimensions between the RE and FP condition against the control condition. Given the difficulty I experienced in recruiting participants for Study 1, and the priority of comparing the two major trancework techniques, I focused on recruiting an adequate sample to do this comparison.

Characteristics of the sample. From the demographic perspective, the sample in this study was predominantly male, so it was not possible to determine whether there was any systematic gender difference in flow or performance related to the RE or FP conditions. This study also had a more mature group of participants as compared with Study 1. Although selection of matured golfers as participants might raise concerns, many of them were very keen to participate. They had more time and were willing to allocate the time to listen to the

audio file more than those who were still working. Also, some of the participants at 70 years old still played golf competitively at very low HC. Because the participants in the present study were largely older adults, the result might not be generalizable to younger adults, so more studies should be conducted with younger adults.

Difference between PSS and PRP. In the Study 1 Discussion section, I raised a question of whether there is a difference between a PSS and a PRP. In order to explore this issue further, I need to first find a way to distinguish whether a PSS is due to inadequate skill or confidence. That may involve measuring the self-confidence of golfers before and after putting. I could also film golfers' performance and replay the scene to them afterward during the interview to seek clarification by asking them how they felt before and right after making each putt. However, my main focus on Study 2 was to compare the effect of RE and FP on global flow, flow dimensions, and performance. The topic of the fluctuation of self-confidence in making the putt was not of my main focus. Therefore, I did not measure the data on PSS and PRP or golfers' confidence before their putts to allow me to follow up this issue.

Depth of trance. An issue that I did not monitor in the present study was the depth of trance that participants entered during the hypnosis sessions. Because of the study structure, which involved seven self-managed hypnosis sessions, it was critical that the quality of each self-managed session was high enough, in terms of the depth of trance, for individuals to gain the full benefits of the hypnosis scripts. I used a hypnosis diary as a manipulation check of whether participants listened to the audio file as frequently as I instructed, and if they had any feedback about the sessions. Although most individuals gave feedbacks about their experience, it was complicated to generalize and compare their experience without using a scale. Without knowledge of the depth of the self-managed hypnosis sessions, it might be difficult to evaluate the effectiveness of the hypnotic intervention. Depth of trance is a

variable that is not easy to measure because it depends on individuals' reports of their own experience. Each participant only knows the depth they achieved relative to their own previous experiences of hypnosis. Tart (1970) conducted a study with 35 undergraduate males to explore "the degree to which the self-reports of hypnotic depth or state accurately reflect the dimension of hypnotic depth" (p. 120). Tart explained the need to evaluate the depth of hypnotic trance: "variations in depth in a given S throughout the course of the experiment, as well as such variations across Ss, could seriously confound results, even to the point of increasing variance sufficiently to obscure genuine effects" (p. 106). Tart asked participants to first complete a modified version of the SHSS:C with tape-recorded procedures. Then participants were asked to scale their depth of hypnotic trance on a 10-point scale for each suggestibility test item on the SHSS:C. The result of Tart's study showed that "these self-reports were highly correlated with measures of hypnotic behaviour and experience" (p. 105). In the Further Research section below, I propose a possible solution of using questionnaires to measure hypnotic depth.

Further Research

In this section, first, I discuss some ways to expand the research on RE and FP. Second, I propose two questionnaires as a possible tool to explore the depth of trance in participants. Third, in order to record the depth of trance, there is a need to conduct more hypnotist-led hypnosis sessions, even though hypnotist-led sessions might cost more time and resources. Fourth, I suggest some ways to examine which time of day is more effective to listen to the audio file. Fifth, I comment on some ways to test how long the effect of post-hypnotic suggestions lasts. Sixth, I propose a way to test the effect of hypnosis on different skill levels. Seventh, I conclude this section with some comments on the causal relationship between flow and performance.

Research on RE and FP. The present study was the first to compare the effect of different hypnosis techniques on flow state and performance. There were several differences between the RE script and the FP script, as I argued in the Discussion section. One of them was the challenge that participants might choose a different event each time they listen to the RE audio file. Another was the fact that the FP script was able to repeat the same event many times, whereas the RE only repeated once. I propose that future studies consider these differences in their study design. For example, one condition may use the RE script in which participants could choose whichever event they regress back to, with another condition in which the RE script asks participants to commit to the same event each time they listen to the audio file. Another condition may have a script in which there are multiple repetitions of the same regressed event. These conditions would be used to compare with a standard FP condition similar to this study. The results of these future studies would clarify the effect of different factors within the RE condition against the FP condition.

Depth of trance. As mentioned in the Methodological Considerations section, there is a need to measure the depth of trance of individuals while they are in trance. Pekala (1995a, 1995b) reported on a protocol that he proposed could achieve this, called the Phenomenology of Consciousness Inventory: Hypnotic Assessment Procedure (PCI–HAP). "The PCI-HAP is a state instrument for measuring hypnotic responsivity from a predominantly phenomenological perspective. The PCI-HAP includes a preassessment [sic], a hypnotic induction, and a postassessment [sic]" (Pekala & Maurer, 2015, p. 11). The post-assessment part asks if "participants opened their eyes during the eye-catalepsy item, if they raised their finger when asked to do so (finger-response item), their self-report as to whether they fell asleep (sleep-state item)" (Pekala & Maurer, 2015, p. 12), then "asks participants about their hypnotic depth: On a 1-to-10 scale, how hypnotized do you feel that you became? Let 1 = not hypnotized at all, and let 10 = the most hypnotized that you can imagine." (Pekala & Maurer,

2015, p. 18). This is the item to measure self-reported hypnotic depth (the srHD) score of participants.

Kronenberger, LaClave and Morrow (2002) developed the Hypnotic State Assessment Questionnaire (HSAQ), a standardized clinical instrument for the documentation and assessment of hypnotic response in ongoing clinical sessions. It is a brief and multidimensional measure of hypnotic response. "The HSAQ includes two behavioral rating sections (one for behaviors during hypnosis and one for posthypnotic behavior) as well as a brief experiential interview that immediately follows the hypnosis session" (p. 259). The HSAQ comprises of 18 items, divided into three equal parts of six items: behaviors during hypnosis (Hypnotic State Observations or HSO), behaviors immediately following the termination of hypnosis (Post-hypnotic Observations or PHO), and subjective experience of hypnosis (Post-hypnotic Inquiry or PHI). "Items for each section were chosen based on clinical experience, review of literature, observation of videotape of hypnotized subjects, and adherence to the goals of development of the HSAQ" (p. 260). The HSAQ is conducted by hypnotists during live sessions, therefore, it would have been useful as a measure of hypnotic depth for live sessions of this study. However, it is not suitable as self-reports for participants' self-managed sessions. Individuals can only compare their own experiences on different occasions. What some individuals consider to be a 9 on the scale could be rated as only a 5 for other individuals with much greater hypnotisability. Thus, using a scale like the HSAQ, in which the trained hypnotist observes and ranks subtle body language signs, including noise made by the client, spontaneous verbalizations, motoric behaviour, focused attention (eyes), and rhythmical breathing, using a 5-point Likert scale would give a more consistent evaluation of the hypnotic response across participants.

Hypnotist-led sessions and self-managed hypnosis sessions. In addition to several points raised in Study 1 about the difference between hypnotist-led and self-managed

hypnosis sessions, there may be a preference for hypnotist-led sessions based on the previous paragraph about depth of trance. At the moment, there has not been a validated questionnaire that I am aware of that specifically measures depth of trance, which participants can complete after each self-managed hypnosis session. The use of the PCI-HAP or the HSAQ requires the presence of a hypnotist to evaluate individuals' depth of hypnotic trance. Although the process of using a hypnotist to conduct the depth of trance questionnaire is time and resource consuming, it will provide a more accurate assessment of participants' experience, which helps to ensure that the hypnosis intervention is as effective as possible.

Ideal time of the day for listening to the hypnosis audio file. In the present study, I gave participants the option to listen to the audio file when they went to bed at night, just before their sleep or listen during the day time. In practice, this is what practitioners often suggest that clients do. It was, however, unclear whether the different times at which participants listened to the audio file had any influence on participants' flow state or performance. From the times participants logged their sessions in the diary, it appeared that some participants preferred to listen at night, whereas others could only listen to the audio recording in the morning or during the daytime. In the future, researchers may consider studies with three conditions, one condition with participants listening to the audio recording first thing in the morning, the second condition with participants listening during the daytime, and the third condition with participants listening at night before bed. The results of such studies could reveal whether there is a most effective time of the day for undertaking self-managed hypnosis.

The long-lasting effect of post-hypnotic suggestion. There has not been any research in sports contexts examining the duration for which post-hypnotic suggestion effects can last. This topic is of interest for both researchers and practitioners alike. There have only been two studies with follow-up in the research in sports contexts. The first research was the

study by Barker and Jones (2006), in which the researchers collected eight data points seven months after the intervention. The second study was by Barker, Jones, and Greenlees (2010), in which the researchers collected follow-up phase data four weeks after completion of the post-test phase. Although these two studies followed up with their participants after a period of time, these data were not specific to the hypnosis intervention. Barker and Jones combined hypnosis, refining bowler's technique, and self-modelling technique through the use of an edited videotape as the intervention. Barker et al. combined practicing the soccer wall-volley task with three group hypnosis sessions as the intervention. I propose that future research should consider having similar study design to the present study, but with multiple data collection points, with the first point right after the intervention, the second point at four weeks after completion of the post-test phase, and the third point at eight weeks after completion of the post-test phase. These data should enlighten researchers about how long the effects of various hypnosis conditions last, for example, whether the effect of RE or FP reduces first over time.

Research with golfers at different skill levels. As discussed in Chapter 3, there might be a difference in how athletes at different skill levels respond to hypnotic interventions. I argued that elite athletes are more likely to be motivated to apply hypnosis interventions to enhance their flow state and improve performance.

Causal relationship between flow and performance. Similar to what I mentioned in Chapter 3, the future research section, there is a need to explore the relationship between flow and performance. In order to conduct studies that analyse data using SEM, there is a requirement for much bigger sample sizes, which is beyond the scope and resources of a doctoral research.

Conclusion

Based on the results of the present study, it may be possible to conclude that the FP condition helped golfers to improve their global flow as compared with the RE condition, through increases in time transformation and the action-awareness dimension, in particular. Both hypnosis conditions also seemed to improve golfers' putting performance in terms of the number of putts they holed. The results of Study 2 have some practical implications for golfers, especially with the improvement of number of putts holed. Extending beyond golf, the present study offers a fresh approach to apply hypnosis interventions in improving performance and enhancing flow, by using different trancework scripts. Also, athletes in other self-paced, closed skill sports could consider using RE and FP to improve performance and the capability to experience flow. This information is particularly useful for applied psychology practitioners who aim to help athletes to improve their performance, as well as to increase enjoyment and intrinsic motivation through the experience of flow in sport.

CHAPTER 5: THE EFFECTS OF FUTURE PROGRESSION HYPNOSIS TRAINING ON FLOW STATE AND PUTTING PERFORMANCE WITH HIGHLY-SKILLED GOLFERS IN COMPETITION

Introduction

In Study 1, I found that a hypnosis intervention improved both putting performance and flow state in golfers. In Study 2, I found that FP suggestions improved global flow more than RE suggestions mainly due to the improvement of two concomitants: action-awareness merging and time transformation. I also found that both hypnosis conditions improved the number of putts holed, from pre-test to post-test. However, putting performance and intensity of flow may be affected differently during competitive rounds of golf, whereas opponents, play partners, and officials, weather and condition of the greens can all affect golfers' performance. Anderson, Miles, Mahoney, and Robinson (2002) argued that full experimental research designs are not suitable for research in applied sports environments. Goldfried and Wolfe (1996) commented that laboratory-type research frequently use artificial surroundings with very little similarity to sports competition environments, to achieve the level of control expected of experimental research. Both Study 1 and 2 were conducted on a practice green at each golfer's home course, thus enabling control of starting time of the putting test and which hole was used for the experiment. I chose the same hole on their club's practice green to make sure the difficulty of the hole was consistent. Participants were also very familiar with the surface of the putting green and the slopes and breaks (contours that affected the direction of the rolling ball) for the practice green due to their familiarity with location. Essentially, studies with high levels of experimental control lack the pressure and complications commensurate with actual golf competitions. First, in actual golf competitions, other people involved including; other players, game officials, and an audience. Second, the full gamut of shots is required including; drive, iron, wedge, bunker, chipping, and pitching that occur

before putting takes place. With the wider range of shots required a golfers' thoughts, feelings, and level of confidence may be affected. Third, in official golf competitions, the hole location is normally set in a more difficult position than on non-competition days. Hence, it is more challenging for golfers to score well in competitions, including the putting component. Fourth, there is inherent pressure to play well in competition because golfers are ranked based on their performance and prizes represent an added pressure. Fifth, pressure can be cumulative because performance in events affects player ranking, which often influences whether golfers are chosen or are eligible to play in more prestigious events. In Study 2, the FP condition showed stronger improvement on global flow state than the RE condition in a field study on a practice green. It is important to explore whether the FP technique delivers the same positive results in a competitive environment due to its difference from a field study environment.

In view of the substantial differences between field studies and competition, I employed the SCD to examine the influence of FP hypnosis on putting performance and flow state among high-level golfers in 12 competition matches. SCD research allows interventions to be studied using participants as their own control condition to compare the effects of an initial BP with an IP (Kazdin, 2011). The SCD design is also suitable to study athletes in real-world contexts (Pates, 2013; Pates and Cowen, 2013). On the practice greens in Study 2, it was more likely for golfers to experience time transformation and action-awareness merging due to the short duration of the test. There was little break between putts so golfers took less than an hour on average to finish 56 putts. There was also limited movement from one putting position to another because all the putts were played from a distance of 4 m around the same hole. When golfers play competition golf, there are substantially longer breaks between shots. There are also more movements from multiple swings and shots, each of which involves different muscle groups. Furthermore, after completing putting on one hole,

players are involved in approximately 10-15 minutes of different shots of the next hole, which can interfere with muscle memory or require different shot cues.

Based on increases in global flow and number of putts holed found in Study 2, I predicted that the FP intervention in Study 3 would have a positive influence on golfers' putting performance in competitive rounds and the intensity of flow they experienced. Furthermore, to explore participants' experience with hypnosis training and its effect on their putting performance and global flow through this study, I conducted an interview with each player at the end of the 12 rounds. Through the interviews, I acquired more details on participants' opinions of the effectiveness of the intervention on their golf performance, which also helped to clarify the quantitative results. The interview contents also helped me to understand the golfers' subjective experience of flow and what factors they felt influenced their flow state, which might not have been evident from the quantitative data alone.

Method

Participants

I invited participants to attend the study through recruitment at local golf clubs in Melbourne and Sydney and also directly through the Golf Victoria website. Five golfers initially signed the consent form. All participants had medium to high WSGC scores, so they had acceptable levels of hypnotisability. During the study, one participant dropped out because he discontinued membership at the club where I conducted this study. Another participant was discontinued in the middle of the study after he belatedly informed me that he had used hypnosis previously to deal with anxiety issues. No previous experience of hypnosis was an inclusion criterion because previous experience with hypnosis could bias participants' belief and attitude toward hypnosis. For example, if participants had previous success with hypnosis, they would be likely to believe in its effectiveness more and this could increase their motivation to achieve strong putting performance and report high levels of flow. On the

other hand, previous unsuccessful hypnotic experience could lead participants to be more skeptical, so they might not produce maximal effort in this study.

The final sample (n = 3) consisted of three male golfers between 20 and 51 years of age (M = 40.33; SD = 17.62), who each practiced at least twice a week and played in competitions at least twice a week. The range of the participants' golf experience was from 7 to 25 years (M = 14.00; SD = 9.64). Their HC range was from 0 to 0.8 (M = + 0.27; SD = 0.46). The HCs of these participants reflect their high level of golf skills and all of them were Pennant team members who represented their clubs in interclub competitions.

Study Design

As indicated earlier for the current study single-case AB designs were used to examine the effect of hypnosis on flow and performance. SCDs were originally developed in clinical and counselling psychology as an alternative to experimental designs that were often considered unsuitable in the therapy context. This is because therapeutic treatments are tailored to the unique needs of individual clients, although they should all conform to the principles of that therapeutic approach. SCDs in which each participant is their own baseline permit variations in specific elements, to suit individuals, within the overall framework of the chosen therapeutic tradition (Hersen & Barlow, 1976; Kazdin, 1982).

Several researchers have explained the advantages of using the SCD, especially in detecting the effect of interventions on performance, in sports competition (Bryan, 1987; Hrycaiko & Martin, 1996; Marlow, Bull, Heath, & Shambrook, 1998). Research by Pates and colleagues demonstrated that the SCD is suitable to evaluate the effect of interventions on flow and performance in sports, including golf, basketball, and netball (Pates & Cowen, 2013; Pates, Cummings, & Maynard, 2002; Pates, Karageorghis, Fryer, & Maynard, 2003). Norsworthy, Gorczynski, and Jackson (2017) conducted a systematic review of flow training research that focused on flow states and performance in elite athletes. They found that out of

seven studies that matched their criteria, six of these studies used the SCD. Norsworthy et al. suggested that the SCD could be an accessible and efficient design for this type of research. They also acknowledged that, "gathering large numbers of participants in this domain may be practically difficult given challenges with recruiting elite athletes" (p.22)

In the present study, the BP consisted of six competitive rounds of golf over a 6-week period and the IP also consisted of six competitive rounds of golf over a 6-week period. This design was selected for numerous reasons. First, SCDs use participants as their own source of control (Barlow & Hersen, 1984; Hrycaiko & Martin, 1996). This is useful in the applied setting because all participants experienced the intervention and this design did not require a control condition (Hrycaiko & Martin, 1996). Because the participants were playing at different clubs with different starting times, it was not necessary to use a multiple-baseline design. The measures were repeatedly administered in six rounds in each phase to balance fluctuations in performance due to various internal factors, such as fitness and confidence level, and external factors, such as weather and course conditions. In an individual sport like golf, especially at the high-skill level, a small performance increase can be of practical importance to athletes, unlike in team sport, where small performance variations of individual players are either difficult to detect or do not meet levels of statistical significance (Bryan, 1987; Zaichkowsky, 1980). Hrycaiko and Martin (1996) suggested that the intervention should only be applied when the stability criterion is met. The stability criterion is achieved when the measured variable is steady or shows a trend that is opposite to the intended treatment effect.

There is, however, a difference between conducting intervention research in clinical psychology and in sport psychology. Clients seeking prescribed clinical psychology treatment are not usually in time-sensitive circumstances, so the practitioners/researchers can usually conduct the baseline and/or the intervention for as long as needed. In elite sport, athletes are

usually under time pressure to improve to perform better in their next competitions. In addition, competition seasons involve limited numbers of events that can each be considered as a single data point. Thus, studies must be conducted with this in mind. Furthermore, Barlow and Hersen (1984) also raised an ethical question of how long the applied clinical researcher can withhold a treatment application. In the present context, 12 weeks of high-level golfers' time was a substantial imposition and after discussion with my supervisor, I considered that six weeks of Baseline monitoring was as much as I could reasonably ask of the participants. Examination of similar previous studies suggested that it should be sufficient.

In the current research, it was not possible to select a single variable as the deciding factor for the commencement of the intervention, because I focused on the changes in all nine flow dimensions, as well as global flow, and three performance measures, number of putts holed, percentage distance error from the hole, and strokes gained putting. Barlow and Hersen (1973) suggested "a minimum of three separate observation points, plotted on the graph, during this BP are required to establish a trend in the data" (p. 320). This requirement of three observation points has been supported in research (Gast & Hammond, 2010; Kennedy, 2005; Lane, Wolery, Reichow, & Rogers, 2007). Thus, the intervention was applied after the first six weeks of Baseline data, which was double the required minimum number of baseline data points. It was unlikely that any systematic changes were due to a common factor other than the hypnosis intervention because all the participants were playing at different times, at different physical locations, and in different weather conditions.

I also conducted post intervention interviews as part of the social validation process to examine participants' understanding of the intervention, whether they followed the guidance provided in the intervention, and their opinions of the effects of the intervention. This is in

line with the suggestion by Hrycaiko and Martin (1996) about using such brief interviews as part of the SCD, as a manipulation check.

The minimum number of participants in an SCD study is somewhat arbitrary (Kazdin, 2011). Kazdin suggested that "So-called single-case research can use a group of subjects (e.g., in a community, in a state or province) in any design (e.g., ABAB) in which the entire group is treated as a subject or in which the number of subjects who engage in the behavior (e.g., recycle, use seat belts, pay their bills on time) is the outcome measure of interest". Kazdin further pointed out that there has been research using the SCD design to evaluate the intervention in which the actual or potential subjects included hundreds or thousands of subjects. Hence, Kazdin concluded that although the SCD has been used with one or a few participants, the actual number of participants is not a necessary characteristic of the designs. Within the studies that focus on the effect of hypnosis in sport, the number of subjects chosen have been between one and five. There are four studies with just one participant (Barker & Jones, 2006; Barker & Jones, 2008; Pates, 2013; Pates & Cowen, 2013); four studies using three participants (Lindsay et al., 2005; Pates et al., 2012; Pates & Maynard, 2000; Pates, Maynard et al., 2001), one study used four participants (Pates & Palmi, 2002) and one study used five participants (Pates, Oliver et al., 2001). Thus, in the current study, I recruited five participants of whom three participants finished the entire intervention and two participants dropped out, as explained earlier. The inclusion of three participants appears to be sufficient based on previous research in the same field, using the SCD to study hypnosis in sport.

Measures

Demographic information form. I gathered demographic information (Appendix C) about participants' age, gender, years of golfing experience since they started playing golf, any previous experience with hypnosis, any current use of prescription drugs, their self-rating as a golf putter (from 1 = "*poor skill*" to 7 = "*excellent skill*") and their Golf Australia HC

score. Based on the Golf Australia Handicap system, scores for the best eight rounds of golfers' most recent 20 rounds are selected and then averaged. This average is then multiplied by 0.93 to give the Golf Australia Handicap number (Golf Australia, 2017). I described to the golfers what flow is and the kind of phenomena people experience when they are in flow. I explained the nine dimensions of flow before asking participants if they had experienced flow before. I also asked the participants to indicate the golf course at which they would like to conduct the study.

Waterloo-Stanford Group C Scale of Hypnotic Susceptibility (WSGC; Bowers, 1993, 1998). As described in Study 1.

Golf putting performance. I followed golfers on the course as they played each competition round in the BP and IP. When golfers reach the green, they normally put a small marker, such as a coin, immediately behind their ball (on the opposite side to the hole), then they pick up their golf ball. As agreed beforehand, during all the rounds in this study, the participants also put down one of my markers, which were coin-shaped pieces of cardboard, 10 cm on the right-hand side next to their marker, at the same distance from the hole. To play their shot, the participants put their ball down immediately in front of their marker, so it was as close as possible to its original position. Then they took away their marker. After they hit their putt, they placed another marker of mine next to where the ball stopped. When they finished putting and left the green, I went onto the green and measured the distance from my markers to the centre of the hole.

To measure the distance, I used the laser range finder Lasertec LDM120. This laser rangefinder is a tool that is frequently used by construction workers who are required to measure distances quickly with high accuracy in outdoor environments. The measurement was taken from the centre of the ball (marked by the marker) to the bottom of the flagstick (called the pin in golf) at the hole. The advantage of the Lasertec LDM120 is that it has a

backlit colour LCD with live view targeting camera, which allows a more accurate aim than most measuring instruments. This Lasertec device is a laser class 2 device with accuracy level of plus and minus 1mm.

I used three quantitative measures of putting performance as dependent measures: number of putts per round, percentage distance error (smaller numbers reflect superior performance), and "strokes gained putting". Number of putts per round is the total number of putts golfers perform during the 18 holes. A shot is considered a putt, when the putter is used to play the shot anywhere on the putting green area. Golfers sometimes decide to hit from the fringes of grass beyond the green with the putter, however, this type of shot does not count as a putt. Broadie (2014) argued that the number of putts in a round does not truly reflect how well golfers perform. A golfer may have 31 putts per round, yet their putting performance is superior to that of a 28-putt golf round, if there are more long-distance putts in the 31 putts, and more putts that are made across green surfaces that are undulating or have difficult slopes. A putt from 30 cm to the hole is not of the same difficulty as a putt from 20 m to the hole. Moreover, if golfers have good chipping skill, they may be able to chip close to the hole, which reduces the number and difficulty of putts. Golfers may have strong chips from off the green that reduce the distance of subsequent putts, but this does not mean these golfers necessarily have good putting skill. Thus, number of putts in a round must be considered a coarse indicator of putting performance.

The second performance measure was percentage distance error, which is defined as "the distance to the hole after the putt compared to the beginning of the putt" multiplied by 100 (Broadie, 2014, p. 142). For example, if a ball lands and stops on the green 5 m from the hole (A) and the golfer takes the first putt after which the ball ends up at 1m away from the hole (B), the percentage distance error is counted as B/A x 100 or 1/5 x 100 = 20%. The smaller the percentage distance error, the closer the ball is to the hole after the first putt,

which is a superior putt. Broadie suggested that the percentage distance error data is useful for long putts, but may not work as well for short putts. For example, if a golfer putts the ball from 40 cm away from the hole and the ball goes past the hole and stops 40 cm past the hole, this results in a 100% distance error, but this data is not meaningful because it does not necessarily give researchers details about how difficult one putt is compared to another.

Broadie (2008) introduced an alternative method to evaluate the quality of putts called "strokes gained putting", which was subsequently developed by Fearing, Acimovic, and Graves (2011). Strokes gained putting takes into account the distance of the initial putt on a green as well as the expected number of putts that a typical PGA golfer takes from the same distance. Strokes gained putting is a new way to quantify how many strokes a professional golfer saves compared to other professional golfers on the PGA tour, using the same unit, strokes, for various types of shot. Broadie argued that a driver shot that moves the ball 1 m further on the course is not the same as a putt that moves the ball 1 m closer to the hole. Hence, measuring distance does not entirely reflect the difficulty of the game. By using stroke as the common unit, the strokes gained method allows golfers to compare their shots with the standard norm from a database called the ShotLink system (Broadie, 2014). The Professional Golfers' Association (PGA) Tour organises and collects data for the ShotLink system, which records the start and end locations of every shot (including putts). This recording is done in many competitions that are organised under the PGA Tour system, with an average of one-inch accuracy. Broadie (2014) stated that, "Strokes gained putting is the tour average number of putts to hole out from a given distance minus the number of putts taken" (p. 34). For example, Bob's ball lands on the green 8 feet from the hole. From this distance, the Tour average putts to hole out is 1.5, according to ShotLink data. This means that Tour professionals hole with one putt half of the time, and two putts half of the time. So, if Bob's first putt goes in the hole, he gains 0.5 strokes compared to the tour average.

Conversely, if he needs two putts to put the ball in the hole, he loses 0.5 strokes compared to the tour average. In this study, I used ShotLink data that applies to scratch golfers because the HC of participants in this study was closer to the scratch level than the professional level. A sample of the strokes gained putting score for scratch golfers is presented in Table 5.1.

Table 5.1

Strokes Gained Putting Data for Scratch Golfers

Distance (feet)	Average number of putts (stroke)
1	1
2	1.01
3	1.07
4	1.2
5	1.34
6	1.45
7	1.54
8	1.6
9	1.65
10	1.68
15	1.81
20	1.89
30	2.03
40	2.14
50	2.22
60	2.3

Note: Adapted from "*Every shot counts: Using the revolutionary strokes gained approach to improve your golf performance and strategy*" by M. Broadie, 2014, New York: Avery Publishing.

Flow State Scale-2 *(*FSS-2; Jackson & Eklund, 2002). As described in Study 1.

Diary of self-managed hypnosis. See Study 1 Measures section.

Social validation interview. At the end of the IP, I interviewed the three golfers in a one-on-one session to check whether participants understood the instructions I had given them about what they were supposed to do, and if they were able to comply with these instructions. The social validation interview was structured in open-ended questions (see Appendix Q) to examine the effectiveness of the intervention qualitatively, and to understand the experience of the participants during the 12 rounds examined in this study. The length of each interview was around 20 to 25 minutes and the content was transcribed verbatim. The use of social validation procedures at the end of SCD studies has become a popular practice since the 1990s, when two review papers on SCD procedures by Dunn (1994) and Hrycaiko and Martin (1996) promoted the inclusion of social validation interviews in SCD studies within the sport psychology field, primarily as a manipulation check (Page & Thelwell, 2013). First, I asked participants about their understanding of the study structure and their feelings during the study. Next, I asked about their experience with hypnosis during the study (both in live sessions and self-managed hypnosis sessions at home). Then I focused on participants' perception of the differences in performance and flow experiences between the BP and IP, as well as variables that could have had some impact on the intervention. I also asked about participants' commitment to listening to the mp3 file and their feedback on those sessions.

Intervention

In Study 2, I identified that the FP condition produced a stronger effect on global flow than the RE condition. Hence, in Study 3, I applied a similar FP condition to the one used in Study 2, with some amendments in the script to suit the competition setting and to make the script not too long. For the induction, deepening, and awakening phases, I retained the same content as in Study 2. The only change was in the trancework phase, with some suggestions focusing on golfers' ability to deal with the pressure of competition and stay in flow. There

were suggestions for golfers to imagine how they would feel and behave on competition days, so they could adapt more easily when they were in the actual competition. Based on feedback from participants in Studies 1 and 2 that the live hypnosis sessions seemed to help them go deeper into trance, and the study by Vasquez (2005), in which he used only one-on-one sessions with basketball players, I decided to include three one-on-one sessions in conjunction with four self-managed hypnosis sessions, in which the golfers listened to the audio recording of the live session. The content of all the one-on-one sessions and audio recorded sessions was the same (see Appendix R).

Procedure

The Victoria University Human Research Ethics Committee approved this study. I recruited participants through posters at various golf clubs in Melbourne and Sydney, web postings, and an advertisement on the Golf Victoria website. Golfers contacted me via e-mail. Upon receiving their emails, I sent a reply email that included the Information Statement of the study and details on the expected commitment for potential participants to read before making an appointment with each potential participant to go through the introduction session. During this meeting, potential participants confirmed they had read and understood the Information Statement and asked any clarifying questions, which I answered as clearly and accurately as I could. If they were willing to participate as volunteers, the golfers signed the Informed Consent form to be part of the study. Potential participants then completed the Demographic Information Form. To ensure potential participants had at least a moderate level of hypnotisability, I conducted the WSGC with each golfer, which took about an hour. All the potential participants did score high enough on the WSGC to be included in the study. I then explained the method to participants including the on course procedure for measuring their putts, and how they were expected to put down the marker before each putt to facilitate subsequent precise measurement with the Lasertec devise once they left the green. In the next

six weeks, I followed them for six rounds to measure their putting scores in their club's weekly competition. This was the BP. At the end of each round, participants immediately completed the FSS-2.

After the six baseline rounds, the IP commenced. The intervention included three one-on-one hypnosis sessions in conjunction with four self-managed hypnosis sessions, where participants listened at home to the pre-recorded audio file with the same content as the live sessions. For the first three intervention weeks, participants had a face-to-face session with me once a week on a separate day from the competition days. Then I asked them to listen to the recorded audio four times within the next three intervention weeks with at least one session a week. Participants filled in a hypnosis training log after each self-managed hypnosis session, indicating the date and time when they conducted the hypnosis session and their general feedback. In total, they experienced seven hypnosis sessions with the same content throughout the IP. During the IP, I followed participants for six rounds of golf to collect data. Participants filled in the FSS-2 at the end of each round. After the 12th round, I conducted a Social Validation Interview with each participant. Finally, I debriefed the golfers on their performance and flow experience before thanking them for their involvement in the study.

Analysis

To compare the differences between BP and IP, I applied both visual analysis and the split-middle technique mode of analysis. I initially used visual analysis, which includes both descriptive statistics and visual inspection of data, to compare BP and IP data (Ottenbacher, 1986). Visual inspection involved eye-balling the data in the BP and IP to identify general patterns and anomalies, such as outliers that digress from patterns that are present in the data. Ximenes, Manolov, Solanas, and Quera (2009) suggested that visual inspection is one of the most frequently used methods for detecting intervention effects in SCD data by looking for changes in trend, level, slope and variability. Baer (1977) suggested that visual analytical

techniques work as a filter to eliminate small effects and promote large intervention effects within applied behaviour research. First, I plotted graphs for each participant using Microsoft Excel 2016. I summed the values of all the data points of each phase (baseline, intervention) and divided the total by the number of data points in that phase (6) to calculate the mean of each phase. I supported eye-balling the data in terms of average scores by comparing the means of the BP and IP and noting any anomalies that distorted the means. These means helped to identify whether putting performance and global flow state increased or decreased from the BP to the IP. However, means only provide rough estimates in SCD data because they do not account for any trends occurring during the BP, for example, due to practice effects (Goldberg et al., 2007; Hausknecht, Halpert, Di Paolo, & Gerrard, 2007). Goldberg et al. explained practice effect as "changes in test performance attributed to increasing familiarity with and exposure to test instruments, paradigms, and items" (p. 103). Bartels, Ryan, Urban and Laura (2010) suggested that a practice effect is the capability of a person to learn and adapt, which could be an interfering factor that complicates results interpretation.

Early proponents of SCDs proposed methods to examine any trends arising during the BP and projected those trends through the IP (Kazdin, 1976). To examine trends, I used the split-middle technique developed by White (1972, 1974). This method requires an analysis of the celeration line (trend line) in each phase (Barlow & Hersen, 1984). I supported the eye-balling in terms of trends by considering the slopes for the BP and IP and identifying noteworthy changes in slopes, as well as noting any anomalies that distorted either or both slopes. The slope or trend "refers to the tendency for performance to decrease or increase systematically or consistently over time" (Kazdin, 2011, p. 124). One of three trend patterns will appear in the BP and IP, either no trend with a horizontal line, or an increasing trend with an upward slope, or a decreasing trend with a downward slope. When comparing the slope of the BP and IP, I looked for a change in slope from either a horizontal or downward slope in

the BP to an upward slope in the IP. This pattern of change reflects an increase for global flow and each flow dimension and an improvement for strokes gained putting performance. Conversely, a change from either a horizontal or upward slope in the BP to a downward or horizontal slope in the IP reflects an improvement for the number of putts and percentage distance error performance indications.

There are multiple steps to create a trend line based on the split-middle technique (Kazdin, 1984). The first step is to draw a vertical line in the middle of the data points of each phase, to ensure a 'split' occurs with the same number of data points in each half. If there are odd numbers of data points, the line is drawn through the middle point. If there are even numbers of data points, the line is drawn between the two middle points. The second step is to locate the mean of the data points in both the left and right halves. The third step is to draw another vertical line in the middle of the two halves, so that the data points in one phase are 'split' into quarters with an equal number of data points in each. The fourth step is to draw a horizontal line going through the mean point of each half of the data points. The fifth step is to find the intersection between the vertical line in the middle of each half and the horizontal line through the mean point. There are two intersection points for each phase. The six and final step is to connect the two intersection points to create the celeration line. The celeration line shows the trend for each phase needs to be evaluated to see whether 50% of the data points of that phase are situated above and below the trend line. I extrapolated the celeration line of the BP to create a projection of the celeration line through the intervention period, which I call the projection line. I then examined the location of the IP data points in relation to the projection line of the BP slope. This indicates whether the intervention was effective based on whether the majority of the data points in the IP are above or below the projection line. Examination of data in the IP relative to the extrapolated trend, "provides a way to describe the data in a more analytic fashion than is usually the case" (Kazdin, 1976, p. 309).

For an effective intervention with a variable that the aim is to increase, e.g., flow or strokes gained putting, most of the data points in the IP should be above the projection line. For an effective intervention with a variable that the aim is to reduce, e.g., number of putts per round, most of the data points in the IP should be below the projection line. However, this is only an indication because anomalies or outliers can distort the slope of the projection line. One or two abnormally low data points early in the BP or one or two abnormally high data points late in the BP can produce an abnormally steep positive slope, whereas one or two abnormally high data points early in the BP or one or two abnormally low data points late in the BP can produce an abnormally steep negative slope. The final interpretation of the data for each study variable for each participant is based on consideration of all the factors listed here.

During data analysis, I paid attention to whether there is a possibility of a Hawthorne effect that can affect the conclusion. The Hawthorne effect as described by Franke and Kaul (1978) as an increase in worker productivity produced by the psychological stimulus of being singled out and made to feel important. This description has subsequently been broadened to other areas. The Hawthorne effect is a non-specific effect of participating in a study. It is not controlled for by standard study designs (McCarney et al., 2007). The main difference between a genuine intervention effect and the Hawthorne effect is that the Hawthorne effect in the present study may cause the results of the first one or two rounds during the IP to be much higher than the average level of the BP data before dropping down to the average level or lower during the remaining rounds of the IP. Whereas, a genuine intervention effect creates a considerable and consistent improvement in the IP throughout all or most of the IP rounds and might even be expected to show an increasing effect in the final rounds because the intervention was conducted over several weeks of the IP, so the intervention has more time to have a positive effect later in the IP.

I employed narrative analysis techniques to analyse data from the social validation interviews. The main aim of the social validation interviews was to provide information on the perceived importance of the study and the effectiveness of the intervention. Because I used open-ended questions, the participants' answers could provide essential information about participants' experience. I transcribed verbatim the recorded interviews then checked for accuracy by reading the transcript while listening to the interview audio records several times. This process helped to increase my understanding of the material and the descriptive accounts of what participants said.

Results

In this study, I examined the effect of a FP hypnosis intervention on putting during competition golf rounds in highly-skilled golfers. Because the study involved a single-case research design, in this section, I present data for each participant individually in four parts. First, I present a brief profile of the participant. Then, I present three indicators of putting performance, number of putts per round, percentage distance error, and strokes gained putting performance, illustrated in separate graphs. Next, I present flow data, which are illustrated using a separate graph representing each flow dimension and a graph for global flow for each participant. Finally, I present a summary of that participant's interview responses. The names used in this section are pseudonyms.

I present various graphs plotting performance variables and flow dimensions during the six BP competition rounds and the six IP competition rounds. The abscissa represents the number of each competition round and the ordinate axis represents the score on the measured performance variable or the flow dimension. The dashed, horizontal lines demonstrate the mean values (M) in the baseline and post-intervention phases. The solid lines represent the celeration lines, which indicate the trend of performance in each phase. The dotted line, extending from the celeration line of the BP, represents the projection of the celeration line

through the IP. I also present differences in means (which are measured by subtracting the BP mean from the Intervention mean) and slopes for each phase to assess changes in performance or flow dimension. When the intervention mean is lower, the sign is negative, and when the intervention mean is higher, the sign is positive. For number of putts and percentage distance error score, a negative value indicates improvement in the IP, whereas for all flow means and the strokes gained putting score, a positive value indicates an increase in the IP.

Participant Thomas

Golfer's profile. Thomas is a 50-year-old with 25 years of golf experience. He was playing with a HC of 0.8 at the start of the study and he was the only golfer who reported experiencing flow prior to the study. Thomas is relatively athletic and had played several sports in addition to golf. Thomas rated his putting ability at 4 out of 7 on the relevant Likert scale. He completed the WSGC and scored 10 points out of 12, demonstrating an ability to go deep into trance. In 2018, he was selected for the first time to be a member of his club's Pennant team at interclub competitions.

Number of putts per round in competition. Figure 5.1 illustrates the number of putts per round for Thomas during the BP and IP.

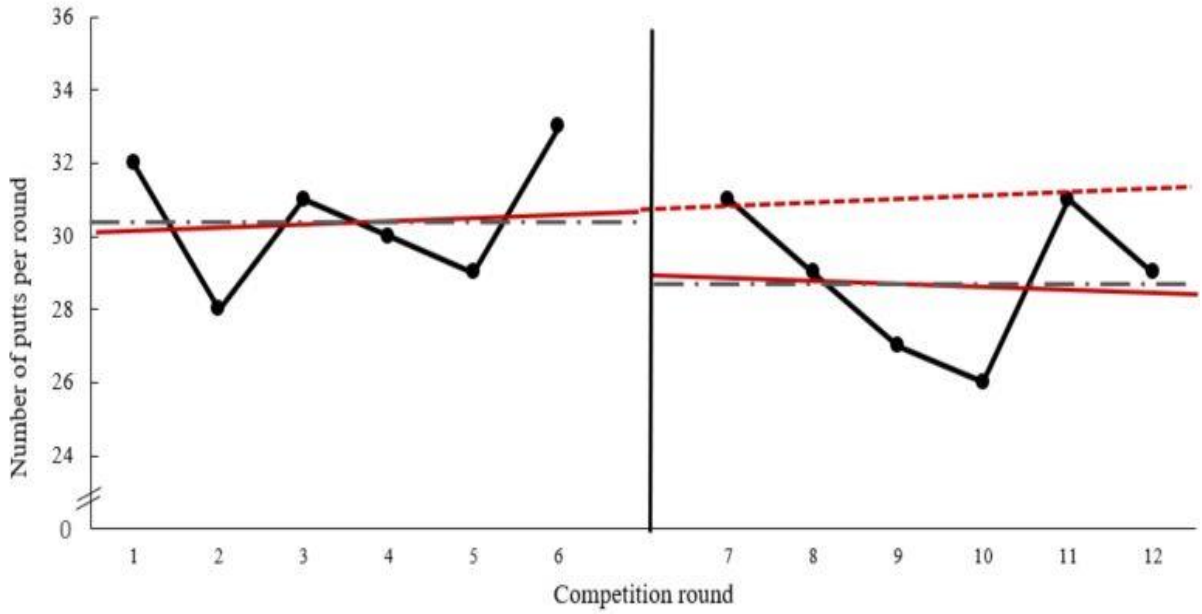

Figure 5.1. Number of putts per round across phases for Thomas

Between these two phases, Thomas showed a decrease of -1.67 putts or 5.5% in the mean number of putts per round, which was the strongest decrease among the three participant golfers. There were some deviations in the number of putts per round in both the BP and IP, considering that Thomas was playing off HC close to scratch. The change in slope from 1.01 in Baseline to -1.02 in the IP seems to indicate that Thomas' putting result improved. However, both slopes are so close to horizontal that I was unable to draw a conclusion based on the negligible change in slope alone. Despite the deviation in number of putts for each round, the fact that both slopes are close to horizontal suggested that the results are relatively stable in each phase. The change from a positive to a negative trend in slope across phases for number of putts per round was only detected for Thomas. Five of the six points in the IP are below the projection of the celeration line from the BP. Because the mean in the IP is clearly lower than the BP mean, and five out of six IP data points are below the projection line, this is evidence of a decrease in number of putts in the IP, which represents a clear intervention effect.

Percentage distance error. Figure 5.2 illustrates the results of Thomas' percentage distance error before and after the intervention. The percentage distance error was calculated by the distance to the hole after the putt compared to before the putt multiplied by 100. Between the BP and IP, Thomas' results showed a very small change of mean percentage distance error, signified by the dashed lines, of -0.17 points or almost 2%. There seemed to be an outlier in Round 1, which made the mean of the BP higher.

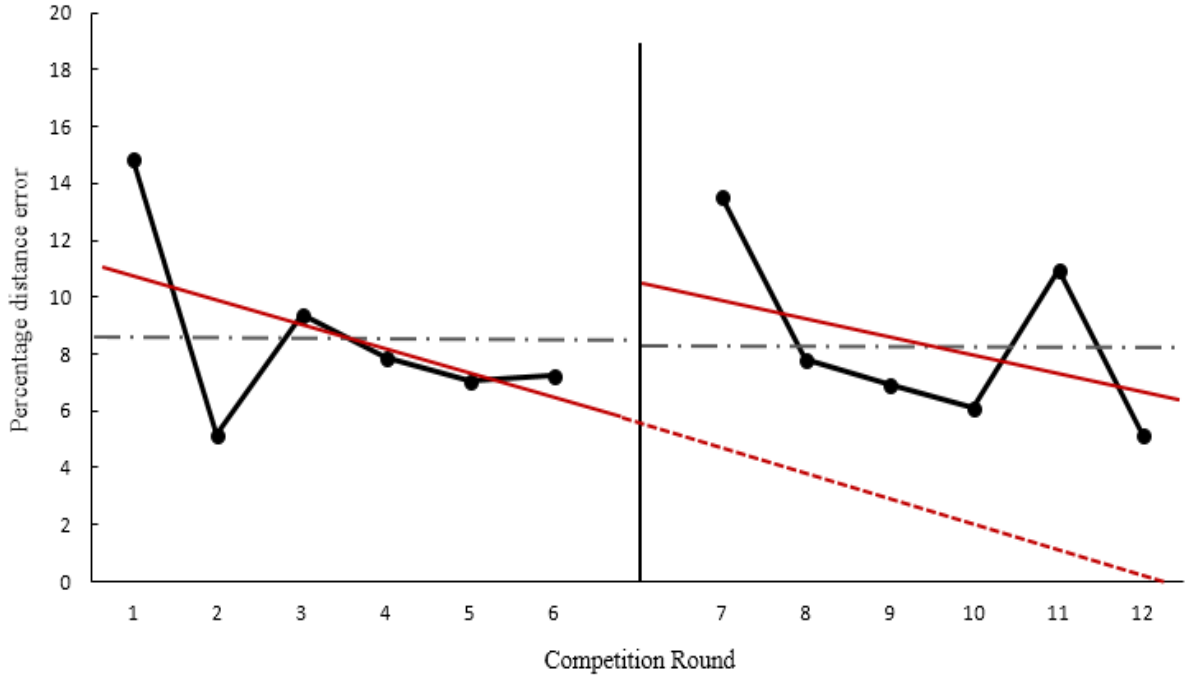

Figure 5.2. Percentage distance error per round across phases for Thomas

This was the smallest change in mean of percentage distance error for all participants. The range of data in the BP was from 5.17 to 14.86, which was slightly larger than the range in the IP of 5.15 to 13.53, which was due largely to the outlier in Round 1. The slope patterns were similar for both phases, delineating a reduction of slope value for the BP of -1.33 and IP of -1.27 from the first data point to the last. All data points in the IP were above the projection line, which indicated no effect. However, if the data was considered without the outlier in Round 1, which increases the negative slope, there would be a small effect of the intervention.

Strokes gained putting. Figure 5.3 illustrates Thomas' strokes gained putting scores before and after the intervention.

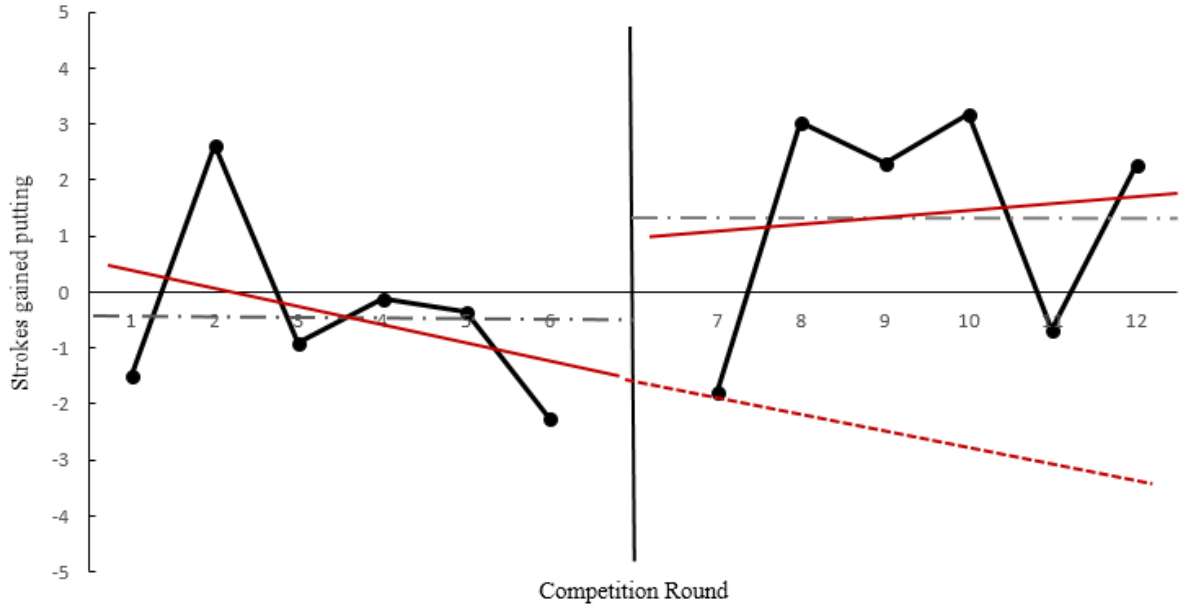

Figure 5.3. Strokes gained putting per round across phases for Thomas

There was an increase in mean strokes gained putting from -0.42 to 1.39. For the strokes gained putting score, an increase in mean during the IP indicated an improvement of performance. This means that Thomas improved his strokes gained putting score between the BP and IP by 1.80 points or 432.80%, giving him the highest score improvement among the three golfers. In the BP, the Round 2 strokes gained putting score seems to be an outlier, while other data points decreased steadily. There was a reverse in the trend from a negative to a positive trend in the IP, indicating a positive effect. In the IP, two performance assessments (Round 8, 10) did not overlap with baseline performance. All the data points in the IP were above the projection line. All of these results indicated that Thomas showed a strong improvement in the IP, indicating an intervention effect.

Global flow. Figure 5.4 illustrates the results of Thomas' global flow scores before and during the intervention.

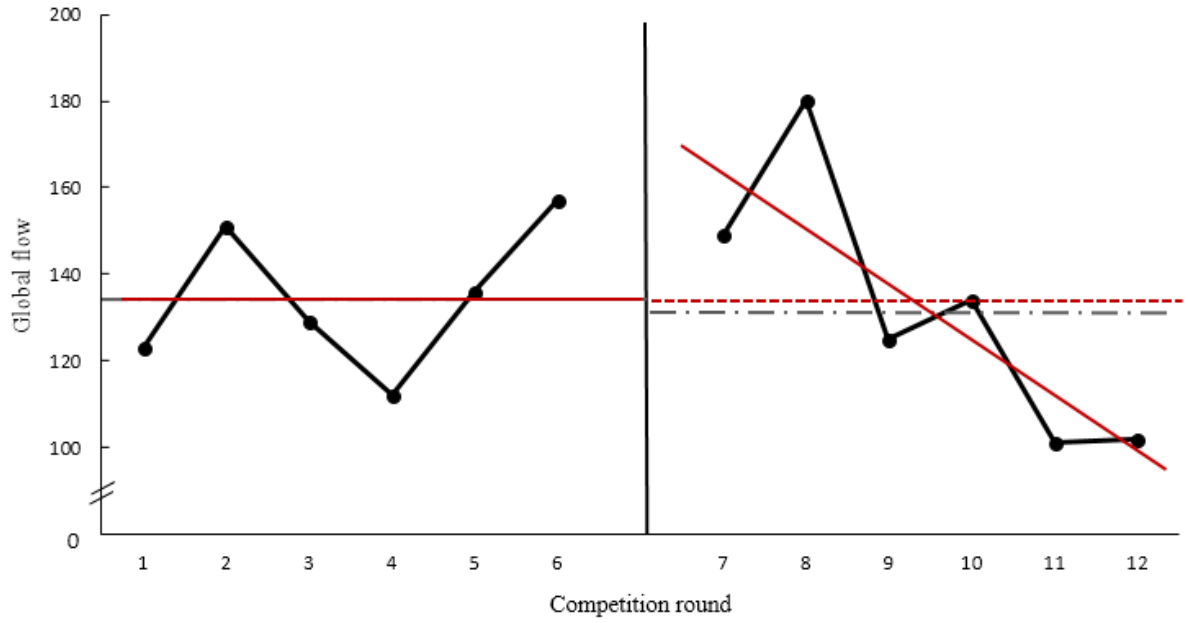

Figure 5.4. Global flow scores per round across phases for Thomas

Between the BP and the IP, the mean global flow score for Thomas was almost stable with a slight decrease of -2.83 or 2%. He was the only golfer who had a negative result on global flow mean score. The celeration line in the BP overlaps with the mean score line, which indicates a stable baseline. The data points in Rounds 8, 11, and 12 lie outside the range of the BP (from 112 to 157), which shows that there was more volatility in the IP. There was a change from an almost neutral slope (1.00) to a negative slope (-1.35) for the celeration line during the IP, which indicates a dropping trend for global flow. Looking at this graph pattern alone, there was possibly a Hawthorne effect. There was a large increase in global flow immediately after the intervention started, but this was not sustained because global flow progressively deteriorated after each round in the IP. Two data points lie above, and three data points lie below the projection line. The overall conclusion is that global flow dropped after the intervention.

Challenge-skill balance. Figure 5.5 illustrates the results of Thomas' flow scores for challenge-skill balance before and during the intervention.

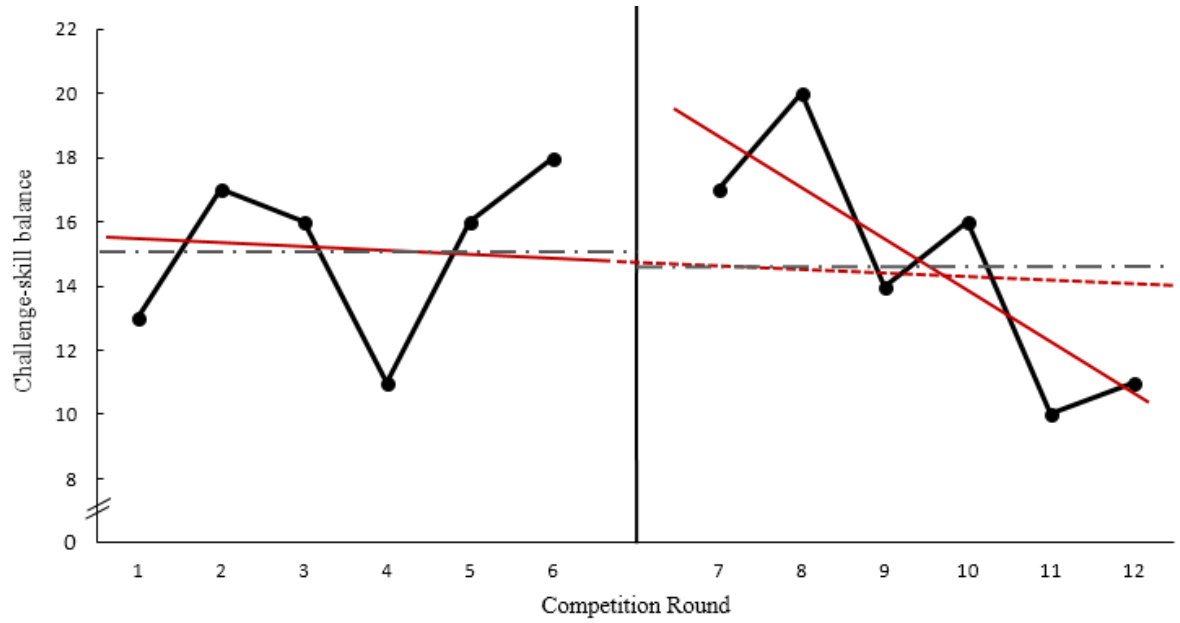

Figure 5.5. Flow scores for the challenge-skill balance per round across phases for Thomas

Between the BP and IP, Thomas' mean score for challenge-skill balance was similar with a slight drop of 0.5 or 3.3%. There was more fluctuation in the IP than the BP with Round 8, 11, and 12 data outside the range of the data in the BP. The slope of the BP was almost flat at a value of -1.02 and then, during the IP, it sloped more strongly downward at -1.38. The steep slope of the IP indicates that the high challenge-skill balance results in Round 7 and 8 could be due to a Hawthorne Effect. Data points in the IP were equally split on two sides of the projection line, which indicated no difference in results based solely on the split-middle technique analysis. The overall conclusion for the challenge-skill balance data was a drop in the IP.

Action-awareness merging. Figure 5.6 illustrates the results of Thomas' flow scores for the action-awareness merging dimension before and after the intervention.

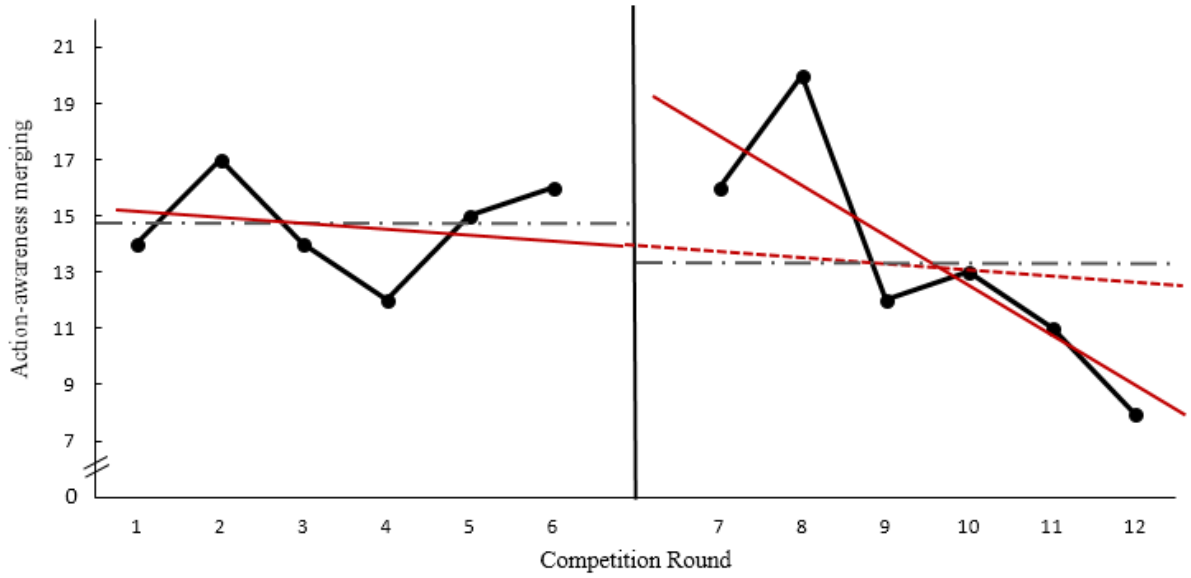

Figure 5.6. Flow scores for the action-awareness merging dimension per round across phases for Thomas

Between the BP and IP, there was a mean drop of 1.33 or 9%. Data in the BP was more homogenous, while data in the IP was more scattered with points for Rounds 8, 11, and 12 outside the range of data in the BP. The slope of the BP was near flat at -1.05, whereas the slope of the IP was a steeper, negative slope at -1.50. This steep change of slope suggested that the results in Rounds 7 and 8 were more likely due to a Hawthorne effect than a genuine intervention effect. In the IP, two of the data points were above the projection line, whereas three points fell below the projection line, and one point was on the projection line. Data from the projection line showed no conclusive evidence of improvement or decline. Overall, there was a decline in action-awareness merging, due to a likely Hawthorne Effect at the start of the IP.

Clear goals. Figure 5.7 illustrates the results of the Thomas' flow scores for the clear goals dimension before and during the intervention.

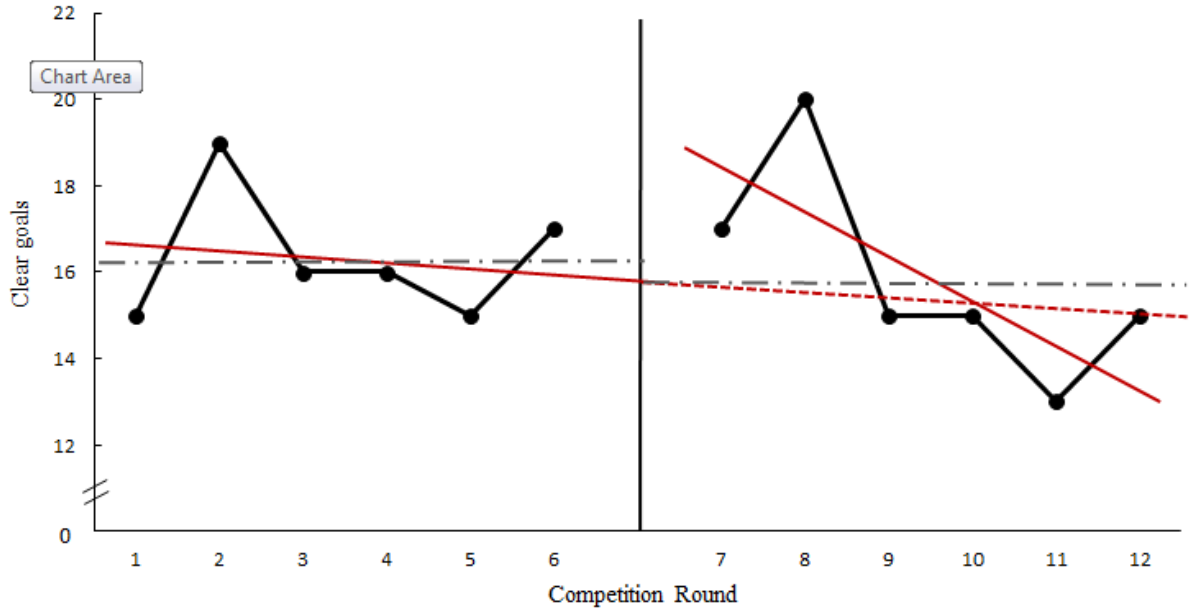

Figure 5.7. Flow scores for the clear goals dimension per round across phases for Thomas

Between the BP and IP, there was a slight drop in mean value of 0.50 or 3%. Data in the BP were consistent, except in Round 2, with a slight downward slope of -1.04 in the BP. In the IP, the slope became steeper downward at -1.21, which was likely due to a high score in Round 8. Two data points in the IP were above the projection line, so there was no effect.

Unambiguous feedback. Figure 5.8 illustrates the results of Thomas' flow scores for the unambiguous feedback dimension before and during the intervention.

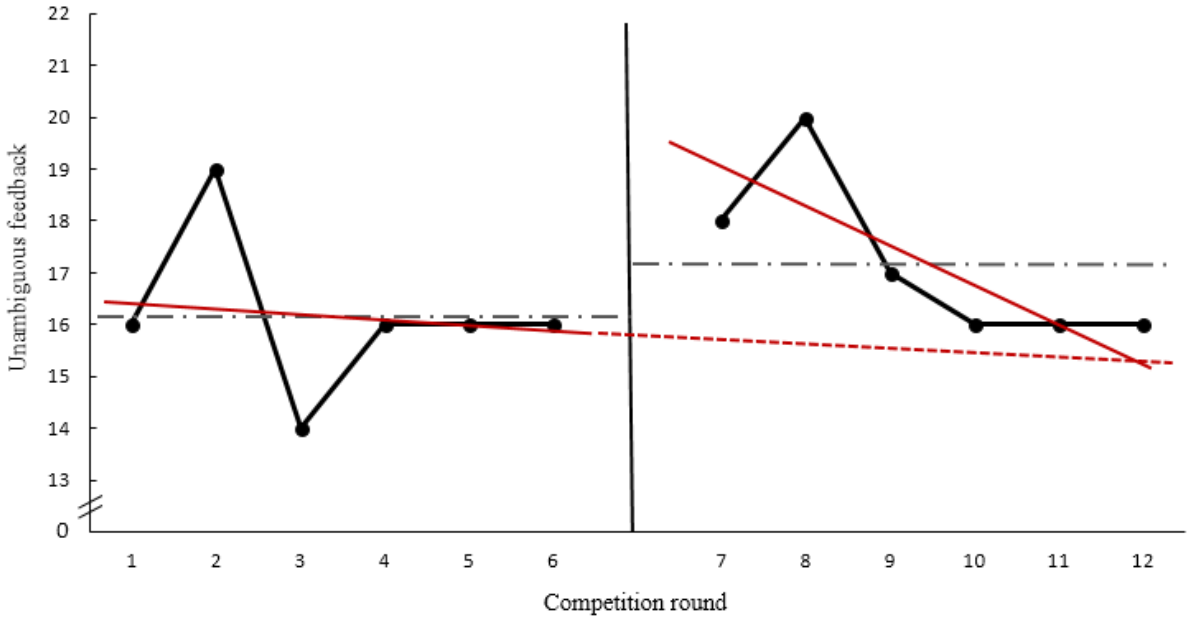

Figure 5.8. Flow scores for the unambiguous feedback dimension per round across phases for Thomas

Between the BP and IP, there was an increase of mean of 1.00 or 6%. There was a similar pattern in both the BP and IP in which the data at the beginning was high and then became more stable toward the end of the phase at a lower level. The high value in Round 2 could be an outlier which might have exaggerated the slope in the BP. The slope in the BP was close to horizontal with a value of -1.02. The slope became steeper and was negative at -1.15 in the IP. The data was more volatile at the beginning of the IP before unambiguous feedback scores stabilized at a lower level. Another interpretation of the pattern in the IP is that Round 8 is an outlier because Round 7 is closer to the rest of the IP. However, all the data points in the IP were above the projection line. The increase in the mean in the IP and all the data points being located above the projection line suggests a positive effect of the intervention for unambiguous feedback.

Total concentration. Figure 5.9 illustrates the results of Thomas' flow scores for the total concentration dimension before and during the intervention.

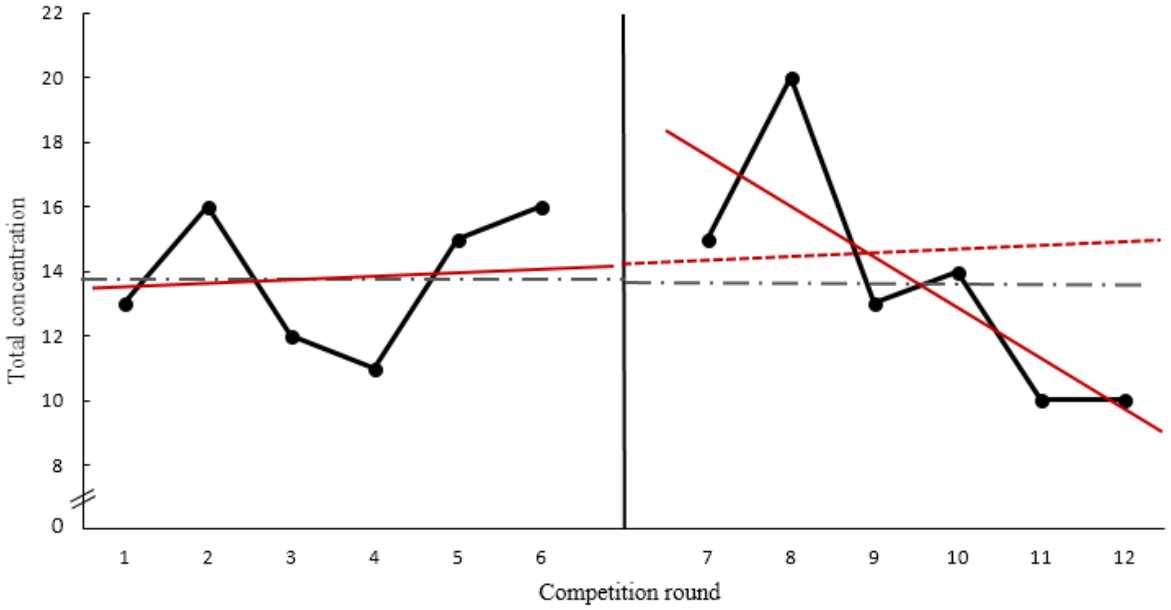

Figure 5.9. Flow scores for the total concentration dimension per round across phases for Thomas

Between the BP and IP, there was almost no change in mean with a difference of -0.17 or 1%. Data in the IP were more volatile than in the BP, largely due to the high value in Round 8 and the big drop in Rounds 11 and 12. The slope in the BP was slightly positive at 1.02 and changed to a steeper, negative slope in the IP at -1.41. Four out of six intervention points were below the projection line, which indicates that there was no intervention effect.

Sense of control. Figure 5.10 illustrates the results of Thomas' flow scores for the sense of control dimension before and during the intervention.

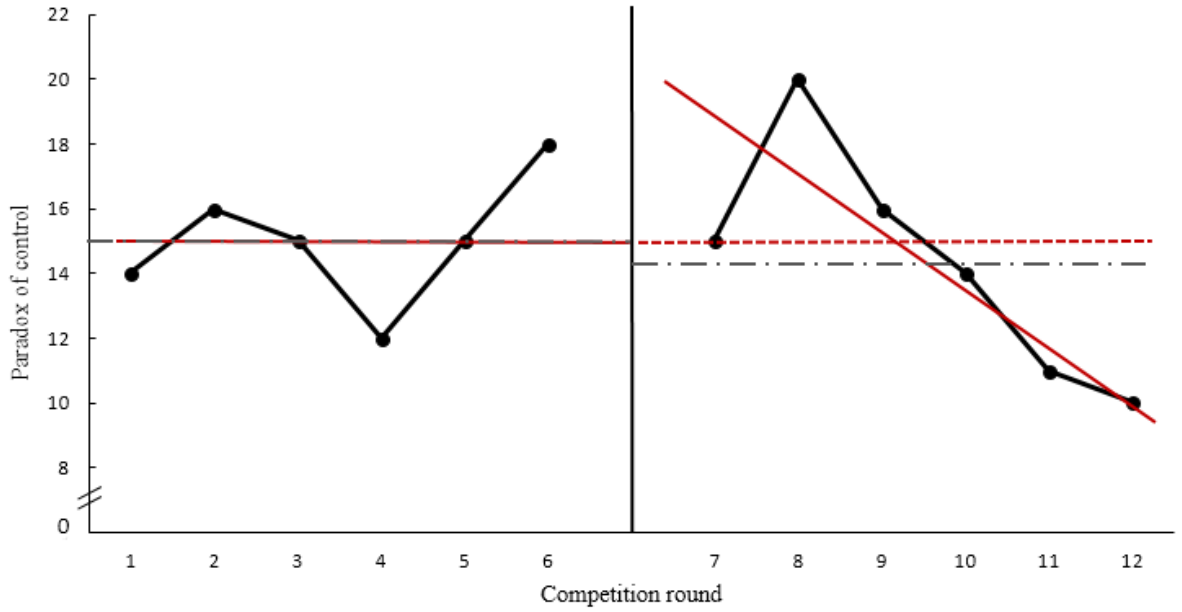

Figure 5.10. Flow scores for the sense of control dimension per round across phases for Thomas

Between the BP and IP, there was a slight drop in mean at -0.67 or 4.5%. Thomas was the only golfer with a reduction in mean for sense of control during the IP. Thomas' data in the BP was relatively stable with the mean almost overlapping with the celeration line with a slope of 1.00. In the IP, the trend changed to a negative slope of -1.46. The steep decline in trend was made worse by a high outlier in Round 8. There were only two points above the projection line for sense of control, which was the lowest result among the three golfers. The steep negative slope and the presence of only two data points above the projection line suggests no effect of the intervention for sense of control.

Loss of self-consciousness. Figure 5.11 illustrates the results of Thomas' flow scores for the loss of self-consciousness dimension before and during the intervention.

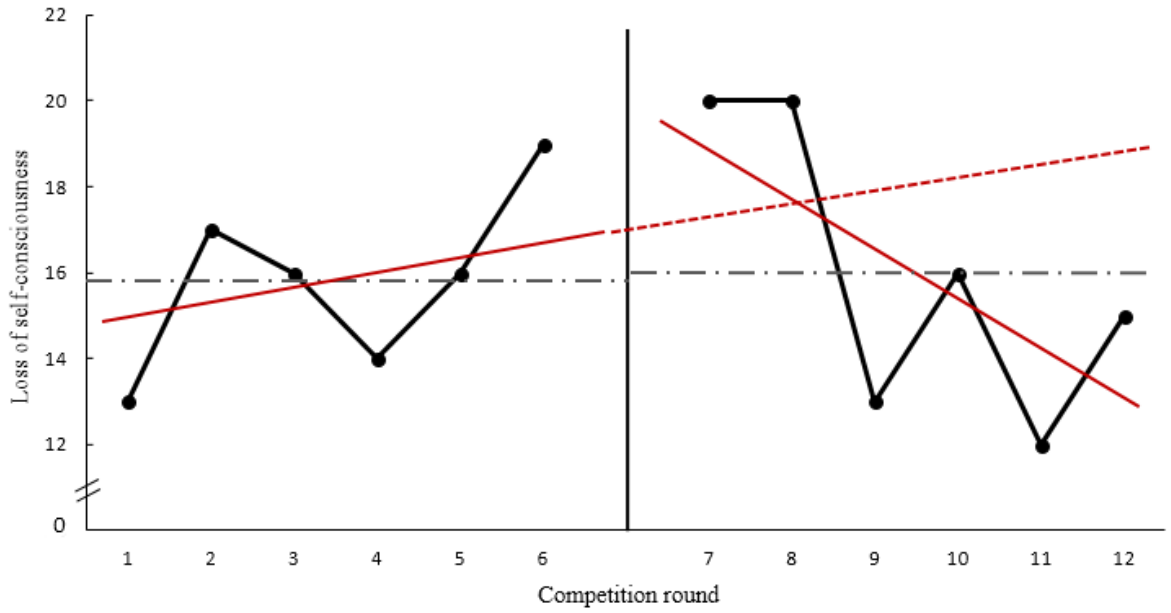

Figure 5.11. Flow scores for the loss of self-consciousness dimension per round across phases for Thomas

Between the BP and IP, there was a minor change in mean of 0.17 or 1.1%. Although the mean was stable, there was more volatility in the IP, with the data points for Rounds 7, 8, and 11 outside the range of data in the BP. Data in Rounds 7 and 8 could be explained by the Hawthorne effect because there is a high peak immediately after the hypnosis intervention was introduced, but it is short-lived, which is characteristic of the Hawthorne effect, and the data points that follow are substantially lower. There was a change in trend from positive at 1.07 in the BP to negative at -1.23 in the IP. In the IP, four points were well below the projection line, which suggests that there was no effect of the intervention.

Transformation of time. Figure 5.12 illustrates Thomas' flow scores for the transformation of time dimension before and during the intervention.

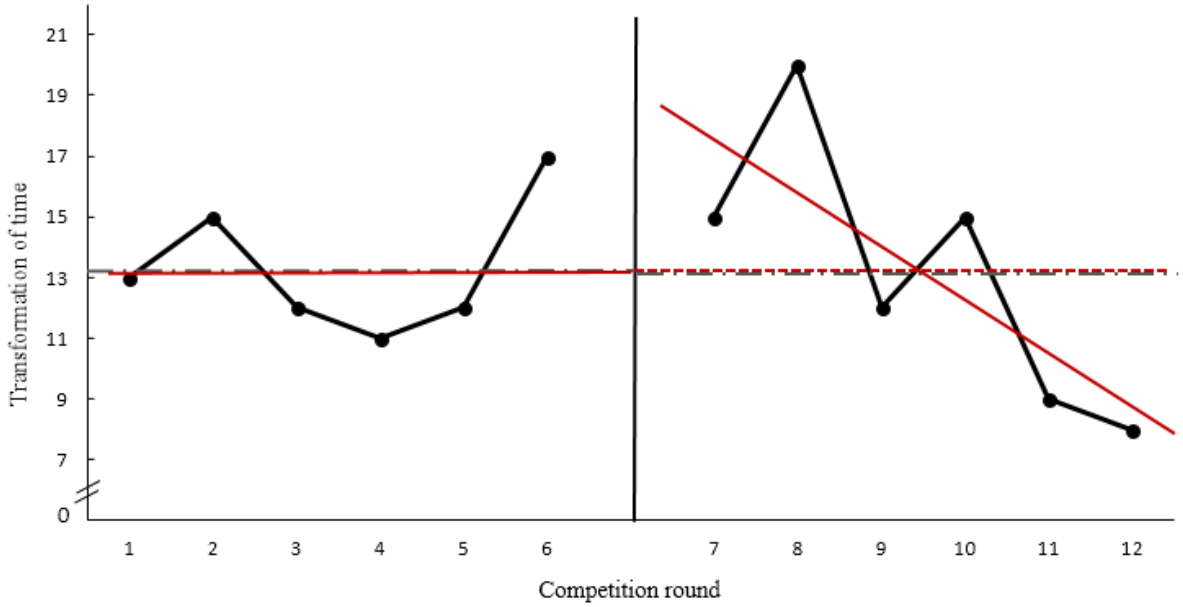

Figure 5.12. Flow scores for the transformation of time dimension per round across phases for Thomas

Between the BP and the IP, there was a slight decrease in mean of -0.17 or 1.3% from the BP to the IP. The BP data was relatively stable with the celeration line almost overlapping with the horizontal mean line, whereas there was more variation in the IP. The trend changed to a negative slope during the IP at -1.47. There was a high volatility for Thomas in the IP, with the data point for Round 8 being higher than most IP data points and the data points in Rounds 11 and 12 dropping substantially lower. The projection line divided the data points in the IP evenly with three points above and three points below the line. Hence, there is no evidence of a positive intervention effect.

Autotelic experience. Figure 5.13 illustrates the results of Thomas' scores for the autotelic experience dimension before and during the intervention.

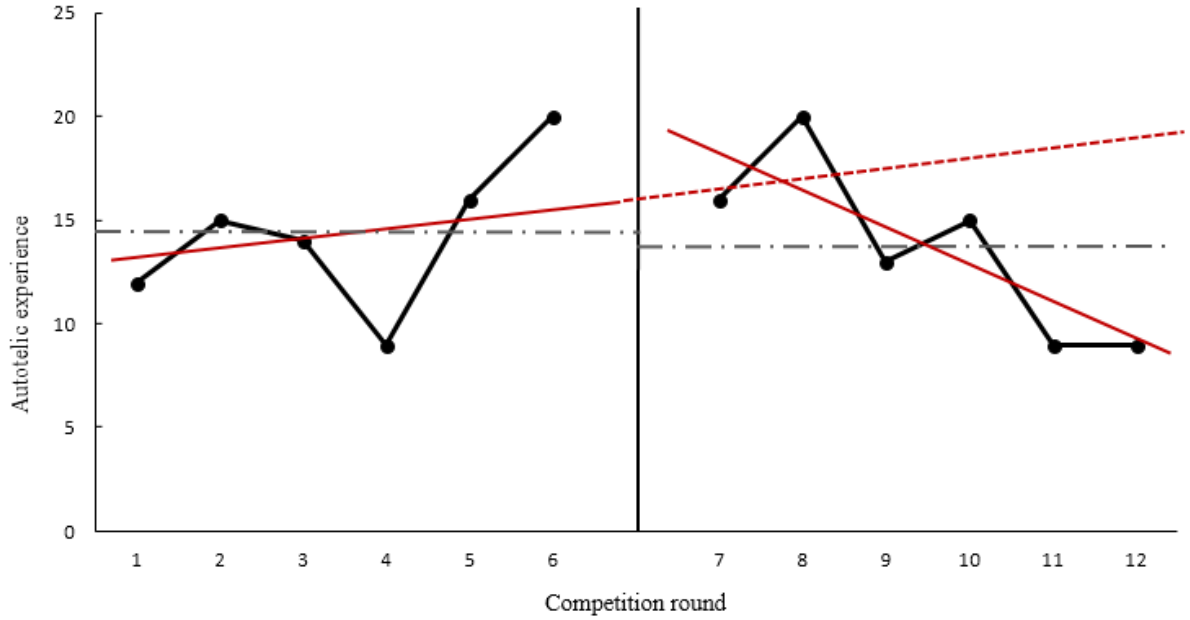

Figure 5.13. Flow scores for the autotelic experience dimension per round across phases for Thomas

Between the BP and IP, there was a change in mean of -0.67 or 5% decrease in autotelic experience. Both the BP and IP data showed some volatility, with Rounds 6 and 8 producing the maximum score possible on the autotelic experience dimension of 20, that is, all four items were scored with a five on the Likert scale. The slope changed from positive in the BP at 1.10 to negative at -1.48 in the IP. The IP trend decreased as much as other dimensions for Thomas. Five data points in the IP were below the projection line, which indicates that there was no intervention effect.

To sum up, Thomas experienced performance improvement after the hypnosis intervention with a reduction of number of putts per round and increase in strokes gained putting score, white the percentage distance errors showed a small improvement effect. In flow, there was a high level of consistency between the patterns for all the dimensions, which, like the global flow pattern, show negative slopes in the IP. The negative slopes or the low scores in the IP, while the means are still the same as or lower than the BP mean indicates no intervention effect.

Social validation interview. Following the twelfth and final round in the study, I conducted a social validation interview with Thomas. The interview was held in a quiet location at the club-house of Thomas' home golf club. Thomas reported that the intervention helped him become a better putter, "I have gone from what I felt myself as a 5 HC putter to a better than scratch putter". He gained more confidence when standing in front of the middle range putts, "I virtually never miss any 3 or 4-footer from the time we have been doing this, whereas previously I would regularly miss a couple of these in each round". Thomas mentioned that hypnosis helped to change his belief about his ability to putt, "changing of belief has been very successful. It has been the most reinforced message through the hypnosis file and sessions". He mentioned that the training helped him perform automatically, "sometimes I feel like I am more able to get my conscious mind out of it… my subconscious mind has been more receptive in the session for other times". However, this intervention effect was limited to the effect on Thomas' putting. Thomas said, "the challenge is to apply the same thing to other parts of the game". Explaining why he did not improve on his flow skill, Thomas said,

> I have been putting a lot of focus on trying to improve the golf overall. I've been putting more pressure on the golf. And sort of like when you put an investment of time in the making, I don't think it has been helping me get in the zone. I feel like that the pressure of the effort I've put in… you know that objective performance as you've seen in the intrinsic performance. So, I would not say that I have got in the zone more, partly because I am focused more than ever on results and partly that was the need to be playing off scratch as well.

With reference to the time of day that is best for listening to the hypnosis mp3 file, Thomas suggested early afternoon worked best for him because, "I felt that I was more effective when my mind wasn't fully engaged". Both in the early morning and before bed, he seemed to be

more conscious and hence felt less effective. He found that this intervention was really beneficial to him, “I’ve really appreciated the work you’ve done. I really think it’s been beneficial, it’s been interesting. And so, I actually I don’t have any criticism per se”.

Participant Igor

Golfer’s profile. Igor was 51 years old with 10 years of golf experience, since he started playing golf competitively. He played with a HC of scratch (0) at the start of the study. Igor reported that he had never experienced flow. He also stated that he had never experienced time transformation, when playing or thinking about golf. He ranked his putting skill at 5 out of 7. When he did the WSGC, he scored 7 out of 12 points and demonstrated that he could only go to a medium level of trance. However, he showed a good ability to travel back in time with RE items of the WSGC. He had been a member of his club’s Pennant team for two years at interclub competitions. During Round 11, Igor had to play the round in particularly bad weather on a stormy day with heavy rain and strong wind. He initially wanted to cancel the round, but then decided to play on to help the study to finish in a timely fashion. Because of this strong wind and rain, Igor’s results for Round 11 were substantially worse than for other rounds across both the BP and IP. During analysis of the results, several weeks after the study ended, I noticed the consistent pattern of poor results in Round 11. I decided to remove Igor’s results for Round 11 because they distorted the pattern of all his three performance indicators and seven out of nine flow dimension scores for the IP.

Number of putts per round in competition. Figure 5.14 illustrates the number of putts per round for Igor from BP to IP with Round 11 removed.

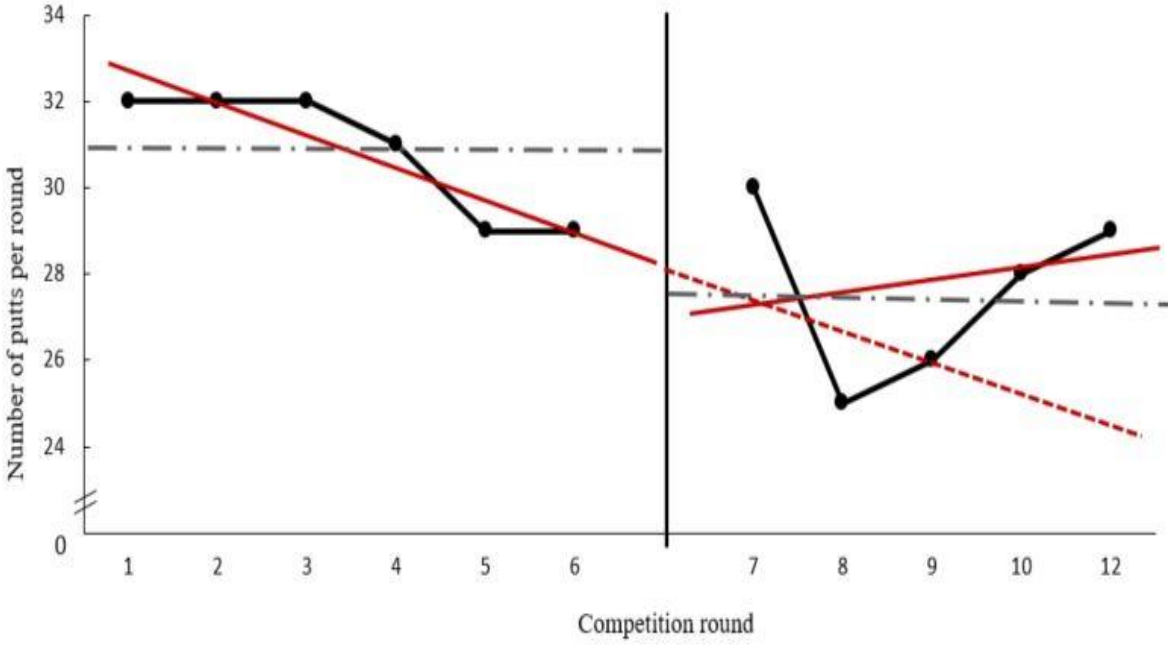

Figure 5.14. Number of putts per round across phases for Igor after removing Round 11 as outlier

Between the BP and IP, Igor's results in Figure 5.14 showed a decrease in the number of putts mean by 3.23 putts or 10% which indicated substantial improvement. Data points during the BP were stable with a small deviation from the mean. There was a negative trend at -1.08 during the BP. The celeration line in the IP changed to a slight positive slope at 1.04 with three out of five data points remained above the projection line. The two lower scores in Rounds 5 and 6 could reflect a genuine improvement in putting performance that was happening before the Intervention. Overall, there might be some interaction effect during the IP.

Percentage distance error. Figure 5.15 illustrates the results of Igor's percentage distance error before and during the intervention with Round 11 removed. The percentage distance error was calculated by the distance to the hole after the putt compared to the before the putt multiplied by one hundred.

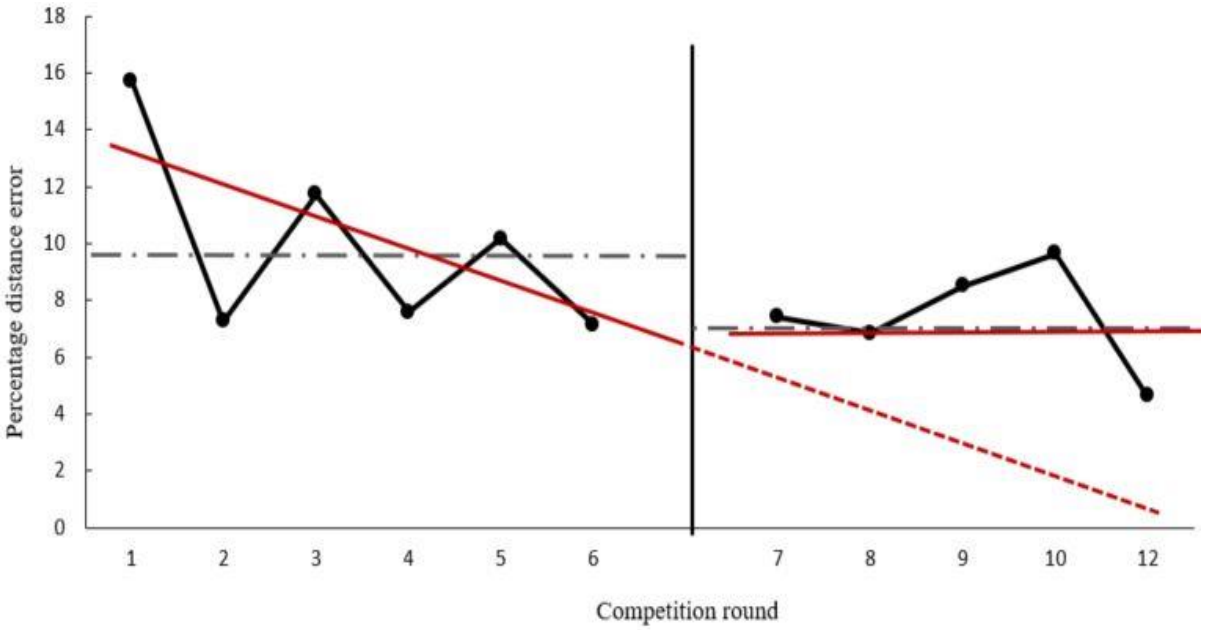

Figure 5.15. Percentage distance error per round across phases for Igor after removing Round 11 as outlier

As shown in Figure 5.15, the data showed a substantial drop in the mean percentage distance error during the IP of 2.51 putts or 25.3%. The celeration line in the IP almost overlapped with the mean line with slope of 1.00. All the data points in the IP were still above the projection line, which suggested greater error than expected. However, the big outlier in Round 1 was the main reason to create a steeper celeration line than was indicated by the rest of the Baseline data. This outlier made the projection line a poor guide which should be given little credit compared to the large reduction in mean distance error during the IP and the almost horizontal celeration line for this phase, indicating stable performance. The overall result suggested a positive intervention effect.

Strokes gained putting. Figure 5.16 illustrates Igor's strokes gained putting results before and during the intervention with Round 11 removed.

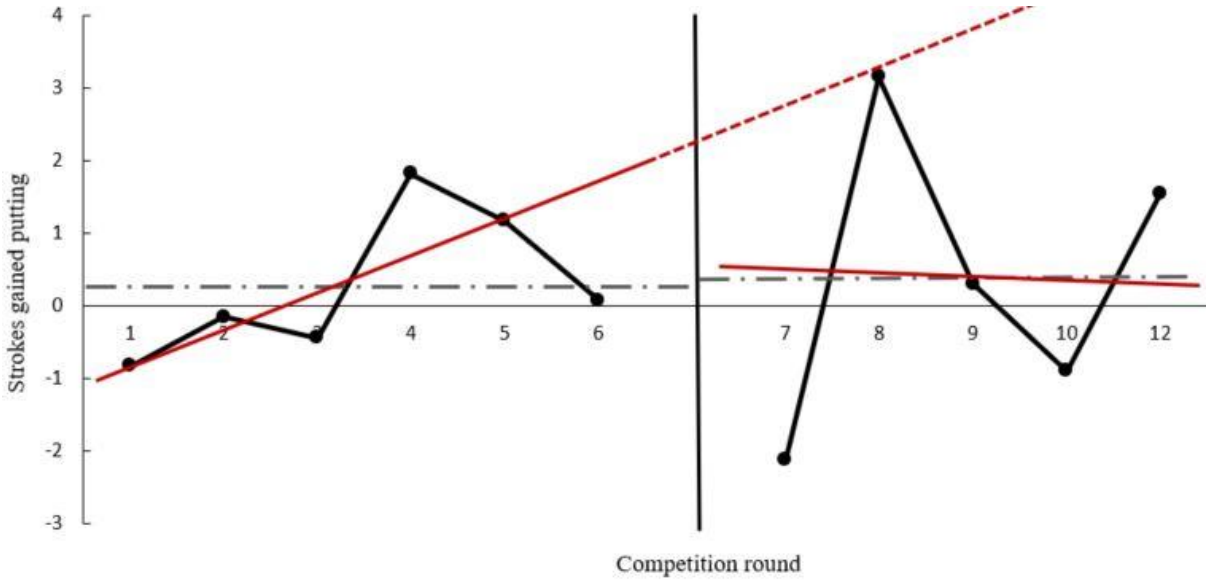

Figure 5.16. Strokes gained putting per round across phases for Igor after removing Round 11 as outlier

From the BP to the IP, Igor showed an increase in mean of strokes gained putting of 0.12 mean points or 45.93%. Figure 5.16 shows that there was a high variation in the IP with very low scores for Round 7, and a very high score for Round 8 beyond the data range in the BP. BP were not as volatile as in the IP, the data for Round 4 and 5 were much higher than the other four data points, which had the potential to make the steepness of the projection line misleading. There was a change in slope from positive in the BP at 2.13 to negative in the IP at 1.61. Four out of five data points in the IP were below the projection line, and one data point was on that projection line, which indicated a reduction in effect. There was not much change, except the slope in the IP became less steep and the mean was slightly above the mean in the BP. Overall, there was no intervention effect in strokes gained putting for Igor, who was the only person who did not improve on this criterion.

Global flow. Figure 5.17 illustrates Igor's global flow scores before and during the intervention with Round 11 removed.

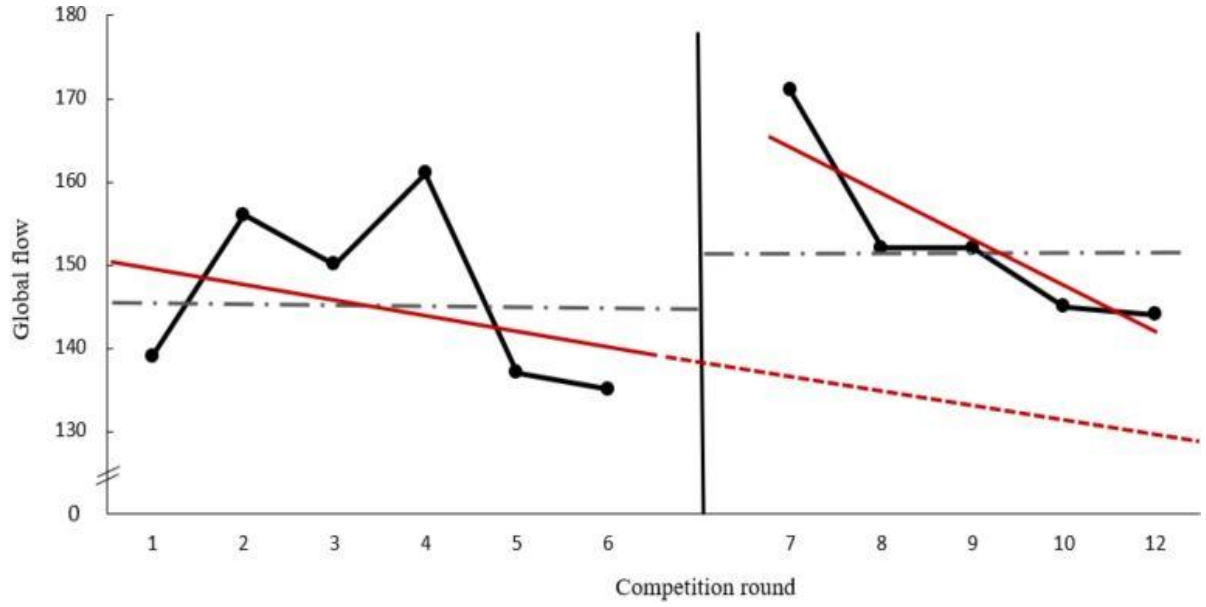

Figure 5.17. Global flow scores per round across phases for Igor after removing Round 11 as outlier

From the BP to the IP, there was a slight increase in mean global flow at 6.47 or 4.42%. The slopes in both phases were negative. The slope in the BP was -1.03. The slope in the IP increased in steepness at -1.12. All the data points in the IP were above the projection line which suggested some positive effect.

Challenge-skill balance. Figure 5.18 illustrates Igor's results for challenge-skill balance before and during the intervention with Round 11 removed.

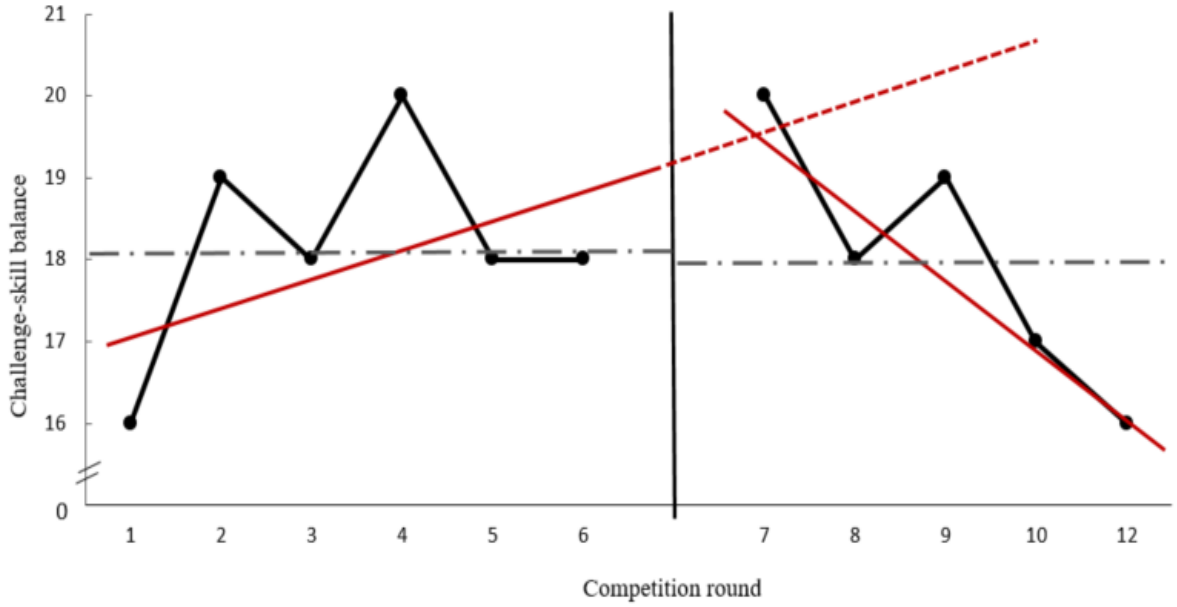

Figure 5.18. Flow scores for the challenge-skill balance per round across phases for Igor after removing Round 11 as outlier

Between the BP and the IP, there was a slight drop in mean value of 0.17 or 0.92%. Data in both phases were volatile with a positive slope of 1.06 for the Baseline and a negative slope of -1.15 for the IP. Five out of the six data points in the IP were below the projection line. the data for Rounds 10 and 12 were both low. There was not much change in the slope of the celeration line in the IP. Because the results would not be changed to a noteworthy extent. Overall, there was no intervention effect.

Action-awareness merging. Figure 5.19 illustrates Igor's results for the action-awareness merging dimension before and during the intervention with Round 11 removed.

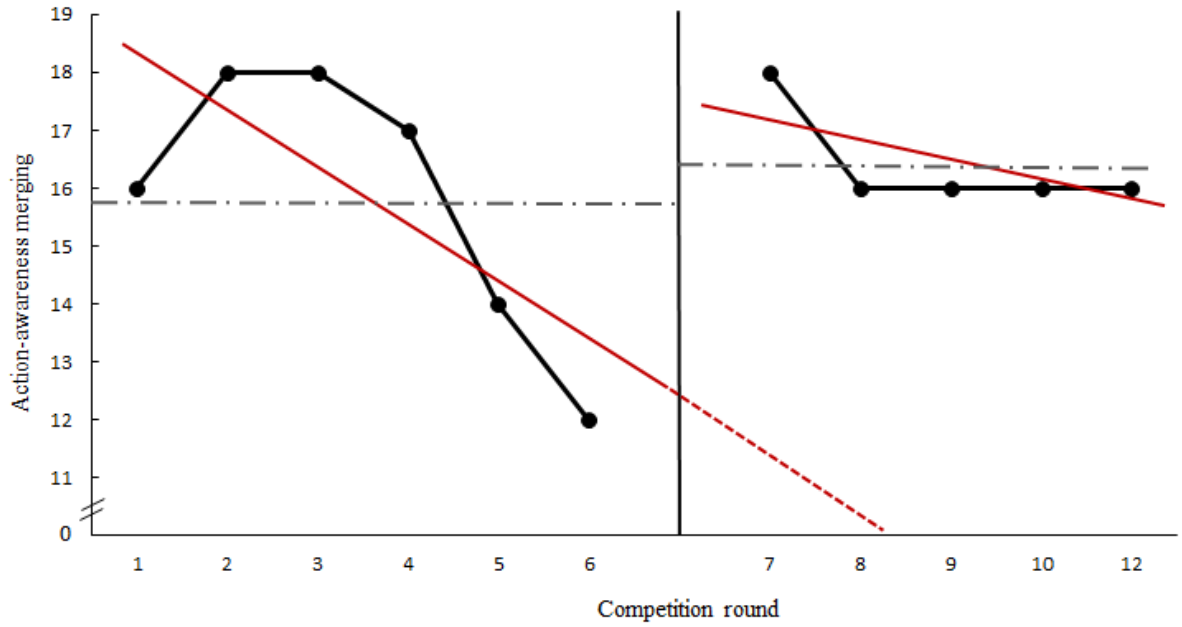

Figure 5.19. Flow score for the action-awareness merging dimension per round across phases for Igor after removing Round 11 as outlier

Between the BP and the IP, there was a slight increase of 0.57 or 3.58% in mean flow state. The Baseline data was more volatile with the scores for Rounds 5 and 6 being very low, which dragged the slope of the celeration line in the BP down at -1.21. The slope in the IP remained negative at -1.06, but with less steepness. While the data of Round 5 and 6 in the BP dropped and the IP data was stable, all data points in the IP were above the projection line, which suggested some intervention effect.

Clear goals. Figure 5.20 illustrates Igor's clear goal dimension scores before and during the intervention with Round 11 removed.

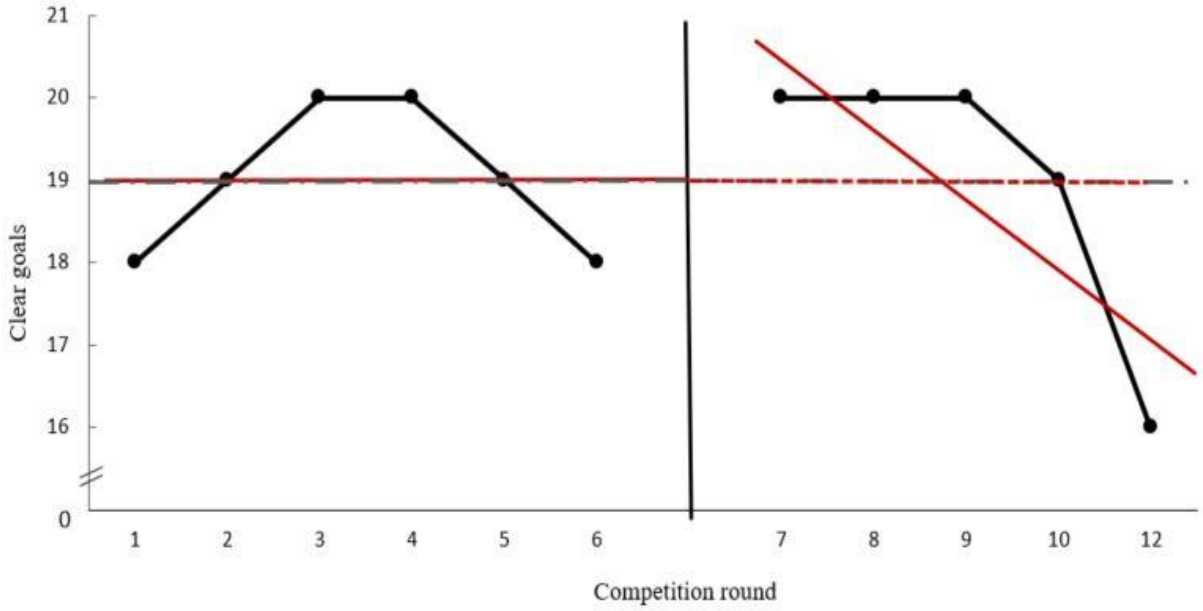

Figure 5.20. Clear goal dimension score across phases for Igor after removing Round 11 as outlier

As illustrated in Figure 5.25, the mean of the BP and the IP were equal. There was a stable pattern of data in the BP with the celeration line overlapped with the mean line. The trend changed to a negative slope at -1.14 in the IP. There were three data points above the projection line, however the slope in the IP was negative, which indicated that flow seemed to have been dropping at the end of the IP. All these indications suggested that there was no positive effect.

Unambiguous feedback. Figure 5.21 illustrates Igor's unambiguous feedback dimension scores before and during the intervention with Round 11 removed.

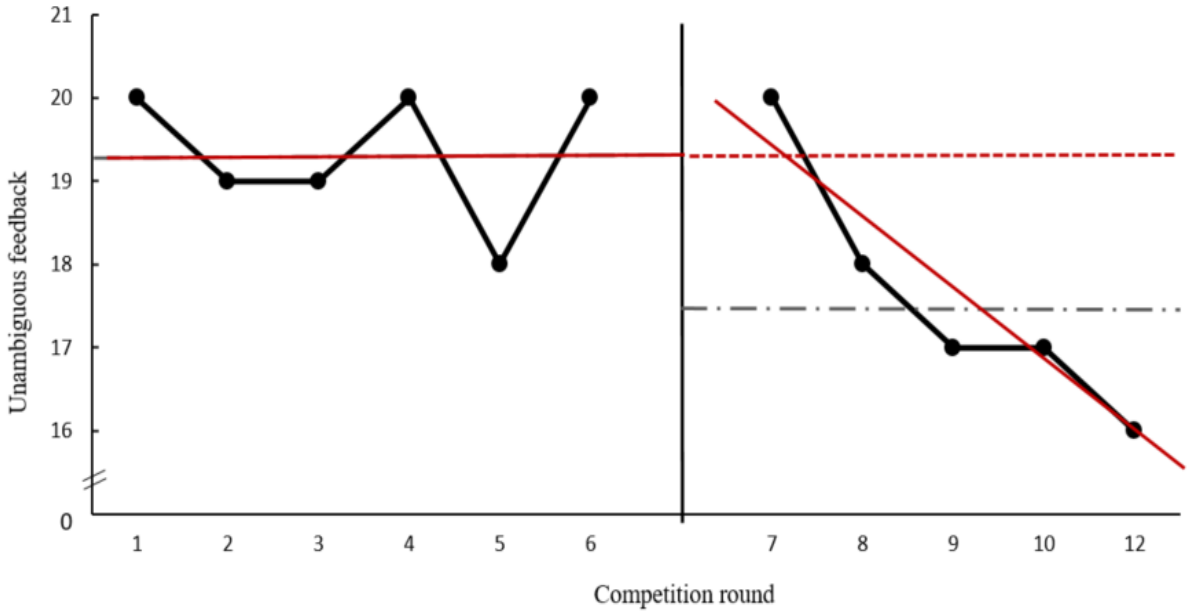

Figure 5.21. Flow scores for the unambiguous feedback dimension per round across phases for Igor after removing Round 11 as outlier

Between the BP and the IP, there was a drop in mean of 1.73 points or 8.97%. The data in the BP was relatively stable with the celeration line overlapping the mean line with a slope of 1.00. In the IP, the celeration line showed a negative steep slope at -1.15. Four out of five data points were under the projection line. This showed a clear case of declining in unambiguous feedback after the intervention was introduced.

Total concentration. Figure 5.22 illustrates Igor's total concentration dimension scores before and during the intervention with Round 11 removed.

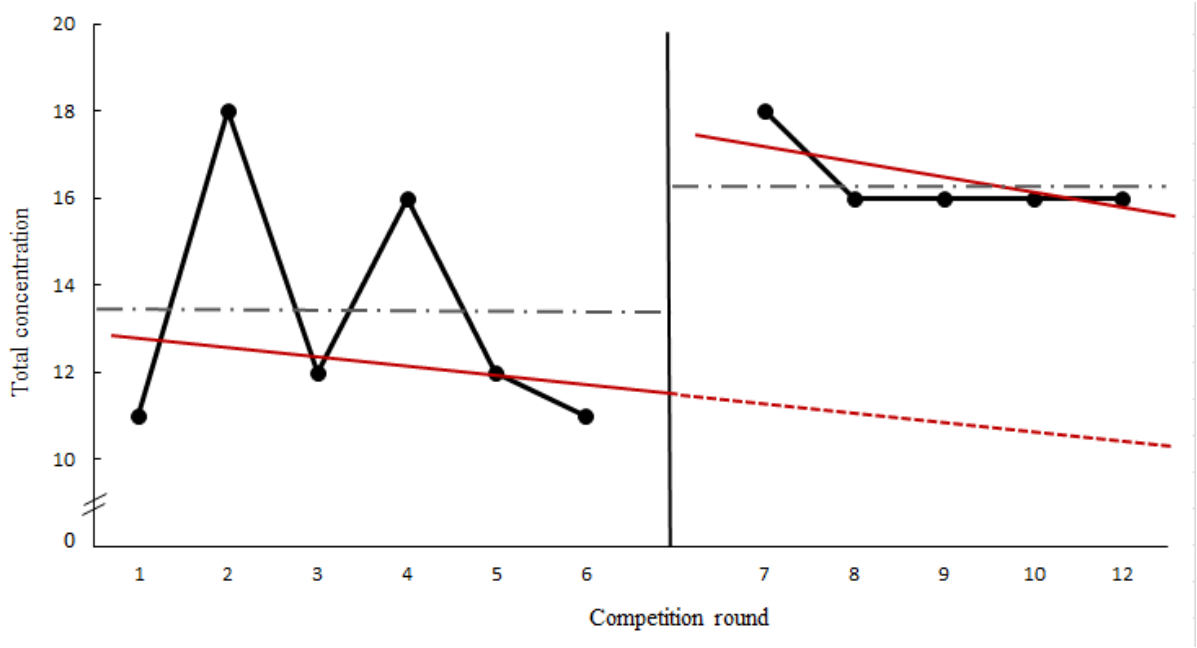

Figure 5.22. Flow scores for the total concentration dimension per round across phases for Igor after removing Round 11 as outlier

Between the BP and the IP, there was a strong increase in mean of 3.07 points or 23%. There was great volatility in the BP. The data for Round 2 could possibly be an outlier. The trend slope in the Baseline was downward at -1.05, whereas the trend slope in the IP was only slightly steeper at -1.06. All the data points in the IP were above the projection line, which clearly showed that the intervention was associated with an increase in total concentration.

Sense of control. Figure 5.23 illustrates Igor's results for the sense of control dimension before and during the intervention with Round 11 removed.

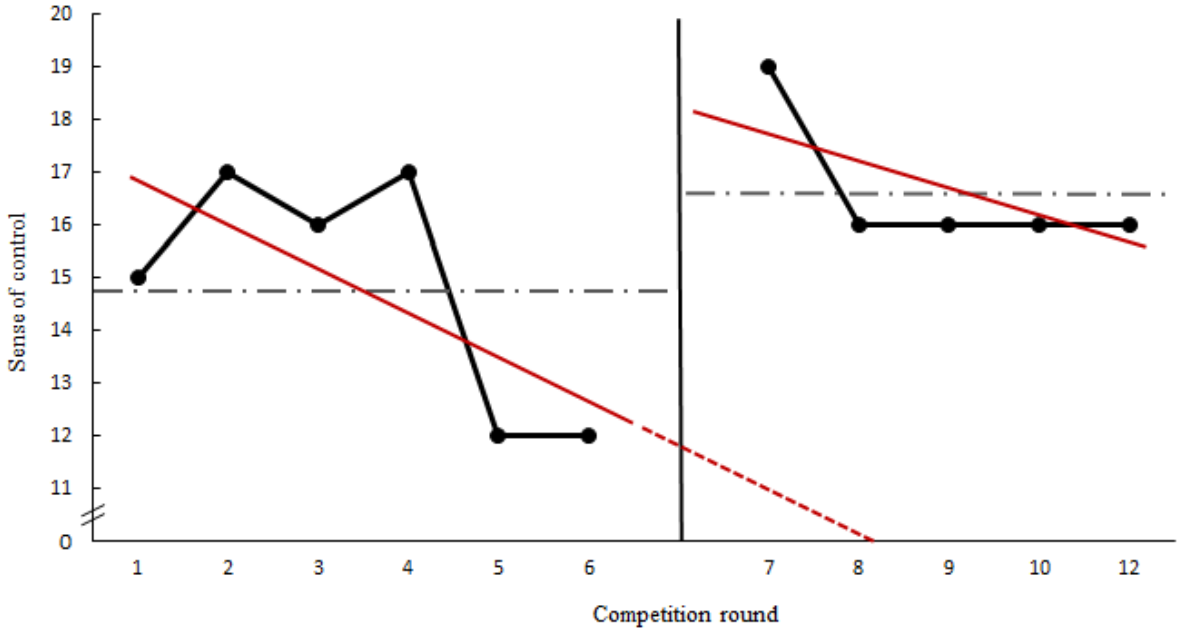

Figure 5.23. Flow scores for the sense of control dimension per round across phases for Igor after removing Round 11 as outlier

Between the BP and the IP, there was an increase in mean of 1.77 or 11.91%. The data in the BP showed some fluctuation at Rounds 5 and 6, which made the trend line slope downward at -1.17. The data in the IP showed a more consistent result except for Round 7 when there was a potential Hawthorne Effect. The slope of the IP was less negative at -1.09. All the data points in the IP were above the projection line, which clearly indicated a positive intervention effect.

Loss of self-consciousness. Figure 5.24 illustrates Igor's results for the loss of self-consciousness dimension before and during the intervention with Round 11 removed.

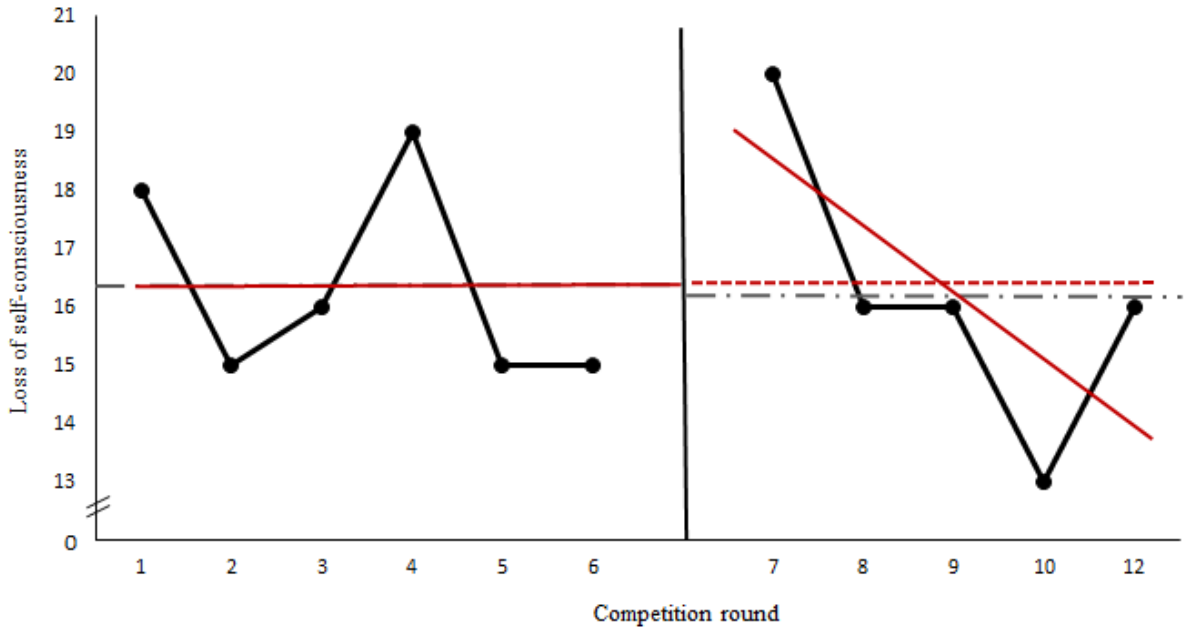

Figure 5.24. Flow scores for the loss of self-consciousness dimension per round across phases for Igor after removing Round 11 as outlier

Between the BP and the IP, there was a reduction in mean at 0.13 or 0.82%. Data points in the BP were relatively stable with the celeration line overlapped with the mean line with slope of 1.00, that is the line was horizontal. There was more volatility in the IP with the data for Rounds 7 and 10 out of the data range in the BP. The high value point in Round 7 could be due to a Hawthorne Effect. There was a down trend for the celeration line in the IP with slope of -1.24. With four data points under the projection line, I concluded that there was no positive effect of the intervention.

Transformation of time. Figure 5.25 illustrates Igor's results for the transformation of time dimension before and during the intervention with Round 11 removed.

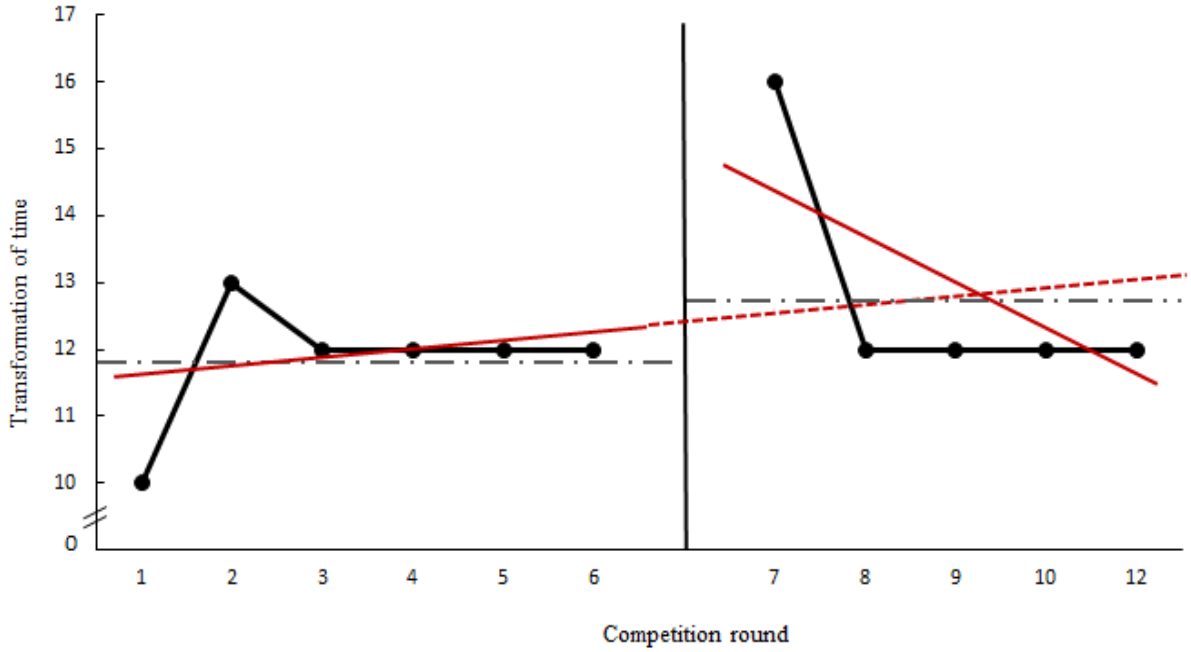

Figure 5.25. Flow scores for the transformation of time dimension per round across phases for Igor after removing Round 11 as outlier

Between the BP and the IP, there was an increase of mean of 0.97 or 8.17% due largely to a low outlier in Round 1 and a high outlier in Round 7. There was a change in trend from a positive slope of 1.03 in the BP to a negative slope of -1.17 in the IP. The high value in Round 7 might be due to a Hawthorne Effect. Although four points in the IP were below the projection line, eyeballing suggested that the BP and the IP were very similar, which meant I concluded there was no intervention effect.

Autotelic experience. Figure 5.26 illustrates Igor's results for the autotelic experience dimension before and during the intervention with Round 11 removed.

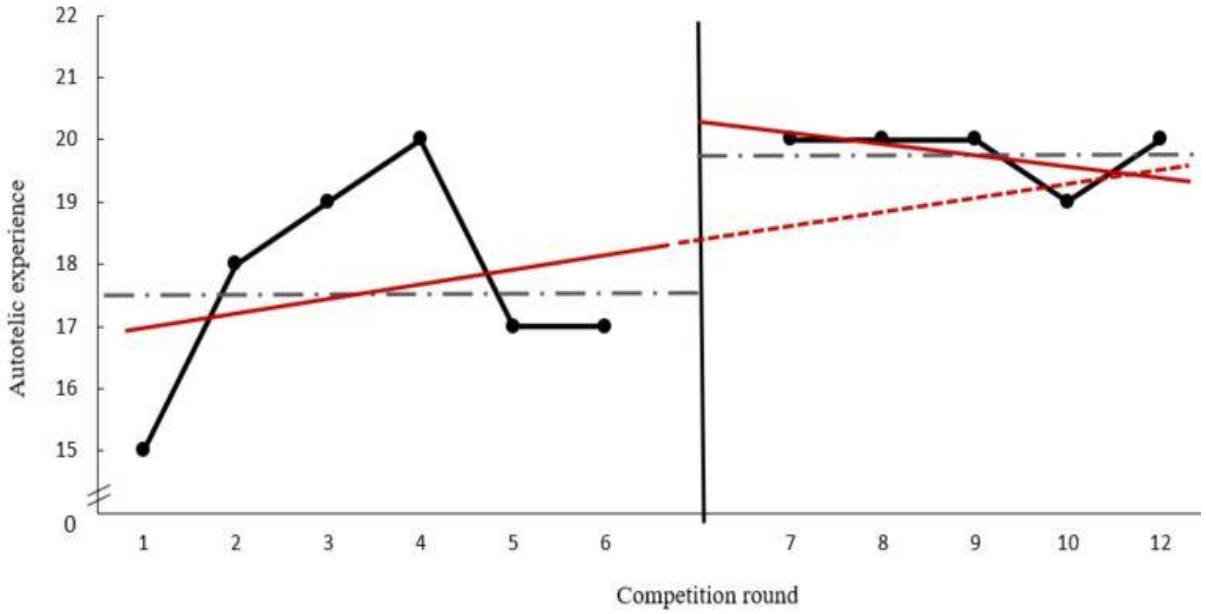

Figure 5.26. Flow scores for the autotelic experience dimension per round across phases for Igor after removing Round 11 as outlier

There is a substantial increase of the difference between the BP and IP means with the Intervention mean showing an increase of 2.13 or 12.08%. The Round 1 low outlier made the trend line in the BP steeper than the other data points in the BP suggest, with a slope of 1.04, while the trend line in the IP have a downward slope of -1.03. Four out of five data points are above the projection line which suggests a positive intervention effect.

To sum up, after the intervention, Igor improved his performance result only in the percentage distance error, while the number of putts per round and strokes gained putting did not show improvement. Although Igor had an improvement in global flow score, his results was affected by several factors. First, the appearance of an outlier in Round 11 due to extreme weather condition meant that the data for Round 11 was not meaningful to be included in the analysis. The effect of outlier in Round 11 affected more obvious to action-awareness merging, clear goal, total concentration, and autotelic experience dimensions than other dimensions. There was positive intervention effect on concentration, sense of control, and autotelic experience dimension, with mild effect on action-awareness merging

dimension. There was particularly high score in Round 7 for challenge-skill balance, action-awareness merging, unambiguous feedback, total concentration, sense of control, loss of self-consciousness, and transformation of time dimension. The consistency of its occurrence certainly suggests strongly that it is a Hawthorn effect.

Social validation interview. Igor described his putting before the study as "I have always been what I considered a good ball striker but a poor putter, and easily in the past got away with my putting". Talking about the effect of hypnosis he mentioned "Working with hypnosis and especially the pre-shot routine trigger, I felt that it really anchored my putting, and now even in a competition when I put the ball down and start the routine, I feel like I am in a, just a solid place and I feel confident over each putt, which has been really good". When discussing about his putting results during the IP, Igor said: "I have not been playing any better in terms of scoring, but my putting, I feel like I make a big step" and "I have sunk good putts down the stretch in all of them [intervention rounds] which is really confidence boosting". He mentioned certain techniques of putting that he still needed to work on, which prevented him from putting as well as he could: "My putting looked horrible so I'm working on that, I am bringing it (the club head) too far inside".

Referring to how hypnosis helped, Igor said: "visualizing the shot that you want to hit, being confident over that shot, and executing it". Igor also said that he needed to use this knowledge gained with putting on other parts of his game: "I have to continually doing it with every shot whether it's driving or iron, taking practice swings, look at the shot, feel the shot, see what you have to do then do it and don't think of anything else. And yeah, it's really helping my game".

Igor found that he enjoyed listening to the audio file "it was an ongoing process for me. It's something I will continue to do, I will continue to listen to the relaxation tape". Igor found that the training helped him get into the flow state much easier:

> It does not take much to get me into a confident frame of mind. Like today I got off to a solid start and boom I'm on my way and then I find that it's quite easy to with a little confidence to get to that relaxed state of mind where you don't think much at all, the body has practiced that shot many time and just let it flow. So, I have found, especially from that match play, once I've got it going that it's hard to beat.

The hypnosis training helped him to be less punishing to himself when the game did not go according to plan: "I used to be someone who would beat myself up if I got off to a bad start or hit a bad shot. I'm getting better at accepting that and moving on"

According to Igor, the best time to listen to the audio file was in the evening after dinner but before bed time. And he found it got easier after more sessions. He even thought that it could be useful for his whole family,

> The second time it was easy because I knew what was coming. As I said before, it is something I will continue to listen to. And I might even get my wife and my kids to listen to it, too, just to get their heads into a different frame of mind.

Igor proposed a suggestion that the script could have been shorter,

> I certainly felt the first time I listened to it that it was too long to get into relaxed state. I think your manner was so good that I got so relaxed. I think the getting into relaxed state part was 20 minutes or so and I got it in 5. I think you might shorten that, maybe 12 or 15 minutes then get into the other parts.

He proposed to have another script, which would be more compact and focus specifically on helping people relax instantly, "maybe you can work on some other tape work, quicker, the whole thing is compressed, with triggers they can recognize so they can calm down quickly". He concluded that he wished he could work on this type of intervention earlier, "I wish I had met you when I was a 20-year-old. It would really help me when I was starting out".

Participant Lee

Golfers' profile. Lee was 20 years old with 7 years of golf experience, when he participated in the study. He played with a HC of scratch (0) at the start of the study. Lee reported that he had not experienced flow while playing or thinking about playing golf prior to the study. He rated his putting skill at 5 out of 7. He demonstrated a high level of hypnotisability with a score of 9 out of 12 for the WSGC test. This showed that he could go into deep trance. During Round 8, Lee forgot his driver club at home, which meant that he had to borrow a driver club from the pro-shop. During Round 8, he was not comfortable with the driver, mainly because the driver was not a good match for his physical ability. As a result, he felt less comfortable with his long game (driver, long iron club shot), which negatively affected his flow state. However, his putting performance did not seem to be greatly affected by this occurrence. The global flow state was probably somewhat generalised across the whole game, so it was likely to be affected by the borrowed driver, whereas Lee was using his usual putter, so his putting skill was not affected much by the change of driver, since Lee mostly got to the green in a reasonable number of shots. Therefore, in the segment below, his putting performance did not change, but his flow scores might be affected by outliers in Round 8. In the flow section below, I present the graphs and analysis which I removed data for Round 8 as outlier because this outlier affected eight out of nine flow dimension scores. The original graph and data is available upon request.

Number of putts per round. Figure 5.27 illustrates Lee's number of putts per round from the BP to the IP.

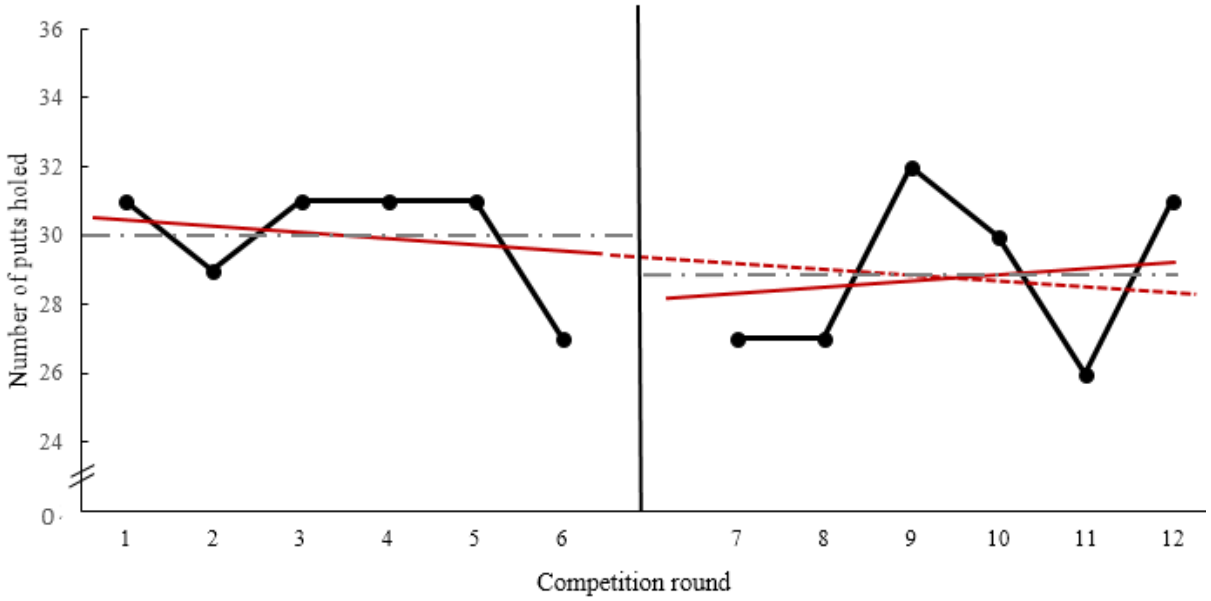

Figure 5.27. Number of putts per round across phases for Lee

Between the BP and the IP, Lee's number of putts per round showed a decrease in the mean of 1.17 putts or 3.89%. This was the lowest decrease in the number of putts per round among the three golfers. Number of putts per round showed more variability in the IP compared to the BP. Four out of six data points, those in Rounds 7, 8, 10, and12, overlapped with data points in the BP. The projection line divided the data in the IP into two halves with three data points in each half. The negative trend in slope of -1.02 in the BP was reversed into a positive trend of 1.01 in the IP. The change from a negative to a positive trend in slope across phases for number of putts per round was detected for both Igor and Lee, but it was a steeper change in Igor's case. Overall, the information suggested that there was no intervention effect.

Percentage distance error. Figure 5.28 illustrates Lee's results for the percentage distance error before and during the intervention. The percentage distance error was calculated by the distance to the hole after the putt compared to the distance before the putt multiply by 100.

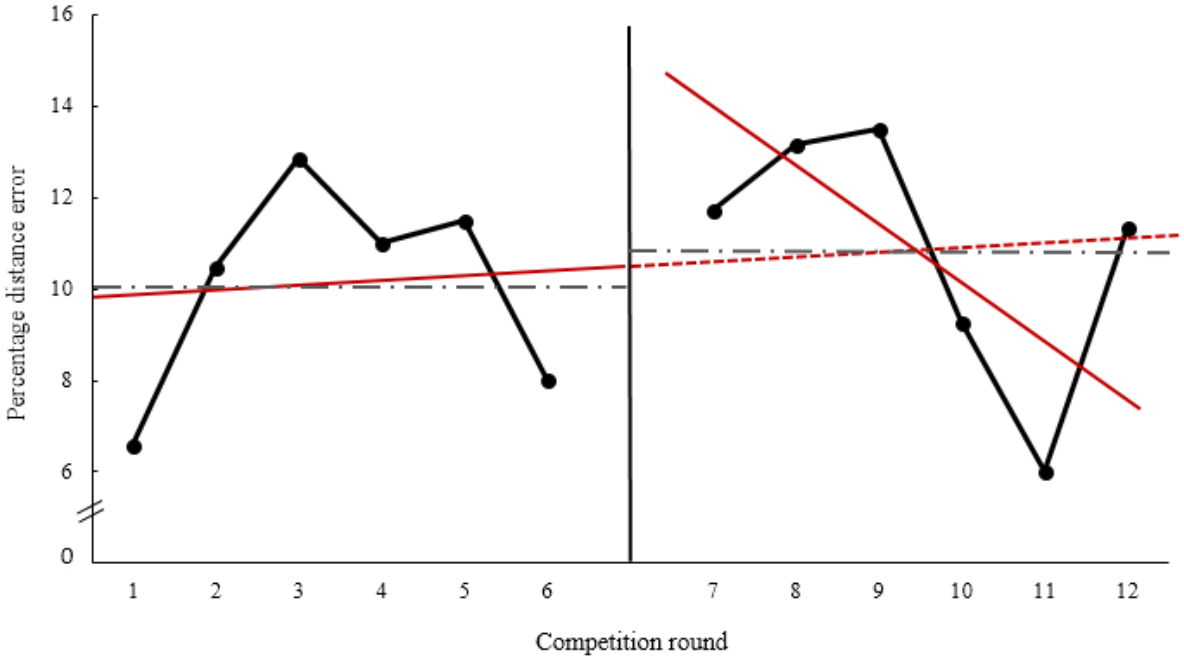

Figure 5.28. Percentage distance error per round across phases for Lee

From the BP to the IP, Lee's percentage distance error scores showed an increase in the mean of 0.75 or 7.48%. Lee was the only golfer who had an increase in the percentage distance error mean score among the three golfers, which was not a positive result. There was a high fluctuation in data range for both phases. The data for Rounds 8, 9, and 11 did not overlap with the BP data points. The near horizontal trend in slope of 1.02 in the BP contrasted with a negative trend of -1.44 in the IP. The very low distance error in Round 1 could have distorted the Baseline celeration line and the projection line to slope more steeply upward than would be suggested by other data points in the BP. Lee was the only golfer who showed a change in slope between the BP and the IP, which indicated an increase in putting error. The projection line cut through the data points of the IP with four data points above and two data points below the line. All the information suggested that there was no intervention effect.

Strokes gained putting. Figure 5.29 illustrates Lee's strokes gained putting results before and during the intervention.

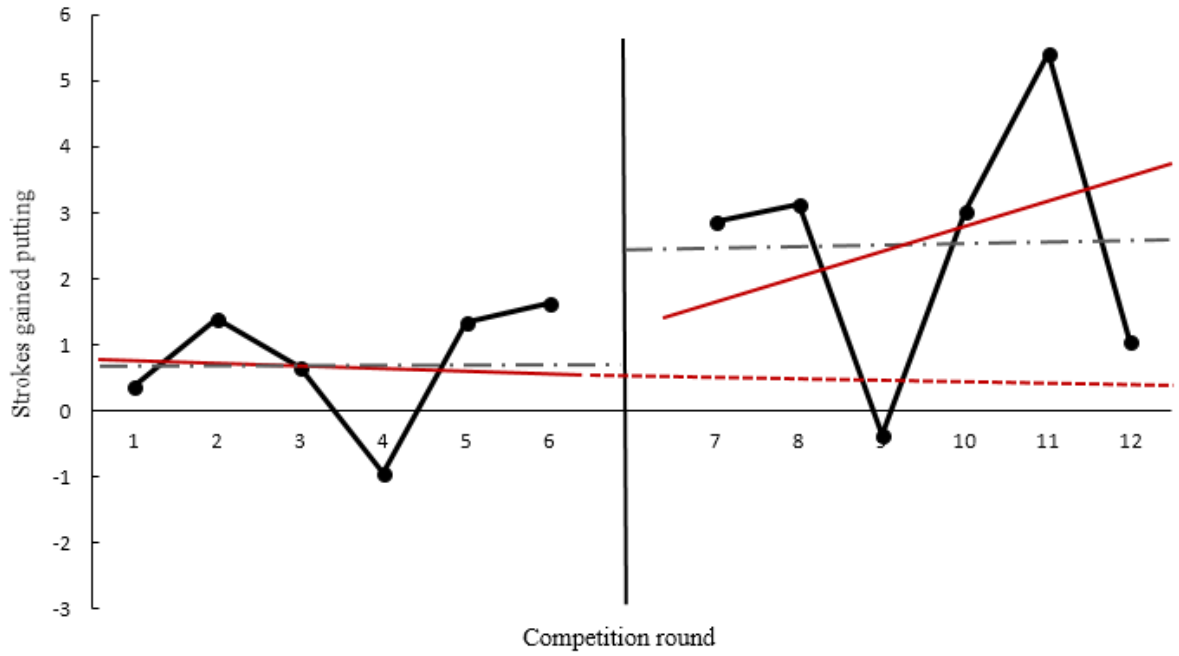

Figure 5.29. Strokes gained putting per round across phases for Lee

From the BP to the IP, Lee showed an increase in the mean for strokes gained putting of 1.78 or almost 240%. The celeration line in the BP was downward with a slope of -1.18. The slope changed to a positive trend in the IP at 1.69, which indicated an improvement in putting performance, as measured by strokes gained putting. In the IP, four data points were outside of the BP data range. Five out of six data points in the IP were above the projection line, which indicated a strong positive intervention effect.

Global flow. Figure 5.30 illustrates Lee's results for the global flow scores before and during the intervention with Round 8 removed.

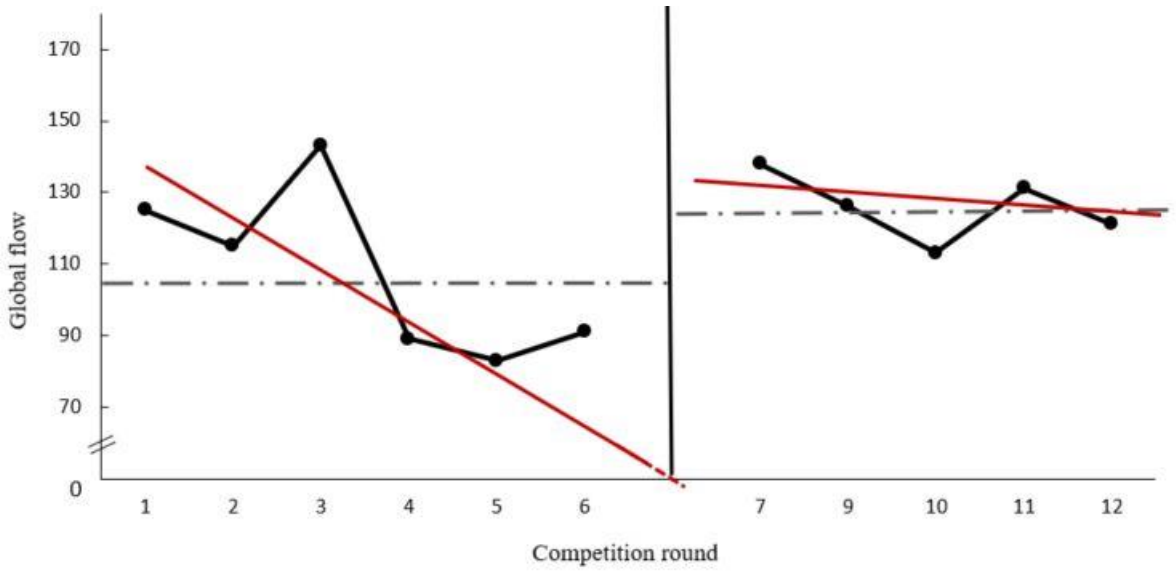

Figure 5.30. Global flow scores per round across phases for Lee after removing Round 8 as outlier

With Round 8 removed, between the BP and the IP, Lee reported an increase in mean global flow of 18.13 points or 16.84%. This was the largest increase in flow for all participants. There was a change from a negative slope of -1.46 in the BP to a less steep slope of -1.05 in the IP. Lee had a low overall global flow score in the BP, with his average around 116.67, This low global flow score for Lee indicated a lot of room for improvement because Lee's mean score was only eight points higher than 108, which is the middle value of the total flow scale. Because of the steep downward slope in the BP, eyeballing using the projection line was not effective. However, all data points in the IP were above the mean line of the BP, which indicated that there was a positive intervention effect on Lee's global flow score.

Challenge-skill balance. Figure 5.31 illustrates Lee's results for challenge-skill balance before and during the intervention with Round 8 removed.

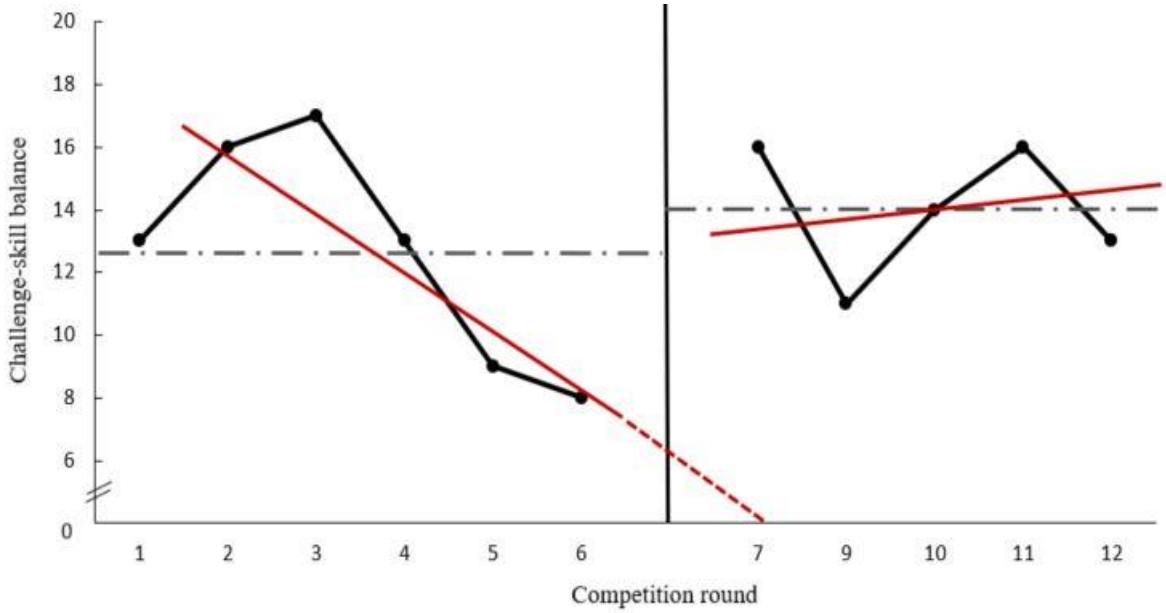

Figure 5.31. Flow scores for the challenge-skill balance per round across phases for Lee after removing Round 8 as outlier

There was a steep downward slope in the BP with high scores in Rounds 1, 2 and 3 contrasted with much lower scores in Rounds 4, 5 and 6, which made the trend line negative with slope of -1.53. Because of the steep downward slope in the BP, eyeballing using the projection line was not effective. Nonetheless, four points in the IP were at or above the mean line for the BP. There was an improvement in the mean from the BP to the IP of 1.33 or 10.53%. As illustrated in Figure 5.31, the trend line in the IP became positive with slope of 1.07. Overall, the result suggested that there was a positive effect of the intervention for challenge-skill balance.

Action-awareness merging. Figure 5.32 illustrates Lee's results for the action-awareness merging dimension before and during the intervention with Round 8 removed.

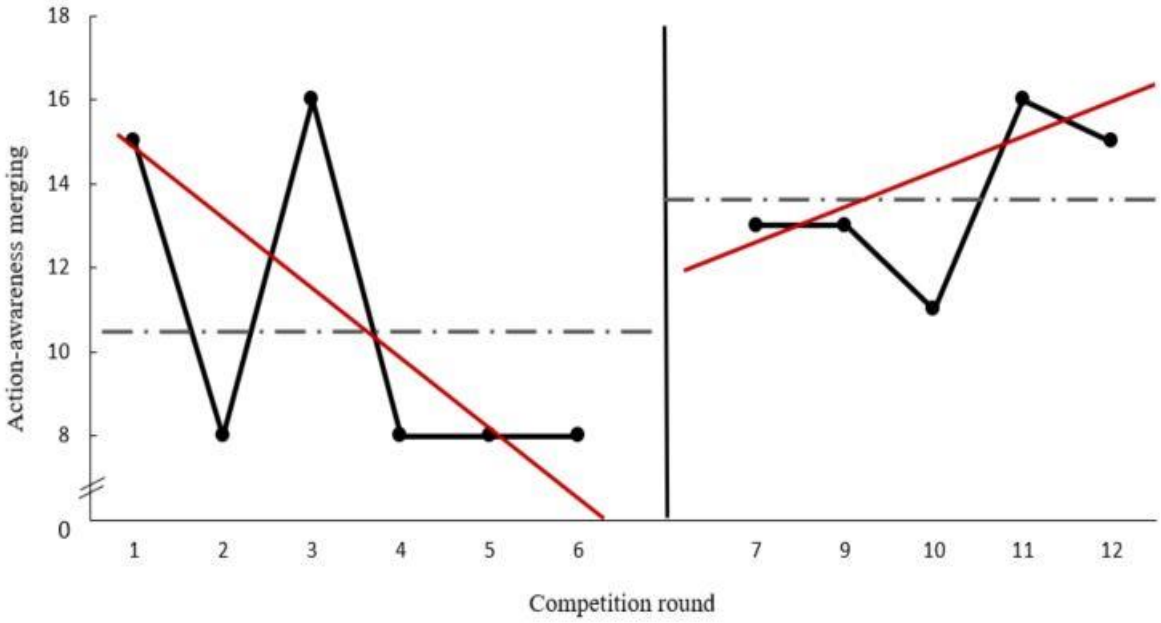

Figure 5.32. Flow scores for the action-awareness merging dimension per round across phases for Lee after removing Round 8 as outlier

There was an increase in the difference between the mean for BP and the IP to 3.10 or 29.52%. Data in the BP showed a high fluctuation in Rounds 1 to 3 then stabilized in Rounds 4 to 6. The high values for the data for Round 1 and Round 3 produced a steep negative trend line in the BP with slope of -1.63, which made the projection line not so reliable to analyse the result in the IP. These two values contrasted the much lower scores for the other four BP data points. Eyeballing using the split-middle technique was not useful because all the data points in the IP were higher than the exaggerated steep negative slope of the projection line as illustrated in Figure 5.32. The trendline in the IP had a positive slope of 1.19 and all five data points in the IP were above the BP mean line. Overall, these results suggested a positive intervention effect.

Clear goals. Figure 5.33 illustrates Lee's results for the clear goals dimension before and during the intervention with Round 8 removed.

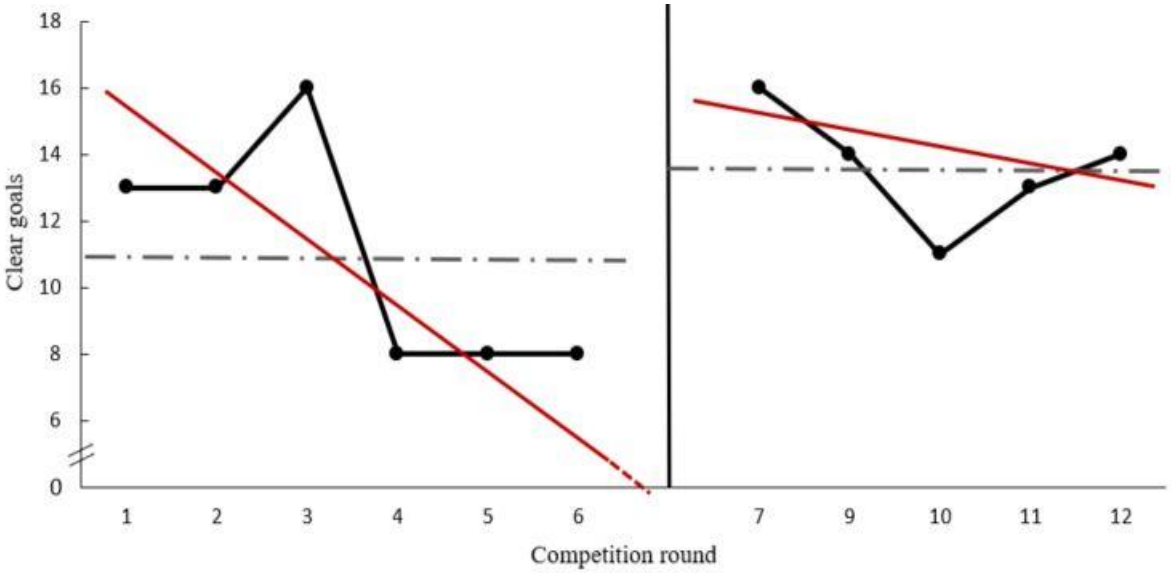

Figure 5.33. Flow scores for the clear goals dimension per round across phases for Lee after removing Round 8 as outlier

As illustrated in Figure 5.33, there was an improvement in the mean of 2.6 or 23.64%. In the BP, there was a fluctuation with early high scores followed by a steep drop and scores stayed down in Rounds 4 to 6. Therefore, the celeration line in the BP had a negative trend with slope of -1.75, which also meant that the projection line was below all the data points in the IP. Five intervention points were all above the mean of the BP. The celeration line in the IP then showed a downward trend with slope of -1.11. Overall, the data suggested that there was a positive intervention effect for clear goals.

Unambiguous feedback. Figure 5.34 illustrates Lee's results for the unambiguous feedback dimension before and during the intervention with Round 8 removed.

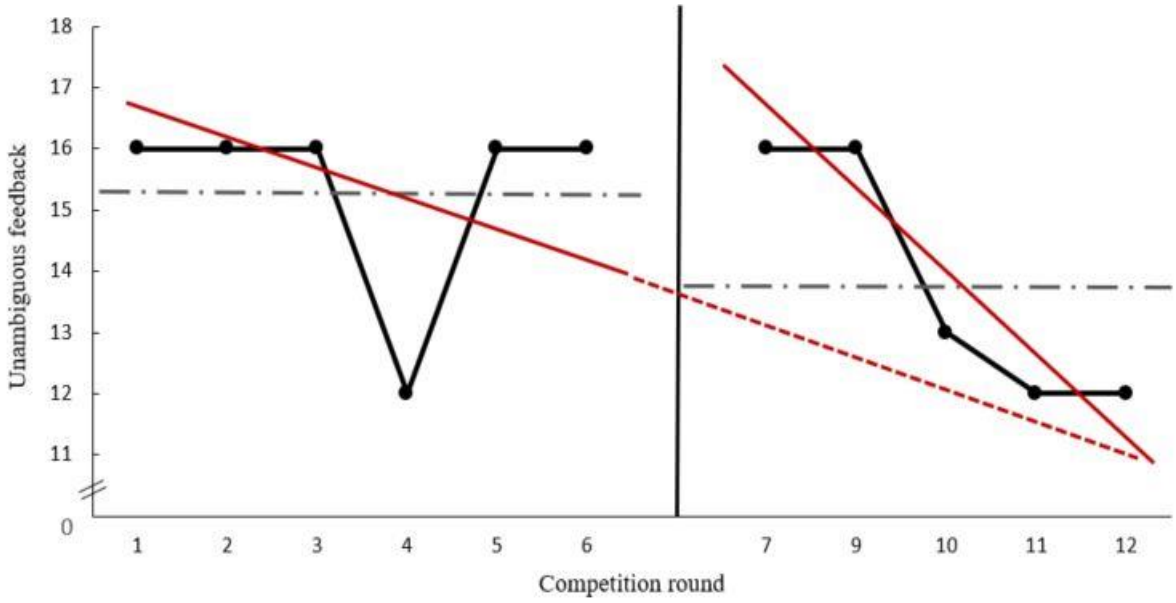

Figure 5.34. Flow scores for the unambiguous feedback dimension per round across phases for Lee after removing Round 8 as outlier

Between the BP and the IP, there was a decrease in mean of 1.53 or 10%. The celeration line in the BP sloped down at -1.09 because of an outlier in Round 4, which also lowered the mean. The trend line in the IP was steeper with a slope of -1.33 due to a big drop from Round 10 to 12. Although the projection line was below all the data points in the IP, it was not possible to conclude that this showed an intervention effect because of the exaggerated negative slope in the BP due to the outlier in Round 4 and the large drop in scores for Rounds 10,11, and 12. Without the outlier in Round 4, all the other data points were stable at a much higher level, while the scores for the last three IP Rounds, that is, 10, 11, and 12 were much lower. Overall, there was no intervention effect.

Total concentration. Figure 5.35 illustrates Lee's results for the total concentration dimension before and during the intervention with Round 8 removed.

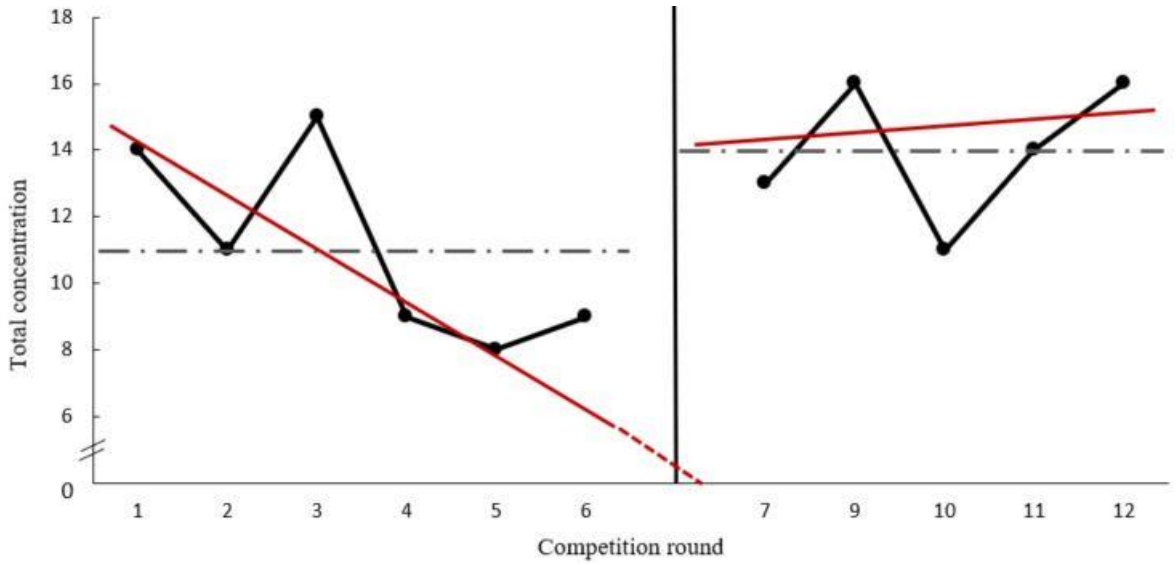

Figure 5.35. Flow scores for the total concentration dimension per round across phases for Lee after removing Round 8 as outlier

As illustrated in Figure 5.35, there was an increase in mean in the IP compared to the BP of 3.00 or 27.27%. There was a fluctuation in the BP with the data higher for Rounds 1 to 3 and lower for Rounds 4 to 6. Thus, the celeration line in the BP had a negative trend with a steep slope of -1.54. There was a change in direction with the celeration line in the IP having a positive trend with slope of 1.03. Using the split-middle technique, all the data points in the IP were above the projection line. Overall, the result suggested a positive intervention effect.

Sense of control. Figure 5.36 illustrates Lee's results for the sense of control dimension before and during the intervention with Round 8 removed.

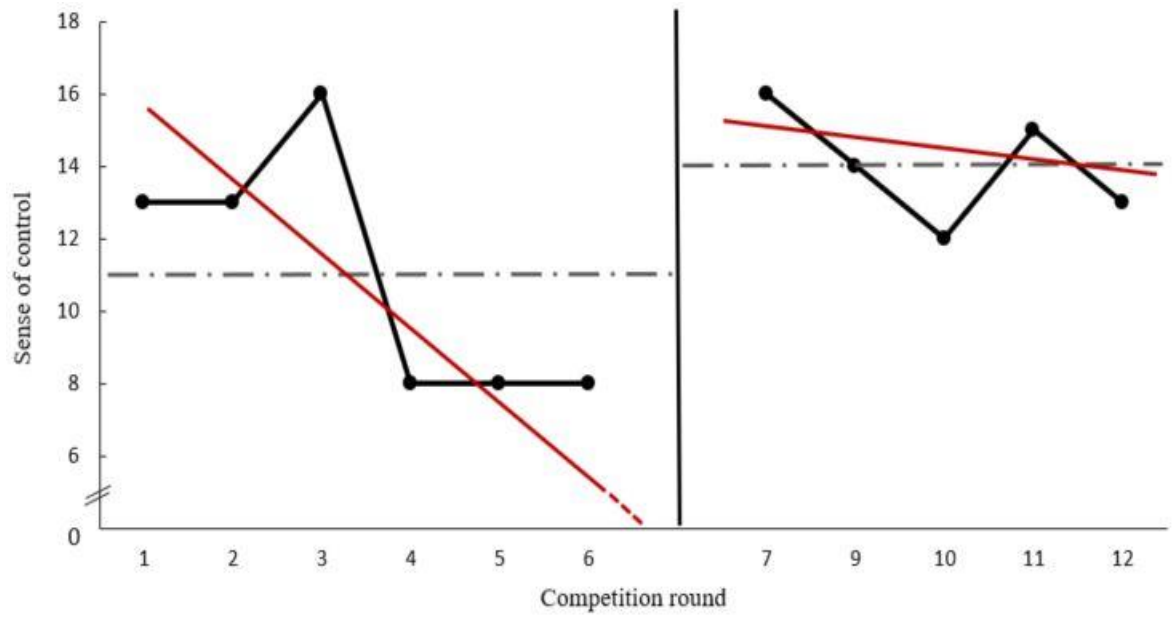

Figure 5.36. Flow scores of the sense of control dimension per round across phases for Lee after removing Round 8 as outlier

As illustrated in Figure 5.36, there was with an increase in mean between the BP and IP means of 3.00 or 27.27%. Similar to the total concentration dimension, in the BP of the sense of control dimension, there were high scores in Rounds 1 to 3 and lower scores in Rounds 4 to 6. This fluctuation led to a steep downward celeration line with slope of -1.75. The trend in the IP became slightly negative with a slope of -1.07. The projection line in the split-middle technique was not useful because the slope of the celeration line in the BP had an exaggerated downward slope, which meant all the data points in the IP were above the projection line. Overall, the results suggested a clear positive effect of the intervention on sense of control.

Loss of self-consciousness. Figure 5.37 illustrates Lee's results for the loss of self-consciousness dimension before and during the intervention with Round 8 removed.

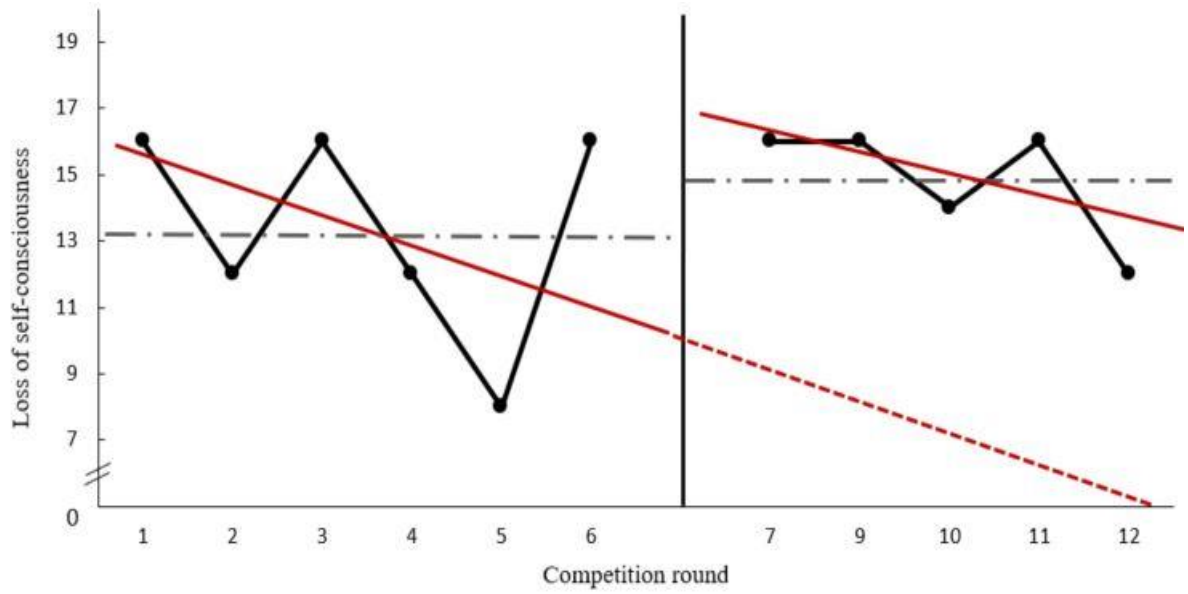

Figure 5.37. Flow scores for the loss of self-consciousness dimension per round across phases for Lee after removing Round 8 as outlier

As illustrated in Figure 5.37, the mean in the IP increased, and the difference between the BP and IP means was 1.47 or 11%. Because of the outlier in Round 5, the celeration line in the BP had a downward slope of -1.22. There was a slighter downward slope at -1.14 in the IP. Using the split-middle technique, all data points in the IP were above the projection line. Overall, the results suggested there was a small, positive intervention effect.

Transformation of time. Figure 5.38 illustrates Lee's results for the transformation of time dimension before and during the intervention with Round 8 removed.

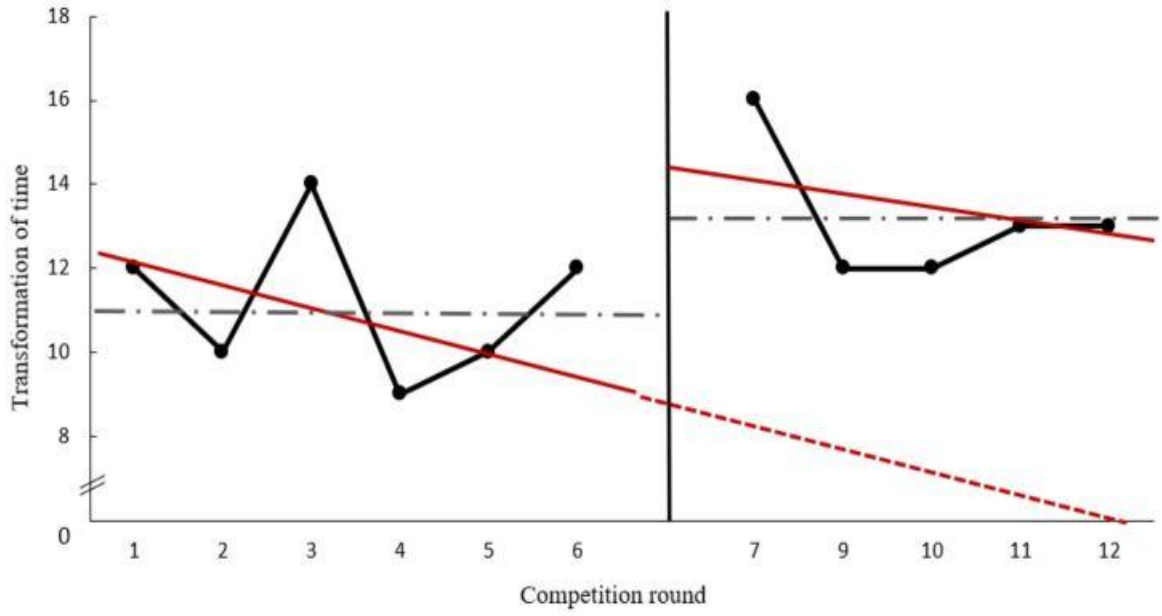

Figure 5.38. Flow scores for the transformation of time dimension across phases for Lee after removing Round 8 as outlier

There was a change in mean of 2.03 or 18.21% from the BP to the IP as illustrated in Figure 5.38. The high value in Round 7 might reflect a Hawthorne Effect. The celeration line trend was negative in the BP with a slope of -1.16 and then remained negative in the IP with a slighter slope of -1.08. Although the projection line was of limited use because of the exaggerated negative slope due to a high value for Round 3, all the data points in the IP were above the mean for the BP. Overall, the results suggested a positive intervention effect.

Autotelic experience. Figure 5.39 illustrates Lee's results for the autotelic experience dimension before and during the intervention with Round 8 removed.

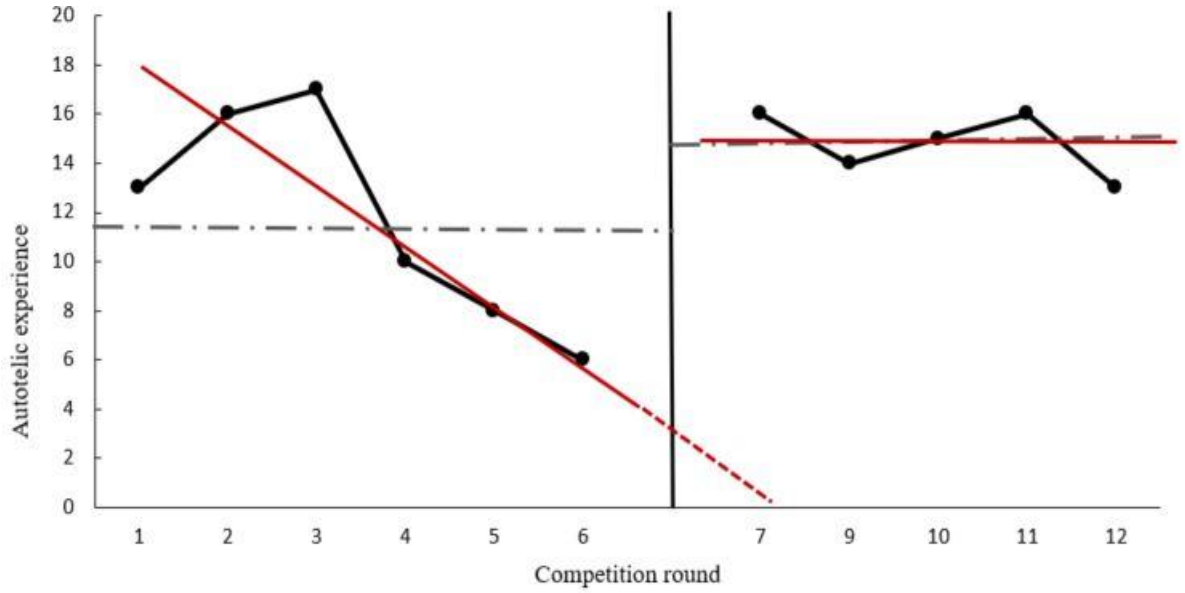

Figure 5.39. Flow scores for the autotelic experience dimension across phases for Lee after removing Round 8 as outlier

Between the BP and the IP as illustrated in Figure 5.39, the trend line in the IP was nearly horizontal and almost overlapped with the mean line. There was a large increase in the mean from the BP to the IP of 3.13 or 26.86%. The BP data followed a pattern of three high values in Rounds 1 to 3, dropping to lower values in Round 4 to 6. This fluctuation led to a steep downward trend in the BP with a slope of -1.92. Because of this steepness, it was not effective to use the split-middle technique to consider whether there was an intervention effect based on the projection line. In the IP, the trend was slightly downward with a slope of 1.03. In either case, all the data points in the IP were clearly above the mean line of the BP. Overall, the results suggested a positive intervention effect.

To sum up, Lee's performance improved in strokes gained putting after the intervention, while there was no improvement in number of putts and percentage distance error. Lee's flow dimension score was affected by the outlier in Round 8 because he forgot his driver club and he had to borrow another club. This incident affected mainly his long shots so did not play a major role with reference to his putting. I excluded data in Round 8 as a systematic outlier for all the flow dimensions. Overall, Lee showed positive improvement

in seven of the flow dimensions, namely challenge-skill balance, action-awareness merging, clear goal, total concentration, sense of control, time transformation, and autotelic experience, as well as the global flow, and a small improvement in the loss of self-consciousness dimension. There was no improvement in the unambiguous feedback dimension.

Social validation interview. Lee explained his understanding of how hypnosis helped him in the following way, “to calm the conscious mind, and let the subconscious mind take over and control thoughts, memories… It helps to relax body and mind”. During the time he was in hypnotic trance, Lee felt there were no thoughts, feelings, or external factors that caused distractions, “I was pretty calm and relaxed and did not think about the environment around me”. The effect of hypnosis helped Lee to become “calmer, I also noticed the small differences throughout my play. I could release my thoughts more easily”. Lee mostly listened to the mp3 file at night before bed. He suggested that, “it was easy to get into a relaxing state because it was quiet, and I was in my bed when I listened to the mp3”. Talking about his experience listening to the mp3 file, Lee said, “I thought they were great. I found myself getting into hypnosis easily. I enjoyed them, they were good”. With each session, he felt it was easier to get into trance, “I can be more relaxed and go deeper each time, a little bit faster. That’s the difference from the first time till now”.

Talking about the effect of the intervention, Lee said that he, “noticed the difference. I really feel a lot more confident and I am able to clear my visualization, my feelings, and putt more instinctively”. The trigger for Lee was to put the ball down to putt. That trigger was the start of his pre-shot routine. Having done the hypnosis training, he was able to, “focus more on my target and visualization of the putt being more instinctual and letting my feel take over”. Hypnosis training helped Lee with his game, as he stated, “pre-shot definitely improved dramatically. I can decide whether it’s a good putt or good read, and not get frustrated if I miss the putt. And I’m now judging my process, my routine, not whether the

putt goes in or not", so he focused more on the process than the result itself. As reflected in the results, Lee improved both his strokes gained putting and his flow state. He reflected on his ability to putt under pressure,

> When I get up there I can just trust my instinct, my pre-shot routine, and be in a state of flow and just let things happen. I feel that my putting performance has improved dramatically since before (pre-study), especially in high-pressure situations, knowing that I can trust my routine. My thought processes and my putting have definitely improved since the study.

Evaluating his performance throughout the study, Lee said, "I see the results now because it has shone a light on different things, my performance, how I improved, how I got better." He also analysed his poor flow performance in Round 8 due to the driver club issue. He explained that he forgot his driver club at home when leaving in a hurry. As a result, he had to borrow a driver from the clubhouse which was not fitted to him. Golfers normally go through a fitting process in which each of the clubs in their bag is customized to match with their height, their strength, and the style of swing they have, in order to maximize their performance. Lee said, "playing [with] a non-fitted club made me feel less confident in my driving skill, and many times put pressure on my long game". He elaborated further that, "my putting skill and game was fine because I played with my usual club, but the rest of my game just felt so much more pressured of scoring due to poor driving shots". Lee's experience with hypnosis training allowed him to,

> Have more awareness in certain situations, it is clearer when I'm putting, what I need to think, what I need to do. The visualization is much clearer, I can focus easier, faster, and let my instinct take over from there, and feel like I'm in a flow. I know what I need to do now, whereas before it wasn't clear. Some days I had it, some days I

> didn't. But now I know how to pinpoint the mental keys that help my putting. I think it is great.

Lee felt that he had more control over his ability to be in the zone,

> Overall, I had better concentration. It was refining the mental keys, while I was playing, to get me into flow. Now I know what triggers, what keys work for my game, for my mind, and how to get into flow for myself as an individual. I feel now after the study it has improved dramatically, I can concentrate and let my instinct take over.

Despite this encouraging result, Lee also admitted that,

> There were times when I did not want to do thing [listen to the hypnosis audio file], but I had an open mind, and now I am glad that I did things that I was not comfortable with. At that time, I did not think that certain things would help but I got a lot out of the study.

Overall, Lee felt that he improved in his concentration and the feeling of being in control,

> I noticed a big difference in my ability to stay focused, to be in the zone, to get out of the zone and get back in again, to feel in control of my game. When I am concentrating, I have this feeling of being in control, calm and relaxed, knowing what things to focus on, definitely more absorbed in the moments – all good things.

To summarize the results of Study 3, the FP intervention helped Lee and Thomas improve their putting performance in strokes gained putting score. Strokes gained score is becoming acknowledged by golf professionals as a preferred measure of golfers' performance. The present study is the first to use strokes gained putting score as a performance indicator for a psychological intervention. Only Thomas showed improvement in number of putts. Igor showed improvement in the percentage distance error, while Thomas showed a small improvement in this performance indicator. In global flow, only Lee and Igor

improved their global flow score; Thomas did not improve. Specifically, Thomas only improved on the unambiguous feedback dimension out of the nine flow dimensions. Lee and Igor displayed a similar pattern of improvement in the flow dimensions. They both improved in terms of total concentration, sense of control, time transformation, and autotelic experience dimensions. Both Lee and Igor showed a small improvement in the loss of self-consciousness dimension. Among the three golfers, Lee had the lowest overall global flow score in the BP. His global flow score was around 107.67, while Thomas' average global flow score was 134.67 and Igor's global flow score was 146.33. It is interesting to note that Lee's overall global flow score in the BP was slightly less than the middle range value of 108, which meant he had yet to experience flow during the BP, yet he showed the greatest improvement in eight out of nine flow dimensions. Overall, these results suggest that the intervention enhanced global flow, various flow dimensions, and improved one or two of the three performance indicators, depending on the participant

Discussion

In this section, I first discuss external factors that could have affected the overall results. Having this knowledge about the influence of external factors is important to evaluate the results, particularly with reference to the impact of the FP hypnosis intervention. I then discuss the results in detail for the three performance measures, global flow state, and the nine flow dimensions. Next, I relate the results of the present study to previous research to further expand the knowledge pool about the impact of hypnosis in sports. In the next section, I consider methodological issues arising from the present study. Finally, I discuss potential future studies based on issues that came up during the present study.

External Factors

Course conditions. Before discussing the findings, there are some points about external factors that should be considered because they might play an important role in

reflections on the results. Unlike research in laboratory settings, where researchers can have full control of the situation and environment, in field research, uncontrolled environmental factors can pose a variety of challenges. The game of golf can be greatly affected by environmental conditions, for example, wind direction and speed have a direct impact on how a ball flies. Golf course design also has an impact. The course on which Thomas and Igor played is a links golf course, which refers to courses located in an area of coastal sand dunes with few water hazards and very few trees. Because of the coastal location and lack of trees, it is often windy at this course, especially before a storm. In Igor's Round 11, the weather was extreme due to a coming storm. The course on which Lee played has more trees and bushes with narrow fairways, which rewards golfers with high accuracy and technical ability. Therefore, it is worth noting these characteristics when comparing the results of Thomas and Igor with Lee's results.

In addition, the way a ball travels on the green depends on certain physical conditions of different greens. If the grass on the greens is left long, there is more resistance to the ball, which means the ball travels a shorter distance with the same force of putt. If the green has just been trimmed, the grass is short, so the ball will travel further and "break" more (divert from a straight line with the slope of the green). Typically, the green condition often varies on different days of the week. The position of the putting hole on the green is frequently changed during the week by the greenkeeper, so even though golfers play their rounds on the same 18 holes every week, the exact position of the hole on each green is likely to change from round to round. After talking to the greenkeepers, I was made aware that the greenkeepers tend to put the hole position in an easier to putt location at the start of the week, and increase the difficulty as the week progresses. On every Saturday, which is usually when the major club competition is held, the hole is set at the most challenging location of the week on the green to make sure the game is more interesting. Hence, I decided to collect data on

the same day of the week for each round to make sure the hole position and its difficulty level was relatively stable from week to week.

Golf partners. In addition to these extraneous environmental variables, various factors associated with the inconsistency in the quality of playing partners might have contributed to the results. Each participant typically played with three different partners every week. The standard of golf partners varied from HC 20 to scratch golfers. When the participants played with lower-skilled golf partners, the game speed was typically slower with more disruptions, because they had to wait for the lower-skilled partners to hit some shots before their turn or they had to temporarily stop their game to look for partners' balls that got lost in the bushes or water. On the other hand, when the participants played with higher-skilled golfers (scratch level), the game speed was quicker, and the participants felt they were in serious competition with their golf partners. So, these variations in playing partners were associated with fluctuations in the conditions from game to game in the actual golf competition rounds. Because of these factors, the data collected from this study contain a higher degree of variability than data collected from Studies 1 and 2. However, conducting research in actual competition, as I did in this study, increases the ecological validity of the context. All the variables that affected the golfers' performance and flow state within and between rounds are part of the experience of putting in a real competition situation. On one hand, it is important to be cautious when interpreting the results, but, on the other hand, the findings could be more meaningful for future competition performance and flow than the results of highly controlled field studies.

Conclusions from the Results

In this study, I investigated the effectiveness of a FP hypnosis intervention in enhancing flow state and golf putting performance among scratch level golfers (HC <= 0). The results showed that the intervention was associated with a strong improvement in

performance for two out of three golfers on strokes gained putting score and a reduced mean for the number of putts per round score. There was also a significant improvement in global flow for two out of three participants. These results are consistent with previous research that used hypnosis to increase flow and performance in sport (Lindsay et al., 2005; Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates, Maynard et al., 2001; Pates, Oliver et al. 2001; Pates & Palmi, 2002). This study was conducted in ecologically-valid conditions of weekly club competitions for 12 weeks and two out of three performance outcomes (number of putts per round, strokes gained putting) were measured according to the standard procedure for professional golfers. The third measure, percentage distance error, was based on radial error, a measure widely used to evaluate performance in target tasks in motor learning research. However, taking into account the influence of the length of putts on their difficulty, radial error for each putt was divided by the length of that putt. Thus, it appears that motor learning measure that has worked effectively in many studies in which performance conditions are constant is not as sensitive to all the variations inherent in putting during golf competition. In particular, Broadie's (2008) recently developed measure of strokes gained putting showed promise in the present research conducted in real golf competition.

Performance. All three golfers reduced the mean number of putts per round from the BP to the IP, with the range of reduction from 1.17 strokes to 1.67 strokes per round. Thomas showed the most noteworthy improvement on this criterion with 1.67 strokes reduction in the mean from the BP to the IP. There was relative stability in the mean of percentage distance error in all three golfers. For both Thomas and Igor, all their data points during the IP were above the extrapolated celeration line. Only Igor's results showed a slope change in the direction that indicated that the distance after his first putt was longer during the IP than the BP. This result supports Igor's comments that his putting skill did not improve as much as it

could, and he knew there were certain technical issues he needed to work on. Percentage distance error was not a highly sensitive indicator of putting performance in this study.

As discussed in the Method section, the strokes gained putting data was expected to best illustrate how much golfers really improved, because it takes into account the difficulty level of the ball position compared to the norm of scratch level golfers. Lee and Thomas showed strong improvement both in terms of the mean and in visual inspection of the data in relation to the projection line. Lee commented, "it has shone a light on different things, my performance, how I improved, how I got better". However, Igor had a minor decrease in mean strokes gained putting and a strong decrease in data points compared to the projection, indicating that his putting performance did not improve. This was in line with Igor's feedback "I have not been playing any better in terms of scoring, but my putting I feel like I make a big step". He emphasized how the hypnosis training helped him feel more confident and he became more aware that he still had some work to do to get better technically. He explained in the interview that he still struggled somewhat with certain aspects of technique in his putting, and he perceived that was the reason he did not do as well as he could, both in terms of performance and flow state. These comments highlight the value of the social validation interviews, which often clarified and informed the quantitative performance results

Global flow and flow dimensions. In terms of the global flow measurement, Lee and Igor experienced strong improvement in global flow. Thomas's results, however, showed a slight decrease in mean with a downward trend in the slope during the IP. Thomas explained that this result was partially due to his high expectation based on how much effort he put in, as well as the way flow during putting was negatively affected by the deterioration of his long shots (driver and iron). Thomas mentioned,

> I have been putting a lot of focus on trying to improve the golf overall, I have been putting more pressure on the golf. And sort of like when you put an investment of

> time in the making, I do not think it has been helping me get in the zone. I feel like that is the pressure of the effort I have put in… so I would not say that I have got in the zone more, partly because I'm focused more than ever on results and partly that was …the scratch as well.

At the start of the study, Thomas was playing with HC 0.8, and he desperately needed to improve his result to become a scratch HC golfer, so that he could represent his club in Pennant matches. Thomas's description and the real sport context in which he participated in the present study suggested that Thomas was creating some level of anxiety, by striving very hard. Despite his improvement in putting skill and scores, he felt that, "the challenge is to not leave other parts of the game behind". He went on to suggest that, in future, research should work on various golf skills at the same time to improve golfers' performance holistically. Thomas's description fit with the Anxiety quadrant in the quadrant flow model proposed by Csikszentmihalyi and LeFevre (1989), in which he perceived that the challenge of playing well to become a Pennant team member was higher than his golf skill in general. Thomas's high level of expectation about the result of the intervention and his anxiety could have caused some interference into his ability to access flow state. Researchers have found that anxiety is a crucial factor that prevents flow from happening (Jackson et al., 1998; Stavrou & Zervas, 2004).

Focusing on the flow dimensions, only Lee reported a positive effect for the challenge-skill balance dimension, with an increase from the BP to the IP, while both Igor and Lee showed a positive effect in global flow. This result contradicts the proposal by Csikszentmihalyi (1975) that challenge-skill balance is the most important dimension to facilitate flow. Similarly, only Lee showed an increase in his clear goals score from the BP to the IP, whereas only Thomas showed an increase in unambiguous feedback. These results do not support the argument made by Nakamura and Csikszentmihalyi (2002), who suggested

that challenge-skill balance, clear goals, and unambiguous feedback are proximal conditions that lead to flow. It is possible that FP hypnosis improved putting skill or perception of putting skill, which in turn increased the skill, or perceived skill, level in the challenge-skill balance relationship, thus, reducing the perception of challenge-skill balance. In terms of the clear goals dimension, I used three different performance measures. Percentage distance error and strokes gained putting indicators are factors for which golfers could not easily determine their outcome. Percentage distance error involves a calculation involving not only the radial error after the putt, but also the distance of the putt from the hole before the ball is hit. Strokes gained putting involves knowing the precise distance of the putt and knowing the value of that distance in the strokes gained putting table. I did not provide participants with the information required to calculate either value. Hence, it was not possible for them to come up with a precise goal to work toward. Based on my observations with the three participants, from a distance of 5 m or less, these golfers tended to aim to hole the putt, which meant they focused on the number of putts per round indicator. From a distance of more than 5 m, these golfers tended to aim for the first putt to get the ball as close to the hole as possible, which meant they focused on the percentage distance error indicator. At no point in their putts could they consciously focus on the strokes gained putting score for a putt of that distance because these data were not available to them beforehand.

For the unambiguous feedback dimension, Igor and Lee reported that they were more focused on their pre-shot routine and being “in the moment”, which took away their concern about the result and the feedback that they received. Thomas found that he was more aware of the feedback because of the pressure that came from his perception that he had relatively weak driver and long iron shots, which translated to more pressure to putt in at the first attempt. Hence, only Thomas showed an increase in score for unambiguous feedback. I did not expect these three dimensions to increase because these dimensions do not have

phenomenal similarity with the hypnotic state, that is, they are not frequently reported as subjective experiences of individuals who have been through a hypnosis process, as are loss of self-consciousness and time transformation.

There were some similar patterns in the changes of flow dimensions between Igor and Lee who showed strong improvement in global flow state. Both of them reported significant improvement in action-awareness merging, total concentration, sense of control, and autotelic experience. Focused attention is a characteristic of people in trance in which they remain relaxed, while still focusing on the suggestions given by hypnotists (Vickers, Zollman, & Payne, 2001). The requirement for total concentration in golf putting is obvious and hypnosis is a useful technique to narrow individuals' attentional focus to the task at hand (Liggett, 2000; Morgan & Stegner, 2008; Stegner & Morgan, 2010). Yapko (2012) suggested that hypnosis can assist athletes in having greater physical control through the amplification of the mind-body relationship, which allows athletes to push their body to the upper limit. Yapko also suggested that self-hypnosis can help building positive expectations and positive communication with one's self, which will lead to enhanced performance. Yapko concluded that "building positive images through hypnosis and self-hypnosis can turn an athlete's performance around completely" (p.117). In addition, athletes experience a sense of power, composure, confidence and positive feeling while they are in flow (Jackson & Csikszentmihalyi, 1999). As demonstrated in Study 1, a hypnosis intervention that includes appropriate trancework suggestions can enhance self-confidence, which is associated with an increase in sense of control in golfers. Thus, it is possible that hypnotic suggestions contributed to the increase of these two flow state dimensions, total concentration and sense of control.

I proposed that hypnosis is frequently associated with increases in both loss of self-consciousness and time transformation, so the intervention should be expected to facilitate

increases in the flow state dimensions of loss of self-consciousness and transformation of time, when participants have been given suggestions of their best performance, while they are experiencing loss of self-consciousness and time transformation during hypnosis. I expected that these increases would facilitate an increase of global flow state. However, these flow dimensions did not show the expected pattern with Thomas and Igor. Whereas Lee showed a strong improvement in these two dimensions from BP to IP, Thomas and Igor showed a clear reduction in loss of self-consciousness, and no change in time transformation from BP to IP. Before and during the intervention, Igor reported that he had not experienced time slow down or speed up at all. He appeared to be a very time conscious person who usually wanted to perform any golf shots as quickly as possible to move on to the next hole. He seemed to dislike other golfers who played slowly and took more time than he thought was necessary to play their shots. It is possible that the hypnosis script did not take into account the individual character of Igor to offer more suitable suggestions for his needs. One example of Igor's unique personality is his acute sense of urgency with timing in activities in which he participated. I observed this during his attendance at live hypnosis sessions, as well as when I watched him play golf. If I had understood Igor more deeply at the start of the intervention, I could have included more suggestions specifically aimed at easing his mind, based on his concern with the time factor, which became evident over the course of the study and in the social validation interview. These suggestions might help him experience the transformation of time dimension more clearly. Lee reported a small increase in the loss of self-consciousness dimension and an increase in the time transformation dimension from the BP to the IP, but the other two golfers did not show similar increases. Thus, it was not possible to conclude whether there was an effect of the hypnosis intervention or whether some other factor or factors affected the loss of self-consciousness and transformation of time flow dimensions.

For Thomas and Igor, there was a consistent pattern in six out of nine flow dimensions that reflected a negative slope during the IP for these two golfers. This was observable in the flow dimensions of challenge-skill balance, clear goals, unambiguous feedback, loss of self-consciousness, transformation of time, and autotelic experience. There are several factors that might explain this decrease in flow during the IP. First, both Igor and Thomas participated in this study right before the start of their club's Pennant games. In order to be selected to represent their respective clubs, they both needed to show strong performance during this period. Hence, pressure came not only from the weekly competition, but also from the watchful eyes of the officials who would select the best golfers for their club's Pennant team. Thomas mentioned that his putting was improving significantly, but this made him compare his putting skill with his performance of other golf shots. He felt that his other skills were lagging behind the standard of his putting. Because of the perceived pressure, it is possible that Thomas's level of anxiety might have influenced his ability to experience flow. The second reason, which was not obvious to me at the start of this study, was the effect of changes in the seasons. Thomas and Igor played their BP rounds in autumn. When they played the IP rounds at the start of winter there was more wind and heavier rain. Thomas and Igor played at links courses that were very close to the ocean. The wind conditions on links courses were more extreme compared to in-land courses like the one at Lee's golf club. As a result, both Thomas and Igor suffered an increase in number of strokes score mainly due to problems with their drives and long iron shots. Thomas was affected more severely because he acknowledged that driving was one of his weaker skills. Having problems with their long game (driver and iron shots) means that golfers tend to be under more pressure to play the ball onto the green, which, in turn, puts their putting under greater pressure. This could be a major factor in accounting for the negative slope for these six flow dimensions for Thomas and Igor. The negative slope might have been exaggerated by what,

at times, looked like a Hawthorne effect in the data, where the Round 7 performance was higher than BP performance, but performance declined substantially for the succeeding round. Research by Pates (2013) and Pates and Cowen (2013) also briefly commented that their result could have been affected by either a Hawthorne or Rosenthal effect (cf. Rosenthal & Rosnow, 2008). In contrast to the Hawthorne effect, which is caused by the perception of being specially selected to participate in research, the Rosenthal effect, more commonly called the Experimenter effect, is the positive effect experienced by research participants trying to please the experimenter. Thus, it is possible that the Hawthorne effect or the Experimenter effect happened with several flow dimensions in the present study.

Another reason to consider in explaining the negative slope during the IP is that both Thomas and Igor had high BP scores for global flow (134.67 and 146.33 respectively), compared with Lee's score (107.67). As a result, the potential for Thomas and Igor to increase their flow scores was limited by a possible ceiling effect with some flow dimensions. For example, the loss of self-consciousness dimension score for the BP for Thomas was 15.83 and for Igor it was 16.33 out of a maximum score of 20. Considering the fact that the BP loss of self-consciousness flow state dimension scores averaged 4/5, it would be challenging to improve this dimension. This could explain why both Thomas and Igor did not improve on this loss of self-consciousness dimension. Similar arguments could be made about the following dimensions, challenge-skill balance dimension, where the BP mean for Thomas was 15.17 and for Igor was 18.18; action-awareness merging for Igor, where the BP mean was 15.83; clear goals for Thomas and Igor, where the BP mean was 16.33 and 19.00, respectively; unambiguous feedback for Thomas and Igor, where the BP mean was 16.17 and 19.33, respectively; and autotelic experience for Igor, where the BP mean was 17.67.

Another factor that could have contributed to the fluctuation of some flow dimensions was the structure of the competition setting. Deviation of flow dimension scores could be

mainly due to variations in the golf competition setting from round to round, e.g., weather, green condition, play partners' timing and behaviour, and a range of golf performance demands, that is, the demands presented by different shots, e.g., driving, iron, bunker, chipping, or pitching, which require different skill sets. Lindsay et al. (2005) found a substantial fluctuation in results in cycling competitions due to the competition setting. This could mean that the external conditions of the competition setting had some influence on participants' flow experience. However, research by Pates (2013) and Pates and Cowen (2013) on a tour golfer did not report that these factors had a significant effect on their results. The present study had two differences from the studies by Pates (2013) and Pates and Cowen (2013). Those two studies only had one participant each, and only considered global flow score, rather than all nine flow dimensions, so it is likely that their structure was not sensitive enough to detect some of the variations observed in the present study.

Relation to Theory and Previous Research

Using Neodissociation theory to explain the results. In this study, I did not specifically explore the potential underlying mechanisms that might explain how hypnosis facilitates global flow state and flow state dimensions, or how it might enhance performance. However, using Hilgard's (1977) Neodissociation theory, it is possible to partially explain increases in flow state and improvement in performance in this study. In the model of hierarchical levels of control mechanisms, Hilgard (1977, 1991, 1992) described the Executive Ego, which is the Central Control Structure, and various Cognitive Control Structures that are subsystems that carry out actual behaviours, such as the movements involved in putting in golf. The Executive Ego initiates action sequences from subsystems and then monitors their functioning once the subsystems have been activated. Hilgard (1994) suggested lapses of consciousness occur with well-learned activities, such as walking, driving a car, or playing musical instruments, once these activities have been learned. These activities

are carried out by subsystems with minimum conscious control. The subsystems can be semi-autonomous to carry on the well-learned actions once they have begun without the control and monitoring functions of the Executive Ego. The relaxation of the Executive Ego and its monitoring function allows well-learned activities to operate on the basis of automatic processes within the subsystems, while allowing the Executive Ego to focus on other cognitive processes. Applying this explanation to the results of the present study, the suggestions in the FP hypnosis condition might have disturbed the balance between the monitoring and executive control functions (Hilgard, 1994). Hence, the monitor did not correct the control functions. Because the monitor failed to offer a correction, imaginative suggestion for future success in putting performance may be confused with external reality. For the advanced golfers involved in this study, putting skill on their own golf courses is simple and well-learned enough for the actuated subsystem to run on its own, without controlling and monitoring from the Executive Ego. Being free from monitoring the putting activities means that the Executive Ego could have allowed the golfers to focus on other aspects of the environment and green conditions that enabled them to enhance their performance. Since the Executive Ego was free from monitoring and controlling, it could also have allowed golfers to enjoy playing more, with more automatic movement of putting, which could have led to the increases in global flow state and flow state dimensions that were observed in the study. In the case of Thomas and Igor, because of the bad weather during several rounds of the IP, their long shots (drive, iron) were affected negatively, which meant their scores could have been very high (and the performance result on these occasions could have been very poor) if their putting games were not effective. In Thomas's case, there was also an element of anxiety and the pressure to become a Pennant team member. Both the weather and anxiety factors might have affected the Executive Ego negatively in a way that required the Executive Ego to maintain its monitoring function throughout the putting

process. If there was continuous monitoring from the Executive Ego, the corresponding subsystem would not be able to perform the putting skill with automatic movement. At the same time, the Executive Ego would not be available to focus on other aspects of the environment and green conditions to enhance putting performance. Thus, these factors might partially explain the negative results during the IP for several flow dimensions and performance indicators for Thomas and Igor.

Relationship between flow and performance. There were inconsistent patterns of association between flow state and putting performance. While Lee and Igor clearly improved their global flow scores, it was Lee and Thomas who improved their strokes gained putting, and Igor did not. Both Thomas and Igor increased their percentage distance error scores, which meant they performed worse on this indicator, while all three golfers reduced their mean score of number of putts holed, which meant they improved in this performance indicator. The mean of strokes gained putting for Lee and Thomas increased, which indicated that there was some improvement in their putting performance whereas the mean for strokes gained putting for Igor was relatively unchanged. This result indicated that changes in flow state did not always correspond with changes in competition performance. A possible explanation is that hypnosis had a direct effect on performance and also a separate, but direct, effect to flow. A clear example could be observed in the performance of Thomas, who improved his number of putts per round and strokes gained putting performance indicators, but reduced his global flow state score. This would suggest that flow was not a mediator between the hypnosis intervention and performance. Research by Koehn (2005) suggested that imagery affects flow and performance in two separate ways, which means flow does not play a role in facilitating performance improvement. In contrast to Pates and colleagues (Pates, 2013; Pates & Maynard, 2000; Pates, Oliver et al., 2001), who found that hypnosis improved both flow and performance, other researchers have found mixed results (Lindsay et

al., 2005; Vasquez, 2005). Lindsay et al. found that hypnosis only improved performance and flow state score in one out of three cyclists. Vasquez only found improvement in participants' performance, and not in flow. However, the structure of the present study, in which I employed the SCD, did not allow for testing of causal relationships between the intervention, flow, and performance.

Methodological Issues

In this section, first, I discuss issues related to the study design, including the SCD and sample size. Next, I consider the timing and frequency of hypnosis sessions. In the following part, I comment on the methods used to measure performance and flow state, as well as the social validation technique. I conclude this section with discussion about potential effects of presence, as the researcher, during all the rounds for each golfer, when I was monitoring performance and for which I measured flow state at the end of each round.

Single-case design. In the present study, I used the SCD with a social validation interview, which had a number of positive aspects, as well as several methodological issues that could be improved in future research. Using two-group, pre-test, intervention, post-test comparison experimental designs, I conducted Studies 1 and 2 in this thesis on practice greens. These were considered field studies with almost a "vacuum" environment in which, as the researcher, I could control various conditions, including the choice of putting hole, time of day, and the pace at which golfers putted. These conditions also lacked the intensity and pressure of actual competition rounds, with uncontrollable external factors, for example, playing partners, who were competing against participants in Study 3, officials monitoring participants to ensure they observed all the rules, and recording of the actual results. In Study 3, there were also influences from how golfers performed other shots leading to the green, and preceding the putting on each hole. In short, Studies 1 and 2 only provided partial understanding of how hypnosis might affect golfers' putting performance and flow state in

real golf competition. The focus of Study 3 was to evaluate the effect of hypnosis on flow state and performance in actual competition golf, considering all other factors of which I was aware. I deemed the SCD the most appropriate method in this case because it allowed the analysis of the hypnosis intervention in actual competition conditions where the intervention cannot be withdrawn or "turned off" (Hrycaiko & Martin, 1996). Furthermore, the golfers became their own control condition with the first six rounds providing a baseline with no intervention. This was a strength of this study.

At the same time, a methodological issue that arose from the use of the SCD in an actual competition context was that I was not able to control all the factors that might influence golfers' performance. Csikszentmihalyi (1975) suggested that the type of competition setting could affect the rewards and enjoyment that participants experience in their activity. For example, sometimes the ball came close to the green and rested on the fringe. Fringe is a technical golf term that refers to any grass adjoining the putting surface that is mowed to a height only slightly higher than the grass on the putting green. This height is typically about halfway between green grass height and fairway grass height. When the ball lay on the fringe, golfers would normally use putters to putt to the hole, but these shots were not technically counted as putts because the ball was not on the green for the start of the shot. Another scenario that was anomalous occurred when golfers hit bunker shots close to the hole, and were then able to putt into the hole easily, which made their putting result look better than it really was. A third scenario that might have distorted the results arose when golfers lost their ball after a pitch shot flew into the bushes. Since they were not able to recover the ball, they did not continue playing the hole and forfeited the putt to receive penalty strokes. These and similar situations were uncontrollable events that could affect the golfers' putting score and flow state. To minimize the impacts from external factors, I employed two techniques. First, using a study design with six rounds of BP and six rounds of

IP, I would expect the impacts to be balanced out, so they were unlikely to have noteworthy effects on the final putting performance variables or global flow state and the nine flow dimensions. In future, researchers should consider having more than six rounds in each phase to further neutralize impacts from external factors. Second, I used strokes gained putting as a major measure of putting performance. Since strokes gained putting score takes into account the distance and difficulty of each putting shot in comparison with the general norm, it should be a more accurate way to evaluate golfers' putting performance across the BP and IP than measures like radial error and number of putts in each round. Furthermore, the conduct of this study in actual, high-level golf competition balanced the uncontrollable impacts from the competition environment with a substantial increase in ecological validity. As such, the improvement of number of putts holed in all three golfers and the improvement in strokes gained putting in two out of three golfers was a very meaningful outcome for high-level golfers, especially during golf competition.

Sample size. Due to the loss of two participants, one because he changed the golf club he played at and the other because he had previous experience with hypnosis in a context outside sport, the sample size was not as high as expected, which might have reduced the potential to identify performance or flow patterns across the golfers. Even though I ended up with three participants, the outcome was interpretable on the whole. The three participants, who were not excluded, did complete all 12 rounds despite several challenges, including the pressure they were under to perform in competition, the impact of having the researcher monitoring them all the time, and the extra tasks they had to do so that I could make the performance measurements.

Timing and frequency of hypnosis sessions. An issue that is worth considering is the timing and frequency of hypnosis intervention sessions. In this study, I conducted seven hypnosis sessions in total, which comprised three one-to-one and four self-managed hypnosis

sessions during the six golf rounds of the IP. This approach was different to the research reported by Pates (2013), Pates and Cowen (2013), and Pates, Oliver et al. (2001) because those researchers gave participants only one individual session with the hypnotist and seven daily "self-hypnosis" sessions with recorded audio. In those studies, all hypnosis sessions were completed before the intervention period commenced. Vasquez (2005) employed a slightly different approach, using six one-on-one sessions with the hypnotist, but no recorded audio for self-managed hypnosis. All sessions were completed before the intervention started. While this method showed some improvement in the results, it is possible that the effect was stronger right after the hypnosis intervention period and reduced substantially as the IP continued. To sustain hypnosis effects over a longer period of time, in the present study, I conducted hypnosis sessions between the rounds of the IP. While the results of this study showed some improvement both in performance and flow state, there might be potential for even stronger results with more frequent hypnosis training sessions. An area that is related to hypnosis is imagery. Wakefield and Smith (2009) conducted a study to examine the effects of different frequencies of imagery training on netball shooting performance. The results showed that there was significantly greater improvement in performance among participants in the condition that had three training sessions per week, whereas the twice-per-week and once-per-week conditions, as well as the control condition, did not show significant improvement. Since imagery is used in several hypnosis suggestions to help clients experience a specific trance state or travel back in time to re-experience their past successful event, it is possible that the frequency of hypnosis sessions might show a similar pattern to the increasing effect of imagery. Frequency of hypnosis sessions is an aspect that would benefit from further research.

Measurement of performance. In the present study, I used three quantitative measures of putting performance: number of putts per round, percentage distance error

(smaller numbers reflect superior performance), and strokes gained putting. Number of putts per round is one of the most frequently used measures by all golfers as an indicator of their putting performance. Although it is simple and easy to count, it does not provide an accurate picture of golfers' putting skills, because it does not take into account the distance of each putt. Percentage distance error measurement is similar to the radial error measurement employed in Studies 1 and 2. It uses a variation on a long existing motor learning type of technique to calculate the accuracy level, namely dividing the error after the putt is completed by the distance of the ball from the hole before the putt and then multiplying by 100 to take into account the fact that longer putts are usually more difficult. Strokes gained putting is the type of performance indicator that is used frequently by sports analysts who collect data on performance, using many cameras to follow golfers during tournament play (Broadie, 2014). Overall, the results of the present study showed that strokes gained putting seems to provide a more sensitive way to examine the putting performance of golfers than number of putts per round or percentage distance error. It is also one of the more meaningful performance measures to use in research about the impact of flow on performance because golfers are not aware of their strokes gained putting during the round, so this cannot influence their responses when they fill in the FSS-2, which reduces the chance of bias due to positive or negative performance outcomes. Compared with the studies by Pates (2013) and Pates and Cowen (2013), who used stroke average as the only indicator of improvement in actual golf competition, the three performance indicators I used in the present study allowed me to examine putting performance more thoroughly. Norsworthy et al. (2017) pointed out that the limitation of the seven studies of flow training in their systematic review was the use of only one performance indicator. Having three performance indicators in the present study could, potentially, have provided more sensitivity to any changes caused by the hypnosis

intervention, and could have given a clearer picture of the impact of the intervention on each performance indicator of golf putting

Measurement of flow with FSS-2. In this study, the flow dimensions were only measured once at the end of each 18-hole round. The golfers' answers reflected my instructions to report on their flow state throughout the game, which included the long game (driver, iron), short game (chipping, pitching, and bunker shots), and putting. Not having a measurement immediately before and after putting meant that the flow state score did not reflect the true flow state of golfers on the putting green. A problem that has limited flow research is that testing for flow state is highly likely to disrupt flow if individuals are experiencing it, so the majority of researchers have measured flow retrospectively, at the end of performance. This limits the specificity of participants' reports of flow. For example, tennis players who start poorly and gradually pick up their game, finishing strongly to win the match might retrospectively report a high level of flow, although they only experienced that level late in the match. In the context of golf, if interventions focus on putting, further studies need to develop different ways to measure flow specifically during putting. One possible solution is to use the short-form of FSS-2 to collect multiple measures of flow during the breaks between shots, which would provide a clearer representation of the flow state throughout various golf skills (driving, iron, chipping, bunker shot), including putting.

To measure flow state, I used the FSS-2, which has received satisfactory psychometric support (Jackson & Eklund, 2002). However, there is no specific score point which determines whether participants are truly in flow or not. The FSS-2 manual suggests that participants who score the middle point of 108 or above can consider that they are experiencing a state in which flow-like attributes exist (Jackson & Eklund, 2004). As the scores of participants in this study increased, this indicated that individuals had more of a flow-like experience, but this cannot determine conclusively whether participants were in a

flow state or not. Out of three golfers, Lee's mean global flow score of 107.67 during the six rounds of the BP suggested that he had not experienced a flow-like state. During the IP, Lee increased his mean global flow score to 116.67, so it was likely that he had more of a flow-like experience during the IP. Nonetheless, it is questionable whether small changes in scores around the middle of a scale that runs from 36 to 180 reflect the dichotomous phenomenology of flow, that is, people experience being in flow or not in flow, not 76% or 64% in flow. However, for Thomas and Igor, whose mean global flow scores were at 134.67 and 146.33 respectively for the BP, it is possible that these golfers experienced flow-like attributes even before the IP started. These scores could have represented a ceiling effect. Hence, it would be difficult to detect a significant increase from pre-test to post-test. One possible method to separate those who are in flow from those who are not, based on their FSS-2 score, was proposed by Kawabata and his colleagues (Kawabata & Mallett, 2011; Kawabata & Evans, 2016). Those researchers suggested if item-average scores of the three proximal dimensions (challenge-skill balance, clear goals, unambiguous feedback) are above 3.4, the participants are in flow. If the item-average scores are below 3.3, the participants are not in flow. While this result has not been confirmed in empirical research, the suggestion by Kawabata may be used as a reference for the present study. Based on Kawabata and colleagues' proposal, Thomas and Igor were in flow both in the BP and the IP. Lee was not in flow during the BP, but he was in flow during the IP. Csikszentmihalyi (1991) suggested that the very focus of participants on the hypnotic state may prevent or eliminate the type of superordinate awareness that is required to make an accurate observation of being in that state. This is also likely to apply to states of flow in the sense that while in flow, participants were more likely to lose their self-consciousness and the sense of the time it takes to participate in their golf game. Because of their deep absorption in the activity, it would

potentially be harder to recall clearly, after the round, the details of their flow state during that round.

Another challenge of measuring flow state in the present study was the way flow was recorded. I asked the golfers to fill in the FSS-2 questionnaire right after they finished their round. Filling out the flow questionnaire right after finishing the round, especially if they had lost or performed badly, could have led to a more negative assessment of flow than the same phenomenal experience might have promoted under more favourable outcome conditions. For example, a golfer could have a high level of flow state and play well for 15 holes, but, at that point, suddenly feel the pressure of being in a winning position. The ensuing change in arousal level and focusing on the outcome are likely to disrupt flow (Chavez, 2008) and the golfer makes mistakes that lead to a losing performance. In completing the FSS-2 after three disastrous final holes, the golfer could provide a low estimate of their flow during the round, being strongly influenced by those last three holes. This is a risk of conducting retrospective introspection. The reverse effect is equally plausible. After performing well over the last few holes and turning a mediocre round into a good performance outcome, golfers might retrospectively produce a more positive assessment of their flow state during performance than they actually experienced during most of the round. Brewer et al. (1991) concluded from three studies that, "bogus performance feedback significantly affected ratings of psychological states experienced during performance. Subjects who were given success feedback perceived themselves as being more confident and focused on the task than subjects given failure feedback" (p. 227). Thus, it is possible that performance feedback confounded golfers' reports of their flow state. Thomas and Igor played particularly badly in Rounds 11 and 12, which seemed to negatively affect their evaluation of flow.

Social validation technique. The combination of the SCD with the social validation interview was effective in exploring the results from a qualitative, as well as a quantitative,

perspective. The social validation technique has been used in many disciplines, including education and medical research (Page & Thelwell, 2013). These relatively brief interviews that focus on individuals' understanding of the study procedures and their experience of participation in the study assist quantitative research, using statistical analysis, by assessing socially important outcomes to participants (Matson & Dempsey, 2009). Researchers have recommended the use of a procedure to monitor the internal experience of participants, along with the SCD (Smith, 1988; Swain & Jones, 1995; Wollman, 1986). In this study, social validation interviews helped me to explore golfers' experience of hypnosis, and the perceived effectiveness of hypnosis on their flow state and putting performance. For example, Lee's comment on the study structure was, "Everything was pretty straight-forward. The instructions and guidelines were good and easy to understand, I had no issues". Igor agreed, "you explained the process well so it was not a problem for me to understand and follow". Thomas shared the same sentiment, "when I first looked at your poster, I did not have a clear understanding of what was expected. After our first meeting, I was very clear about the research requirement and what I was supposed to do." In addition, Lee commented on his experience with hypnosis, "I noticed myself calmer. And also noticed the small differences throughout my play. I could release my thoughts more easily". This feedback was important to give a holistic view of the participants' overall experiences with hypnosis. The social validation interviews also indicate that participants reported that they adhered to the intervention instructions. Pates (2013) and Pates and Cowen (2013), in their studies with an elite golfer, used a practical assessment questionnaire with a similar purpose to explore golfer's experiences with hypnosis during a golf tour event. Their qualitative data were in tune with the findings in the present study in terms of how participants felt hypnosis positively affected their flow state and golf performance. In these recent studies, Pates and Pates and Cowen reported that hypnosis may help athletes regulate their emotion by

increasing positive emotions, such as confidence and fun. They also found that hypnosis elevated the feeling of mental relaxation which made the participants feel calm. The hypnosis intervention helped to improve the golfer's ability to focus attention and cope better with distractions. Finally, the hypnosis intervention seemed to augment positive thinking and altered the golfers' belief and feelings of control.

Presence of the researcher. The presence of the researcher is a factor that might influence the results of studies that focus on hypnosis interventions. In the present study, I collected performance data during each golf round and flow data immediately after each round. My presence at the venue before, during, and after every competition round might have created additional pressure on the golfers to perform as well as they could once the hypnosis intervention had started. As Igor mentioned, during the interview, "it was more the fact that you were watching, and I was trying too hard and got caught up in the result, rather than the process. I think that was probably it" and "I actually played better and felt more in flow while you were not around". Lee, however, was quite comfortable with my presence throughout the 12 rounds. He said, "I don't really pay much attention to your presence, so I cannot comment much". In the present study, I followed participants around the course for six BP rounds, watching every shot they played and every shot outcome, with a particular focus on putting, which I was measuring. Although this must have been somewhat distracting at the start, I expected that these golfers were used to my presence by the end of the BP. In future studies in golf, where the presence of the researcher is very evident because there are few spectators at this level of competition, researchers should consider ways to measure performance without being too intrusive. Perhaps it would reduce the effect of researcher presence, if researchers accompanied players for other rounds before starting to collect data. This would make studies even more demanding in terms of researchers' time and effort, but the rewards of greater confidence that effects are genuine and not due to Hawthorne effects,

experimenter effects, or demand characteristics would be worth the extra attention given to the details of research design.

The presence of the researcher in intervention studies extends to delivery of the intervention in two ways. First, there might be an effect of researcher presence during hypnosis as perceived by participants. Some participants might feel obliged or motivated to perform as if they were under hypnosis to please the hypnotist. Sarbin (1950) proposed that hypnosis is an act between the hypnotist and the hypnotized client, which depends on the clients' perception about their roles, and their belief about the appropriate behaviour while they are hypnotized. Thus, participants in the present study might have modified their belief and behaviour when they went through the live hypnosis session with me.

Second, there is a potential benefit of researcher presence to ensure hypnosis sessions are fully effective. There might be a difference between a live hypnosis session with a researcher or therapist and self-managed hypnosis sessions, using audio files in sport contexts. In clinical practice, Johnson and Wiese (1979) found that a hypnotist-led session is more advantageous than a self-managed session in producing general hypnotic responsiveness in hospitalized pain patients. Hypnotized participants report certain subjective shifts in their physical awareness, which are observable by hypnotists. These shifts may include changes in bodily sensations, changes in body image, and a disinclination to speak or move (Cardeña, 2005). Yapko (2012) suggested several of these observable changes include muscular twitching, eye closure with fluttering eyelids, change in breathing rate, change in pulse rate, and jaw relaxation. Hypnotists may use these signals as guides to adjust key aspects of their delivery, including their tone of voice and the speed with which they present suggestions to ensure participants are in a deep trance state. Sometimes a relaxing suggestion may be repeated several times, if hypnotists feel that clients are not fully relaxed yet. In the present study, Lee commented that, "I feel more relaxed and go deeper when you hypnotize

me than when I listen to the recording alone". Igor suggested that he was able to relax quickly during the self-managed session, whereas the audio recording kept repeating relaxing suggestions, which made him feel bored after a while. Igor also reported that he struggled to discipline himself to listen to the audio recording in his own time due to various life commitments, so, he preferred the live sessions to the self-managed sessions. Only Thomas reported feeling equally comfortable with both types of hypnosis session.

Further Research

In this section, I first comment about the needs to customize hypnosis scripts to match each individual's needs. Then I present some suggestions for conducting research on customized hypnosis scripts to enhance specific flow dimensions. Next, I discuss the need for researchers to conduct studies that focus on the causal relationship between performance and flow. Last, I propose some ideas for researching the effect of hypnosis on flow in other sports.

Customizing hypnosis induction technique and trancework suggestion scripts.

One area that was not sufficiently explored in this study was the customization of hypnosis induction technique and trancework suggestion scripts. The effectiveness of scripts might be increased by customizing a suitable induction technique to each participant, and focus on specific elements during trancework suggestions that are perceived to be critical by participants. Yapko (2012) discussed strategies that hypnotists can use in practice. Hypnotists should be flexible and adapt induction techniques to match clients' capabilities. During the induction and deepening stages, hypnotists usually observe clients' verbal and non-verbal feedback to determine whether the person is in trance. If one induction technique does not seem to be working effectively for a particular client, hypnotists can shift to a different approach or style. In addition, during the introduction phase, hypnotists also ask questions about clients' relevant past experiences and use them as the foundation for suggestions that

should make the session more effective. In the present study, I used PMR as the standard induction technique, which was suitable for Lee and Thomas because they responded well and could go deep into trance. However, PMR induction seemed to be too slow and repetitive for Igor because he mentioned, “the script talked about tripling the relaxation feeling that I currently experience, and I thought to myself that I am already so relaxed that I cannot be any more relaxed than this”. Igor also suggested that there should have been more than one script to be used so that he did not feel bored. These comments from Igor suggested that he might not have been in a deep trance, based on the PMR alone, and, in a consultancy, rather than a research, context, the hypnotist could have applied another induction technique as an alternative induction. Another form of customization is based on golfers’ hypnotisability. Lynn and Sherman (2000) suggested that hypnotists modify suggestions and hypnotic communications to minimize resistance and optimize responsiveness from clients.

All these customizations to tailor hypnosis scripts for individual needs were not applied during the present study. In the present study, I used a script similar to the modified FP script that I employed in Study 2, with the focus on examining the effects of hypnosis in actual competition contexts. I did not adapt the script to each individual based on their susceptibility results because, although hypnosis might be more beneficial to each golfer with a customized script, it would be harder to interpret the results with reference to effects of the hypnosis intervention on flow dimensions. There has not been any previous research using hypnosis interventions to enhance flow and performance by targeting specific flow dimensions with which to compare the present results. Thus, having a customized script for each golfer would potentially make more diverse aspects of the hypnosis intervention that could be affecting the results, so it would be harder to interpret findings and draw conclusions.

Customising scripts is a refinement that could enhance the effect of hypnosis interventions in sports contexts like golf. For example, Igor and Lee showed that they performed well in the RE test of the WSGC, while Thomas struggled to regress back to his childhood. None of the three golfers scored positively on the visual hallucination item, which might suggest that their ability to imagine new things solely based on hypnotic suggestions was not strong. All three golfers performed well with the post-hypnotic suggestion test, which indicated that they could perform suggestions after their hypnotic trance state. However, to establish the link between how well participants perform in various tests of the hypnotisability scale and how well they can do similar things in an actual intervention, further research is required on each specific item in the WSGC that is proposed to be relevant to the performance task, e.g., golf putting, or the psychological variables to be generated e.g., flow. In the context of imagery, Callow and Hardy (2005) suggested that the meaning of the same image could be very different for various individuals, which could then affect the effectiveness of an imagery intervention. This is consistent with the element of meaning in Ahsen's (1984) triple code theory of imagery. With knowledge of the current study results, other researchers can now design future studies with different conditions based on their hypnotisability score. One type of study could compare a condition in which participants who score positively on the post-hypnotic suggestion item and those who do not score on this item and given post-hypnotic suggestions related to golf putting, with the prediction that the intervention will have a greater effect on putting performance for those who had positive scores on the WSGC post-hypnotic suggestion item. Another type of study could compare the effect of a RE hypnosis intervention in two conditions, one comprising individuals who scored positively on the RE item of the WSGC and the other condition consisting of individuals who did not score on the RE item. Again, the prediction would be that the intervention will have a greater effect on putting performance for the condition comprising

those individuals who scored positively on the RE item. Equivalent effects could be tested for with reference to global flow state or specific flow state dimensions, if the post-hypnotic suggestion or RE hypnosis intervention contains instructions to generate experiences associated with flow state.

Hypnosis scripts targeting specific flow dimensions. Although the results of this study showed an improvement in flow state and performance, the FP hypnosis script could be improved. For this study, I applied a similar FP condition to the one used in Study 2, with some amendments in the script to suit the competition setting. For the induction, deepening, and awakening phases, I retained the same content as in Study 2. The only change was in the trancework phase with some suggestions focusing on golfers' ability to deal with the pressure of competition and stay in flow. There were suggestions for golfers to imagine how they would feel and behave on competition days, so they could adapt more easily when they were in the actual competitions. Due to the limited duration of the sessions, I was not able to incorporate as many hypnotic suggestions for the flow dimensions as I consider would be optimally effective, especially with reference to the loss of self-consciousness and time transformation dimensions. This might partially explain why there was a strong increase in action-awareness merging, clear goals, concentration, sense of control, and autotelic experience in two out of three golfers, but only Lee increased on the loss of self-consciousness and time transformation dimensions from BP to IP. In the current study, I assumed that because time transformation and loss of self-consciousness are the characteristics of the hypnosis experience, they would respond similarly to a general hypnotic script. However, these two dimensions might respond differently once a customized script for each dimension is used. To test this, I suggest studies that have three conditions, with one condition focusing on the antecedent dimensions, another condition focusing on the loss of self-consciousness dimension, and the third condition focusing on the time transformation

dimension. The results of research in which hypnosis interventions with different script content along these lines are applied will help clarify the role of the script content on each flow dimension, as well as on global flow.

Hypnosis scripts on performance and on flow state. Studies that focus on performance and flow state in separate conditions could give further insight into whether enhancing flow leads to improved performance or whether enhancing performance leads to increases in flow. To examine this proposition, I suggest studies should be conducted that have two conditions, one condition with a hypnosis intervention focusing on golf putting performance enhancement and another with a hypnosis intervention that focuses on global flow state or specific flow state dimensions. Both performance and flow would be tested throughout the BP and IP in both conditions. Such studies could examine whether there is a reciprocal effect between flow and golf putting performance, which would indicate whether highly resource-intensive studies to test these propositions using modelling would be valuable to undertake. If there is a causal relationship between flow and performance, the hypnosis condition focusing on global flow and specific flow dimensions should improve performance more than the hypnosis condition focusing on performance alone, because the hypnosis intervention needs to increase the flow state before improving putting performance. In the case that there is no causal relationship between flow and performance, flow and performance should change independently.

Research in other sports. Research on the application of hypnosis could be extended further to other target sports, including pistol and rifle shooting, archery, dart throwing, bowling, and basketball free-throw shooting. Because of the similarity between these self-paced sports in which athletes perform their skills in their own time, researchers can examine whether hypnosis affects global flow state, the nine flow dimensions, and performance in the same way as it did in the present study. Shooting, archery, and bowling are particularly

suitable for this kind of study because no other activity precedes the target-shooting action. In the present study, the golfers had to perform driving, iron, chipping, pitching, or bunker shots before the putting shots. The potential influence of these additional shots made it more difficult to interpret the flow results, which could have been affected by the positive or negative outcomes of previous shots. Thus, research can apply the same study design in relation to bowling or pistol shooting performance, for example, to compare the effect of hypnosis intervention on flow dimensions and performance. In such a shooting environment, less extreme environmental factors would typically be present than in the present study. The results of athletes' performance are also known to the athletes right away, which may have a different effect on dimensions, such as clear goals and unambiguous feedback. Above all, there are no other kinds of shots or performance activities before the actual recorded shots, so the flow score results would more accurately reflect the mental state of athletes during the performance.

Summary

In summary, the present study comprised an ecologically-valid examination of the effects of a FP hypnosis intervention on global flow state, flow state dimensions, and putting performance, which I conducted with three highly-skilled golfers who played in their club competitions over a 12-week period. The three golfers showed an improvement in number of putts holed and two out of three golfers improved their strokes gained putting from the BP to the IP. Two out of three golfers also increased their global flow state score in the IP compared to the BP. These results supported the proposition that hypnosis can be used to enhance global flow state and performance, although the mechanisms of how hypnosis affects global flow state and performance are inconclusive at this moment. In this study, I did not explore the causal effect of hypnosis on global flow state, the nine dimensions of flow state, or performance. This will be discussed in the further studies section of Chapter 6. In

addition, I did not examine the proposition that global flow state or some or all of the dimensions of flow state act as mediators of the effect of hypnosis on performance. However, results of this study were useful in demonstrating that a FP hypnosis intervention can be applied in the high ecological validity context of golf competition. I consider this study as a substantial study because of the level of commitment it required on the participants, and the time it took to finish the study (which was almost 18 months from the start to the end). To study this further, researchers should consider applying this knowledge to target each flow state dimension specifically and to customize scripts for each participant.

CHAPTER 6: GENERAL DISCUSSION

Introduction

This chapter consists of five sections. In the first section, I present a summary of the conclusions from the three studies that I conducted in this thesis and I discuss how the overall findings of the present thesis relate to theory and research. I also discuss the advantages and disadvantages of the methods used for the three studies. Based on the results and feedback from these three studies, I propose suggestions for future research. I also consider implications of the studies in this thesis for the practice of hypnosis to enhance flow state and improve performance in sport. Finally, I reflect on the key outcomes from this thesis.

Conclusions

In the literature review of this thesis, I noted the similarities between flow state and hypnosis trance state, especially related to loss of self-consciousness and time transformation. Csikszentmihalyi (1975) identified these phenomena as dimensions associated with flow state and researchers have reported them to be common experiences of individuals during hypnosis (Kihlstrom, 1985; Vasquez, 2005). Based on the identification of these phenomena in flow and in hypnosis, the general purpose of this thesis was to examine the influence of hypnosis on flow state and golf putting performance. In particular, I examined two original issues in the studies in this thesis. First, with reference to hypnosis, I examined techniques that could enhance the influence of hypnosis on flow and performance. Second, with reference to flow state, I moved beyond studying global flow state, the focus of previous studies of hypnosis in sport, to examine whether studying the nine dimensions of flow would add to the understanding of mechanisms through which hypnosis affects flow state.

Results Summary

In Study 1, the results suggested that there was no significant difference in global flow between the TH and the NH conditions, however, there was a significant increase in the

TH condition for sense of control and loss of self-consciousness flow dimensions. The improvement for the loss of self-consciousness dimension supported one of the main predictions, while the improvement for the sense of control dimension was not predicted. For performance, there was a significantly greater improvement for the TH condition compared to the NH condition for radial error, whereas number of putts holed was not significant, but had a large effect size. This improvement in performance due to the TH intervention provides evidence supporting Neodissociation theory, in which Hilgard (1973) argued that hypnosis is an altered state, rather than a state created by attitudes, expectancies, motivation, or role-taking as proposed by social cognitive theories. The NH condition had the same content as the TH condition (introduction, induction, deepening, and awakening), except that the TH condition also included trancework suggestions. Hence, the improvement in flow dimensions and radial error results cannot be explained by attitudes, expectancies, and motivation of participants, because participants in both conditions shared the same attitudes, expectancies, and motivational level. The improvement in radial error, therefore, appears to be a result of the presence of trancework suggestions in the TH condition. Researchers previously applying hypnosis to flow and performance in sport did not address the question of whether hypnosis creates an altered state, which was similar to flow and hence increased performance, or whether hypnosis creates an expectation, belief, or motivation among participants to enact a hypnotic state. The comparison of TH as an active intervention with NH as a control condition supported the altered state theoretical position.

Results of Study 1 showed that TH affected both flow dimensions and putting performance. At the same time, there were eight flow dimensions that showed significant main effects from pre-test to post-test. The exception was unambiguous feedback. These results could be due to a placebo effect, but it could also be that the induction and deepening stage of NH might have contributed to the increase in flow score for some dimensions. This

explanation is an interesting proposition, in that in future, researchers may consider whether various aspects of hypnosis might have different effects on psychological states like flow dimensions. This further supports the examination of all the flow dimensions separately in studies that aim to increase understanding of the mechanisms by which techniques like hypnosis enhance flow state.

The use of NH as a comparison condition is a novel idea that has not previously been used to investigate hypnosis in sports. I discussed this point in detail in the Methodological Considerations section of Chapter 3. Using NH as a placebo holds promises for further research to explore aspects of hypnosis in sport. It is also possible to examine whether the induction and deepening processes that are presented in NH might have active effects in relation to certain flow dimensions, such as the relaxation and calmness component of sense of control and the experience of loss of self-consciousness. Furthermore, the feedback from Study 1 participants about time factors that affected the time transformation dimension, including to avoid having the test session shortly before or after a regular golf round, was crucial for Study 2. Also, feedback about the length of the self-managed hypnosis sessions potentially affecting participants' motivation to listen was also valuable knowledge to apply in Study 2 to make the intervention more effective.

In Study 2, I compared the effect of RE and FP hypnosis on flow and golf putting performance. Comparing these two widely-used trancework techniques, RE and FP, is a crucial step to examine the effect of different types of trancework techniques on each flow dimension, global flow state, and performance, an approach which has not been explored in hypnosis in sport in the past. Unlike Study 1, however, in Study 2 there was no significant improvement for radial error. Importantly though, both hypnosis conditions improved the number of putts holed significantly. There was a significant increase of global flow score in the FP condition compared to the RE condition. There were significant interaction effects for

two flow dimensions, action-awareness merging and time transformation. Action-awareness merging and time transformation are both concomitant dimensions. Stavrou and Zervas (2004) and Nakamura and Csikszentmihalyi (2002) have argued that these dimensions should not affect the level of flow state. In the current study, however, I proposed that hypnosis can influence flow state based on the improvement of concomitant dimensions. The interaction effects of these two dimensions partially confirmed my proposal. There was significant improvement in both conditions for six flow dimensions, challenge-skill balance, action-awareness merging, total concentration on the task, sense of control, loss of self-consciousness, and autotelic experience. Based on the greater influence of the FP condition on flow dimensions, I decided to employ this technique in the SCD study of highly-skilled golfers.

In Study 3, I explored the effectiveness of a FP intervention in 12 rounds of golf competition, using SCD. The first six rounds represented the BP for each participant and the last six rounds represented the IP. The results of Study 3 indicated that two out of three participants improved their global flow state, whereas the remaining participant's global flow score declined. However, three dimensions that Csikszentmihalyi (2000a) proposed to induce flow, namely challenge-skill balance, clear goals, and unambiguous feedback did not show clear improvement. Only one of three golfers improved on these dimensions, while the other two golfers showed a decrease. In the case of unambiguous feedback, two golfers had a strong decline in their score during the IP. Two golfers showed significant improvement in action-awareness merging, total concentration, sense of control, and autotelic experience. The two dimensions that were expected to improve the most were loss of self-consciousness and time transformation. These two phenomena have been widely observed in hypnosis, so they could be reasons why hypnosis is an effective way to enhance flow. Only one golfer, however, showed a significant improvement in these two dimensions. This pattern of

improvement for two antecedent dimensions (total concentration on the task at hand, sense of control) and two concomitant dimensions (action-awareness merging, autotelic experience) did not accord with suggestions by Stavrou and Zevras (2004) about the role of antecedents and concomitants in facilitating flow experience. This result also did not support the categorisation of Nakamura and Csikszentmihalyi (2002), in which they proposed that proximal conditions (challenge-skill balance, clear goals, unambiguous feedback) are required for people to be in a flow state. However, the results did support Jackson and Marsh's (1996) and Sugiyama and Inomata's (2005) dimensional frequency analysis findings. They found that athletes reported action-awareness merging, concentration on the task at hand, sense of control, and autotelic experience over 70% of the time. Therefore, these dimensions could be seen as core dimensions. It is possible that in an altered state, like hypnosis, certain concomitants might become variables that can be manipulated to enhance flow.

The results of these three studies have not concurred with the previous research on the flow model by Csikszentmihalyi (1975, 2000a). In the present studies, challenge-skill balance has not been shown to be a key criterion that determines flow state, as Csikszentmihalyi (1975) suggested. The results of the present studies support the findings of Fong, Zaleski, and Leach (2015), who reported that the relationship between challenge-skill balance and flow was only moderate. They concluded that this relationship was affected by moderating factors, including age, cultural characteristics, domain, and methodological issues. In all three studies in the present thesis, the aim was to promote only the loss of self-consciousness and time transformation dimensions, so it was expected that the challenge-skill balance, clear goals, and unambiguous feedback dimensions did not respond to the hypnosis intervention. Furthermore, Jackson (1996) also found only one-third of her sample responded to the

challenge-skill balance and clear goals dimensions. Jackson proposed that these might be aspects taken for granted by participants, which caused the low percentage of response.

General Pattern of the Three Studies

Upon closer examination of the three studies, there were no viable patterns across the three studies, nor, in fact, any clear patterns, regarding effects of the key intervention (hypnosis with trancework in Study 1; FP in Study 2) in the two field studies. There were some interaction effects for flow dimensions in Study 1 and some in Study 2, but they did not match up. There was only one interaction effect for a performance variable (radial error in Study 1). There were a number of occasion main effects for flow dimensions in Study 1 and Study 2, some of which match up. Because all four conditions did involve an intervention, some changes from pre- to post-test might be expected. It could be that the NH changes represent a placebo effect or a Hawthorne effect, or possibly the relaxation and focusing of concentration in the induction and deepening phases of the NH condition were enough to create real change in some flow dimensions. There are some matches between the effects in the SCD in Study 3 and one or other of the field studies, but none run across all three studies. The SCD study either corresponded with Study 1 or Study 2, not both.

In this research, one of my main aims was to examine the effects of flow at a more detailed level than has generally been undertaken in the flow research in sport. Most researchers have examined global flow state, but some researchers have proposed differences between the characteristics of flow dimensions (e.g., Stavrou & Zervas, 2004; Nakamura & Csikszentmihalyi, 2002) and the relationship between flow and hypnosis is also based on some proposed commonality of flow dimensions and hypnosis phenomena (loss of self-consciousness, time transformation). Norsworthy et al. (2017) pointed out that, “no single study linked the intervention employed with specific theoretical dimensions of flow” (p. 23). To understand how flow works, it is important to examine these propositions in more detail.

Factors that Affected the Three Studies Differently

There were a number of uncontrolled factors in the three studies that could have affected the results in different ways. First, the specific types of hypnosis intervention employed were different in all three studies. In Study 1, one intervention involved TH with trancework, focusing mainly on developing belief, confidence, and automatic putting skill in general, and the other condition was NH with no trancework. This is different to the two interventions in Study 2, that both involved systematic trancework, each with a widely used technique (RE, FP). The hypnosis intervention in Study 3 was also FP, but the script was adapted to putting in the competition environment instead of putting on a practice green.

Second, there was a difference in the skill level of participants. In Study 1 and Study 2, skill levels varied considerably, but were all in the average range. In Study 3, all three golfers were highly-skilled performers. This could have affected typical levels of some of the flow dimensions. For example, challenge-skill balance might be quite different for scratch golfers compared to average club level players. Third, task difficulty also plays a role in the results. In Study 1 and Study 2, the task was a relatively simple putting task, performed in one sequence on the same green, and from the same, relatively short distance from the hole. In Study 3, each putt was from a different distance and the slopes and borrows also varied from putt to putt across 18 greens. Furthermore, the two or three putts on each green were separated by a substantial period of time that included other golf shots that could have provided motor interference and effects on arousal level and emotions generally. Fourth, the duration of the putting task may have played a role. In Study 1 and Study 2, a substantial number of putts were performed in a block of time with no other shots between them, compared with Study 3, in which the putts on each green were performed separately and were preceded by up to four other shots. The interval between putts on one green and putts on the next green was approximately 10 to 15 minutes in Study 3. The duration of the task and the

interval between putts in Study 3 might have hindered golfers from getting into, or staying in, flow state. Grove and Lewis (1996) suggested that the duration of the task is crucial for flow. Flow is not a phenomenon that switches on and off again and again. In the context of a golf round, once flow occurs, it is likely to last for several holes and apply to all shots for those holes, then it may not reoccur for the remainder of the round. The number of holes for which flow is experienced will vary and where the holes are in the round during which a golfer is in flow will also vary. There has not been any study to date in which golfers have been interviewed about how flow state fluctuates during a round of golf.

Finally, there is a difference between self-paced putting on a practice green with no pressure, aside from that associated with being in a study, and putting in a competition setting with numerous external factors that affect the pace of putting, making it much more like an externally-paced task. These external factors potentially affect the outcome of putts. According to golf rules, if a golfer's ball stops closest to the hole in their playing group, that golfer needs to wait for everyone in the playing group to putt before they can putt. Thus, depending on the position of a golfers' ball on the green, relative to their playing partners, golfers might be required to putt first or last of three or four golfers. Because other people are waiting for their turn, the golfer who must putt first may feel a greater sense of pressure and the need to rush to perform the shot. In practice, golfers with the closest position to the hole may choose to putt out before other golfers make their putt. In that case, golfers may also feel time pressure to finish the shot quickly. Sometimes, due to the pace of play there may be another group of golfers who are already waiting to play onto the green. Hence, there can be perceived pressure that golfers need to complete their putting relatively quickly, which potentially leads to the characteristics of externally-paced putting. Although I did not measure this, my impression was that golfers in Study 3 appeared to take their putts more quickly when they were in those situations, compared with when they practiced their putts

before the game. Singer (1998, 2000) suggested that different cognitive processes are responsible for successful performance with self-paced and externally-paced sport tasks. Kimiecik and Stein (1992) proposed that self-paced activities are more likely to induce flow than externally-paced activities because athletes can decide when to start the performance. Hence, this might be one factor that hindered the increase of flow state in Study 3, compared with Studies 1 and 2. To sum up, there is a need for these five variables (nature of the hypnosis intervention, skill levels of participants, task difficulty, duration of the putting task, difference between putting on a practice green and putting in competition environments) to be examined systematically in order to determine the role they play in flow experience. At this stage, it is appropriate to examine the results of each study independently based on these factors that varied between studies.

Causal Relationship between Flow and Performance

A major issue that has not been addressed in flow research is how global flow and flow dimensions influence performance or the causal relationship between flow and performance. Exploring the possibilities of a causal relationship requires a large sample to enable causal modeling analysis to be conducted. Within the framework, time limits, focus areas, and access to skilled participants in the current research, causal modelling could not be included. I found the individualistic and time-consuming nature of golf made it particularly difficult to recruit and organise participants to collect the required data.

Study 1 was important because it was not clear from previous research whether trancework is really the part of the hypnosis process that creates the effects on flow state and performance. Study 2 was important because all previous research on the effect of hypnosis on flow and performance have used RE as the chosen technique for the trancework component. However, there are arguments to support the use of FP in sports. Yapko (2013) argued that FP "involves "guiding" the client into the future, where he or she may have the

opportunity to imagine the consequences of current changes or experiences, integrate meanings at deeper levels, and, in general, obtain more of an overview of his or her life than day-to-day living typically affords" (p. 110). Yapko also suggested that FP can be used either as a therapeutic intervention or as a method to check on the hypnotist's work. Using FP to check on a hypnotist's work allows the hypnotist to evaluate "whether the intervention's results will likely be lasting ones; and what likely impact on clients' lives the intervention will ultimately have" (Yapko, 2012, p. 355-356). Study 2, therefore, helped in providing evidence of whether FP or RE is more effective in a sport performance context. Study 3 was important because this study was used to test the application of FP hypnosis in a weekly golf competition environment with high ecological validity compared to non-competitive field studies. Because of the demand and expectation that golfers experienced during the competition and external factors that happened during golf competition, some participants improved their performance, but not necessarily their flow score and vice versa. Norsworthy et al. (2017) found that none of the seven studies in their systematic review paper reported a relationship between flow state and performance. They also recommended recruiting larger sample sizes for quantitative designs to further clarify the directional relationship between flow and performance.

Number of Flow Dimensions Required to be in Flow State

Despite different conceptualizations of various authors about flow (see the section on Flow, subsection Definition in Chapter 2 of this thesis), it is unclear how many flow dimensions are required for individuals to be in flow state. In their book "Rethinking Sport and Exercise Psychology Research", Hassmen, Keegan, and Piggott (2016) discussed the uncertainty of how many of these nine dimensions need to be present in order to identify that flow state is occurring. They based some of their arguments on research by Jackson (1996) who stated, "the fact that there was variance in the percentage of athletes endorsing each flow

dimension underscores the idea that there may be individual and/or sport-specific differences in how flow is experienced in sport" (p. 85). Engeser (2012) specifically addressed the number of dimensions needed for a flow state. Engeser (2012) is a response article to the research by Schiefele and Raabe (2011), who used a computer game to test the skills-demands fit (the term that author used which was similar to the challenge-skill balance term used by Csikszentmihalyi) hypothesis of flow theory. Engeser cited the original research by Csikszentmihalyi (1975) that proposed the five defining components of flow. These five components were "the merging of action and awareness, centering of attention, the loss of self-consciousness, the feeling of control in a task with coherent, non-contradictory demands, and the autotelic nature of the activity" (Engeser, 2012, p. 24). Engeser suggested that all these five original components have to be present in order to experience flow. Engeser, however, did not mention whether there is a minimum threshold level that should be considered sufficient for these components to produce an experience of flow. In response to Engeser (2012), however, Schiefele (2013), argued that some of these five components are not consistently part of the experience of flow.

Is it possible to target a specific flow dimension? I discussed the nine dimensions as distinct elements of flow experiences, but when athletes are in flow state and their flow increases, they may not experience an increase in just one dimension independently. For example, it is possible to question whether someone can experience an increase in sense of control and simultaneously not experience any change in the other eight dimensions, especially total concentration, which is central to the essence of flow. The definition of flow typically refers to total absorption or total immersion, terms that reflect the idea of total concentration. Thus, when individuals are involved in interventions designed to target change in one dimension of flow, their phenomenological experience is likely to involve experiencing change in some or all of the nine dimensions. This is likely to be reflected in

their responses to the FSS-2, in which they might report increases in several related dimensions. The potential interlink among dimensions might explain why participants in the three current studies typically reported changes in several dimensions, some of which I did not expect to change, because I did not directly target them through the intervention. Thus, the popular flow scales, such as the FSS-2 and the DFS-2, might not be the most effective tools to study the effect of a particular intervention on a single, targeted flow dimension. One possible way to explore the effect of contextual variables or interventions on each dimension separately in future research is to use qualitative techniques to elicit comments about their flow experience from individuals, while focusing in detail on the aspect of flow that is the target of that particular research. However, an effect of focusing on one dimension of flow is that changes in other dimensions might be missed because they are excluded from enquiry. An alternative would be to ask participants what specific aspect, or aspects, of flow they feel has changed. This would allow them both to report dimensions that were not targeted in the study, and to not report change in the targeted dimension.

In the present thesis, there were several challenges associated with using hypnosis interventions to target only two flow dimensions, namely loss of self-consciousness and time transformation. First, it was unclear if the trancework suggestions I used would specifically increase one or two dimensions. The interventions might possibly affect several dimensions simultaneously. Second, it was unclear how many repetitions would be required before a suggestion would have a significant or meaningful effect. Third, because I did not use a customised script that matched each participant's WSGC score, I might have targeted a hypnotic response that was not suitable for that participant. For example, not all participants could respond to the post-hypnotic suggestion or the RE suggestion in the WSGC. Therefore, the blanket suggestion used with all participants in the three studies might not be effective for everyone.

Previous research showed that the loss of self-consciousness dimension and time transformation dimension are not popular dimensions in all cases. Swann et al. (2012) conducted a systematic review of qualitative research about flow state in sport and found less than 30% of athletes in those qualitative studies reported loss of self-consciousness and time-transformation as flow effects. It was unclear whether the low rate of athletes who reported these two flow dimensions means that loss of self-consciousness and time transformation are not acknowledged to happen during flow state as often as other dimensions, or that they require more specific, targeted interventions to be activated. Jackson (1992) also found that her participants in flow state research with elite figure skaters did not frequently acknowledge increases in loss of self-consciousness. Jackson suggested that this lack of recognition of loss of self-consciousness as a flow dimension that skaters experienced could be due to "the ambiguity surrounding what self-consciousness entails" (p. 170). When validating the FSS-2, Jackson and Eklund (2004) found the time transformation dimension to have modest relationships with the other dimensions.

These findings raise a question about whether the flow experience is unique to individuals. Perhaps different individuals experience only some of the nine dimensions and the number of dimensions each individual experiences is different. In addition, it is possible that the flow dimensions that individuals experience, vary between individuals, rather than flow being a general state that is similar among all athletes. In addition, it is possible that the dimensions that are identified by different individuals during flow state are affected by individuals' access to language that describes all the phenomena they experience. Thus, for example, individuals who do not understand the concept of time transformation are hardly likely to talk about it in research interviews. They might focus on concepts like skill, goals, and feedback, which are common in sport and coaching. Increasing the understanding of

dimensions of flow by using qualitative techniques has potential, but will require very careful thought about how to undertake interviews.

Use of Hypnosis to Enhance Flow and Improve Performance through Confidence and Self-Efficacy

In this section, I first discuss potential links between confidence, self-efficacy, flow, and performance. Next, I discuss how using hypnosis to enhance self-esteem and confidence may increase flow and improve performance.

A factor that is important for both flow and performance is confidence (Koehn, 2007). Bandura (1997) distinguished between confidence and self-efficacy:

> Confidence is a nondescript term that refers to strength of belief but does not necessarily specify what the certainty is about. …. Perceived self-efficacy refers to belief in one's agentive capabilities, that one can produce given levels of attainment. A self-efficacy assessment, therefore, includes both an affirmation of a capability level and the strength of that belief. (p. 382)

Bandura (1986) suggested a reciprocal relationship between confidence and performance, that is, enhancing self-efficacy can lead to increased performance, and performing well enhances self-efficacy. According to Jackson and Csikszentmihalyi (1999), flow can help diminish self-consciousness, which helps to build confidence in participants. Koehn (2007) also suggested that interventions that increase flow can give athletes the motivation and confidence to aim for enhanced performance and positive experiences.

There is a potential to increase flow and enhance performance by increasing self-efficacy using hypnosis. I have found no research that directly addresses the connection between hypnosis and confidence in sport. However, research by Barker and colleagues (Barker & Jones, 2005, 2006, 2008; Barker et al., 2010) explored the link between hypnosis and self-efficacy, a similar concept to confidence, in sports. One of the characteristics of

hypnosis training is that it can improve self-efficacy (Pates & Maynard, 2002). Self-efficacy has been found to be a strong and consistent predictor of individual athletic performance (Escarti & Guzman, 1999; Treasure, Monson, & Lox, 1996). Barker and colleagues (Barker & Jones, 2005, 2006, 2008; Barker et al., 2010) used hypnosis to successfully improve athletes' self-efficacy and performance in judo, cricket, soccer, and soccer wall-volley performance. Barker, Jones, and Greenlees (2013) suggested there were four ways that hypnosis may affect self-efficacy. First, a hypnotic suggestion with content about effective coping and the ability to be in control of challenging situations can help athletes to recall past (and imagine future) successful experiences and re-evaluate poor performance. Research by Callow, Hardy, and Hall (2001) and Jones, Mace, Bray, MacRae, and Stockbridge (2002) showed that motivational general-mastery imagery (related to effective coping and being in control of challenging situations) and motivational specific imagery (related to the setting and achieving of specific performance goals) are effective ways to increase self-efficacy. These four ways might offer an explanation for the increase of flow and improve of performance in my three studies.

In Study 2 and Study 3 of the present thesis, I focused the content of the hypnosis script on effective coping and being in control of situations in the past or future. The impact on performance supported the findings of Callow et al. and Jones et al. However, a specific performance goal was not elaborated in detail in the studies in the present thesis. In Studies 1 and 2, golfers were told that the goal was to hole as many putts as possible. At the same time, I also measured the radial error, which reflects a different goal. For example, when golfers focused on the goal to hole as many putts as possible, they might hit the ball more firmly with the plan to hit the ball so it would go straight to the hole on an imagined route. Because, they hit the ball hard, if the ball missed the hole, it would travel a greater distance past the hole, which would increase radial error. A golfer who focused on having low radial error would

focus on hitting the ball as close to the hole as possible, but not necessarily hole the putt. Hence, they might produce a lower radial error mean, but also a smaller number of putts holed. It was possible that some golfers in Studies 1 and 2 might have chosen different goals, depending on their existing confidence when putting 56 putts from a 4m distance. Thus, having more than one goal could have confused participants and could have led to a detrimental effect on their performance. In Study 3, I informed the golfers that the goal was to take the minimum number of putts possible in a round. However, they were also made aware that I measured the percentage distance error and strokes gained putting score. The three participants in Study 3 played 18-hole rounds based on their previous experience, which could have affected their goals for putting. This might partially explain why, in the three studies, the clear goals dimension only approaches significance in Study 1 and only one out of three golfers in Study 3 experienced an increase in this dimension.

Second, hypnosis may affect self-efficacy through vicarious experience. For example, during hypnosis participants might imagine successful putting performance by a golfer of comparable skill level to themselves, leading to increased self-efficacy. Third, hypnosis may influence self-efficacy through suggestions, such as ego-strengthening, as an internal verbal persuasive technique. The ego-strengthening technique, popularized in hypnosis by Hartland (1966, 1971), involves giving repeated suggestions of confidence, so that these suggestions are firmly established in individuals' subconscious mind and create an automatic response in terms of feelings, thoughts, and behaviour (Hammond, 1990). It is popular among clinical hypnotists to facilitate self-confidence and self-efficacy (Barker et al., 2013, Herber, 2006) and was the main focus for Study 1 and to a certain degree for Study 2 and Study 3.

Finally, hypnosis can influence self-efficacy through influencing physiological and emotional state, which leads to positive changes in emotional responses (Martin, Moritz, & Hall, 1999). In Studies 2 and 3, it is possible that these suggestions helped golfers to

experience the synchronization between action and awareness, which could partially explain why the action-awareness merging dimension score increased at post-test for Study 2, and increased during the IP of Study 3. Research by Barker and Jones (2005, 2006, 2008) and Barker et al. (2010) provided preliminary support for the effect of hypnosis on athletes' self-efficacy. Barker et al. (2010) also concluded that the effect of hypnosis on performance was not mediated by changes in self-efficacy, which means that more research is needed to fully understand the role of self-efficacy in use of hypnosis to enhance performance.

Methodological Considerations

Throughout this thesis, I discussed methodological issues specific to each study at the end of that study. However, there are some issues that are of general relevance to hypnosis research in sport. In this section, I discuss four issues. First, I argue that there are some advantages in using a hypnotisability test for selecting participants. Second, I comment on the need to consider participants' past experience of flow in developing effective hypnosis interventions. Third, I talk about the importance of choosing suitable performance indicators. Fourth, I mention the advantage of using a laser range finder in measuring performance outdoors. There were also methodological issues related to the measurement of flow and flow dimensions that I discussed in detail in the discussion section of Chapter 5, so I will not repeat that discussion here.

Hypnotisability Test

One of the positive factors in the three studies in this thesis was the use of a well-established hypnotisability test (WSGC) to check for participants' ability to experience hypnotic trance. The hypnotisability scores were used first to scan and select only participants with a medium or high score on hypnotizability. Hypnotizability is a term widely used to refer to individuals' responses to test suggestions after a formal induction procedure (Barnier & McConkey, 2004). Most previous studies by Pates and colleagues (Pates, 2013; Pates &

Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001, Pates & Palmi, 2002) and Lindsay et al. (2005) did not employ a formal measure of hypnotisability or discuss their decision not to test this key factor. In the study of hypnosis and flow in sport, Vasquez (2005) was the only researcher who used the WSGC to test participants' hypnotisability, but only so that he could match participants into the two research conditions based on similar susceptibility scores. In Vasquez's study, the WSGC mean for the hypnosis condition was 4.07 (SD = 2.12), with participants' scores ranging from 1 to 9, while the mean for the relaxation condition was 3.88 (SD = 2.42), with participants' scores ranged from 0 to 9. Among 15 participants in the hypnosis condition, only five participants were able to regress on the WSGC test, and only three demonstrated the ability to use the post-hypnotic suggestion. Vasquez recognized that the low hypnotisability of the hypnosis condition was probably the main reason for no improvement in their flow state mean. Barnier & McConkey (2004) surveyed hypnosis articles from 1992 to 2001 and concluded that measuring participants' hypnotisability was usual practice in laboratory and clinical research. Unfortunately, measuring hypnotisability has not been a popular practice in research of hypnosis in sports. Clearly, based on the finding of Vasquez, if researchers do not test their participants' susceptibility level, they will not know what proportion of their sample has low susceptibility and consequently a limited capacity to experience the full benefits of the hypnotic intervention. The three studies in the present thesis are the first in sport to use a hypnotic suggestibility test to select participants, excluding individuals who score low (0-3 on WSGC) on hypnotisability. I consider that it was an effective means to increase confidence that participants in these studies had sufficient capability to enter a hypnotic trance, so that they would benefit from the hypnosis interventions in this research, provided that extraneous factors did not interfere. I recommend that researchers who examine hypnosis in sport in the future employ moderate to high scores on a hypnotisability test as an inclusion

criterion, to ensure that results of their studies are not distorted by individuals who cannot readily enter trance states.

Choosing Effective Performance Indicators

Choosing performance indicators that do not affect how participants perceive their performance outcomes is crucial to evaluate increases in flow. Some researchers have argued that the experience of flow state could be affected by the performance outcome that immediately precedes the quantitative or qualitative self-report of flow (Koehn, 2007; Privette & Bundrick, 1997). Privette and Bundrick suggested a positive connection between flow experience and performance outcome, meaning failure performance is related to worry, while optimal performance is linked with joy and ecstasy. Throughout the three studies that constitute the present thesis, I asked participants to complete the FSS-2 immediately after they had concluded their putting performance at pre-test and post-test (Study 1, Study 2) and after the 18th hole of each round (Study 3). At this point, although the golfers had not been given explicit feedback, they had sufficient experience to be able to estimate how they had performed. In Studies 1 and 2, the golfers would reflect fairly easily on how many times they putted directly into the hole and whether their putts that missed the hole were close, long, or short of the hole. In Study 3, the golfers knew exactly how many putts they took, and what their total number of strokes were because they were required to tally those numbers to submit their scorecard. Conversely, performance indicators, including radial error (Study 1, Study 2), percentage distance error, and strokes gained putting (Study 3) are likely to be more difficult for golfers to judge exactly. Percentage distance error was a similar measure to radial error. In Studies 1 and 2, radial error was a measure of the distance to the centre of the hole after the first putt, with the constant initial putting distance of 4m. In Study 3, percentage distance error was the distance to the hole after the first putt divided by the initial putting distance (which changes for each putt, depending where participants' lay-up shots stop on the

green) then multiplied by 100 to make it a percentage. So, it was possible that number of putts holed and number of putts per round indicators might more directly affect how golfers perceived their flow state. I propose that researchers hereafter consider using indicators that are ambiguous for participants to judge, including radial error and strokes gained putting, to reduce the potential influence of performance outcome on participants' self-evaluation of their flow state, when flow state is reported after performance. It should also be noted that experienced golfers, or skilled performers in any sport, are likely to have expectations of how they should perform and will evaluate their performance subjectively. Such evaluations will vary not only on the basis of individuals' estimates of how they performed, but also in comparison to their subjective expectations, which could be unrealistically high or low.

Using a Laser Range-finder

One advantage of the design of Study 3 was the use of a laser range-finder to measure performance outdoors and in competition. Using a laser range-finder, especially one that has a camera view function, to measure the distance of the ball from the hole before golfers made their putts and again after the putt was completed was a novel technique, which allowed precise values to be recorded. The measurements were made after golfers left the green, so this process was less intrusive to the golf game than taking measurements during putting, while I was still able to collect putting data relatively efficiently. In Studies 1 and 2, I used a tape measure to measure the putting distance, a process that was likely to be less accurate and definitely more time consuming. Having a laser range-finder like the Lasertec LDM120 was useful because it has a camera that allowed me to view the screen and locate the laser point. When the weather was too sunny, it could become hard to spot the laser point location. I then used a pair of red laser viewing glasses which was a special type of glasses that enhance only the laser colour, so that I could take the measurements more easily. The Lasertec LDM120 also allowed me to save several measurements in the devise memory before I copied them to

my notepad. In this way, I was able to measure study participants' performance with minimal disruption to the participant or his playing partners. I recommend this kind of device to researchers who need to take measurements of distances between static objects (e.g., golf ball and centre of hole) unobtrusively under time pressure.

Optimal Dose of Hypnosis Training

As discussed in Study 3, various studies of the application of hypnosis in sport seem to have followed different hypnosis doses for training. A popular approach has been to use one live session with a hypnotist, followed by numerous (often seven) self-managed hypnosis sessions with the pre-recorded audio file (Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates & Palmi, 2002). Lindsay et al. (2005) used a similar structure with one live session and multiple mp3 sessions, which participants listened to at home. However, Lindsay et al. did not indicate how many sessions they asked participants to complete in total. Vasquez (2005) did not use any self-managed hypnosis sessions with pre-recorded audio files. Instead, he conducted six live sessions with participants. Barker and Jones (2008) presented a similar pattern with all of the eight sessions as live because participants rejected self-managed hypnosis sessions. As a consequence, the researchers conducted eight live hypnosis sessions. The largest number of sessions employed in a study of hypnosis in sport was conducted by Barker and Jones (2006), who presented 10 hypnotist-led sessions followed by two self-managed sessions a day for three weeks in a case study with a cricket player; the total number of sessions being 52 sessions, which the participant recorded in his diary. Conversely, Barker, et al. (2010) only used three live sessions with 59 college students and still found a positive effect on self-efficacy and soccer wall-volley performance. The published research to date on hypnosis in sport has done little to clarify the total number of sessions required to achieve a specific outcome, such as a significant increase in flow, self-efficacy, or performance. Hypnosis is a

resource intensive technique, both for athletes and the hypnotist. Judging by the research that has been conducted in sport, it appears likely that some studies have involved many more hypnosis sessions than were necessary to achieve the desired effect. Thus, research is needed to identify the optimal number of sessions to achieve a targeted outcome. At the same time, it should be considered that the influence of a specific number of sessions will vary with other aspects of the hypnosis intervention that contribute to the dose. Researchers have used two types of study design, experimental studies and SCD studies, to explore the effect of hypnosis interventions in sports. To clarify the terminology, in field studies, including Barker et al. (2010) and Vasquez (2005), I use the pre-test, intervention, post-test terms. For SCD studies, I use the BP and IP terms. In some SCDs, the intervention is delivered between the BP and the IP, whereas in other SCDs, the intervention occurs during all or some of the IP.

Two key aspects of the hypnosis dose are the duration and frequency of hypnosis training. Duration refers to the length of an intervention session, whereas frequency refers to the number of sessions in a fixed period of time, usually a week. Pates and colleagues (Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates & Palmi, 2002) used the SCD. They provided a one-hour hypnotist-led session, so the duration was 60 minutes and the frequency was one because the session was provided once to each participant. Participants also listened to a recorded audio file of 40 minutes duration, so the duration of the audio sessions was shorter, at 40 minutes, than the live session. Participants were instructed to listen once a day for seven days continuously before the IP started (the frequency was thus seven sessions per week). Lindsay et al. (2005) used the SCD and asked participants to listen to the audio recording once per day, however, information was not provided on how many days the participants listened to the audiotape, and how long each self-managed hypnosis session lasted. Lindsay et al. also did not clarify whether they completed the training before the outcome variables

under study were monitored to determine the effect of the intervention. Because Lindsay et al. used the term “intervention phase” to indicate all the trials after the BP, I assumed that the hypnosis intervention extended until the last trial. Thus, duration and frequency of the hypnosis intervention are unclear. Barker and Jones (2006) used SCD with 10 hypnotist-led sessions, each lasting between 70 and 90 minutes. Participants were also instructed to practice a 10-minute self-hypnosis session at home twice a day for three weeks continuously. The intervention period lasted eight weeks, but Barker and Jones did not make clear the frequency of hypnosis training per week. There were 16 IP data points, of which eight data points were collected concurrently with the hypnosis training and eight data points were collected seven months after the intervention. However, Barker and Jones also provided six (one hour) technical coaching sessions with video recording during those sessions for participants to review. The participants were asked to view the tape twice a day, for 10 days before the post-intervention data collection. Participants were also instructed to view the tape two hours before the beginning of each game to enhance their level of self-efficacy. Hence, it was not possible to conclude how much the hypnosis intervention contributed to the overall improvement. Barker and Jones (2008) used an SCD in which the intervention included eight hypnosis sessions each lasting 70-minutes, however, there was no indication of the frequency of training. The total intervention time was eight weeks and data for the IP was collected over the same period as the hypnosis sessions. Barker et al. (2010) used an experimental pre-test, intervention, post-test design with a follow up four weeks after the post-test phase. In this field study, participants received three 45-minute group hypnosis-training sessions in between pre-test and post-test data collection. There was no report of the frequency of the hypnosis training. In Study 3 of the present thesis, I used three hypnotist-led sessions which each lasted 60 minutes combined with four self-managed hypnosis sessions, which lasted 55 minutes each at the same time as I collected IP data. The frequency of training was once a

week for six weeks with an exception of week seven during which there were two sessions. As reflected in this discussion, there has been a wide variety of doses in hypnosis training studies in sport conducted by different researchers. Further, reporting of the frequency and duration of sessions has not always been complete. In future, it would be helpful of a transparent process is used to ensure that all important aspects of interventions are presented, which should enhance the potential for researchers to make valid comparisons of their studies with previous research.

Test of Retention of Hypnosis Effect

During the planning stage, I discussed the possibility of tests of retention with my supervisor. Although, it would be valuable to have added tests of retention in the studies, it would also mean that there was a longer commitment required by participants. There would be a trade-off between number of participants and the length of the study per participant. To have a meaningful test of retention, participants need to be tested at least three months after the post-test stage. In such a case, it would take around five months from the time participants agreed to be part of the study to the time they finished. Such a length of time is a big challenge to keep participants motivated and committed.

Further Research

In this section, I first present the issue of participants' skill level as a noteworthy research question. Second, I propose examination of RE with FP as a combined hypnosis intervention. Third, I discuss an isomorphic model of hypnosis training that has the potential to extend the current research model. Fourth, I discuss research that would explore the optimal dose of hypnosis training. Fifth, I suggest the value of conducting research on other golf skills. Sixth, I continue with discussion about the potential of research in self-paced and external-paced sport.

Participants' Skill Level

Research using hypnosis to improve flow and performance in sports is in its infancy, so many questions still need to be addressed. One aspect to which researchers have not paid sufficient attention is participants' skill level. In the present thesis, participants in Study 1 had a mean HC of 11.35 (*SD* = 6.35). Participants in Study 2 had a mean HC of 11.56 (*SD* = 7.41), which is similar to Study 1. The skill level of participants in these two studies would be considered as an intermediate level in golf, whereas participants in Study 3 has a mean HC of 0.27 (*SD* = 0.46), that is, an advanced level. Hence, the results of Studies 1 and 2 might not readily be generalizable to Study 3 and vice versa because of apparent skill differences in the population sub-sets. Similar research, using imagery training to improve basketball free-throw shooting performance and self-efficacy, showed that the most effective way to deliver imagery depends on the level of skill development in athletes (Fazel, 2015; Fazel, Morris, Watt, & Maher, 2018). In the first study, with league players of limited skill, delivery of imagery content using a retrogressive approach, in which all aspects of the imagery content were delivered at the start and contextual content was removed step by step, was superior to delivery in which the full imagery content was presented in every session and progressive imagery delivery, in which the core technical skill was delivered in early imagery sessions and contextual content was progressively added in later sessions (Fazel et al., 2018). In Study 2, using the same research design with more highly-skilled league players, progressive imagery was found to be superior to delivery of the full content in every session and retrogressive imagery (Fazel, 2015). Since there are certain similarities between imagery and hypnosis, especially in assisting performance enhancement, Fazel's research suggests that different methods of hypnosis training might be suitable with golfers of different skill levels. How skill level affects the experience of flow and improvement of performance in golfers should be explored further. Whether the duration and content of hypnosis interventions needs

to be adjusted based on different skill-level participants should also be considered empirically.

Combining Regression with Future Progression Hypnosis

Use of the FP technique in Studies 2 and 3 of the present thesis is new to research on hypnosis and flow in sport, because to date sport researchers have used the RE technique (Lindsay et al., 2005; Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates & Palmi, 2002; Vasquez, 2005). The results of Study 2 in the present thesis showed that both RE and FP hypnosis conditions improved performance as measured by number of putts holed. FP also created significantly stronger increase of flow state. I also observed positive effects of the FP technique on global flow state, flow dimensions, and performance in Study 3, with the SCD design. From these findings for Study 2 and Study 3, I suggest that researchers consider more frequent use of the FP technique in testing the effect of hypnosis on flow state and sports performance.

There are also possibilities to combine RE and FP techniques to create stronger influence on flow and performance. There are two popular ways in which clinical practitioners use the RE technique. The first strategy is to regress individuals back to a previous traumatic event to release the negative emotion and redefine the negative impact from that event to the client's life. The second strategy is to regress clients back to a past event to rediscover certain skills that they possessed at that time, and to bring those past experiences forward to the present, so these skills can be applied to deal with current challenges (Yapko, 2012). Most studies of hypnosis in sport to date have used the second strategy (Lindsay et al., 2005; Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Vasquez, 2005). Based on the description of the first strategy, it could be useful for practitioners to apply this

strategy to resolve any emotional block before using the second strategy. Athletes might have experienced certain trauma in the past that influences their current beliefs and confidence. Some of these beliefs could be limiting in the sense that they distort reality, which then makes athletes less confident and prevents athletes from performing at their best. Using RE to remove the negative emotion attached to the traumatic event, the individual would potentially be able to remove fears, anxiety, or mental blocks. Hypnotists could then use FP techniques more effectively to help individuals envision their future successful performance. As discussed in Study 3, use of the RE technique to help rediscover past successful skills can help participants feel and re-experience past success in more detail and with vivid sensations. I argue that real memories are often richer than imagery of events that individuals have never experienced. These sensations and concrete pictures of themselves performing can provide a solid foundation for individuals to build on. Although RE to powerful events experienced in the past can create rich images, the FP technique gives individuals the capacity to harness effective skills from the past in preparation for a specific future event or events. Based on these reflections, I propose that the combination of RE and FP techniques would likely create an even stronger effect than either technique on its own. Thus, researchers may consider future studies in two directions. The first direction includes participants with a past trauma to resolve. This type of study with traumatised participants could include three conditions. The first condition involves RE hypnosis for trauma plus FP hypnosis for positive experience during a targeted future event. The second condition involves only RE hypnosis for the trauma. The third condition involves only FP hypnosis for positive experience during the future event. The prediction would be that the condition that involves RE hypnosis for trauma plus FP should produce superior results compared with the other two conditions.

The second direction includes participants who have past outstanding performance or skills on which to base future performance. This direction with the past outstanding

performance participants would include three conditions. The first condition involves RE hypnosis to experience past high performance plus FP hypnosis to experience that performance during a targeted future event. The second condition involves RE hypnosis of the past high performance only. The third condition involves only FP hypnosis of experience of performing well in the targeted future event. The prediction would be that the condition that involves RE hypnosis to experience past high performance plus FP should produce superior results compared with the other two conditions. These two directions should allow researchers to test whether the appropriate combined RE for past trauma plus FP or RE for past success plus FP condition is superior to RE or FP condition alone.

Difference in Performance between Individuals in Hypnotic Trance and Individuals Who Receive Post-Hypnotic Suggestions

An interesting question is whether people who are under hypnotic trance produce superior outcomes than individuals who are not in a trance state, but were previously hypnotized and received post-hypnotic suggestions to be executed in a conscious state. Published research comparing these two conditions is rare. In a non-sport study, Salzberg (1960) compared four different conditions: hypnotic, post-hypnotic suggestion, waking suggestion, and normal waking condition. Participants were required to perform three tasks from easier to harder, simple counting, immediate rote memory, and test of concept formation. Salzberg found that both the hypnotic and post-hypnotic suggestion conditions led to superior performance compared with the two waking conditions. Since 2000, most research using hypnosis to improve sports performance has used post-hypnotic suggestions as the default hypnosis condition (Barker & Jones, 2005; 2006; Barker et al., 2010; Lindsay et al., 2005; Pates, 2013; Pates & Cowen, 2013; Pates et al., 2002; Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Vasquez, 2005). However, the WSGC test in all the three studies of this thesis and in the study by Vasquez showed that some

individuals do not respond to post-hypnotic suggestion. These individuals would probably not benefit from post-hypnotic suggestions during a hypnosis research or applied intervention, although post-hypnotic suggestion is a widely-used hypnosis intervention approach. The post-hypnotic suggestions given during hypnosis are expected to be activated in the appropriate live sport context. Individuals in a hypnotic trance state experience sensation similar to those experienced in flow, which may lead to improved performance, but people who only receive post-hypnotic suggestions about hypnosis may not actually experience the flow state while they perform. It depends on their ability to recall the flow state based on the post-hypnotic suggestions. In order to experience flow-like states that include total concentration or absorption, individuals typically enter a trance-like state during the performance. Hence, in sport, it makes sense to explore how well athletes can perform and experience flow when they are hypnotized by a trained hypnotist during the event compared with when they perform on their own with the effect of post-hypnotic suggestions and triggers given before the event. One reason why researchers have been reluctant to conduct studies in which participants are hypnotised during activities, such as sport, is ethical concerns associated with allowing individuals to perform potentially dangerous activities in a mental state in which reality might be suspended. Thus, such research would need to be very carefully designed.

An Isomorphic Model of Hypnosis Training

Robazza (1993) and Robazza and Bortoli (1993) proposed an Isomorphic model of the application of hypnosis in sport. In this Isomorphic model, “active-alert hypnosis is induced before or during practice whereas TH is induced after practice to establish

connections between the two experiences" (Robazza & Bortoli, 1994, p. 963). Robazza and Bortoli further suggested that,

> before or during motor execution, instructions are given to induce active-alert hypnosis either by an external operator or by the subject when in a wakeful condition. With closed (self-paced) skills, as in archery and track and field, alert hypnosis can precede performance so the athlete has time to prepare the execution (p. 963).

Robazza and Bortoli proposed the Isomorphic model on the basis that some researchers have argued that hypnosis alone or hypnosis with post-hypnotic suggestions may not be sufficient to improve performance on motor and cognitive tasks (Jacobs & Salzberg, 1987; Morgan & Brown, 1983; Taylor, Horevitz, & Balague, 1993). Clearly, hypnosis training using the Isomorphic Model is a worthy direction to consider for future research. I suggest future studies should have three conditions, one condition with post-hypnotic suggestions, another condition with only active-alert hypnosis suggestions, and a third condition in which participants receive both active-alert and post-hypnotic suggestions. A study design with these three conditions will allow researchers to compare and conclude with more certainty whether the isomorphic model of hypnosis intervention provides superior results compared with post-hypnotic suggestions or active-alert suggestions.

Optimal Dose of Hypnosis Training

One critical question is the dose of hypnosis training that will produce the optimal impact on flow state and performance, as mentioned in the methodological issues section. Researchers should specifically explore issues, including the ideal number of hypnosis training sessions per week (i.e., frequency), how long each session should last (i.e., optimal session duration), how many weeks hypnosis interventions should continue (i.e., extent of the program). Furthermore, researchers should examine whether all sessions should be led by hypnotists, self-managed, or a combination of live hypnosis and self-managed recorded

sessions, and whether there is a best time of the day to use self-managed hypnosis sessions. Researchers may also conduct various programs of hypnosis research in sport in which the dose variables are examined systematically. For example, one study should focus on the frequency of the hypnosis sessions per week, with three conditions that vary in number of sessions (e.g., one, two, or three sessions). The second study should focus on the duration of each hypnosis session, with conditions, such as 30, 60, and 90 minutes. The third study should look into the most effective total number of sessions in a program, with conditions that vary (e.g., six, eight, or 10 sessions in the program). Then results from the previous three studies should be combined to compare different combinations of frequency, duration, and total number of sessions in the program, which may indicate an optimal dose for future hypnosis training.

Using Hypnosis with Past Personal Experience of Flow

One factor with potential to influence the effect of hypnosis on flow that has not been examined systematically is how past personal experience of flow and hypnosis may influence the subsequent experience of hypnosis and flow. Having the knowledge about past personal experience of flow or a poor performance through the use of the hypnosis RE technique to recall and relive past experiences could assist in removing any emotional blockage to confidence and self-belief, thus, allowing individuals to derive more benefit from hypnosis. However, few researchers using hypnosis to improve flow and performance have considered participants' past experience. Only the studies by Lindsay et al. (2005) and Vasquez (2005) considered participants' past personal experience in a sport context. Vasquez (2005) asked participants to recall their most recent experience with the flow state, before he gave them relaxation and induction suggestions in a field study. After the induction stage, the hypnotist gave participants trancework RE suggestions to ask them to remember the last performance in which they experienced flow or an ideal performance state. Lindsay et al. interviewed

participants about a previous successful event and relaxation state before feeding the key words and phrases the participants used in recounting the event back to participants during the hypnosis suggestions of the IP of the SCD study. The results of these studies were not conclusive. Vasquez only found improvement in performance, but not flow. Lindsay et al. only found one of three participants improved in both flow and performance.

Similar to the concept of considering the past personal experience of participants is the concept of using a tailored script to match with participants' needs. These concepts are similar in the sense that they both require researchers to consider the unique needs of each individual when hypnotists provide the induction and suggestions. Barabasz and Christensen (2006) conducted a study to compare the effect of tailored versus scripted inductions in age RE. For the tailored induction condition, the male hypnotist chose the induction type and manner of administration, based on his clinical experience and intuition, after he observed each individual participant, "during the debunking of false beliefs about hypnosis, reactions to pre-hypnotic induction experiences, and responses observed during the second author's administration of the Stanford Hypnotic Clinical Scale" (p. 256). Barabasz and Christensen found that participants given tailored inductions showed significantly richer results compared with participants given general scripted inductions. These results align with the suggestion that tailored inductions and tailored scripts of suggestions that are customized for each participant should yield more improvement on flow and performance. This approach could have potential in the context of research examining the use of hypnosis to promote flow in sport. One concern is the extent to which tailoring scripts depends on the intuition of the researcher who tailors the hypnosis content. In order for hypnosis to be used effectively as a sport enhancement intervention, there is a need for qualified sport hypnotists (Taylor et al., 1993) and a more stringent review of their qualification standards (Grindstaff & Fisher, 2006).

Research on Other Golf Skills

Through experience of the studies in the present thesis, I have offered some insights into the influence of hypnosis interventions on global flow, flow dimensions, and performance. Replication of the study design of Study 1 and 2 on golf shots other than putting may be beneficial. Researchers have examined the effect of hypnosis on putting (Pates, Oliver et al., 2001) and chipping (Pates & Maynard, 2000), but there is little information regarding performance of other golf shots, such as driving, iron shots, bunker shots, and pitching. These golf tasks that require different types of movement and fitness levels (driving, iron shots) might benefit more from a different hypnosis delivery method than the approach employed in the studies in the present thesis. Although the series of three studies I conducted showed some improvement in golfers' putting performance, studies that can influence multiple golf skills simultaneously are likely to be the most appealing to golfers. For example, Thomas and Igor both mentioned they felt the need to improve various skills (Thomas wanted to improve his driving skill, Igor wanted to improve his pitching skill) in order to truly enjoy and relax in their game.

It is unclear whether a general hypnosis intervention that uses one script for all golf skills would be sufficient to facilitate flow and improve performance. Because of variations in physical and psychological aspects of different golf shots, it is likely that hypnosis interventions that involve multiple elements to address each specific golf shot, would be more effective than generic hypnosis interventions. Researchers may consider studies comparing a hypnosis intervention on a single element (e.g., putting) with a hypnosis intervention on multiple golf shots to determine which condition facilitates global flow state and flow dimensions more. Similarly, comparisons between a condition with a general hypnosis intervention for multiple golf shots and another condition with multiple hypnosis scripts targeting different golf shots should be informative.

Self-paced and Externally-paced Sports

Similar hypnosis studies in interactive sports (such as tennis, badminton) in which there is a direct opponent, whose behaviour affects the performance outcome, would allow other variables to be examined and compared with the results of the present study. Golf is a self-paced sport in which golfers can perform shots or putts at their own pace (within reason), whereas interactive sports are externally-paced. Swann, Keegan, Crust, and Piggott (2016) argued that because of the self-paced, and stop-start nature of golf, golfers can recall the shots they hit. Golfers can also recall the thoughts and emotions at times in between shots. Consequently, golfers can reconstruct performance in sequence and detail more clearly than athletes in externally-paced or team sports. In externally-paced sports, athletes' pace and actions must vary depending on the opponents' behaviour. Additional research involving interactive sports participants will widen the understanding of how hypnosis facilitates flow and performance under the influence of external factors, such as direct opponents. The external factors in interactive sports have a direct influence on performance, whereas the external factors in golf have only an indirect influence. One way to conduct this type of study of flow in externally-paced sport is to examine two conditions in sports like tennis or badminton. In one condition, players hit balls to the wall and keep score similar to a normal game. In the second condition, players play against an opponent and keep score as usual. After the game, players complete the FSS-2 to record their flow score. This type of study design allows researchers to compare the effect of a real opponent with a pseudo-opponent (the wall). When playing against the wall, players can predict the movement of the ball and, knowing where the next ball will be, which should allow them to be more in control of the game, hence, making it easier to get into flow state.

Implications for Practice

The findings reported in this thesis provide useful information for sport psychology practitioners, coaches, and athletes who are interested in using hypnosis as a tool to improve flow and performance. Athletes and sports enthusiasts would gain benefit from increasing the intensity of flow by enhancing some or all of its nine dimensions. Flow dimensions, including clear goals, unambiguous feedback, total concentration, sense of control, action-awareness merging, and autotelic experience are highly relevant to the performance and enjoyment of the sporting experience. The results of Study 1, and particularly Study 2, showed that hypnosis can be used to facilitate these flow dimensions in golf putting, especially in the practice context. The use of hypnosis during practice sessions should help athletes to get into flow more frequently and with greater control. Study 3 showed a variety of external factors that may affect flow and performance. Hence, coaches and sport psychology consultants, who have undergone formal training in the use of hypnosis, may want to consider giving athletes a hypnosis intervention during training or pre-season, so that athletes can master the skill before applying it in competitive environments.

Another aspect that is important to consider is the use of a hypnotisability test in applied work before the actual hypnosis intervention. Barnier and McConkey (2004) conducted an examination about the use of hypnosis scales in 119 experimental and clinical articles published from 1992-2001 in the International Journal of Clinical and Experimental Hypnosis. The results showed that 98 percent of published laboratory research used hypnosis scales, while only 46 percent of published clinical research involved hypnosis scales. In the research on hypnosis in sport performance, only Vasquez (2005) used a hypnosis scale, the WSGC, to test his participants' susceptibility. Use of the WSGC, as an example of a hypnotisability test, at the start of each of the three studies allowed me to pre-select suitable participants, that is, individuals with at least moderate levels of hypnotisability. It was also a

good opportunity to build rapport and let clients become familiarized with hypnosis. An advantage of measuring hypnotisability is that athletes who nominate to undertake hypnosis interventions in the applied setting can be introduced to interventions directly, if they have at least moderate scores on a test like the WSGC. At the same time, those who score low would be wasting their time and that of the professional performing hypnosis to enter such programs at that time. However, hypnotisability is not a fixed entity and those with low scores can be given exercises to increase their susceptibility to hypnosis, following which the interventions are likely to be more effective for them. Spanos (1982) suggested that hypnotic responding is a consequence of a variety of intrapersonal, interpersonal, and contextual skills. He argued quite strongly that these factors are changeable when participants are given helpful information and training. Diamond (1977) agreed that "hypnotizability is modifiable" (p.147).

Furthermore, depending on the responses to the items in the hypnotisability test, practitioners can develop a more suitable script and intervention to match with clients' capability. As demonstrated in Studies 2 and 3, some participants did not score high on the RE item in the WSGC, while others did not perform the required action in the post-hypnotic suggestion test. While the results of Study 3 showed initial improvement in flow state and putting performance, it is possible that the results could have improved if the script was more customized to each individual. Woody and Barnier (2008) argued in support of the need for a tailored script in that, "the type of induction used needs to be matched to the kind of individual being hypnotized" (p. 260). They further suggested that a standardized hypnotic scale could only inform how a subject used that particular style of induction. Barabasz and Christensen (2006) conducted a study to explore the effect of tailored versus scripted inductions in RE with 20 volunteers. They found that "tailored induction showed

significantly greater focal point dependence evidence of age regression than those exposed to scripted inductions" (p. 258).

The lack of association between the drop in flow score and poor performance in Study 3 suggested that different methods of evaluating flow should be considered. The repeated administration of a 36-item measure, using the long version of the FSS-2, might limit its application to measure the fluctuation of various flow dimensions between holes during a round of golf. In addition, a relatively long measure like the FSS-2 might not be very sensitive to changes happening every few shots in golf. In Study 3, I only used one measure of flow, the FSS-2, and I only measured flow at the end of a golf round, which might not necessarily reflect how golfers experienced flow throughout the round. It may be more appropriate to use the 9-item version of the FSS-2, the SHORT FSS-2 flow scale after each hole, or after several holes. If the goal is to measure flow state for putting only, sport psychology consultants and coaches may want to consider having one short questionnaire before and after each putt. Once athletes are used to working with the scales, especially during practice, they are more likely to be comfortable responding to short scales after each set of three or six holes during a round of golf. Another possible method, which needs to be tested by research, is to regress well-trained-in-hypnosis golfers after their round to answer the FSS-2 based on their recall during that RE. In such research a hypnotist would hypnotise golfers to regress to the first six holes, and complete the FSS-2 based on their recall during that regression. The process repeats again for the second six holes, and the last six holes. If this method can produce reliable results in research, it would be an effective tool to explore the fluctuation of flow from hole to hole or even from putt to putt. However, researchers who want to explore this direction would need to be cautious because of the false memory debate, which has been a popular topic during the latter half of the 1990s (Yapko, 2012).

Coaches and sport psychology consultants may also want to consider the dose of a minimum eight hypnosis training sessions as suggested in Study 3. These eight training sessions can be a combination of hypnotist-led and self-managed sessions, or all of one type, although athletes in some studies have stated a preference for hypnotist-led sessions. However, Barker et al. (2010) reported significant effects on self-efficacy and soccer wall-volley performance for a shorter 3-session intervention. Based on feedback from the social validation interviews in Studies 1 and 2, a hypnosis script should not be too long in duration (more than 40-50 minutes), because golfers and other athletes have many other commitments, so they might feel that they cannot devote the time needed to listen frequently to very long scripts. Athletes in Study 3 also suggested that there should be a variety of mp3 files with different content that can match with different needs during competition. Coaches and practitioners may want to consider the use of short self-hypnosis sessions (10 minutes) like those proposed by Barker and Jones (2006), as a supplement to the kind of hypnosis intervention used in Study 3. A problem with the use of self-hypnosis is that training golfers and other athletes to use hypnosis effectively could take longer than simply asking them to do quite long scripts presented by researchers who have extensive hypnosis training. If the athletes are not thoroughly trained, self-hypnosis might be self-delivered in ineffective ways. The compromise of using self-managed sessions had strengths and weaknesses. Strengths include that the voice, the content, and the delivery of the content are consistent with what athletes experience in the live hypnosis sessions that are part of the program. Weaknesses are that hearing exactly the same material delivered in precisely the same way on every occasion, especially during the induction stage when individuals are not yet in trance, could lead to boredom and loss of motivation for the hypnosis program. Ultimately, practitioners and athletes must decide on the most manageable approach based on their availability and athletes' commitment to the hypnosis program.

Concluding Remarks

The amount and breadth of published research examining hypnosis in sport psychology is scant (Stegner & Morgan, 2010), despite the promising start made by Pates, Maynard and colleagues (Pates & Maynard, 2000; Pates, Maynard et al., 2001; Pates, Oliver et al., 2001; Pates et al., 2002) and Lindsay et al. (2005) on flow and Barker, Jones and colleagues (Barker & Jones, 2006; 2008; Barker et al., 2010) on self-efficacy largely between 2000 and 2010. The purpose of this thesis was to examine the effectiveness of hypnosis to increase global flow state, flow state dimensions, and golf putting performance, with a focus on two flow state dimensions, loss of self-consciousness and time transformation. In Study 1, I compared the effect of TH, including trancework suggestions, with NH, with no trancework. Results indicated that TH with trancework was more effective for improving golf putting and the two flow dimensions, sense of control and loss of self-consciousness. Other flow dimensions increased in both the TH condition and the NH condition, suggesting that elements of induction and deepening might enhance certain aspects of flow. In Study 2, I assessed the effects of FP hypnosis and RE hypnosis on global flow state, flow state dimensions, and golf putting performance. This was the first study in sport that compared two well-established hypnosis techniques. Results indicated that FP was more effective than RE in enhancing global flow due to increases in the time transformation and action-awareness merging dimensions. Both FP and RE significantly improved performance in terms of the number of putts holed. Based on the results of the first two studies, I conducted Study 3 to explore the effectiveness of a FP intervention with highly-skilled golfers, using a SCD in a real world competition situation. Results indicated that FP increased flow state through the action-awareness merging, total concentration, sense of control, and autotelic experience flow state dimensions. FP also improved the number of putts per round and the strokes gained putting score. Analysis of the effects of hypnosis on the nine flow dimensions was an original

aspect of the research in this thesis that shows promise for increasing understanding of how hypnosis enhances flow state. This thesis provides insights into a range of possible directions for further research in finding the most effective ways to deliver hypnosis training in target sports like golf, which should enhance understanding of how to increase flow state and self-paced performance in sport. In the research conducted here, I addressed some effects of hypnosis interventions and extraneous variables on targeting specific flow dimensions (loss of self-consciousness, time transformation) and performance, but there is a long way to go before research can fully address the magic formula for using hypnosis to enhance flow in every different combination of circumstances in which people play golf, let alone perform in any sport. I hope that this research stimulates others to do more study on the influence of hypnosis on flow and sports performance.

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Appendix A - Study 1 Information statement

INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH

You are invited to participate

You are invited to participate in a research project entitled "**The effect of hypnotic trancework on flow and performance in athletes"**

This project is being conducted by a student researcher Dung Tien Dao as part of a Doctor of Philosophy Program at Victoria University under the supervision of Professor Tony Morris and Associate Professor Daryl Marchant from the College of Sport and Exercise Science, Victoria University.

Project explanation

Athletes performing at their best commonly report being totally absorbed in and focused on the task, confident and in control while their body moves effortlessly and automatically. This state is called flow. This research will contribute to understanding how hypnosis enhances flow in sport. There are some aspects of hypnosis that I propose can help golfers to experience flow more often with benefits for enjoyment and performance. Results from this research will provide new evidence about the effect of different types of hypnosis and hypnosis techniques on flow and sport performance.

What will I be asked to do?

In the first session, you with be provided with clear information about the study, the details and the commitment level being asked of participants and you will have the opportunity to ask Dung any questions and clarify any concerns. You will then have the opportunity to read and sign the informed consent form. You will then complete a questionnaire that asks about your ability to relax and imagine various experiences, that is, to experience a hypnotic state. In the second session, you will be asked to putt from a number of positions around a golf hole, first performing 10 practice putts 56 scoring putts. After your putting performance, you will complete a questionnaire that asks you about your experiences while doing the putting task (5-10 minutes). On the next session, Dung will then take you through a 60-minute session of hypnosis, which involves suggestions to perform putting with confidence and accuracy. After this session, you will be given a recorded audio of the hypnosis session and asked to listen to it daily for seven days. The third session will be conducted one week after the second session. In it you will perform 10 practice putts before doing 56 scoring putts. You will then again complete the questionnaire on your experiences while performing, followed by talking to Dung about your experiences of the whole study.

What will I gain from participating?

By participating to this study, you will gain insights into the way your mind and body works when you are putting. You will learn the skill to relax mentally and to putt in an automatic pattern. You will experience how hypnosis can help you improve your golf game by allowing you to be fully focus and absorb in the golf game.

How will the information I give be used?

The study results will be used as part of the data for Dung's PhD thesis. Your personal putting scores will only be used within group patterns, so your individual details will not be identifiable. These data will also be used for scientific research papers and conference presentations. This could lead to the hypnosis techniques being used by sport psychologists to assist golfers and other athletes in the future.

What are the potential risks of participating in this project?

People often associate hypnosis with the fear that a hypnotist has complete control over participants, including what they believe, think, and do. The reality is that hypnosis is a cooperation between the hypnotherapist and the client which make equal effort to bring success to the session. In scientific/experimental research, the hypnosis process is based on the trust that the hypnotic suggestion is in keeping with the wishes of the participants and does not involve deception or manipulation.

Qualification of the hypnotist is also a valid concern and potential risk for participants. If a hypnotist is not well trained and qualified by an authoritative body in the field, they are unlikely to be able to successfully conduct sessions and could potentially cause psychological distress to the participants. I am trained and certified as a clinical hypnotherapist with the Academy of Hypnotic Science and I am a member of the Australian Hypnosis Association. This training and certification ensures that I have a strong foundation of knowledge and experience to conduct hypnosis sessions according to the standard required by the Australian Hypnosis Association.

There is a chance of unwanted behavior that arises during a hypnosis session due to traumatic events in participants' past. People in a trance state will rarely relive traumatic and unpleasant feelings. Hence, I will do advance screening through questionnaire and communication to assess the possibility that past traumatic events will surface during hypnosis. From this initial scanning, you will be assessed to be sure that you are suitable for the study. During each hypnosis session, I will observe you carefully and if I identify any sign of distress, I will stop the study immediately. In this event, I will bring you out of hypnotic state to relax, and refocus you on the real current situation. If you show signs of continued distress, you will be offered the opportunity to consult a psychologist. All of these steps are part of the safeguard protocol

that I will use to minimize risks. The same practice of bringing you out of the hypnotic state will be used at the end of every session.

All your information will be confidential with only access by Dung and research supervisors. Official paperwork, including hard copies of results, will be kept in a locked filing cabinet drawer for five years and follow the strict data handling procedure as stated by the policy and procedure for research integrity of Victoria University (2012).

How will this project be conducted?

This project will be conducted at a local golf course in Melbourne. The first two sessions will be conducted in a quiet room at the golf course. In the first session I inform you about the study and ask you to sign the consent form if you are interested to participate. In the second session, you will go through a questionnaire with Dung. In the third session, you will be asked to do 10 practice putts, then 56 scoring putts on the putting green. In the fourth session, you will go through a hypnosis session with Dung and be given a set of recorded audio files to listen at home for the next 7 days. You will come back after 1 week to do one last session. Right after each session of putting, you will be asked to fill in two questionnaires and asked about your experience during the study

Who is conducting the study?

The College of Sport and Exercise Science, Victoria University.

Chief Investigator

Professor Tony Morris

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Secondary Investigator

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Student researcher

Dung Tien Dao

Email: sportpsychologyconsultants@gmail.com

Phone: 04.6622.6543

If you have concern about any psychological issue, you may contact the independent psychologist Dr. Janet Young from Victoria University (email: janet.young@vu.edu.au, telephone: 9919 4762) for further consultation.

Any queries about your participation in this project may be directed to the Chief Investigator listed above.

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

Appendix B - Study 1 Consent Form

CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH

INFORMATION TO PARTICIPANTS:

You are invited to participate in a research project entitled "**The effect of hypnotic trancework on flow and performance in athletes".** In this research participants do two rounds of 56 scoring putting with one week of hypnosis intervention with performance suggestion in between. This result will provide new evidence about the effect of different types of hypnosis and hypnosis techniques on flow and sport performance.

This project is being conducted by a student researcher Dung Tien Dao as part of a Doctor of Philosophy Program at Victoria University under the supervision of Professor Tony Morris and Associate Professor Daryl Marchant from the College of Sport and Exercise Science, Victoria University.

CERTIFICATION BY SUBJECT

I, "[Click here & type participant's name]"

of "[Click here & type participant's suburb]"

certify that I am at least 18 years old and that I am voluntarily giving my consent to participate in the study:

"The effect of hypnotic trancework on flow and performance in athletes" being conducted at Victoria University by Professor Tony Morris, Assoc Prof Daryl Marchant and Dung Tien Dao.

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the research, have been fully explained to me by the student researcher Dung Tien Dao and that I freely consent to participation involving the below mentioned procedures:

- Attending four sessions (60 - 90 minutes)
- Performing 56 scoring putts on a practice green on two occasions
- Answering 3 questionnaires and 1 brief interview
- Going through a hypnosis session with Dung
- Listening to the recorded audio file of the hypnosis session at home daily for at least 7 days

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way.

I have been informed that the information I provide will be kept confidential.

Signed: _____

Date: _____

Any queries about your participation in this project may be directed to the researcher Professor Tony Morris Phone: 0430,511.543

If you have concern about any psychological issue, you may contact the independent psychologist Dr. Janet Young from Victoria University (email: janet.young@vu.edu.au, telephone: 9919 4762) for further consultation.

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email Researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

Appendix C - Demographic Information Form

Demographic and Information Form

1. Participant code:_____

2. Age: Gender:

3. Member of club: _____

4. Most convenient golf course (driving rage) to test putting skill _____

5. Years of golfing experience:

6. Handicap:

7. Do you have experience with Hypnosis? Yes No

8. Are you currently using any prescription medications? Yes No

9. Rate your ability as a golf putter?

1 2 3 4 5 6 7

Poor Average Excellent

10. Have you experienced flow before? Yes No

Appendix D - WSGC manual

WATERLOO-STANFORD GROUP SCALE OF HYPNOTIC SUSCEPTIBILITY, FORM C: *Manual and Response Booklet'*

KENNETH S. BOWERS
University of *Waterloo*

Abstract: The manual and response booklet for the Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C (WSGC) is presented. The WSGC is a group adaptation of the individually administered Stanford Hypnotic Susceptibility Scale, Form C (SHSSC).
The Waterloo-Stanford Group Scale of Hypnotic Susceptibility Form C (WSGC) is a group adaptation of the individually administered Stanford Hypnotic Susceptibility Scale, Form C (SI3S.C) (Weitzenhoffer & Hilgard, 1962). Normative data for the scale were reported previously (Bowers, 1993). This article presents instructions for administration and scoring, along with additional normative data.

PREPARATION

Note to Experimenters Concerning Age Regression:

Each subject must be given a pencil and a clipboard with paper at the beginning of this item. In small groups of 8 to 12 subjects, it is feasible for the experimenter to hand out materials. In larger groups, however, an assistant will be required. Turn the subject's response booklet over so they can use the back page to write on. They will keep the clipboards until after the "negative hallucination" item. At that time, it is important to remember to turn these booklets face-side up when collecting the pencils at the end of the item. Otherwise, the handwriting on the page will cue the subject’s memory before the amnesia suggestion has been released. Be sure that each subject returns completely to the present at the end of the regression item.

Materials Needed

- Scoring booklet and pencil for each subject
- Clipboard
- Stopwatch for timing item responses (or wristwatch with second hand).

WSGC INDUCTION AND SUGGESTIONS

Preliminary Instructions

In a few minutes, I am going to administer a standard procedure for measuring hypnotic ability. At the end of the standard procedure, you will be asked to report on your experience in the response booklet, which has been given to you. Place the clipboard and your pencil or pen on the floor in front of you. If you are wearing contact lenses, you may wish to take them out now.

Now, I think we can begin.

Induction by Eye Closure

1. Now, please seat yourself comfortably and rest your hands in your lap. That's right. Rest your hands in your lap. Now, look at your hands and find a spot on either hand and just focus on it. It doesn't matter what spot you choose; just select some spot to focus on. I will refer to the spot you have chosen as the target. That's right. . . hands relaxed. . . . Look directly at the target.

I am about to help you to relax, and meanwhile, I will give you some instructions that will help you to gradually enter a state of hypnosis. Please look steadily at the target, and while staring at it, keep listening to my words. You can become hypnotized if you are willing to do what I tell you to and if you concentrate on the target and on what I say. You have already shown your willingness by being here today, and so I am assuming that your presence here means that you want to experience all that you can. Just do your best to concentrate on the target-pay close attention to my words, and let happen whatever you feel is going to take place. Just let yourself go. Pay close attention to what I tell you to think about; if your mind wanders, that will be okay; just bring your thoughts back to the target and my words, and you can easily experience more of what it's like to be hypnotized.

Hypnosis is perfectly normal and natural and follows from the conditions of attention and suggestion we are using together. It is chiefly a matter of focusing sharply on some particular thing. Sometimes you experience something very much like hypnosis when driving along a straight highway and you are oblivious to the landmarks along the road. The relaxation in hypnosis is very much like the first stages of falling asleep, but you will not really be asleep in the ordinary sense because you will continue to hear my voice and will be able to direct your thoughts to the topics that I suggest. What is important here today is your willingness to go along with the ideas I suggest and to let happen whatever is about to happen. Nothing will be done to embarrass you.

2. Now, take it easy, and just let yourself relax. Keep looking at the target as steadily as you can, thinking only of it and my words. If your eyes drift away, don't let that bother you. . , just focus again on the target. Pay attention to how the target changes, how the shadows play around it, how it is sometimes fuzzy, sometimes clear. Whatever you see is all right. Just let yourself experience whatever happens and keep staring at the target a little longer. After a while, however, you will have stared long enough, and your eyes will feel very tired, and you will wish strongly that they were closed. Then, they will close, as if by themselves. When this happens, just let it happen.

3. As I continue to talk, you will find that you will become more and more drowsy, but not all people respond at the same rate to what I have to say. Some people's eyes will close

before others'. When the time comes that your eyes have closed, just let them remain closed. You may find that I shall still give suggestions for your eyes to close. These suggestions will not bother you. They will be for other people. Giving these suggestions to other people will not disturb you but will simply allow you to relax more and more.

You will find that you can relax completely, but at the same time, sit up comfortably in your chair with little effort. You will be able to shift your position to make yourself comfortable as needed without it disturbing you. For now, just relax more and more. As you think of relaxing, your muscles will actually begin to relax. Starting with your right foot, relax the muscles of your right leg . . . now the muscles of your left leg. . . . Just relax all over. Relax your right hand . . . forearm . . . upper arm . . . and shoulder. . . . That's right. . . . Now your left hand . . . forearm . . . upper arm . . . and shoulder. . . . Relax your neck and chest . . . more and more relaxed … completely relaxed . . . completely relaxed.

4. As you become relaxed, your body will feel deeply at ease . . . comfortably heavy. You will begin to have this pleasant feeling of heaviness and comfort in your legs and feet . . . in your hands and arms . . . throughout your body . . . as though you were settling deep into the chair. Your body feels comfortable and heavy. . . . Your eyelids feel heavy too, heavy and tired. You are beginning to feel very relaxed and comfortable. You are breathing freely and deeply, freely and deeply. You are becoming more and more deeply and comfortably relaxed. Your eyelids are becoming heavier, more and more heavy and difficult to keep open.

5. Staring at the target so long has made your eyes very tired. Your eyes may hurt from staring, and your eyelids feel very heavy. Soon, you will no longer be able to keep your eyes open. Soon, you will have stood the discomfort long enough; your eyes are tired from staring, and your eyelids will feel too tired to remain open. Perhaps your eyes are becoming moist from the strain. You are becoming more and more relaxed and comfortable. The strain in your eyes is getting greater and greater. It would be a relief just to let your eyes close and to relax completely relax completely. The strain in your eyes will eventually be so great that you will welcome your eyes closing of themselves, of themselves.

6. Your eyes are tired, and your eyelids feel very heavy. Your whole body feels heavy and relaxed. You feel a pleasant, warm tingling throughout your body as you become more and more deeply relaxed … deeper . . . deeper . . . more relaxed . . , completely relaxed and drifting down into a warm, pleasant state of relaxation. Keep your thoughts on what I am saying; listen to my voice. Your eyes are getting blurred from straining. You can hardly see the target, your eyes are so strained. The strain is getting greater, greater and greater, greater and greater. Your eyelids are heavy, very heavy. Getting heavier and heavier, heavier and heavier. They are pushing down, down, down. Your eyelids seem weighted and heavy pulled down by the weight . . . so heavy . . . your eyes are blinking, blinking . . . closing, closing.

Your eyes may have closed by now, and if they have not, they would soon close of themselves. But, there is no need to strain them more. You have concentrated well on the target and have become very relaxed. Now, we have come to the time when you may just let your eyes close. That's it, eyes closed now.

7. You now feel very relaxed, but you are going to become even more relaxed. It is easier to relax completely now that your eyes are closed. You will keep them closed until I tell you to open them or until I tell you to become alert. . . . You feel pleasantly, deeply relaxed and very comfortable as you continue to hear my voice. Just let your thoughts dwell on what I'm

saying. You are going to become even more relaxed and comfortable. Soon, you will be deeply hypnotized, but you will have no trouble hearing me. You will remain deeply hypnotized until I tell you to awaken later on. Soon, I shall begin to count from 1 to 20. As I count, you will feel yourself going down further and further into a deeply relaxed, a deeply hypnotized state. . . . But, you will be able to do all sorts of things I ask you to do without waking up. . . . One . . . you are going to become more deeply relaxed and hypnotized. , . . Two . . . down, down deeper, and deeper. . . . Three. . . . Four . . . more and more deeply hypnotized. . . . Five. . . . Six. . . , Seven , . . You are sinking deeper and deeper into hypnosis. Nothing will disturb you. . . . Just let your thoughts focus on my voice and those things I tell you to think of. You are finding it easy just to listen to the things I tell you. Eight. . . .Nine. . . . Ten.. .halfway there.... always deeper.. . . Eleven.. . .Twelve.. . .Thirteen. . . . Fourteen. . . . Fifteen. . . . Although deeply hypnotized, you can hear me clearly. You will always hear me distinctly, no matter how deeply hypnotized you become. Sixteen. . . . Seventeen. . . . Eighteen... Deeply hypnotized. Nothing will disturb you. You are going to experience many things that I will tell you to experience. . . . Nineteen.. . . Twenty. . . deeply hypnotized now! You will not wake up until I tell you to. You will wish to remain relaxed and hypnotized and to have the experiences I describe to you.

Even though you are deeply relaxed and hypnotized, I want you to realize that you will be able to write, to move, and even to open your eyes if I ask you to do so, and still remain just as hypnotized and comfortable as you are now. It will not disturb you at all to open your eyes, move about, and write things. You will remain hypnotized until I tell you otherwise. . . . All right, then.

1. Hand Lowering

Now, hold your right hand out at shoulder height, with the palm of your hand facing up. Your right hand straight out in front of you, the palm up. There, that's right. . . . Attend carefully to this hand, how it feels, what's going on in it. Notice whether or not it's a little numb, or tingling; the slight effort it takes to keep from bending your wrist; any breeze blowing on it. Pay close attention to your hand now. Imagine that you are holding something heavy in your hand . . . maybe a heavy baseball, or a billiard ball . . . something heavy. Shape your fingers around as though you were holding this heavy object that you imagine is in your hand. That's it. . . . Now, the hand and arm feel heavy, as if the weight were pressing down. . . . And as it feels heavier and heavier, the hand and arm begin to move down . . . as if forced down . . . moving . . . moving . . . down . . . down . . . more and more down . . . heavier. . .heavier. . . . The arm is getting more and more tired and strained . . . down . . . slowly but surely . . . down, down . . . more and more down. The weight is so great, the hand is so heavy. . . . You feel the weight more and more. . . . The arm is too heavy to hold back. . . . It goes down, down . . . more and more down.
(Allow 10 seconds.)

That's good. . . . Now, let your hand go back to its original resting position, and relax. You probably experienced much more heaviness and tiredness in your arm than you would have if you had not concentrated on it and had not imagined something trying to force it down. Now, just relax. . . . Your hand and arm are now as they were, not feeling tired or strained. . . . All right, just relax.

2. Moving Hands Together

Now, extend your arms ahead of you, with palms facing each other, hands about a foot apart. Hold your hands about a foot apart, palms facing each other. I want you to think about a force acting on your hands to pull them together, as though one hand were attracting the other. You are thinking of your hands being pulled together, and they begin to move together . . . coming together . . . coming together . . . moving together . . . closer together . . . more and more toward each other . . . more and more.
(Allow 10 seconds.)

That's fine. You notice how closely thought and movement are related. Now, place your hands back in their resting position and relax . . . your hands back in their resting position and relax.

3. ***Mosquito Hallucination***

You have been listening to me very carefully, paying close attention. You may not have noticed a mosquito that has been buzzing, singing, as mosquitoes do. . . . Listen to it now . . . hear its high-pitched buzzing as it flies around your right hand. . . . It is landing on your hand. . . . Perhaps it tickles a little bit. . . . There, it flies away again. . . . You hear its high-pitched buzz. . . . It's back on your hand, tickling. . . . It might bite you. . . . You don't like this mosquito. . . . You'd like to get rid of it. . . . Go ahead, brush it off . . . get rid of it if it bothers you.
(Allow 10 seconds.)

It's gone. . . . That's a relief. . . . You are no longer bothered. . . .The mosquito has disappeared. No more mosquito. Now relax, relax completely.

4. Taste Hallucination

I want you to think of something sweet in your mouth. Imagine that you have something sweet tasting in your mouth, like a little sugar. . . . And, as you think about this sweet taste, you can actually begin to experience the sweet taste. . . . It may at first be faint, but it will grow . . . and grow. . . . Now, you begin to notice a sweet taste in your mouth. . . . The sweet taste is increasing . . . sweeter . . . and sweeter. . . . It will get stronger. It often takes a few moments for such a taste to reach its full strength. . . . It is now getting stronger . . . stronger.
(Allow 10 seconds.)

All right. Now, notice that something is happening to that taste. It is changing. You are now beginning to notice a sour taste in your mouth . . . an acid taste, as if you had some lemon in your mouth, or a little vinegar. . . . The taste in your mouth is getting more and more sour . . . more acid . . . more and more sour.
(Allow 10 seconds.)

All right. Now, the sour taste is going away, and your mouth feels just as it did before I mentioned any taste at all. Your mouth is normal now. There, it's quite normal now, and you just continue to relax . . . more and more relaxed.

5. Arm Rigidity

Please hold your right arm straight out in front of you, and fingers straight out too. . . . That's right . . . right arm, straight out. Think of your arm becoming stiffer and stiffer . . . stiff . . . very stiff. . . . As you think of its becoming stiff, you will feel it become stiff . . . more stiff and rigid, as though your arm were in a splint, so the elbow cannot bend . . . stiff . . . held stiff, so

that it cannot bend. A tightly splinted arm cannot bend. . . . Your arm feels stiff as if tightly splinted. . . . Test how stiff and rigid it is. . . . Try to bend it . . . try.
(Allow 10 seconds.)

That's fine. You will have an opportunity to experience many things. You probably noticed how your arm became stiffer as you thought of it as stiff, and how much effort it took to bend it. Your arm is no longer at all stiff. Place it back in position, and relax.

6. Dream

We are very much interested in finding out what hypnosis and being hypnotized means to people. One of the best ways of finding out is through the dreams people have while they are hypnotized. . . . Now, neither you nor I know what sort of a dream you're going to have, but I'm going to allow you to rest for a little while and you are going to have a pleasant dream . . . a real dream . . . just the kind you have when you are asleep at night. When I stop talking to you very shortly, you will begin to dream. You will have a pleasant dream about hypnosis. You will dream about what hypnosis means. . . . Now, you are falling asleep . . . deeper and deeper asleep . . . very much like when you fall asleep at night. . . . Soon, you will be deep asleep, soundly asleep. As soon as I stop talking to you, you will begin to dream. When I speak to you again, you will stop dreaming, if you still happen to be dreaming, and you will listen to me just as you have been doing. If you stop dreaming before I speak to you again, you will remain pleasantly and deeply relaxed. . . . Now, sleep and dream. . . Deep asleep!
(Allow 1 minute.)

The dream is over; if you had a dream, you can remember every detail of it clearly, very clearly. You do not feel particularly sleepy or different from the way you felt before I told you to fall asleep and to dream, and you continue to remain deeply hypnotized. Whatever you dreamed, you can remember quite clearly, and I want you to review it in your mind from the beginning so you could tell it to someone if asked to.
(Allow 20 seconds.) All right. That's all for the dream.

7. Arm Immobilization (left hand)

Now, your left hand and arm should be in your lap. You are very relaxed and comfortable, with a feeling of heaviness throughout your body. I want you now to think about your left arm and hand. Pay close attention to them. They feel numb and heavy, very heavy. How heavy your left hand feels. . . . Even as you think about how heavy your left hand is, it grows heavier and heavier. . . . Your hand is getting heavier . . . heavier and heavier. . . . Your hand is getting heavier, very heavy, as though it were being pressed against your lap. You might like to find out a little later how heavy your hand is. . . . It seems much too heavy to move. . . . But in spite of being so heavy, maybe you can move it a little; but maybe it is too heavy even for that. . . . Why don't you see how heavy it is. . . . Just try to lift your hand up, just try.
(Allow 10 seconds.)

That's fine. You see how it was harder to lift than usual because of the relaxed state you are in. Now, place your hand back in its resting position and relax. Your hand and arm now feel normal again. They are no longer heavy. Just relax, relax all over.

8. Age Regression

Continue to go deeper and deeper into the hypnotic state. I am now going to give you a clipboard with some paper on it and a pencil. When I do, hold the clipboard on your lap and hold out your writing hand . . . and I will give you a pencil to write with. Keep your eyes closed for all of this.
(Give each subject their clipboard and pencil. Remember to turn over the response booklet so they will write on the back of it.)
You have a clipboard and a pencil with you, and now, I would like you to write your name on the paper while keeping your eyes closed. Keep your eyes closed through all of this. While you are writing your name, why don't you also write your age and the date? That's fine. Keep the clipboard and the pencil in your hands and listen closely to me. I would like you to think about a pleasant time when you were in the fifth grade of school; and in a little while, you will find yourself once again a little child pleasantly enjoying a nice day, sitting in class in the fifth grade, comfortably writing or drawing on some paper. . . . I shall now count to five, and at the count of five, you will be back on a pleasant day in the fifth grade. . . . But no matter what you experience, you will continue to hear my voice, and you will continue to do what I tell you to do.

One, you are going back into the past. It is no longer 2016 (state present), nor 2015 (state an earlier year), nor 2014 (state a still earlier year), but much earlier. Two, you are becoming increasingly younger and smaller. . . . Three, presently, you will be back having a pleasant time in the fifth grade, and you will feel an experience exactly as you did once before on a nice day when you were sitting in class, writing or drawing. Four, very soon, you will be there. . . . Once again a little child having a pleasant time in a fifth-grade class. You are nearly there now. . . . In a few moments, you will be right back there. Five! You are now a small child in a classroom, sitting happily in school.
(Allow 30 seconds.)

You are sitting happily at school. You have a pad of paper and are holding a pencil. I would like you to write your name on the pad with this pencil. . . . That's fine, and now, please write down your age . . . *(pause until almost all are through writing)* . . . and now the date, if you can. . . *(pause until almost all are through writing)* . . . and the day of the week.

Presently, you will no longer be in the fifth grade, but you will be still younger, back at a happy day in the second grade. I shall count to two, and then you will be in the second grade on a very happy day. One, you are becoming smaller still and going back to a nice day when you were in the second grade, sitting happily in school with some paper and a pencil. . . . Two, you are in the second grade.
(Allow 30 seconds.)

You are sitting happily at school. Would you please write your name on the paper. . . . That's good. . . . And now, can you write how old you are? . . . Now, I would like you to write down who I am, or if you are not sure who I am, write down who you think I might be.
(Allow 30 seconds.)

That's fine. . . . And now, you can grow up again and come right back to Jan 2016 (*state current day and date*) in (*name of locale of testing*). You are no longer a little child but a grown-up person, sitting in a chair, deeply hypnotized. Fine, everything is back as it was. You won't need the pencil and clipboard for a while. Continue to hold the pencil in your hand. Turn the clipboard over and put it on your lap. Just place the clipboard face down on your lap. Your

hand should be back in its resting position, resting comfortably in your lap. Just keep your eyes closed and relax . . . deeply and comfortable. That's right, just relax completely.

9. ***Music Hallucination***

In a few moments, a recording of "Jingle Bells" will be played for you. When the recording starts, the volume will be turned way down, and you will probably not be able to hear it, or you will hear it very faintly. Then the volume will increase, and I want you to let me know when you can hear it satisfactorily by holding up your right hand. When you can hear the music satisfactorily, hold up your right hand. Okay? Here we go. . . . The recording of "Jingle Bells" has been turned on.
This is Level 1.
(Allow 5 seconds.)

Now, it is being turned up a little. This is Level 2. Hold your hand up if you can hear it now.
(Allow 5 seconds.)
And now louder. This is Level 3.
(Allow 5 seconds.)
And now the loudest setting. This is Level 4. Hold your hand up if you can hear the music now.
(Allow *5* seconds.)
Now, the music has been turned off. There now, there is no longer any music. You can return your hand to its resting position and relax. Now. . . just sit back and enjoy being hypnotized.

10. Negative Visual Hallucination

Just relax and become even more deeply hypnotized, as you continue to breathe comfortably and effortlessly. As you sit comfortably in your chair with your eyes closed, I am going to place two balls in the centre of the floor. I am going to place two coloured balls right in the middle of the floor, so that you will be able to see them clearly. In a moment, I am going to ask you to open your eyes. You will see just two balls in the centre of the floor on a piece of wood . . . just two balls.
(Put three balls in the middle of the floor in a triangular configuration.)

Okay, now is the time to open your eyes and to look at the centre of the floor in front of you. See the two balls that I have placed there. Please make a mental note of the colour of the balls you see. Remember the color of the balls you see, so that you can report them later. Okay, now, close your eyes and continue to relax. . . . Now, I would like you to turn over the clipboard that is on your lap and write down the color of the balls you saw. Just write down the color of the balls. . . . When you have written down the color of the balls, I want you to hold the pencil you've been writing with in the air . . . keep the pencil in the air until it is collected along with the clipboard. . . . When your pencil has been collected, you may let your arm go back to its original resting position and relax completely.
(Collect pencils, turn over the response booklets, and place each booklet and pencil on the floor in front of the subjects. Remove the three balls from the floor and place them out of sight.)

Okay, you've done very well. Just keep your eyes closed and relax . . . deeply and comfortably. That's right, just relax completely.

11. ***and*** **12. Posthypnotic** ***Suggestion (doodle) and Amnesia***

Stay completely relaxed and pay close attention to what I'm going to tell you next. In a moment, I shall begin counting backwards from 20 to 1. You will awaken gradually, but for most of the count, you will remain in the pleasant, relaxed state that you are now in. By the time I reach 5, you will open your eyes, but you will not be fully aroused. When I get to 1, you will be fully alert, in your normal state of wakefulness. You probably will have the impression that you have slept, because you will have difficulty in remembering all the things I have told you and all the things you did or felt since you started looking at the target. In fact, you will find it so much of an effort to recall any of these things, that you will have no wish to do so. It will be much easier simply to forget everything until
I tell you that you can remember. You will remember nothing of what you did or felt from the time that you started looking at the target, until I say to you, "Now, you can remember everything!" You will not remember anything you did until then. After you open your eyes, you will feel fine.

I shall now count backwards from 20, and at 5, not sooner, you will open your eyes but not be fully aroused until I say "one." At 1, you will be awake... A little later, I will tell you to turn to page 2 of your response booklet. When you turn to page *2,* you will draw a small tree in the upper right-hand corner. You will draw a small tree but forget that I told you *to* do so, just as you will forget the other things, until 1 tell you, "Now, you can remember everything." Ready, now, 20. . .19. . .18. . .17. . 16. . .1 5 . . . 1 4 . . . 13.. . 12.. . 11.. . 10, halfway.. . 9 . . . 8 .. . *7* . .*6* . . .5 . . .4 . . . 3 . . . *2* . . . 1. Wake up! Wide awake! Any remaining drowsiness that you may feel will quickly pass.

Testing
Now, turn to page 2 of your response booklet.
(Allow 10 seconds.)

Now, please write down briefly, in your own words, a list of the things that happened since you began looking at the target. Do not go into detail. Spend 3 minutes, no longer, in writing your reply. I will let you know when time is up.
(Allow 3 minutes.)

Listen carefully to my words. Now, you can remember everything. Now, please turn to the next page of the response booklet. On this page, write down a list of anything else that you now remember that you did not remember previously. Please do not go into detail. Spend 2 minutes, no longer, on this section. Again, I will let you know when time is up.
(Allow 2 minutes.)

Now, please turn to the next page of your response booklet. Please do not turn back to earlier pages. You will find listed on page 4, and on the following pages, the specific events that were suggested to you during the hypnosis session. Please read the instructions and then answer the questions in the remainder of the booklet. Work right through to the end, and let me know if you have any questions.
(When all subjects have completed the response booklet, make sure you have their attention before continuing.)

You may recall that during the session today, you were asked to hold up your hand when you heard a recording of “Jingle Bells.” In fact, no recording was played-there was no music in the room. Also, near the end of the session, you were told that when you opened your eyes, you would see two balls in the middle of the floor. Actually, there were three balls there. The

purpose of these two items was not to deceive you. We know from past research that the perception of persons who are highly responsive to hypnosis will sometimes be altered to coincide with suggestions that do not accurately reflect the stimuli presented. Our intention with respect to the two suggestions just mentioned was to assess your responsiveness to suggestions that involve such perceptual alterations.

STANDARDIZATION DATA

Standardization data from two samples of participants are presented in Table 1. A frequency distribution of scores from the University of Connecticut sample is presented in Table 2. Additional normative data can be found in Bowers (1993)

Table 1
Standardization Data From Two Samples of Participants

	N	*M*	*SD*	Alpha	Correlation With HGSHS:A
University of Waterloo	259	5.81	3.09	.80	.70
University of Connecticut					
Female	558	5.97	3.00		
Male	368	5.42	2.89		
Total	926	5.75	2.95	.77	

Note. HGSHS:A = Harvard Group Scale of Hypnotic Susceptibility, Form A.

Table 2
Distribution of Scores

Score	Frequency	Percentage	Cumulative Frequency	Cumulative Percentage
0	25	2.7	25	2.7
1	56	6.0	81	8.7
2	74	7.9	155	16.6
3	88	9.4	246	26.0
4	115	12.3	358	38.4
5	122	13.1	480	51.4
6	93	10.0	573	61.4
7	99	10.6	672	72.0
8	90	9.6	762	81.7
9	65	7.0	827	88.6
10	56	6.0	883	94.6
11	34	3.6	917	98.3
12	16	1.7	933	100.0

SCORING BOOKLET

(The scoring booklet should be prepared with sufficient space for participants to record responses to questions. Only the text, with page breaks indicated, is reproduced here.)

DO NOT OPEN THIS BOOKLET UNTIL THE EXAMINER SPECIFICALLY INSTRUCTS YOU TO DO SO.

Please supply the information requested below:
Name Code _____ Age _____ Sex___
Phone_____ Today's Date_____ Time__
Study Number:_____
Have you ever been hypnotized before? Yes_____ No_____
If so, please cite the circumstances and describe your experiences. Please be brief.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE SPECIFICALLY INSTRUCTED TO DO SO
Hypnotist Code_____

File Code A B C D E F G Score_____ + _____=_____

Now, please briefly write down, in your own words, a list of the things that happened since you began looking at the target. Do not go into detail. Spend 3 minutes, no longer, in writing your reply.

Please DO NOT TURN THIS PAGE until the examiner specifically instructs you to do so.

PLEASE DO NOT RETURN TO PAGE 2.

On this page, write down a list of anything else that you now remember that you did not remember previously. Please do not go into detail. Spend *2* minutes, no longer, in writing out your reply.

Please DO NOT TURN THIS PAGE until the examiner specifically instructs you to do so.

PLEASE DO NOT RETURN TO EARLIER PAGES.

ITEM SCORING

Listed below in chronological order are the 12 specific happenings that were suggested to you during the standard hypnotic procedure. We wish you to estimate whether or not you objectively responded to these 12 suggestions, that is, whether an onlooker would have observed that you did or did not make certain definite responses by certain specific criteria.

It is understood that your estimates may in some cases not be as accurate as you might wish them to be and that you might even have to guess. But, we want you to make whatever you feel to be your best estimate regardless.

Beneath a description of most of the suggestions are *two* sets of responses, labelled A and B. Please circle either A or B for these questions, whichever you judge to be the more accurate. Please answer every question. Failure to give a definite answer to every question may lead to disqualification of your record. For a few of the suggestions, a special scale has been devised. Select the response that is the best estimate of your experience.

1. Hand lowering (right hand)

You were next told to extend your right arm straight out and feel it becoming heavy, as though a weight were pulling the hand and arm down. Would you estimate that an onlooker would have observed that your hand lowered at least 15 cm (before the time you were told to let your hand down deliberately)?

Circle one

A. My hand had lowered at least 15cm by then.
B. My hand had lowered less than 15cm by then.

2. Moving hands together

You were next told to hold your hands out in front of you about a foot apart and were then told to imagine a force pulling your hands together. Would you estimate that an onlooker would have observed that your hands were not more than 15cm apart (before you were told to return your hands to their resting position)?

Circle one

A. My hands were less than 15cm apart by then.
B. My hands were more than 15cm apart by then.

3. Experiencing of mosquito

You were next told to become aware of the buzzing of a mosquito that was said to become annoying, and then you were told to brush it off. Would you estimate that an onlooker would have observed you make any grimacing, any movement, any outward acknowledgment of an effect (regardless of what it was like subjectively)?

Circle one

A. I did make some outward acknowledgment.
B. I did not make any outward acknowledgment.

4. Taste experience

Then you were told that you would have a sour taste in your mouth. You were next told that you would have a sweet taste in your mouth.

- How strong was the sweet taste in your mouth?
  (Circle one)
  None vague weak strong

- Did you make any facial movements, such as lip movements or grimacing, that an onlooker would have observed?
  (Circle one)
  Yes No
- How strong was the sour taste in your mouth?
  (Circle one)
  None vague weak strong
- Did you make any facial movements, such as lip movements or grimacing that an onlooker would have observed?
  (Circle one)
  Yes no

5. ***Arm rigidity (right)***

You were next told to extend your right arm straight out, then to notice it becoming stiff, and then told to try to bend it. Would you estimate that an onlooker would have observed that there was less than 5cm of arm bending (before you were told to stop trying)?
Circle one

A. My arm was bent less than 5cm by then.
B. My arm was bent at least 5cm by then.

6. Dream

You were next told to have a dream. In the following space, describe your dream in detail.

We have found that people have various sorts of experiences in response to this.

- How real would you say your dream was?
  Not real or no dream 1 2 3 4 5 very real
- Which of the following categories do you think best describes your experience?

Circle one

A. Nothing went through my mind.
B. Passing thoughts, no dreamlike imagery.
C. Fleeting, vague, dreamlike imagery, play of colors, and so on.
D. Dreamlike imagery, but no clear theme or sequence of events.
E. Dreamlike imagery, plus sequence of events.
F. Something other than these. (Describe.)

_____
_____
_____
_____
_____

7. Arm immobilization [left arm)

You were next told how heavy your left hand and arm felt and then were told to try to lift your hand up. Would you estimate that an onlooker would have observed that you did not lift your hand and arm up at least 2.5cm (before you were told to stop trying)?

(Circle one)

A. I did not lift my hand and arm 2.5cm by then.
B. I did lift my hand and arm at least 2.5cm by then.

9. *Music hallucination*

Next you were asked to hold your right hand up when you could satisfactorily hear the recording of "Jingle Bells."

Circle one

A. I raised my right hand.
B. I did not raise my right hand.

(Items 8,10, and 11 scored from information recorded during the suggestions. ltem 12 is scored from information recorded in the scoring booklet.)

APPENDIX B

Scoring Key

Item	Scoring Criteria
1. Hand lowering	Circles A, indicating hand lowered at least 6 inches in 10 seconds.
2. Moving hands together	Circles A, indicating hands were less than 6 inches apart after 10 seconds.
3. Mosquito hallucination	Circles A, indicating an outward acknowledgment of the effect.
4. Taste hallucination	Circles at least "vague" on both (sweet and sour) tastes and circles "yes," indicating facial movement at least once; *or* circles at least "vague" on one taste and "strong" on the other.
5. Arm rigidity	Circles A, indicating arm bent less than 2 inches in 10 seconds.
6. Dream	Circles D or E, indicating clear dreamlike imagery; *or* circles F and offers description that is judged to be like D or E.
7. Arm immobilization	Circles A, indicating arm raised less than 1 inch in 10 seconds.
8. Age regression	Shows clear change in handwriting on back of form between present and at least one regressed age.
9. Music hallucination	Circles A, indicating right hand raised in response to hearing music.
10. Negative visual hallucination	Records colors of exactly two balls at the time of the suggestion (on back of form).
11. Posthypnotic drawing	Actually draws tree in response booklet.
12. Posthypnotic amnesia	Recalls three or fewer items before suggestion is removed and recalls three or more new items after suggestion is removed (in response booklet).

APPENDIX B (Continued)

Appendix E - WSGC Scoring sheets

SCORING BOOKLET

DO NOT OPEN THIS BOOKLET UNTIL THE EXAMINER SPECIFICALLY INSTRUCTS YOU TO DO SO.

Name Code _____
Today's Date_____ Time__
Study Number:_____
Have you ever been hypnotized before? Yes_____ No_____
If so, please cite the circumstances and describe your experiences. Please be brief.

Now, please briefly write down, in your own words, a list of the things that happened since you began looking at the target. Do not go into detail. Spend 3 minutes, no longer, in writing your reply.

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Beneath a description of most of the suggestions are *two* sets of responses, labelled A and B. Please circle either A or B for these questions, whichever you judge to be the more accurate. Please answer every question. Failure to give a definite answer to every question may lead to disqualification of your record. For a few of the suggestions, a special scale has been devised. Select the response that is the best estimate of your experience.

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Circle one

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2. Moving hands together

You were next told to hold your hands out in front of you about a foot apart and were then told to imagine a force pulling your hands together. Would you estimate that an onlooker would have observed that your hands were not more than 15cm apart (before you were told to return your hands to their resting position)?

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Circle one

A. I did make some outward acknowledgment.
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4. Taste experience

Then you were told that you would have a sour taste in your mouth. You were next told that you would have a sweet taste in your mouth.

- How strong was the sweet taste in your mouth?
  (Circle one)
  None vague weak strong
- Did you make any facial movements, such as lip movements or grimacing, that an onlooker would have observed?
  (Circle one)
  Yes No
- How strong was the sour taste in your mouth?
  (Circle one)
  None vague weak strong
- Did you make any facial movements, such as lip movements or grimacing that an onlooker would have observed?
  (Circle one)
  Yes no

5. ***Arm rigidity (right)***

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6. Dream

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We have found that people have various sorts of experiences in response to this.

- How real would you say your dream was?
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- Which of the following categories do you think best describes your experience?

Circle one

A. Nothing went through my mind.
B. Passing thoughts, no dreamlike imagery.
C. Fleeting, vague, dreamlike imagery, play of colors, and so on.
D. Dreamlike imagery, but no clear theme or sequence of events.
E. Dreamlike imagery, plus sequence of events.
F. Something other than these. (Describe.)

_____
_____
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_____
_____

7. Arm immobilization [left arm)

You were next told how heavy your left hand and arm felt and then were told to try to lift your hand up. Would you estimate that an onlooker would have observed that you did not lift your hand and arm up at least 2.5cm (before you were told to stop trying)?

(Circle one)

A. I did not lift my hand and arm 2.5cm by then.
B. I did lift my hand and arm at least 2.5cm by then.

9. ***Music hallucination***

Next you were asked to hold your right hand up when you could satisfactorily hear the recording of "Jingle Bells."

Circle one

A. I raised my right hand.
B. I did not raise my right hand.

(Items 8,10, and 11 scored from information recorded during the suggestions. ltem 12 is scored from information recorded in the scoring booklet.)

Appendix F - Flow State Scale -2 (FSS-2)

Name code:_____ Date: _____

Please answer the following questions in relation to your experience in the putting activity you have just completed. These questions relate to the thoughts and feelings you may have experienced while taking part. There are no right or wrong answers. Think about how you felt **DURING YOUR LAST PUTTING TEST** and answer the questions using the rating scale below.

For each question circle the number that best matches your experience.

Rating Scale:
Strongly Disagree / Disagree / Neither agree nor disagree / Agree / Strongly Agree
1 2 3 4 5

1	I was challenged, but I believed my skills would allow me to meet the challenge.	1	2	3	4	5
2	I made the correct movements without thinking about trying to do so	1	2	3	4	5
3	I knew clearly what I wanted to do	1	2	3	4	5
4	It was really clear to me how my performance was going.	1	2	3	4	5
5	My attention was focused entirely on what I was doing	1	2	3	4	5
6	I had a sense of control over what I was doing.	1	2	3	4	5
7	I was not concerned with what others may have been thinking of me.	1	2	3	4	5
8	Time seemed to alter (either slowed down or speeded up)	1	2	3	4	5
9	I really enjoyed the experience	1	2	3	4	5
10	My abilities matched the high challenge of the situation	1	2	3	4	5
11	Things just seemed to be happening automatically.	1	2	3	4	5
12	I had a strong sense of what I wanted to do.	1	2	3	4	5
13	I was aware of how well I was performing.	1	2	3	4	5
14	It was no effort to keep my mind on what was happening.	1	2	3	4	5
15	I felt like I could control what I was doing.	1	2	3	4	5
16	I was not concerned with how others may have been evaluating me.	1	2	3	4	5
17	The way time passed seemed to be different from normal	1	2	3	4	5
18	I loved the feeling of the performance and want to capture it again.	1	2	3	4	5
19	I felt I was competent enough to meet the high demands of the situation.	1	2	3	4	5
20	I performed automatically, without thinking too much.	1	2	3	4	5
21	I knew what I wanted to achieve.	1	2	3	4	5

22	I had a good idea while I was performing about how well I was doing	1	2	3	4	5
23	I had total concentration.	1	2	3	4	5
24	I had a feeling of total control.	1	2	3	4	5
25	I was not concerned with how I was presenting myself.	1	2	3	4	5
26	It felt like time went by quickly.	1	2	3	4	5
27	The experience left me feeling great.	1	2	3	4	5
28	The challenge and my skills were at an equally high level.	1	2	3	4	5
29	I did things spontaneously and automatically without having to think.	1	2	3	4	5
30	My goals were clearly defined	1	2	3	4	5
31	I could tell by the way I was performing how well I was doing.	1	2	3	4	5
32	I was completely focused on the task at hand	1	2	3	4	5
33	I felt in total control of my body.	1	2	3	4	5
34	I was not worried about what others may have been thinking of me.	1	2	3	4	5
35	I lost my normal awareness of time	1	2	3	4	5
36	I found the experience extremely rewarding.	1	2	3	4	5

Appendix G - Study 1 Neutral hypnosis script

HYPNOSIS SCRIPT STUDY 1 - NEUTRAL HYPNOSIS CONDITION

Introduction

In this session you will be guided through a hypnosis procedure because hypnosis can help you feel calm, enhance confidence and help you with your golf performance and flow state. A typical hypnosis session includes the following stages: induction – the hypnotist will give you suggestions to help you relax your body and mind so you can go into the trance state, a hypnotic state. This will be followed by the deepening stage to further relax your body and mind. When you are deep in trance, you will be given suggestions to improve your golf putting performance. This is called the trancework stage. You will imagine that you putt automatically a good putt with correct speed, break and power from a 4m distance to go to a hole. The last stage is awakening when the hypnotist slowly wakes you up with his counting from 1 to 10.

Hypnosis works based on the concept of moving your brain waves into Alpha wavelength range, which allows them to be more open to positive suggestion in the subconscious mind. However, it doesn't mean the hypnotist has total control over your mind, or that you will tell the hypnotist anything you don't want to say or do anything you don't want to do. In reality, you are still aware of what is going on around you (although you don't worry about anything except what the hypnotist is saying) and can have control over whether or not you go into trance. Hypnosis is a state in which you must give 100% consent. You must allow things to happen. If you allow me to be your guide, I'll show you how to place yourself in a beautiful state of hypnosis, feeling the physical relaxation and mental alertness. And the most important thing of all is, if you accept the suggestions given to you with the

correct mental attitude, you will have positive change that help you perform putting easier and more confident.

Progressive Relaxation Induction

First let's start by putting your feet flat on the ground *(remind client to uncross their arms and legs if they do).* Now that you are sitting/ lying down in a comfortable position, I'd like you to close your eyes and keep them closed until I ask you to open them. Just let your body relax...nice and easy. Now I'd like you to take a really good deep breath and fill the lung to your stomach….in….in….in…. and hold it. Now let it out S-L-O-W-L-Y …out….out….out….. good. The moment you start to breathe out, allow your body to relax much more with each breath. Now I'd like you to take another really good deep breath. Fill your lungs up really well…in…in…in…and let it out S-L-O-W-L-Y again….out….out….out. Excellent. Now, I'd like you to take one more deep breath... fill your lungs now...in….in…in…and hold it. Now let it out S-L-O-W-L-Y….out….out….out, and already you can feel your body starting to relax. Some people when they feel relax will experience a warm wonderful feeling around their bodies. Now let that warm, wonderful feeling of relaxation flow all the way down to your feet. Feel your feet becoming loose and limp. Now let this feeling of relaxation flow up into your ankles. From the ankles, up all the large and small muscles of your legs to your knees. From your knees now, into your thighs. From your thighs into your hips. From your hips now, into your abdomen. With each breath you exhale, just let your body becomes more and more DEEPLY relaxed. Just let it all go, more and more. Let that warm, wonderful feeling of relaxation flow up all the muscles of your back. Let all the muscles of your back go loose and limp and lazy, just like a rag doll.

Let this relaxation flow up into your shoulders. Now over your shoulders and down your arms to your elbows...from your elbows to your wrists...from your wrists into your hands, going out to the ends of your fingertips, guiding you to become more and more

DEEPLY relaxed. Just letting it all go more and more. Let that warm, wonderful feeling of relaxation flow up all the muscles of your neck. Let all the muscles of your neck go loose, limp and lazy. Let this relaxation flow up into your head. Now over your head and down into your brow. All the muscles of your eyes relaxed. All the muscles of your cheeks relaxed. All the muscles of your chin relaxed. Now if your teeth are clenched, just unclench them now, and let your jaw sag. Just let it all go, more and more... DEEPLY relaxed. Now, I'm going to count from three down to one. On each count just allow yourself to drift deeper and deeper into relaxation (3) Going deeper and deeper. (2) Getting more and more deeply relaxed. (1) So deep, so comfortable, so relaxed, just letting yourself go, more and more.

Outside noises will not make you feel uncomfortable at all, you will always be aware of the sounds around you. You are not asleep, just relaxed. The only difference is that from this moment on, any sounds you hear will not affect or disturb you in any way. As a matter of fact, any sounds you hear, ***(mention any ones they might hear)*** will just help and guide you to become more deeply relaxed. The only sound you remain interested in is the sound of my voice and the sound of my voice always helps you to relax much more. The sound of my voice helps you to drift DEEPER and DEEPER. Always letting go…. more and more...loose and limp. Now, I'm going to count from five down to one. On each count let the relaxation double throughout your whole body. (5) Allowing relaxation to double. (4) Relaxation doubling more and more. (3) Very comfortable, very relaxed. (2) Relaxation is almost doubled in your body.

(1) You have allowed relaxation to double in your body. Every nerve, every tissue, every fibre doubled in its relaxation, more and more, deeper, letting go, further and further.

Now, I'm going to count from five down to one again. On each count triple the relaxation in your body. (5) Allowing relaxation to begin tripling. (4) Relaxation triples more and more. (3) Very comfortable, very relaxed. (2) Relaxation almost triples in your body. (1)

You have allowed relaxation to triple in your body. Every nerve, every tissue, every fiber tripling in its relaxation. Just really letting go, unwinding, loosening up, limp, very relaxed. All discomforts gone from your body. All your organs functioning normally, all your glands are functioning perfectly. Just letting yourself go, more and more. You will always be aware of your surroundings. You may hear sounds in the background, but those sounds will not disturb or affect you in any way. The only sound you will be interested in is the sound of my voice and the sound of my voice just helps you to drift DEEPER and DEEPER relaxed.

Deepening Techniques

Whenever you enter this state, you allow yourself to go back into this same beautiful state that you are now in. Each time allowing yourself to go back deeper, each time enjoying it more and more, feeling terrific in every way. Whenever you enter this state, the instant you close your eyes, you mentally reach up and turn your light switch into the off position. When that switch is in that off position, all electricity flowing from your brain to your body becomes disconnected.

Your muscles become instantly calm, very deeply relaxed and you allow the sound of my voice to guide you deeper into relaxation. Following my suggestions guides you deeper into relaxation. The deeper you go the better you feel, and the better you feel the more and more your body relaxes with just wonderful feelings going through your body So relax, and let yourself go. Now I want you to relax still more to a deeper state of relaxation. Much more relaxed. So again I'll count from five down to one and as I count from five down to one, your body will double the relaxation you have right now, automatically. 5...Relaxation starting to double. 4...Relaxation doubling more and more. 3...Very comfortable very relaxed. 2...Relaxation is now almost doubled in your body. 1...Relaxation now has doubled in your body from the top of your head to the tips of your toes. Every fibre, every tissue, every organ, every gland every part of you has doubled in its relaxation. You feel fine.

I want you to imagine, or visualize, in front of you is a long staircase that is leading down into relaxation. We have never found a basement, a bottom of a person's ability to relax. It's endless. Every breath that you exhale takes you down another step on this staircase of relaxation. Every breath takes you deeper into an endless state of relaxation. You drift down feeling wonderful, feeling comfortable. Relax and let yourself go. Just relax and let yourself go. I still want you to double your relaxation. Already with your light switch in the off position, every muscle becomes dormant, quite unable to move. Again I will count, but this time from ten down to one. With each count, you will take one step down the staircase of relaxation. As I count from ten down to one, your conscious mind will relax as much as your body is relaxed and your mind and body will double the relaxation that they have at that time on each and every count. 10…take your first step...Your mind is as relaxed as the body is relaxed and the body is doubling its relaxation. 9...The mind is relaxed as the body is relaxed, and the body is doubling its relaxation again. 8…another step…. Mind relaxed as the body is relaxed and the body again is doubling the relaxation it has at this time. 7...each step down the staircase makes you feel more and more comfortable. 6...Keep right on going now. 5...4...3...2...1...Mind relaxed as the body is relaxed and your body has doubled its relaxation many times over as you move down this staircase

By relaxation I mean the absence of all contractions. Your body is loose, limp and motionless. Your muscles offering no resistance just as if you were a rag doll. Complete relaxation means the absence of all movement. It means the complete absence of holding any part of your body rigid. So as you are completely relaxed, all the muscles attached to your bones are limp. If you make any voluntary movements you can only do so by contracting some group of muscles, but when you allow these muscles to become completely dormant, your nerves are completely inactive. And it’s certain that complete relaxation in any set of

nerves simply means zero activity in these nerves. And it is physically impossible for you to be nervous in any part of your body. You're feeling better than you've felt in a long time. Outside noises will not distract you. Anything you may hear will only assist you in relaxing more and more deeply and you do go deeper. With every breath, down another step on that endless staircase of relaxation. The sound of my voice keeps guiding you deeper into relaxation.

Following my suggestions keeps guiding you into deeper relaxation. And the more and more you allow your body to relax the better you feel and the better you feel the more your mind and body will relax. You have complete control over every nerve in your body, control over your whole nervous system, and you drift much deeper, much deeper into relaxation. Moving down from the staircase, you will find an escalator with three more levels of relaxation for you to go into. Level A, level B and level C. Now to accomplish these levels, you must know it will work, let it work. You can feel it working, feel it working because the escalator brings you down to deeper levels at all times. So now I want you to go from where you are to level A, ten times deeper. You know it will work, let it work. Feel it working, feel yourself sinking down to level A as if you're going down an escalator. Very good. Now I want you to go from level A to level B. Again you know it will work, let it work. Feel it work as if you're going down an escalator from level A to level B, ten times deeper, automatically going down. Very good.

Now I want you to go from level B to level C, your deep level of relaxation today. You know it will work, let it work. Feel it work. Feel yourself sinking down many times deeper to level C. That's fine.

Now with your light switch in the off position, shutting down the electricity to every muscle in your body, I want you to try to lift your right leg, (5 *second pause),* stop trying. And Let your body go much deeper. Now I want you to try to lift your left leg, *(5 second*

pause), stop trying and let your body go deeper still. Now I want you to try to lift your right arm, *(5 second pause)*, stop trying and let your body go deeper still. All the way down to the very bottom of relaxation where you will be so peaceful, happy and content. Every day you will feel better and better, happier and happier and more contented. Each time you enter this beautiful state of relaxation, you'll go much deeper than the time before.

Trancework – Neutral suggestion

Just let go and continue to relax more comfortably with each breath that you take, and as you breathe continue to relax. I want you to shift your awareness to your hands and into your fingers, and I want you just to imagine that you have tiny little video cameras in the tips of those fingers, and also that you can see whatever is under those fingers, the colour, the texture, the feeling, the patterns of the grain.

And as you are looking at what is under your fingers, I want you to also become aware of your feet, but I don't want you to think about why your left foot may be a little heavier than your right foot, or why your right foot feels a little warmer than your left one.

Then while you're thinking about your fingertips and your feet, I also want you to just become aware of your shirt or top and to think about the feeling of the material. You can also become aware of the texture and how it feels against your body, or the way that you felt as you first awoke this morning.

Now as you're thinking and feeling about all those different and relaxing things, you can also think about all that lovely relaxation that just keeps flowing through your mind and your body. All the way down from the top of your head to the tips of your toes, taking you deeper and deeper into this lovely deep relaxing hypnotic trance, and the deeper you go the better you feel. That's right go much deeper now, follow my count from 10, 9, 8, 7, 6, 5, 4, 3, 2, 1.

Many people when they come along to here, just never seem to get quite comfortable… thinking that they know it all about relaxation… and that no one can tell them how to do it… So it's nice to know… that someone… can easily… and quickly learn how to drift effortlessly into trance… as you sit there … here… there, while a part of your mind tries to be worthy of the exact meaning of the words that you hear, and of all the changes that occur there in your own thoughts, or your own sensations and your awareness, as I speak to you here and you continue to drift down there.

What about those thoughts, and those feelings? Your awareness as I speak to you here… For what you speak to yourself speaks for itself, and a part of your mind can easily search to find, that many things which seem one way often turn out to be another. Because two and two are four, but too could also mean 2 or something completely else and no two are ever alike. Because it all belongs to you and to your ability to relax, as you begin to know what you thought you really don't know. And although you may try to guess where you're going to go from here, there's no way to really know or even to let go whilst holding on…

So there's nothing you need to do or not to do, because everything that you do will allow you to recognise that I can say many different things, and there's no need for you to pay attention to each thing I say or to anything that I don't say… because there is a time when the effort to train the mind to stay on track is simply not worth the trip… easier to bring the mind back to that time of peaceful calm awareness… or that effortless relaxation. Whether this is that or that is this, or it is or it isn't, can be or can't be, was or wasn't, maybe or might be, right or wrong, none of that really matters just now.

Now the conscious mind can go anywhere pleasant that it wishes, while I continue to talk to your subconscious mind, and the subconscious mind continues to hear… Aware that you often overhear a conversation without being fully aware that you even are… You don't need to do anything at all, because it all belongs to you… as you relax now, the way that you

do, hearing now, with eyes closed, comfortable… that voice, that sound, in the background of the mind… and feel that relaxed drifting glow… or that quiet calmness that courts slight dreams… followed themselves as I spoke… turning spokes in a wheel… drifting… turning… effortlessly down… into that quiet still place… where my words can mind your mind… of all of those things that are needed for you to remember and retrieve that calm sense of balance…as you just focus inwardly now and drift deeper… and deeper and deeper. And the deeper you go, the better you feel, the better you feel the deeper you go…. Go much deeper now, from 10, 9, 8, 7, 6, 5, 4, 3, 2, 1.

You are aware of everything, and yet, you are not aware. You are listening with your subconscious mind, while your conscious mind is resting and not listening. Your conscious mind drifts far away and is not listening. Your subconscious mind is alert, and listening, and hearing everything while your conscious mind remains relaxed and very peaceful. You can relax peacefully because your subconscious mind is taking charge, and when this happens, you close your eyes and let your subconscious mind do all the listening. Your subconscious mind knows, and because your subconscious mind knows, your conscious mind does not need to know and you can stay relaxed, and not mind while your subconscious mind stays alert.

You have much potential in your subconscious mind which you don't have in your conscious mind. You can remember everything that has happened with your subconscious mind, but you cannot remember everything with your conscious mind. You can forget so easily, and with forgetting certain things, you can remember other things. Remembering what you need to remember, and forgetting what you can forget. It does not matter if you forget, you need not remember. Your subconscious mind remembers everything you need to know, and you can let your subconscious mind listen and remember while your conscious mind relaxes and forgets. And as you continue to listen to me with your subconscious mind, your

conscious mind relaxes. Let your conscious mind stay deeply relaxed, and let your subconscious mind listen to me. When you go to the putting green, you will spend at least 5 minutes to focus on your breathing. You are constantly remembering that all shots are equal importance. That you can do each shot treating it as new. You have zero expectation going to each shot.

Awakening

Soon I will begin to slowly bring you back to consciousness, and as I bring you back your subconscious mind will transfer all of these positive relevant new learnings to your conscious mind. When you come back they will all seem very real to you and your conscious mind will believe them. They will all be real to you and you will permanently believe them and act according to what best suits your desired outcome. You will accept and believe all the new learning's and act accordingly in a happy safe and positive way.

To bring you back to full alertness, I am going to count slowly from one to ten, and with each forward count you will become a little more alert. Your eyes can remain comfortably closed until I get to ten. Then when I do get to ten I'll click my fingers, your eyes will open and you will come back to complete full alertness, feeling calm and peaceful. Your body will be filled with energy and your mind relaxed… looking forward to whatever it is you do for the rest of the day. Now you can get ready to slowly come back.

ONE – Feeling just fine

TWO – Realise right here right now, just how deep you were in trance right there right then

THREE – Beginning to feel so very, very good … Remembering all the suggestions

FOUR – You can putt automatically with ease, you can perform at the same level with your best performance.

FIVE – You can experience the flow of performance within yourself emerge in the putt with total concentration

SIX – the feeling starts to return to your hands and feet… and moves all the way up through your arms and legs.

SEVEN – the feeling moving right up through your body now as you start to come closer and closer to full awareness.

EIGHT – the energy moves up through your waist and into your chest… you heart-rate, breathing and blood pressure returning to the normal and healthy level for you.

NINE – Energy flows up through your shoulders and into your neck right up into your head…so that the skin on your face and your scalp start to tingle now with vitality as you come all the way up to the surface now.

TEN – Eyes open, fully alert now. How do you feel?

Appendix H - Study 1 Traditional Hypnosis script

HYPNOSIS SCRIPT STUDY 1 – TRADITIONAL HYPNOSIS CONDITION

Introduction

In this session you will be guided through a hypnosis procedure because hypnosis can help you feel calm, enhance confidence and help you with your golf performance and flow state. A typical hypnosis session includes the following stages: induction – the hypnotist will give you suggestions to help you relax your body and mind so you can go into the trance state, a hypnotic state. This will be followed by the deepening stage to further relax your body and mind. When you are deep in trance, you will be given suggestions to improve your golf putting performance. This is called the trancework stage. You will imagine that you putt automatically a good putt with correct speed, break and power from a 4m distance to go to a hole. The last stage is awakening when the hypnotist slowly wakes you up with his counting from 1 to 10.

Hypnosis works based on the concept of moving your brain waves into Alpha wavelength range, which allows them to be more open to positive suggestion in the subconscious mind. However, it doesn't mean the hypnotist has total control over your mind, or that you will tell the hypnotist anything you don't want to say or do anything you don't want to do. In reality, you are still aware of what is going on around you (although you don't worry about anything except what the hypnotist is saying) and can have control over whether or not you go into trance. Hypnosis is a state in which you must give 100% consent. You must allow things to happen. If you allow me to be your guide, I'll show you how to place yourself in a beautiful state of hypnosis, feeling the physical relaxation and mental alertness. And the most important thing of all is, if you accept the suggestions given to you with the

correct mental attitude, you will have positive change that help you perform putting easier and more confident.

Progressive Relaxation Induction

First let's start by putting your feet flat on the ground *(remind client to uncross their arms and legs if they are crossed).* Now that you are sitting/ lying down in a comfortable position, I'd like you to close your eyes and keep them closed until I ask you to open them. Just let your body relax, nice and easy. Now I'd like you to take a really good deep breath and fill the air from your lungs to your stomach….in….in….in…. and hold it. Now let it out S-L-O-W-L-Y …out….out….out….good. The moment you start to breathe out, allow your body to relax much more with each breath. Now I'd like you to take another really good deep breath. Fill your lungs up really well…in…in…in…and let it out S-L-O-W-L-Y again….out….out….out. Excellent. Now, I'd like you to take one more deep breath... fill your lungs now...in….in…in…and hold it. Now let it out S-L-O-W-L-Y….out….out….out, and already you can feel your body starting to relax. Some people when they feel relax will experience a warm wonderful feeling around their bodies. Now let that warm, wonderful feeling of relaxation flow all the way down to your feet. Feel your feet becoming loose and limp. Now let this feeling of relaxation flow up into your ankles. From the ankles, up all the large and small muscles of your legs to your knees. From your knees now, into your thighs. From your thighs into your hips. From your hips now, into your abdomen.

With each breath you exhale, just let your body becomes more and more DEEPLY relaxed. Just let it all go, more and more. Let that warm, wonderful feeling of relaxation flow up all the muscles of your back. Let all the muscles of your back go loose and limp and lazy, just like a rag doll. Let this relaxation flow up into your shoulders. Now over your shoulders and down your arms to your elbows...from your elbows to your wrists...from your wrists into your hands, going out to the ends of your fingertips, guiding you to become more and more

DEEPLY relaxed. Just letting it all go more and more. Let that warm, wonderful feeling of relaxation flow up all the muscles of your neck. Let all the muscles of your neck go loose, limp and lazy. Let this relaxation flow up into your head. Now over your head and down into your brow. All the muscles of your eyes relaxed. All the muscles of your cheeks relaxed. All the muscles of your chin relaxed. Now if your teeth are clenched, just unclench them now, and let your jaw sag. Just let it all go, more and more... DEEPLY relaxed. Now, I'm going to count from three down to one. On each count just allow yourself to drift deeper and deeper into relaxation (3) Going deeper and deeper. (2) Getting more and more deeply relaxed. (1) So deep, so comfortable, so relaxed, just letting yourself go, more and more.

Outside noises will not make you feel uncomfortable at all; you will always be aware of the sounds around you. You are not asleep, just relaxed. The only difference is that from this moment on, any sounds you hear will not affect or disturb you in any way. As a matter of fact, any sounds you hear, ***(mention any ones they might hear)*** will just help and guide you to become more deeply relaxed. The only sound you remain interested in is the sound of my voice and the sound of my voice always helps you to relax much more. The sound of my voice helps you to drift DEEPER and DEEPER. Always letting go….more and more...loose and limp.

Now, I'm going to count from five down to one. On each count let the relaxation double throughout your whole body. (5) Allowing relaxation to double. (4) Relaxation doubling more and more. (3) Very comfortable, very relaxed. (2) Relaxation is almost doubled in your body. (1) You have allowed relaxation to double in your body. Every nerve, every tissue, every fiber doubled in it's relaxation, more and more, deeper, letting go, further and further.

Now, I'm going to count from five down to one again. On each count triple the relaxation in your body. (5) Allowing relaxation to begin tripling. (4) Relaxation triples more and more. (3) Very comfortable, very relaxed. (2) Relaxation almost triples in your body. (1) You have allowed relaxation to triple in your body. Every nerve, every tissue, every fiber tripling in it's relaxation. Just really letting go, unwinding, loosening up, limp, very relaxed. All discomforts gone from your body. All your organs functioning normally, all your glands are functioning perfectly. Just letting yourself go, more and more. You will always be aware of your surroundings. You may hear sounds in the background, but those sounds will not disturb or affect you in any way. The only sound you will be interested in is the sound of my voice and the sound of my voice just helps you to drift DEEPER and DEEPER relaxed.

Deepening Techniques

Whenever you enter this state, you allow yourself to go back into the same beautiful state that you are now in. Each time allowing yourself to go back deeper, each time enjoying it more and more, feeling terrific in every way. Whenever you enter this state, the instant you close your eyes, you mentally reach up and turn your light switch into the off position. When that switch is in that off position, all electricity flowing from your brain to your body becomes disconnected. Your muscles become instantly calm, very deeply relaxed and you allow the sound of my voice to guide you deeper into relaxation. Following my suggestions guides you deeper into relaxation. The deeper you go into relaxation the better you feel, and the better you feel the more and more your body relaxes with just wonderful feelings going through your body So relax, and let yourself go. Now I want you to relax still more to a deeper state of relaxation.

Much more relaxed. So again I'll count from five down to one and as I count from five down to one, your body will double the relaxation you have right now, automatically. 5...Relaxation starting to double. 4...Relaxation doubling more and more. 3...Very

comfortable very relaxed. 2...Relaxation is now almost doubled in your body. 1...Relaxation now has doubled in your body from the top of your head to the tips of your toes. Every fibre, every tissue, every organ, every gland every part of you has doubled in its relaxation. You feel fine.

I want you to imagine, or visualize, in front of you is a long staircase that is leading down into relaxation. We have never found a basement, a bottom of a person's ability to relax. It's endless. Every breath that you exhale takes you down another step on this staircase of relaxation. Every breath takes you deeper into an endless state of relaxation. You drift down feeling wonderful, feeling comfortable. Relax and let yourself go. Just relax and let yourself go. I still want you to double your relaxation. Already with your light switch in the off position, every muscle becomes dormant, quite unable to move. Again I will count, but this time from ten down to one. With each count, you will take one step down the staircase of relaxation. As I count from ten down to one, your conscious mind will relax as much as your body is relaxed and your mind and body will double the relaxation that they have at that time on each and every count. 10…take your first step...Your mind is as relaxed as the body is relaxed and the body is doubling it's relaxation. 9...The mind is relaxed as the body is relaxed, and the body is doubling it’s relaxation again. 8…another step….Mind relaxed as the body is relaxed and the body again is doubling the relaxation it has at this time. 7...each step down the staircase makes you feel more and more comfortable. 6...Keep right on going now.

5...4...3...2...1...Mind relaxed as the body is relaxed and your body has doubled its relaxation many times over as you move down this staircase

By relaxation I mean the absence of all contractions. Your body is loose, limp and motionless. Your muscles are offering no resistance, just as if you were a rag doll. Complete relaxation means the absence of all movement. It means the complete absence of holding any part of your body rigid. So as you are completely relaxed, all the muscles attached to your

bones are limp. If you make any voluntary movements you can only do so by contracting some group of muscles, but when you allow these muscles to become completely dormant, your nerves are completely inactive. And it's certain that complete relaxation in any set of nerves simply means zero activity in these nerves. And it is physically impossible for you to be nervous in any part of your body. You're feeling better than you've felt in a long time. Outside noises will not distract you. Anything you may hear will only assist you in relaxing more and more deeply and you do go deeper. With every breath, down another step on that endless staircase of relaxation. The sound of my voice keeps guiding you deeper into relaxation.

Following my suggestions keeps guiding you into deeper relaxation. And the more and more you allow your body to relax the better you feel and the better you feel the more your mind and body will relax. You have complete control over every nerve in your body, control over your whole nervous system, and you drift much deeper, much deeper into relaxation. Moving down from the staircase, you will find an escalator with three more levels of relaxation for you to go into. Level A, level B and level C. Now to accomplish these levels, you must know it will work, let it work. You can feel it working, feel it working because the escalator brings you down to deeper levels at all times. So now I want you to go from where you are to level A, ten times deeper. You know it will work, let it work. Feel it working, feel yourself sinking down to level A as if you're going down an escalator. Very good. Now I want you to go from level A to level B. Again you know it will work, let it work. Feel it work as if you're going down an escalator from level A to level B, ten times deeper, automatically going down. Very good.

Now I want you to go from level B to level C, your deep level of relaxation today. You know it will work, let it work. Feel it work. Feel yourself sinking down many times deeper to level C. That's fine.

Now with your light switch in the off position, shutting down the electricity to every muscle in your body, I want you to try to lift your right leg, (5 *second pause),* stop trying. And Let your body go much deeper. Now I want you to try to lift your left leg, *(5 second pause),* stop trying and let your body go deeper still. Now I want you to try to lift your right arm, *(5 second pause),* stop trying and let your body go deeper still. All the way down to the very bottom of relaxation where you will be so peaceful, happy and content. Every day you will feel better and better, happier and happier and more contented. Each time you enter this beautiful state of relaxation, you'll go much deeper than the time before.

Trancework – Hypnosis suggestion

I would like you to imagine yourself on the putting green. You are a spectator of your game… and you observe yourself putting at your maximum performance… observe yourself… confident… (describing the technique and clients' strength… - you observe the ball position on the green, before approaching the ball and start to read the green, you decide on the speed of putting, the slope of putting….) notice that you are in control of the game… your muscle control is accurate and fine-tuned… you control your thoughts and are completely focused on what is important at the present time of the putt…. This is YOUR game… you harness your motivation and enthusiasm to the ideal level of arousal for your performance. You control perception of time and focus on the present putting swing…. Just observe yourself how easily this comes to you… the natural flow of your talent into the game… notice how you execute everything you have learned and practiced automatically… you are enjoying yourself…. (*Continue with compounding of positive individually tailored suggestions*).

Feel every move you make… your subconscious mind memorizes peak performance without making a judgement… it is just doing it… naturally… automatically… feel how

good it feels to be on top of your putting game… trust whatever you have programmed into your subconscious mind… it is programmed into your muscle memory to help your putting to be smooth and effortless.… and as a result of what you have practiced and what you are now mentally rehearsing you find that any negative aspects of sport performance which might have troubled you in the past greatly diminish….in importance…with each passing day you adopt a much brighter outlook in which the positive aspects of playing and the enjoyment of success have taken on a great deal more appeal… Now you are using all of your mind for your success… your strength… And over and over observe yourself there with your fine-tuned technique of putting…

Compounding suggestions/ PREM (Positive, Repetitive, Ego Strengthening, Motivational) Suggestion

You have chosen golf for a good reason – you are good at it. You know you can be successful in it and you can feel this coming to you naturally. You know you can and you will succeed, you have done it before and you will do it again. The mind is so much stronger and the body just follows the mind. Every look, glance to or from the other golfers just reminds you that you can retreat into your own focus and confirms that you can shut out unhelpful thoughts. Your competitors are just looking at you because they sense there is something different about you. You are more confident, more self-assured. This is your game, and you are here to confirm this. You are superior, this feeling of your true motivation is why you chose this sport in the first place, and this is etched into your subconscious mind

Every glance from those other golfers just confirms they are concerned perhaps even scared. In your mind repeat these words: “I am success, I can stay focused. I can play at my best. This is my game. I am zoned into the game…” You now have the winner mentality … you keep your eye on the goal. When in competition you imagine yourself already having won your game … even before you start … If there is an award or trophy being given … you

imagine yourself being presented the award ... As you do so ... you experience the feelings of victory, accomplishment, and pride of receiving the winner's award or trophy… You know it is yours … No matter who you are playing against ... They are un-important ... The game is only about how much better you can do than before … There is no pressure from outside … It is only you and your putting … that you love … as you are creative in improving on it ... with focus and concentration ... It is your putting… and most importantly …It is for you to enjoy!

You are aware of how much better you have been performing recently, how you have been able to focus better and give your putting skill so much more attention and energy than ever before. This is just the beginning. The more you become aware that this ability is not from the outside but from within you, the more it will increase. Through listening to the hypnosis audio file that I will give you, you are able to unlock your own inner abilities. You can now draw from your inner reserves to succeed and to WIN. You have a limitless reserve of energy, focus, stamina and strength within you. You've heard of how people in times of emergency are able to lift a car off of a victim trapped beneath it or do many other feats of "super human" strength… This ability is inherent in all of us. It is when we reach inside and harness the inner strength that is in us all. In these times of emergency, we forget about our limitations and do what is required … even if it is a feat of "super human" strength. We all have it within us. All that is called for to use this inner strength is to have faith and belief that we can. Have faith and belief that you are the best, and you will be. Have belief that you have no limitations and are better than all the rest, and you will be. Reach inside … reach deep down … believe you can …

Before and during your training and competition, imagine yourself attaining your goal, performing at the best of your ability... You have a laser beam focus on your tasks and goals ... Nothing takes you away from your goal. Imagine yourself right now putting

effortlessly in your event … See yourself excel in your progress ... See yourself giving 100% plus in your abilities. You know what you can potentially achieve when you can play your putting game automatically and effortlessly. No outside pressure concerns you, instead it makes you feel calm and relaxed

Get it as clear in your mind as you can ... See it … feel it, smell it, taste it! Your strong subconscious mind, that 95% part of your mind that had not been tapped before ... Will make it so! Congratulations! You have made it. Be thankful and happy for your success.

Awakening

Soon I will begin to slowly bring you back to consciousness, and as I bring you back your subconscious mind will transfer all of these positive relevant new learnings to your conscious mind. When you come back they will all seem very real to you and your conscious mind will believe them. They will all be real to you and you will permanently believe them and act according to what best suits your desired outcome. You will accept and believe all the new learning's and act accordingly in a happy safe and positive way.

To bring you back to full alertness, I am going to count slowly from one to ten, and with each forward count you will become a little more alert. Your eyes can remain comfortably closed until I get to ten. Then when I do get to ten I'll click my fingers, your eyes will open and you will come back to complete full alertness, feeling calm and peaceful. Your body will be filled with energy and your mind relaxed… looking forward to whatever it is you do for the rest of the day. Now you can get ready to slowly come back.

ONE – Feeling just fine. TWO – Realise right here right now, just how deep you were in trance right there right then. THREE – Beginning to feel so very, very good … Remembering all the suggestions. FOUR – You can putt automatically with ease, you can perform at the same level with your best performance. FIVE – You can experience the flow of performance within yourself emerge in the putt with total concentration. SIX – the feeling

starts to return to your hands and feet… and moves all the way up through your arms and legs. SEVEN – the feeling moving right up through your body now as you start to come closer and closer to full awareness. EIGHT – the energy moves up through your waist and into your chest… you heart-rate, breathing and blood pressure returning to the normal and healthy level for you. NINE – Energy flows up through your shoulders and into your neck right up into your head…so that the skin on your face and your scalp start to tingle now with vitality as you come all the way up to the surface now. TEN – Eyes open, fully alert now. How do you feel?

Appendix I - Diary for Hypnosis Self-training

Session Log

Each time you do a session please complete the log below, noting the date, the time you started and finished the session and any comments you have about the quality of the session, such as whether you became really absorbed, whether you were able to follow the guidance given in the session, or whether there were any distractions.

Date	Start time	End time	Comments

Appendix J - Study 2 Information Statement

INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH

You are invited to participate

You are invited to participate in a research project entitled "**The effect of time in hypnosis and how it affects flow and performance".**

This project is being conducted by a student researcher Dung Tien Dao as part of a Doctor of Philosophy Program at Victoria University under the supervision of Professor Tony Morris and Associate Professor Daryl Marchant from the College of Sport and Exercise Science, Victoria University.

Project explanation

Athletes performing at their best commonly report being totally absorbed in and focused on the task, confident and in control while their body moves effortlessly and automatically. This state is called flow. This research will contribute to understanding how hypnosis enhances flow in sport. There are some aspects of hypnosis that I propose can help golfers to experience flow more often with benefits for enjoyment and performance. Results from this research will provide new evidence about the effect of different types of hypnosis and hypnosis techniques on flow and sport performance.

What will I be asked to do?

In the first session, you with be provided with clear information about the study, the details and the commitment level being asked of participants and you will have the opportunity to ask Dung any questions and clarify any concerns. You will have the opportunity to read and sign the informed consent form. You will then complete a questionnaire that asks about your ability to relax and imagine various experiences, that is, to experience a hypnotic state. In the second session, you will be asked to putt from a number of positions around a golf hole, first performing 10 practice putts 56 scoring putts. After your putting performance, you will complete a questionnaire that asks you about your experiences while doing the putting task (5-10 minutes). On the next session, Dung will then take you through a 60-minute session of hypnosis, involving suggestions about travelling in time to the future to imagine yourself putting perfect shots repeatedly. After this session, you will be given a recorded audio of the

hypnosis session and asked to listen to it daily for seven days. The last session will be conducted one week after the second session. In it you will perform 10 practice putts before doing 56 scoring putts. You will then again complete the questionnaire on your experiences while performing, followed by talking to Dung about your experiences of the whole study.

What will I gain from participating?

By participating to this study, you will gain insights into the way your mind and body works when you are putting. You will learn the skill to relax mentally and to putt in an automatic pattern. You will experience how hypnosis can help you improve your golf game by allowing you to be fully focus and absorb in the golf game.

How will the information I give be used?

The study results will be used as part of the data for Dung's PhD thesis. Your personal putting scores will only be used within group patterns, so your individual details will not be identifiable. These data will also be used for scientific research papers and conference presentations. This could lead to the hypnosis techniques being used by sport psychologists to assist golfers and other athletes in the future.

What are the potential risks of participating in this project?

People often associate hypnosis with the fear that a hypnotist has complete control over participants, including what they believe, think, and do. The reality is that hypnosis is a cooperation between the hypnotherapist and the client which make equal effort to bring success to the session. In scientific/experimental research, the hypnosis process is based on the trust that the hypnotic suggestion is in keeping with the wishes of the participants and does not involve deception or manipulation.

Qualification of the hypnotist is also a valid concern and potential risk for participants. If a hypnotist is not well trained and qualified by an authoritative body in the field, they are unlikely to be able to successfully conduct sessions and could potentially cause psychological distress to the participants. I am trained and certified as a clinical hypnotherapist with the Academy of Hypnotic Science and I am a member of the Australian Hypnosis Association. This training and certification ensures that I have a strong foundation of knowledge and experience to conduct hypnosis sessions according to the standard required by the Australian Hypnosis Association.

There is a chance of unwanted behavior that arises during a hypnosis session due to traumatic events in participants' past. People in a trance state will rarely relive traumatic and unpleasant feelings. Hence, I will do advance screening through questionnaire and communication to assess the possibility that past traumatic events will surface during hypnosis. From this initial

scanning, you will be assessed to be sure that you are suitable for the study. During each hypnosis session, I will observe you carefully and if I identify any sign of distress, I will stop the study immediately. In this event, I will bring you out of hypnotic state to relax, and refocus you on the real current situation. If you show signs of continued distress, you will be offered the opportunity to consult a psychologist. All of these steps are part of the safeguard protocol that I will use to minimize risks. The same practice of bringing you out of the hypnotic state will be used at the end of every session.

All your information will be confidential with only access by Dung and research supervisors. Official paperwork, including hard copies of results, will be kept in a locked filing cabinet drawer for five years and follow the strict data handling procedure as stated by the policy and procedure for research integrity of Victoria University (2012).

How will this project be conducted?

This project will be conducted at a local golf course in Melbourne. The first session is to inform you about the study and ask if you are interested in joining the study by signing the consent form. You will then go through a questionnaire with Dung to explore your ability to relax and imagine. In the second session, you will be asked to do10 practice putts, then 56 scoring putts on a putting green. In the third session, you will go through a 60-minute hypnosis session with Dung and be given a set of audio files to listen to daily at home for 7 days. You will come back after 1 week to do one last session with 10 practice putts and 56 scoring putts. Right after each session of putting, you will be asked to fill in a questionnaire about your experience during the putting task and at the end of the study you will be asked about your experience during the whole study.

Who is conducting the study?

The College of Sport and Exercise Science, Victoria University.

Chief Investigator

Professor Tony Morris

Email: Tony.Morris@vu.edu.au

Phone: 04.3051.1543

Secondary Investigator

Associate Professor Daryl Marchant

Email: daryl.marchant@vu.edu.au

Phone: 03.9919.4035

Student researcher

Dung Tien Dao

Email: sportpsychologyconsultants@gmail.com

Phone: 04.6622.6543

If you have concern about any psychological issue, you may contact the independent psychologist Dr. Janet Young from Victoria University (email: janet.young@vu.edu.au, telephone: 9919 4762) for further consultation.

Any queries about your participation in this project may be directed to the Chief Investigator listed above.

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

Appendix K - Study 2 Consent Form

CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH

INFORMATION TO PARTICIPANTS:

You are invited to participate in a research project entitled "**The effect of time in hypnosis and how it affects flow and performance".** In this research participants do two rounds of 56 scoring putting with one week of hypnosis intervention in between. The hypnotic suggestion is about imagining a successful performance in the future and using that experience for current putting. This result will provide new evidence about the effect of different types of hypnosis and hypnosis techniques on flow and sport performance.

This project is being conducted by a student researcher Dung Tien Dao as part of a Doctor of Philosophy Program at Victoria University under the supervision of Professor Tony Morris and Associate Professor Daryl Marchant from the College of Sport and Exercise Science, Victoria University.

CERTIFICATION BY SUBJECT

I, "[Click here & type participant's name]"

of "[Click here & type participant's suburb]"

certify that I am at least 18 years old and that I am voluntarily giving my consent to participate in the study:

"**The effect of time in hypnosis and how it affects flow and performance"** being conducted at Victoria University by Professor Tony Morris, Assoc Prof Daryl Marchant and Dung Tien Dao.

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the research, have been fully explained to me by the student researcher Dung Tien Dao and that I freely consent to participation involving the below mentioned procedures:

- Attending four sessions (60- 90 minutes)
- Performing 56 scoring putts on a practice green on two occasions
- Answering 3 questionnaires and 1 brief interview
- Going through a hypnosis session with Dung
- Listening to the recorded audio file of the hypnosis session at home daily for at least 7 days

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way.

I have been informed that the information I provide will be kept confidential.

Signed: _____

Date: _____

Any queries about your participation in this project may be directed to the researcher Professor Tony Morris Phone: 0430,511.543

If you have concern about any psychological issue, you may contact the independent psychologist Dr. Janet Young from Victoria University (email: janet.young@vu.edu.au, telephone: 9919 4762) for further consultation.

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email Researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

Appendix L - Study 2 Future Progression script

HYPNOSIS SCRIPT STUDY 2 – FUTURE PROGRESSION CONDITION

Introduction

In this session you will be guided through a hypnosis procedure because hypnosis can help you feel calm, enhance confidence and help you with your golf performance and flow state. A typical hypnosis session includes the following stages: induction – the hypnotist will give you suggestions to help you relax your body and mind so you can go into the trance state, a hypnotic state. This will be followed by the deepening stage to further relax your body and mind. When you are deep in trance, you will be given future progression suggestions to improve your golf putting performance. This is called the trancework stage. You will imagine that you can putt automatically and accurately in the near future good putts with correct speed, break and power from a 4m distance to go to a hole. The last stage is awakening when the hypnotist slowly wakes you up with his counting from 1 to 10.

Hypnosis works based on the concept of moving your brain waves into Alpha wavelength range, which allows them to be more open to positive suggestion in the subconscious mind. However, it doesn't mean the hypnotist has total control over your mind, or that you will tell the hypnotist anything you don't want to say or do anything you don't want to do. In reality, you are still aware of what is going on around you (although you don't worry about anything except what the hypnotist is saying) and can have control over whether or not you go into trance. Hypnosis is a state in which you must give 100% consent. You must allow things to happen. If you allow me to be your guide, I'll show you how to place yourself in a beautiful state of hypnosis, feeling the physical relaxation and mental alertness. And the most important thing of all is, if you accept the suggestions given to you with the

correct mental attitude, you will have positive change that help you perform putting easier and more confident.

Progressive Relaxation Induction

First let's start by putting your feet flat on the ground *(remind client to uncross their arms and legs if they do).* Now that you are sitting/ lying down in a comfortable position, I'd like you to close your eyes and keep them closed until I ask you to open them. Just let your body relax.. .nice and easy. Now I'd like you to take a really good deep breath and fill the lung to your stomach….in….in….in…. and hold it. Now let it out S-L-O-W-L-Y …out….out….out….. good. The moment you start to breathe out, allow your body to relax much more with each breath. Now I'd like you to take another really good deep breath. Fill your lungs up really well…in…in…in…and let it out S-L-O-W-L-Y again….out….out….out. Excellent. Now, I'd like you to take one more deep breath... fill your lungs now...in….in…in…and hold it. Now let it out S-L-O-W-L-Y….out….out….out, and already you can feel your body starting to relax.

Some people when they feel relax will experience a warm wonderful feeling around their bodies. Now let that warm, wonderful feeling of relaxation flow all the way down to your feet. Feel your feet becoming loose and limp. Now let this feeling of relaxation flow up into your ankles. From the ankles, up all the large and small muscles of your legs to your knees. From your knees now, into your thighs. From your thighs into your hips. From your hips now, into your abdomen. With each breath you exhale, just let your body becomes more and more DEEPLY relaxed. Just let it all go, more and more. Let that warm, wonderful feeling of relaxation flow up all the muscles of your back. Let all the muscles of your back go loose and limp and lazy, just like a rag doll.

Let this relaxation flow up into your shoulders. Now over your shoulders and down your arms to your elbows...from your elbows to your wrists...from your wrists into your

hands, going out to the ends of your fingertips, guiding you to become more and more DEEPLY relaxed. Just letting it all go more and more. Let that warm, wonderful feeling of relaxation flow up all the muscles of your neck. Let all the muscles of your neck go loose, limp and lazy. Let this relaxation flow up into your head. Now over your head and down into your brow. All the muscles of your eyes relaxed. All the muscles of your cheeks relaxed. All the muscles of your chin relaxed. Now if your teeth are clenched, just unclench them now, and let your jaw sag. Just let it all go, more and more... DEEPLY relaxed. Now, I'm going to count from three down to one. On each count just allow yourself to drift deeper and deeper into relaxation (3) Going deeper and deeper. (2) Getting more and more deeply relaxed. (1) So deep, so comfortable, so relaxed, just letting yourself go, more and more.

Outside noises will not make you feel uncomfortable at all, you will always be aware of the sounds around you. You are not asleep, just relaxed. The only difference is that from this moment on, any sounds you hear will not affect or disturb you in any way. As a matter of fact, any sounds you hear, ***(mention any ones they might hear)*** will just help and guide you to become more deeply relaxed. The only sound you remain interested in is the sound of my voice and the sound of my voice always helps you to relax much more. The sound of my voice helps you to drift DEEPER and DEEPER. Always letting go….more and more...loose and limp.

Now, I'm going to count from five down to one. On each count let the relaxation double throughout your whole body. (5) Allowing relaxation to double. (4) Relaxation doubling more and more. (3) Very comfortable, very relaxed. (2) Relaxation is almost doubled in your body. (1) You have allowed relaxation to double in your body. Every nerve, every tissue, every fiber doubled in its relaxation, more and more, deeper, letting go, further and further.

Now, I'm going to count from five down to one again. On each count triple the relaxation in your body. (5) Allowing relaxation to begin tripling. (4) Relaxation triples more and more. (3) Very comfortable, very relaxed. (2) Relaxation almost triples in your body. (1) You have allowed relaxation to triple in your body. Every nerve, every tissue, every fiber tripling in its relaxation. Just really letting go, unwinding, loosening up, limp, very relaxed. All discomforts gone from your body. All your organs functioning normally, all your glands are functioning perfectly. Just letting yourself go, more and more. You will always be aware of your surroundings. You may hear sounds in the background, but those sounds will not disturb or affect you in any way. The only sound you will be interested in is the sound of my voice and the sound of my voice just helps you to drift DEEPER and DEEPER relaxed.

Deepening Techniques

Whenever you enter this state, you allow yourself to go back into the same beautiful state that you are now in. Each time allowing yourself to go back deeper, each time enjoying it more and more, feeling terrific in every way. Whenever you enter this state, the instant you close your eyes, you mentally reach up and turn your light switch into the off position. When that switch is in that off position, all electricity flowing from your brain to your body becomes disconnected.

Your muscles become instantly calm, very deeply relaxed and you allow the sound of my voice to guide you deeper into relaxation. Following my suggestions guides you deeper into relaxation. The deeper you go into relaxation the better you feel, and the better you feel the more and more your body relaxes with just wonderful feelings going through your body So relax, and let yourself go. Now I want you to relax still more to a deeper state of relaxation.

Much more relaxed. So again I'll count from five down to one and as I count from five down to one, your body will double the relaxation you have right now, automatically. 5...Relaxation starting to double. 4...Relaxation doubling more and more. 3...Very comfortable very relaxed. 2...Relaxation is now almost doubled in your body. 1...Relaxation now has doubled in your body from the top of your head to the tips of your toes. Every fibre, every tissue, every organ, every gland every part of you has doubled in its relaxation. You feel fine.

I want you to imagine, or visualize, in front of you is a long staircase that is leading down into relaxation. We have never found a basement, a bottom of a person's ability to relax. It's endless. Every breath that you exhale takes you down another step on this staircase of relaxation. Every breath takes you deeper into an endless state of relaxation. You drift down feeling wonderful, feeling comfortable. Relax and let yourself go. Just relax and let yourself go. I still want you to double your relaxation. Already with your light switch in the off position, every muscle becomes dormant, quite unable to move. Again I will count, but this time from ten down to one. With each count, you will take one step down the staircase of relaxation. As I count from ten down to one, your conscious mind will relax as much as your body is relaxed and your mind and body will double the relaxation that they have at that time on each and every count. 10…take your first step...Your mind is as relaxed as the body is relaxed and the body is doubling its relaxation. 9...The mind is relaxed as the body is relaxed, and the body is doubling its relaxation again. 8…another step… . Mind relaxed as the body is relaxed and the body again is doubling the relaxation it has at this time. 7...each step down the staircase makes you feel more and more comfortable. 6...Keep right on going now.

5...4...3...2...1...Mind relaxed as the body is relaxed and your body has doubled its relaxation many times over as you move down this staircase

By relaxation I mean the absence of all contractions. Your body is loose, limp and motionless. Your muscles offering no resistance just as if you were a rag doll. Complete relaxation means the absence of all movement. It means the complete absence of holding any part of your body rigid. So as you are completely relaxed, all the muscles attached to your bones are limp. If you make any voluntary movements you can only do so by contracting some group of muscles, but when you allow these muscles to become completely dormant, your nerves are completely inactive. And it's certain that complete relaxation in any set of nerves simply means zero activity in these nerves. And it is physically impossible for you to be nervous in any part of your body. You're feeling better than you've felt in a long time. Outside noises will not distract you. Anything you may hear will only assist you in relaxing more and more deeply and you do go deeper. With every breath, down another step on that endless staircase of relaxation. The sound of my voice keeps guiding you deeper into relaxation.

Following my suggestions keeps guiding you into deeper relaxation. And the more and more you allow your body to relax the better you feel and the better you feel the more your mind and body will relax. You have complete control over every nerve in your body, control over your whole nervous system, and you drift much deeper, much deeper into relaxation. Moving down from the staircase, you will find an escalator with three more levels of relaxation for you to go into. Level A, level B and level C. Now to accomplish these levels, you must know it will work, let it work. You can feel it working, feel it working because the escalator brings you down to deeper levels at all times. So now I want you to go from where you are to level A, ten times deeper. You know it will work, let it work. Feel it working, feel yourself sinking down to level A as if you're going down an escalator. Very good. Now I want you to go from level A to level B. Again you know it will work, let it work. Feel it work as if you're going down an escalator from level A to level B, ten times

deeper, automatically going down. Very good. Now I want you to go from level B to level C, your deep level of relaxation today. You know it will work, let it work. Feel it work. Feel yourself sinking down many times deeper to level C. That's fine. Now with your light switch in the off position, shutting down the electricity to every muscle in your body All the way down to the very bottom of relaxation where you will be so peaceful, happy and content. Every day you will feel better and better, happier and happier and more contented. Each time you enter this beautiful state of relaxation, you'll go much deeper than the time before.

Trancework - Future Progression suggestions

Now, I want you to imagine that you are in a very safe and comfortable room. It can be a room in your house or somewhere else which you feel particularly comfortable and relax in it. There is a computer on the desk, the computer is already turn on, and there is a video on it that is about to play. I want you to take your seat. You are now going to watch yourself in this video. You are watching yourself… … going to perform your perfect putting in every way you want to perform in the next putting test. You are relaxed and focused in your seat, just as you are in the video…in your putting game… You are confident…focused. See yourself in the video approaching the practice green with calmness and clear mind… nothing in the environment or other golfers around bothers you in any way. Whatever happens to you before the putting test do not affect you emotionally in any way.

As you walk on to the practice green, your body will naturally be in sync with nature to give you all the performance cues. Your feet become more sensitive and can detect the different slope of the green. Your skin is expanding and can guide you which way and how strong the wind is. As you look at the flag and how much it flies in the wind, the flag gives you the indication of the wind direction and how strong the wind is.

In the video, you see yourself in the practice green at your club. You put down your ball and ready to putt at the first position from a 4m distance to the hole. Your body feel calm, relax and confident. Your breath become smooth and regular with a very soothing rhythm. See yourself in the video reading the green from behind your ball position with the ball, the line and the hole aligning in front of you. The green seems so easy to read with all the down hill, up hill, break and double break. It is so easy because you have been putting on this practice green many time. This familiarity makes you feel more confident, knowing how the ball will travel and what it takes to get the ball to the hole.

As you hold your putter grip, this is the trigger signal for your pre-shot routine as you now allow your body and mind to go into autopilot mode. Your action and the awareness of these actions are merging with each other. Your mind is now fully focus on the task at hand. Your mind starts visualising the line where the ball will travel. It even highlights the path of the ball in a very distinct colour that you feel so comfortable to putt to. As you now step in to the position to putt, you will take one or more practice swing with a clear line and pace you want to hit. In your mind, you see, hear and feel how the ball will travel in your planned path to go in to the hole.

You have no worries about how many you have putted in so far during the test. When you putt, you have all the intention and commitment to make the ball go in to the hole. Your mind is free from any thought, your hand just follows through the motion like a pendulum swing. See yourself in the video make the putt successfully to the hole and experience all the sensations as if you are doing it for real. After the ball goes to the hole, see yourself pick up the ball from the hole, feeling a total sense of control and be in the moment.

The video will stop after you have picked up the ball and move on to the next putting position while you still feel relax, calm, and remember all the senses as if you have just performed the successful putt right now. Very soon I will start counting slowly from 1 to 10,

with each number I count, the video will replay one more time, and the image and movement will merge into every part of you, making you feel as if you have just made another successful putt.

Now I want you to imagine you are holding the putter in your hand. I want you to transfer all the successful feelings and sensations that you have just experienced into the grip of your putter. So that at any time in the future when you hold your putter again, the same sensation of confidence, calmness and trusting your ability comes back to you. From now on, every time your putter is in your hands like this, you will immediately get back into this state of calm, relax, and fully focus on the putting task. Anything or anyone else does not bother you at all. You are able to estimate the right speed, right break to putt. As you stand next to the ball ready to putt, you can feel that pressure from your hand to your putter which is just right. That same sensation brings your mind back to the automatic putting ability, which you can do comfortably when putting. The hole seems bigger, the distance seems shorter, you may even experience a distorted feeling of time and space, in which the ball seems to have no other way, but to go in the hole in a slow motion. It is as if there is a magnetic bond between the ball and the hole, so that with your touch through putting, the ball just follows its course to go easily into the hole while time seems to stay still. You feel an internal joy through the putting process because you are following your process and performing well. Now let's replay the video ten times, starting with 1,2,3 …10.

Imagine yourself after finishing the first 10 putts and are ready to perform the same perfect putt just like what you have seen on the video. All your senses: seeing, hearing and feeling are back to the same sensation as they are when you do well like in the video. You walk to the ball with confidence, feeling calm and relaxed. You are not concerned with the putt at all because you have done putts like this thousands of times in your mind before. When your hand holds the putter grip, the grip triggers all the confident, focus, and

enjoyment sensations of the previous perfect putt to come back. As you make the putt, you feel, hear and see as if you are right back in the video that you have watched….

Imagine yourself after finishing 20 putts and continue to putt in the same putting test. See, hear and feel as you perform with great confidence, calm and no worries. When you putt, the ball will go in the hole easily. The time seems to slow down, while you are experiencing a total sense of control in the situation. Any people around the practice green have no impact on your putting game. Your putting confidence just grows more and more with time. When you putt, your body knows what needs to be done, so the mind will step aside and let the body do what it knows best. All the senses: seeing, hearing, feeling…return to your body instantly the moment you grab your putter grip and feel ready to putt. You follow the pre-shot and post-shot routine with ease.

Imagine yourself performing to the 30th putts… You always perform at your peak in your putting game. When you are preparing for your performance, you concentrate on your breathing ... If you find yourself getting nervous or anxious at all … all you need to do is to hold on to your putter … and you will immediately come back to this relaxed feeling that you are experiencing right now … being relaxed and in control … You will be at you peak … giving your full attention and focus … so you can putt at your best potential. You are putting to the best of your abilities … Imagine it as clearly as you can … … and as you do ... imagine taking a deep breath … and you notice that you are feeling calm and relax. Putting game becomes easier and easier for you with each breath you take. You are confident with your putting skill because your logical mind can step aside to let your body perform the putt automatically.

At any time, you can access these same sensations by the trigger in your putter grip, which allows you to attain your goal, achieve your personal best performance, and winning ... You now have a laser beam focus on your tasks and the putting games ... Nothing takes you

away from your goal. Imagine yourself right now finishing the last few putts for the putting test. In your mind, see yourself performing amazing putt and excelling in your progress ... See yourself giving 100% in your abilities and commitment to your pre-shot and post-shot routine. Get it as clear in your mind as you can ... See it … feel it, hear it, all the confident sensations ….. You can be the winner that you are imagining ... Your imagination can and will become your reality ... You are successful and efficient putter. Each and every time you listen to this audio file again, your mental subconscious will become strong, clear and with great feeling in your body. You are excelling and are the best at both your putting game and golf in general… Your concern is not only if you will win … but rather how much joy and fun you can continue having while performing at your peak state? Now that you are a master of your putting skill, you can slowly let the scene fade, with the computer and the video drift into your subconscious mind and becomes an anchor to remind you about your putting ability, while you will gently switch your attention back to your breathing.

Awakening

Soon I will begin to slowly bring you back to consciousness, and as I bring you back your subconscious mind will transfer all of these positive relevant new learnings to your conscious mind. When you come back they will all seem very real to you and your conscious mind will believe them. They will all be real to you and you will permanently believe them and act according to what best suits your desired outcome. You will accept and believe all the new learning's and act accordingly in a happy safe and positive way.

To bring you back to full alertness, I am going to count slowly from one to ten, and with each forward count you will become a little more alert. Your eyes can remain comfortably closed until I get to ten. Then when I do get to ten I'll click my fingers, your eyes will open and you will come back to complete full alertness, feeling calm and peaceful.

Your body will be filled with energy and your mind relaxed… looking forward to whatever it is you do for the rest of the day. Now you can get ready to slowly come back.

ONE – Feeling just fine.

TWO – Realise right here right now, just how deep you were in trance right there right then

THREE – Beginning to feel so very, very good … Remembering all the suggestions

FOUR – You can putt automatically with ease, you can perform at the same level with your best performance.

FIVE – You can experience the flow of performance within yourself emerge in the putt with total concentration

SIX – the feeling starts to return to your hands and feet… and moves all the way up through your arms and legs.

SEVEN – the feeling moving right up through your body now as you start to come closer and closer to full awareness.

EIGHT – the energy moves up through your waist and into your chest… you heart-rate, breathing and blood pressure returning to the normal and healthy level for you.

NINE – Energy flows up through your shoulders and into your neck right up into your head…so that the skin on your face and your scalp start to tingle now with vitality as you come all the way up to the surface now.

TEN – Eyes open, fully alert now. How do you feel?

Appendix M - Study 2 Regression Script

HYPNOSIS SCRIPT STUDY 2 – REGRESSION CONDITION

Introduction

In this session you will be guided through a hypnosis procedure because hypnosis can help you feel calm, enhance confidence and help you with your golf performance and flow state. A typical hypnosis session includes the following stages: induction – the hypnotist will give you suggestions to help you relax your body and mind so you can go into the trance state, a hypnotic state. This will be followed by the deepening stage to further relax your body and mind. When you are deep in trance, you will be given regression suggestions to improve your golf putting performance. This is called the trancework stage. You will recall an event in the past when you putt automatically and accurately a good putt with correct speed, break and power from about 4m distance to go to a hole. The last stage is awakening when the hypnotist slowly wakes you up with his counting from 1 to 10.

Hypnosis works based on the concept of moving your brain waves into Alpha wavelength range, which allows them to be more open to positive suggestion in the subconscious mind. However, it doesn't mean the hypnotist has total control over your mind, or that you will tell the hypnotist anything you don't want to say or do anything you don't want to do. In reality, you are still aware of what is going on around you (although you don't worry about anything except what the hypnotist is saying) and can have control over whether or not you go into trance. Hypnosis is a state in which you must give 100% consent. You must allow things to happen. If you allow me to be your guide, I'll show you how to place yourself in a beautiful state of hypnosis, feeling the physical relaxation and mental alertness. And the most important thing of all is, if you accept the suggestions given to you with the

correct mental attitude, you will have positive change that help you perform putting easier and more confident.

Progressive Relaxation Induction

First let's start by putting your feet flat on the ground *(remind client to uncross their arms and legs if they do).* Now that you are sitting/ lying down in a comfortable position, I'd like you to close your eyes and keep them closed until I ask you to open them. Just let your body relax.. .nice and easy. Now I'd like you to take a really good deep breath and fill the lung to your stomach….in….in….in…. and hold it. Now let it out S-L-O-W-L-Y …out….out….out….. good. The moment you start to breathe out, allow your body to relax much more with each breath. Now I'd like you to take another really good deep breath. Fill your lungs up really well…in…in…in…and let it out S-L-O-W-L-Y again….out….out….out. Excellent. Now, I'd like you to take one more deep breath... fill your lungs now...in….in…in…and hold it. Now let it out S-L-O-W-L-Y….out….out….out, and already you can feel your body starting to relax.

Some people when they feel relax will experience a warm wonderful feeling around their bodies. Now let that warm, wonderful feeling of relaxation flow all the way down to your feet. Feel your feet becoming loose and limp. Now let this feeling of relaxation flow up into your ankles. From the ankles, up all the large and small muscles of your legs to your knees. From your knees now, into your thighs. From your thighs into your hips. From your hips now, into your abdomen. With each breath you exhale, just let your body becomes more and more DEEPLY relaxed. Just let it all go, more and more. Let that warm, wonderful feeling of relaxation flow up all the muscles of your back. Let all the muscles of your back go loose and limp and lazy, just like a rag doll.

Let this relaxation flow up into your shoulders. Now over your shoulders and down your arms to your elbows...from your elbows to your wrists...from your wrists into your

hands, going out to the ends of your fingertips, guiding you to become more and more DEEPLY relaxed. Just letting it all go more and more. Let that warm, wonderful feeling of relaxation flow up all the muscles of your neck. Let all the muscles of your neck go loose, limp and lazy. Let this relaxation flow up into your head. Now over your head and down into your brow. All the muscles of your eyes relaxed. All the muscles of your cheeks relaxed. All the muscles of your chin relaxed. Now if your teeth are clenched, just unclench them now, and let your jaw sag. Just let it all go, more and more... DEEPLY relaxed. Now, I'm going to count from three down to one. On each count just allow yourself to drift deeper and deeper into relaxation (3) Going deeper and deeper. (2) Getting more and more deeply relaxed. (1) So deep, so comfortable, so relaxed, just letting yourself go, more and more.

Outside noises will not make you feel uncomfortable at all, you will always be aware of the sounds around you. You are not asleep, just relaxed. The only difference is that from this moment on, any sounds you hear will not affect or disturb you in any way. As a matter of fact, any sounds you hear, ***(mention any ones they might hear)*** will just help and guide you to become more deeply relaxed. The only sound you remain interested in is the sound of my voice and the sound of my voice always helps you to relax much more. The sound of my voice helps you to drift DEEPER and DEEPER. Always letting go….more and more...loose and limp.

Now, I'm going to count from five down to one. On each count let the relaxation double throughout your whole body. (5) Allowing relaxation to double. (4) Relaxation doubling more and more. (3) Very comfortable, very relaxed. (2) Relaxation is almost doubled in your body. (1) You have allowed relaxation to double in your body. Every nerve, every tissue, every fiber doubled in its relaxation, more and more, deeper, letting go, further and further. Now, I'm going to count from five down to one again. On each count triple the

relaxation in your body. (5) Allowing relaxation to begin tripling. (4) Relaxation triples more and more. (3) Very comfortable, very relaxed. (2) Relaxation almost triples in your body. (1)

You have allowed relaxation to triple in your body. Every nerve, every tissue, every fiber tripling in its relaxation. Just really letting go, unwinding, loosening up, limp, very relaxed. All discomforts gone from your body. All your organs functioning normally, all your glands are functioning perfectly. Just letting yourself go, more and more. You will always be aware of your surroundings. You may hear sounds in the background, but those sounds will not disturb or affect you in any way. The only sound you will be interested in is the sound of my voice and the sound of my voice just helps you to drift DEEPER and DEEPER relaxed.

Deepening Techniques

Whenever you enter this state, you allow yourself to go back into the same beautiful state that you are now in. Each time allowing yourself to go back deeper, each time enjoying it more and more, feeling terrific in every way. Whenever you enter this state, the instant you close your eyes, you mentally reach up and turn your light switch into the off position. When that switch is in that off position, all electricity flowing from your brain to your body becomes disconnected.

Your muscles become instantly calm, very deeply relaxed and you allow the sound of my voice to guide you deeper into relaxation. Following my suggestions guides you deeper into relaxation. The deeper you go into relaxation the better you feel, and the better you feel the more and more your body relaxes with just wonderful feelings going through your body So relax, and let yourself go. Now I want you to relax still more to a deeper state of relaxation.

Much more relaxed. So again I'll count from five down to one and as I count from five down to one, your body will double the relaxation you have right now, automatically.

5...Relaxation starting to double. 4...Relaxation doubling more and more. 3...Very comfortable very relaxed.

2...Relaxation is now almost doubled in your body. 1...Relaxation now has doubled in your body from the top of your head to the tips of your toes. Every fibre, every tissue, every organ, every gland every part of you has doubled in its relaxation. You feel fine.

I want you to imagine, or visualize, in front of you is a long staircase that is leading down into relaxation. We have never found a basement, a bottom of a person's ability to relax. It's endless. Every breath that you exhale takes you down another step on this staircase of relaxation. Every breath takes you deeper into an endless state of relaxation. You drift down feeling wonderful, feeling comfortable. Relax and let yourself go. Just relax and let yourself go. I still want you to double your relaxation. Already with your light switch in the off position, every muscle becomes dormant, quite unable to move. Again I will count, but this time from ten down to one. With each count, you will take one step down the staircase of relaxation. As I count from ten down to one, your conscious mind will relax as much as your body is relaxed and your mind and body will double the relaxation that they have at that time on each and every count. 10…take your first step...Your mind is as relaxed as the body is relaxed and the body is doubling its relaxation. 9...The mind is relaxed as the body is relaxed, and the body is doubling its relaxation again. 8…another step…. Mind relaxed as the body is relaxed and the body again is doubling the relaxation it has at this time. 7...each step down the staircase makes you feel more and more comfortable. 6...Keep right on going now.

5...4...3...2...1...Mind relaxed as the body is relaxed and your body has doubled its relaxation many times over as you move down this staircase

By relaxation I mean the absence of all contractions. Your body is loose, limp and motionless. Your muscles offering no resistance just as if you were a rag doll. Complete relaxation means the absence of all movement. It means the complete absence of holding any

part of your body rigid. So as you are completely relaxed, all the muscles attached to your bones are limp. If you make any voluntary movements you can only do so by contracting some group of muscles, but when you allow these muscles to become completely dormant, your nerves are completely inactive. And it's certain that complete relaxation in any set of nerves simply means zero activity in these nerves. And it is physically impossible for you to be nervous in any part of your body. You're feeling better than you've felt in a long time. Outside noises will not distract you. Anything you may hear will only assist you in relaxing more and more deeply and you do go deeper. With every breath, down another step on that endless staircase of relaxation. The sound of my voice keeps guiding you deeper into relaxation.

Following my suggestions keeps guiding you into deeper relaxation. And the more and more you allow your body to relax the better you feel and the better you feel the more your mind and body will relax. You have complete control over every nerve in your body, control over your whole nervous system, and you drift much deeper, much deeper into relaxation. Moving down from the staircase, you will find an escalator with three more levels of relaxation for you to go into. Level A, level B and level C. Now to accomplish these levels, you must know it will work, let it work. You can feel it working, feel it working because the escalator brings you down to deeper levels at all times. So now I want you to go from where you are to level A, ten times deeper. You know it will work, let it work. Feel it working, feel yourself sinking down to level A as if you're going down an escalator. Very good. Now I want you to go from level A to level B. Again you know it will work, let it work. Feel it work as if you're going down an escalator from level A to level B, ten times deeper, automatically going down. Very good.

Now I want you to go from level B to level C, your deep level of relaxation today. You know it will work, let it work. Feel it work. Feel yourself sinking down many times deeper to level C. That's fine.

Now with your light switch in the off position, shutting down the electricity to every muscle in your body, I want you to try to lift your right leg, (5 *second pause),* stop trying. And Let your body go much deeper. Now I want you to try to lift your left leg, *(5 second pause),* stop trying and let your body go deeper still. Now I want you to try to lift your right arm, *(5 second pause),* stop trying and let your body go deeper still. All the way down to the very bottom of relaxation where you will be so peaceful, happy and content. Every day you will feel better and better, happier and happier and more contented. Each time you enter this beautiful state of relaxation, you'll go much deeper than the time before

Trancework – Regression suggestions

Now just remain completely and deeply relaxed, that's right. Now I want you to find yourself in whatever picture, image, sensations or pleasant feeling presents itself to you, in a pleasant, safe and comfortable hallway. You feel welcome here, comfortable and free from any and all anxiety and fear.

As you look down the hallway ahead of you, you can see that on your left is a plain blank wall...all the way to the end of the hallway. On your right, there are doors… evenly spaced…. All the way to the end. Each door stores a successful golf event which you putted really well. These golf events and moments are arranged according to your time life…. You can now look to your right and find that you are standing in front of a door that represents your present age, right now. The next door stores one successful event earlier, the next, one event earlier than that, and this continues… each door stores a successful golf putting moment/ event from your life since the beginning of your golf time, all the way down to the other end of the hallway.

I will now count from 3 to 1. At the count of 1, I want you to imagine that you are walking rather slowly down that hallway, looking at every door as you go by, aware that behind each door is a successful event that you putted well in your game. It contains all of the good memories, emotion, feeling… from the golf putting round of that event, all filed away so that they will only be seen when you choose to open the door to see them. When you come to a door at which you feel some need, some desire, or inclination to stop, then stop, stop and signal me by nodding your head. If you reach the end of the hall before finding the appropriate door, you will walk backward to find the right door for you. Ready now? 3,2,1 All right, walking down the hallway. Check out all the doors to find an event which your putting performance was superior to other events and nod your head to let me know. Good, that is right, now, at the count of one, stand outside the right door. 3,2,1 open that door and step into that room, closing the door behind you. You will find yourself in a fairly large, square room, with bare white walls. The only thing you will see is that right in the middle of the room there is a pedestal, about waist high, with a super high-definition projector on top of the pedestal. The projector has two buttons on top of it, one green, and one red. Walk over to the projector and stop, then give me a nod as you did when you stopped in the hall.

"Three, two, one! walk over to the projector. Signal when you are there."

"Now, at the count of one, reach out and push the green button. When you do, the specific event that you putted really well in the past will appear on the wall opposite the door where you came in, or it will appear as a memory in your mind. Either way is ok. Whenever ***WE*** feel that ***WE*** need to stop this event, *YOU* can push the red button, and it will quickly disappear. So, at the count of one, push the green button; "Three, two, one! Push the green button."

On the wall, the vivid video appeared with the event in the past that you performed successful putts with ease and confidence. Allow yourself to absorb and become part of the

video of you on the wall and see what you saw, hear what you heard and feel what you felt back then. Do your best to recall as much details as possible, starting with what clothes you wore? Who were with you? Where were you? How did you feel? Intensify the feeling of success by replaying the scene of your successful putting and re-experience it as vividly in your mind as possible. At the same time, growing a strong sensation of trust in the body.

Notice how you were able to block out distractions and concentrate 100% on your putting, at will ... You had a laser beam type of focus.

As you replay the scene, notice how easy it was for you to read the putting line, predicting the speed and the break. Everything was so easy and seemed so natural to you. You performed your pre-shot routine automatically and you felt confidence inside. Allow yourself now to reconnect to that part of you that feels confidence. It might have been in your head, in your heart or your abdominal. Whichever it was, allow yourself now to feel what you felt at that time. Now see yourself performed the practice stroke before putting with ease and confidence. You might not have noticed it the first time, but when you watch yourself now performing the putt, you recognise how cool, calm and collected you were. As you watched yourself perform that perfect putt again, allow that sensation to relive in your body. Intensify the feeling by making the feeling stronger, the sound louder and the image clearer with more intense colour.

Now I want you to imagine you are holding the putting club in your hand. I want you to transfer all the successful feeling and sensation that you just experience into that holding grip. So that in the next moment when you are holding your putting club again, the same sensation of confident, calm and trusting your ability is getting back to you. Remember from now on, every time your putting club is in your hands like this, you will immediately get back into this state of calm, relax, and focus on the putting task. Anything or anyone else would not bother you at all. You are able to estimate the right speed, right break to putt. As you

stand next to the ball ready to putt. You can feel that pressure from your hand to your club which is just right. That same sensation brings your mind back to the automatic putting ability, which you can do comfortably in practice. The hole seems bigger, the distance seems shorter, you may even experience a distorted feeling of time and space, in which the ball seems to have no other way but to go in the hole. It is as if there is a magnetic between the ball and the hole that with your touch through putting, the ball just follows its course to go easily into the hole.

Awakening

Soon I will begin to slowly bring you back to consciousness, and as I bring you back your subconscious mind will transfer all of these positive relevant new learnings to your conscious mind. When you come back they will all seem very real to you and your conscious mind will believe them. They will all be real to you and you will permanently believe them and act according to what best suits your desired outcome. You will accept and believe all the new learning's and act accordingly in a happy safe and positive way.

To bring you back to full alertness, I am going to count slowly from one to ten, and with each forward count you will become a little more alert. Your eyes can remain comfortably closed until I get to ten. Then when I do get to ten I'll click my fingers, your eyes will open and you will come back to complete full alertness, feeling calm and peaceful. Your body will be filled with energy and your mind relaxed… looking forward to whatever it is you do for the rest of the day. Now you can get ready to slowly come back.

ONE – Feeling just fine

TWO – Realise right here right now, just how deep you were in trance right there right then

THREE – Beginning to feel so very, very good … Remembering all the suggestions

FOUR – You can putt automatically with ease, you can perform at the same level with your best performance.

FIVE – You can experience the flow of performance within yourself emerge in the putt with total concentration

SIX – the feeling starts to return to your hands and feet… and moves all the way up through your arms and legs.

SEVEN – the feeling moving right up through your body now as you start to come closer and closer to full awareness.

EIGHT – the energy moves up through your waist and into your chest… you heart-rate, breathing and blood pressure returning to the normal and healthy level for you.

NINE – Energy flows up through your shoulders and into your neck right up into your head…so that the skin on your face and your scalp start to tingle now with vitality as you come all the way up to the surface now.

TEN – Eyes open, fully alert now. How do you feel?

Appendix N - Brief Social Validation Assessment Form

Brief Social Validation Assessment

Code: *Gender:* *Age:*

We used a conversational interview style to explore the extent to which participants understood and followed the study procedures. Questions to be asked include:

1. Was the questionnaire clear and understandable?

2. Did you understand what you were asked to do?

3. What do you think about the importance of the task?

4. What do you think about the procedures of the study?

5. Did you follow the study procedure and do what was requested?

We used clarification and elaboration probes where appropriate to follow-up on participant responses. Clarification probes help to clarify when participants' answers are not clear. They are questions like "Please explain what you meant by...." Elaboration probes ask for more information about something that seems relevant, but was not fully explained. They involve questions like: "Please can you tell me more about...."

Appendix O - Study 3 Information Statement

INFORMATION TO PARTICIPANTS INVOLVED IN RESEARCH

You are invited to participate

You are invited to participate in a research project entitled **"The effect of hypnosis in real competition to promote flow and improve performance"**

This project is being conducted by a student researcher Dung Tien Dao as part of a Doctor of Philosophy Program at Victoria University under the supervision of Professor Tony Morris and Associate Professor Daryl Marchant from the College of Sport and Exercise Science, Victoria University.

Project explanation

Athletes performing at their best commonly report being totally absorbed in and focused on the task, confident and in control while their body moves effortlessly and automatically. This state is called flow. This research will contribute to understanding how hypnosis enhances flow in sport. There are some aspects of hypnosis that I propose can help golfers to experience flow more often with benefits for enjoyment and performance. Results from this research will provide new evidence about the effect of different types of hypnosis and hypnosis techniques on flow and sport performance.

What will I be asked to do?

In the first session, you with be provided with clear information about the study, the details and the commitment level being asked of participants and you will have the opportunity to ask Dung any questions and clarify any concerns. You will have the opportunity to read and sign the informed consent form. You will then complete a questionnaire that asks about your ability to relax and imagine various experiences, that is, to experience a hypnotic state.

In your next six competition rounds (1 round equals18 holes), Dung will follow you during each round to record your number of putts and the distance of each putt from the hole before and after you putt. After each of your competition games, you will complete a questionnaire that asks you about your experiences while doing the putting task (5-10 minutes). After the six competition rounds, Dung will meet you for a 60-minute session of hypnosis, which involves

suggestions to imagine perfect putting. After this session, you will be given a recorded audio of the hypnosis session and asked to listen to it daily for at least seven days. You will be asked to fill in a simple diary to keep track of your thoughts and feelings after listening each day. Dung will continue following you for another six competition rounds to record your performance in putting (number of putts and distance of each putt from the hole before and after you putt). You will again complete the questionnaire on your experiences while performing, followed by talking to Dung about your experiences of the whole study.

What will I gain from participating?

By participating to this study, you will gain insights into the way your mind and body works when you are putting. You will learn the skill to relax mentally and to putt in an automatic pattern. You will experience how hypnosis can help you improve your golf game by allowing you to be fully focused and absorbed in your performance. You will have the opportunity to have a personalized training program that tracks your performance throughout 12 competition rounds and hypnosis tool to improve your putting game.

How will the information I give be used?

The study result will be used as the data for Dung's PhD thesis. Your personal putting score will be used to analyse group pattern without revealing individual's details. These data will also be used for scientific research paper and conference presentation. This could lead to the hypnosis techniques being used by sport psychologists to assist golfers and other athletes in the future.

What are the potential risks of participating in this project?

People often associate hypnosis with the fear that a hypnotist has complete control over participants, including what they believe, think, and do. The reality is that hypnosis is a cooperation between the hypnotherapist and the client which make equal effort to bring success to the session. In scientific/experimental research, the hypnosis process is based on the trust that the hypnotic suggestion is in keeping with the wishes of the participants and does not involve deception or manipulation.

Qualification of the hypnotist is also a valid concern and potential risk for participants. If a hypnotist is not well trained and qualified by an authoritative body in the field, they are unlikely to be able to successfully conduct sessions and could potentially cause psychological distress to the participants. I am trained and certified as a clinical hypnotherapist with the Academy of Hypnotic Science and I am a member of the Australian Hypnosis Association. This training and certification ensures that I have a strong foundation of knowledge and experience to conduct hypnosis sessions according to the standard required by the Australian Hypnosis Association.

There is a chance of unwanted behavior that arises during a hypnosis session due to traumatic events in participants' past. People in a trance state will rarely relive traumatic and unpleasant feelings. Hence, I will do advance screening through questionnaire and communication to assess the possibility that past traumatic events will surface during hypnosis. From this initial scanning, you will be assessed to be sure that you are suitable for the study. During each hypnosis session, I will observe you carefully and if I identify any sign of distress, I will stop the study immediately. In this event, I will bring you out of hypnotic state to relax, and refocus you on the real current situation. If you show signs of continued distress, you will be offered the opportunity to consult a psychologist. All of these steps are part of the safeguard protocol that I will use to minimize risks. The same practice of bringing you out of the hypnotic state will be used at the end of every session.

All your information will be confidential with only access by Dung and research supervisors. Official paperwork, including hard copies of results, will be kept in a locked filing cabinet drawer for five years and follow the strict data handling procedure as stated by the policy and procedure for research integrity of Victoria University (2012).

How will this project be conducted?

This project will be conducted at a local golf course in Melbourne, which organises regular competition rounds. The first session will be an information sharing and consent process that is conducted in a quiet room at the golf club. In the next six weeks of competition rounds that you attend, Dung will follow you to record your putting performance in a non-obtrusive manner. The live hypnosis session will again be conducted in a quiet place that is convenient for you. Dung will then remind you daily about listening to the hypnosis audio file for at least seven days. Dung will again follow you for another six competition rounds and record your putting performance. The last interview session will be conducted at the end of the last six competitions to conclude this research. Information about your results will be sent only to you once the data has been analysed.

Who is conducting the study?

The College of Sport and Exercise Science, Victoria University.

Chief Investigator

Professor Tony Morris

Email: Tony.Morris@vu.edu.au

Phone: 04.3051.1543

Secondary Investigator

Associate Professor Daryl Marchant

Email: daryl.marchant@vu.edu.au

Phone: 03.9919.4035

Student researcher

Dung Tien Dao

Email: sportpsychologyconsultants@gmail.com

Phone: 04.6622.6543

If you have concern about any psychological issue, you may contact the independent psychologist Dr. Janet Young from Victoria University (email: janet.young@vu.edu.au, telephone: 9919 4762) for further consultation.

Any queries about your participation in this project may be directed to the Chief Investigator listed above.

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

Appendix P - Study 3 Consent Form

CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH

INFORMATION TO PARTICIPANTS:

You are invited to participate in a research project entitled **"The effect of hypnosis in real competition to promote flow and improve performance".** This research will track participants' putting performance in 12 club competition games with one week of hypnosis intervention between Game 6 and Game 7. The hypnotic suggestion used for the intervention is about imagining a successful performance in the future or in the past and using these feelings and sensations for current putting. This result will provide new evidence about the effect of hypnosis techniques on flow and sport performance in real competition.

This project is being conducted by a student researcher Dung Tien Dao as part of a Doctor of Philosophy Program at Victoria University under the supervision of Professor Tony Morris and Associate Professor Daryl Marchant from the College of Sport and Exercise Science, Victoria University.

CERTIFICATION BY SUBJECT

I, "[Click here & type participant's name]"

of "[Click here & type participant's suburb]"

certify that I am at least 18 years old and that I am voluntarily giving my consent to participate in the study:

"The effect of hypnosis in real competition to promote flow and improve performance" being conducted at Victoria University by Professor Tony Morris.

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the research, have been fully explained to me by the student researcher Dung Tien Dao and that I freely consent to participation involving the below mentioned procedures:

- Attending two sessions (60 - 90 minutes) including a hypnosis session with Dung
- Listening to the recorded audio file of the hypnosis session at home daily for at least 7 days
- Recording your feelings and experiences after listening to the audio file in a diary
- Playing 12 competition games during which your putting performance will be recorded unobtrusively by the research student Dung
- Answering a questionnaire after each competition round and an interview at end of the research

I certify that I have had the opportunity to have any questions answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way.

I have been informed that the information I provide will be kept confidential.

Signed: _____

Date: _____

Any queries about your participation in this project may be directed to the researcher Professor Tony Morris Phone: 0430,511.543

If you have concern about any psychological issue, you may contact the independent psychologist Dr. Janet Young from Victoria University (email: janet.young@vu.edu.au, telephone: 9919 4762) for further consultation.

If you have any queries or complaints about the way you have been treated, you may contact the Ethics Secretary, Victoria University Human Research Ethics Committee, Office for Research, Victoria University, PO Box 14428, Melbourne, VIC, 8001, email Researchethics@vu.edu.au or phone (03) 9919 4781 or 4461.

Appendix Q - Study 3 Social Validation Interview

INTERVIEW SCHEDULE

- *Experience of the Study overall*
  - *Understanding of what the study was about*
    - *What do you think about the importance of the task?*
    - *Tell me about your understanding of what you needed to do?*
  - *Interest and motivation to participate*
    - *Tell me how often did you listen to the hypnosis audio file?*
    - *What do you think about the length of each session?*
  - *Reflection on how the study was delivered*
    - *What do you think about the instructions and guidelines in the study?*
  - *Probes for clarification and elaboration*

- *Evaluation of the Intervention*
  - *Clarity of presentation of intervention content*
    - *Tell me about your understanding of the hypnosis suggestions?*
    - *Tell me about any thoughts and feelings that might have caused distraction to you?*
    - *Tell me about anything in the environment that might have caused distraction to you?*
  - *How participants experienced hypnosis*
    - *Tell me about your experience with hypnosis during the study?*
  - *How participants performed putting*
    - *What were you thinking when you did the putting?*
  - *Probes for clarification and elaboration*
- *Reflections on Performance*
  - *What was your experience of putting during competition?*
    - *What was your experience during the putting performance?*
    - *How do you feel about your putting performance now, especially when you have to putt in a pressured situation?*
  - *How did participants evaluate performance throughout the study?*
    - *What do you think about your performance result?*
    - *Let's have a look at the putting scores during pre-intervention versus post-intervention, why do you think there is (or isn't) a difference in putting?*
    - *How did the hypnosis training affect your putting game?*
  - *Probes for clarification and elaboration*

- *Experience of Flow*
  - *How did you evaluate flow throughout the study?*
    - *How would you describe your flow experience during the study?*
    - *Tell me about how your flow fluctuated during your game?*
  - *Probes for clarification and elaboration*

Appendix R - Study 3 Future Progression script

HYPNOSIS SCRIPT STUDY 3 – FUTURE PROGRESSION CONDITION

Introduction

In this session you will be guided through a hypnosis procedure because hypnosis can help you feel calm, enhance confidence and help you with your golf performance and flow state. A typical hypnosis session includes the following stages: induction – the hypnotist will give you suggestions to help you relax your body and mind so you can go into the trance state, a hypnotic state. This will be followed by the deepening stage to further relax your body and mind. When you are deep in trance, you will be given future progression suggestions to improve your golf putting performance. This is called the trancework stage. You will imagine that you can putt automatically and accurately in the near future good putts with correct speed, break and power from a 4m distance to go to a hole. The last stage is awakening when the hypnotist slowly wakes you up with his counting from 1 to 10.

Hypnosis works based on the concept of moving your brain waves into Alpha wavelength range, which allows them to be more open to positive suggestion in the subconscious mind. However, it doesn't mean the hypnotist has total control over your mind, or that you will tell the hypnotist anything you don't want to say or do anything you don't want to do. In reality, you are still aware of what is going on around you (although you don't worry about anything except what the hypnotist is saying) and can have control over whether or not you go into trance. Hypnosis is a state in which you must give 100% consent. You must allow things to happen. If you allow me to be your guide, I'll show you how to place yourself in a beautiful state of hypnosis, feeling the physical relaxation and mental alertness. And the most important thing of all is, if you accept the suggestions given to you with the correct mental attitude, you will have positive change that help you perform putting easier and more confident..

Progressive Relaxation Induction

First let's start by putting your feet flat on the ground *(remind client to uncross their arms and legs if they do).*
Now that you are sitting/ lying down in a comfortable position, I'd like you to close your eyes and keep them closed until I ask you to open them. Just let your body relax.. .nice and easy.
Now I'd like you to take a really good deep breath and fill the lung to your stomach….in….in….in…. and hold it. Now let it out S-L-O-W-L-Y …out….out….out….. good. The moment you start to breathe out, allow your body to relax much more with each breath.
Now I'd like you to take another really good deep breath. Fill your lungs up really well…in…in…in…and let it out S-L-O-W-L-Y again….out….out….out. Excellent. Now, I'd like you to take one more deep breath... fill your lungs now...in….in…in…and hold it. Now let it out S-L-O-W-L-Y….out….out….out, and already you can feel your body starting to relax.
Some people when they feel relax will experience a warm wonderful feeling around their bodies. Now let that warm, wonderful feeling of relaxation flow all the way down to your feet.
Feel your feet becoming loose and limp. Now let this feeling of relaxation flow up into your ankles.
From the ankles, up all the large and small muscles of your legs to your knees. From your knees now, into your thighs. From your thighs into your hips. From your hips now, into your abdomen.
With each breath you exhale, just let your body becomes more and more DEEPLY relaxed. Just let it all go, more and more. Let that warm, wonderful feeling of relaxation flow up all the muscles of your back. Let all the muscles of your back go loose and limp and lazy, just like a rag doll.
Let this relaxation flow up into your shoulders. Now over your shoulders and down your arms to your elbows...from your elbows to your wrists...from your wrists into your hands, going out to the ends of your fingertips, guiding you to become more and more DEEPLY relaxed. Just letting it all go more and more.
Let that warm, wonderful feeling of relaxation flow up all the muscles of your neck. Let all the muscles of your neck go loose, limp and lazy. Let this relaxation flow up into your head. Now over your head and down into your brow. All the muscles of your eyes relaxed. All the muscles of your cheeks relaxed. All the muscles of your chin relaxed.
Now if your teeth are clenched, just unclench them now, and let your jaw sag. Just let it all go, more and more... DEEPLY relaxed.
Now, I'm going to count from three down to one. On each count just allow yourself to drift deeper and deeper into relaxation (3) Going deeper and deeper. (2) Getting more and more deeply relaxed. (1) So deep, so comfortable, so relaxed, just letting yourself go, more and more.

Outside noises will not make you feel uncomfortable at all, you will always be aware of the sounds around you. You are not asleep, just relaxed. The only difference is that from this moment on, any sounds you hear will not affect or disturb you in any way.
As a matter of fact, any sounds you hear, ***(mention any ones they might hear)*** will just help and guide you to become more deeply relaxed. The only sound you remain interested in is the sound of my voice and the sound of my voice always helps you to relax much more. The sound of my voice helps you to drift DEEPER and DEEPER. Always letting go….more and more...loose and limp.

Now, I'm going to count from five down to one. On each count let the relaxation double throughout your whole body. (5) Allowing relaxation to double. (4) Relaxation doubling more and more. (3) Very comfortable, very relaxed. (2) Relaxation is almost doubled in your body.
(1) You have allowed relaxation to double in your body. Every nerve, every tissue, every fiber doubled in its relaxation, more and more, deeper, letting go, further and further.
Now, I'm going to count from five down to one again. On each count triple the relaxation in your body. (5) Allowing relaxation to begin tripling. (4) Relaxation triples more and more. (3) Very comfortable, very relaxed. (2) Relaxation almost triples in your body. (1) You have allowed relaxation to triple in your body.
Every nerve, every tissue, every fiber tripling in its relaxation. Just really letting go, unwinding, loosening up, limp, very relaxed. All discomforts gone from your body. All your organs functioning normally, all your glands are functioning perfectly.
Just letting yourself go, more and more. You will always be aware of your surroundings. You may hear sounds in the background, but those sounds will not disturb or affect you in any way. The only sound you will be interested in is the sound of my voice and the sound of my voice just helps you to drift DEEPER and DEEPER relaxed.

Deepening Techniques

Whenever you enter this state, you allow yourself to go back into the same beautiful state that you are now in. Each time allowing yourself to go back deeper, each time enjoying it more and more, feeling terrific in every way. Whenever you enter this state, the instant you close your eyes, you mentally reach up and turn your light switch into the off position. When that switch is in that off position, all electricity flowing from your brain to your body becomes disconnected.
Your muscles become instantly calm, very deeply relaxed and you allow the sound of my voice to guide you deeper into relaxation. Following my suggestions guides you deeper into relaxation. The deeper you go into relaxation the better you feel, and the better you feel the more and more your body relaxes with just wonderful feelings going through your body So relax, and let yourself go. Now I want you to relax still more to a deeper state of relaxation.

Much more relaxed. So again I'll count from five down to one and as I count from five down to one, your body will double the relaxation you have right now, automatically. 5...Relaxation starting to double. 4...Relaxation doubling more and more. 3...Very comfortable very relaxed. 2...Relaxation is now almost doubled in your body. 1...Relaxation now has doubled in your body from the top of your head to the tips of your toes. Every fibre, every tissue, every organ, every gland every part of you has doubled in its relaxation. You feel fine.

I want you to imagine, or visualize, in front of you is a long staircase that is leading down into relaxation. We have never found a basement, a bottom of a person's ability to relax. It's endless. Every breath that you exhale takes you down another step on this staircase of relaxation. Every breath takes you deeper into an endless state of relaxation. You drift down feeling wonderful, feeling comfortable. Relax and let yourself go. Just relax and let yourself go. I still want you to double your relaxation. Already with your light switch in the off position, every muscle becomes dormant, quite unable to move. Again I will count, but this time from ten down to one. With each count, you will take one step down the staircase of relaxation. As I count from ten down to one, your conscious mind will relax as much as your body is relaxed and your mind and body will double the relaxation that they have at that time

on each and every count. 10…take your first step...Your mind is as relaxed as the body is relaxed and the body is doubling its relaxation. 9...The mind is relaxed as the body is relaxed, and the body is doubling its relaxation again. 8…another step… . Mind relaxed as the body is relaxed and the body again is doubling the relaxation it has at this time. 7...each step down the staircase makes you feel more and more comfortable. 6...Keep right on going now. 5...4...3...2...1...Mind relaxed as the body is relaxed and your body has doubled its relaxation many times over as you move down this staircase

By relaxation I mean the absence of all contractions. Your body is loose, limp and motionless. Your muscles offering no resistance just as if you were a rag doll. Complete relaxation means the absence of all movement. It means the complete absence of holding any part of your body rigid. So as you are completely relaxed, all the muscles attached to your bones are limp. If you make any voluntary movements you can only do so by contracting some group of muscles, but when you allow these muscles to become completely dormant, your nerves are completely inactive. And it's certain that complete relaxation in any set of nerves simply means zero activity in these nerves. And it is physically impossible for you to be nervous in any part of your body. You're feeling better than you've felt in a long time. Outside noises will not distract you. Anything you may hear will only assist you in relaxing more and more deeply and you do go deeper. With every breath, down another step on that endless staircase of relaxation. The sound of my voice keeps guiding you deeper into relaxation.

Following my suggestions keeps guiding you into deeper relaxation. And the more and more you allow your body to relax the better you feel and the better you feel the more your mind and body will relax. You have complete control over every nerve in your body, control over your whole nervous system, and you drift much deeper, much deeper into relaxation. Moving down from the staircase, you will find an escalator with three more levels of relaxation for you to go into. Level A, level B and level C. Now to accomplish these levels, you must know it will work, let it work. You can feel it working, feel it working because the escalator brings you down to deeper levels at all times. So now I want you to go from where you are to level A, ten times deeper. You know it will work, let it work. Feel it working, feel yourself sinking down to level A as if you're going down an escalator. Very good. Now I want you to go from level A to level B. Again you know it will work, let it work. Feel it work as if you're going down an escalator from level A to level B, ten times deeper, automatically going down. Very good.
Now I want you to go from level B to level C, your deep level of relaxation today. You know it will work, let it work. Feel it work. Feel yourself sinking down many times deeper to level C. That's fine.

Now with your light switch in the off position, shutting down the electricity to every muscle in your body All the way down to the very bottom of relaxation where you will be so peaceful, happy and content. Every day you will feel better and better, happier and happier and more contented. Each time you enter this beautiful state of relaxation, you'll go much deeper than the time before.

Trancework - Future Progression and Anchoring

Now, I want you to imagine that you are in a very safe and comfortable room. It can be a room in your house or somewhere else which you feel particularly comfortable and relax in it. There is a computer on the desk, the computer is already turn on, and there is a video on it that is about to play. I want you to take your seat. You are now going to watch yourself in this video. You are watching yourself… … going to perform your perfect putting in every way you want to perform in the next competition. You are relaxed and focused in your seat, just as you are in the video…in your putting game… You are confident…focused. See yourself in the video approaching the green with calmness and clear mind… nothing in the environment or competition bothers you in any way. Whatever result you have had with the driver, iron, and wedges shots before this point do not affect you in any way.

As you walk on to a green, your body will naturally be in sync with nature to give you all the performance cues. Your feet become more sensitive and can detect the different slope of the green. Your skin is expanding and can guide you which way and how strong the wind is. As you look at the flag and how much it flies in the wind, the flag gives you the indication of the wind direction and how strong the wind is.

In the video, you put down your marker and pick your ball up to wait for your turn, your body feel calm, relax and confident. You also place one of my markers 10 cm on the right-hand side to your marker with the same distance to the hole. Your breath become smooth and regular with a very soothing rhythm. See yourself in the video reading the green from behind your ball position with the marker, the line and the hole aligning in front of you. The green seems so easy to read with all the down hill, up hill, break and double break. It is so easy because you have been in this green many time. This familiarity makes you feel more confident, knowing how the ball will travel and what it takes to get the ball to the hole.

When it comes to your turn, you put your ball down and pick only your marker up. This is the trigger signal for your pre-shot routine as you now allow your body and mind to go into autopilot mode. Your action and the awareness are merging with each other. Your mind is now fully focus on the task at hand. Your mind starts visualising the line where the ball will travel. It even highlights the path of the ball in a very distinct colour that you feel so comfortable to putt to. As you now step in to the position to putt, you will take a one or more practice swing with a clear line and pace you want to hit. In your mind, you see, hear and feel how the ball will travel in your planned path to go in to the hole.

You have no worries about whether you want to get a birdie or if you miss the putt it can lead to a bogey or bad score. When you putt, you have all the intention and commitment to make the ball go in to the hole. Your mind is free from any thought, your hand just follows through the motion like a pendulum swing. See yourself in the video make the putt successfully to the hole and experience all the sensations as if you are doing it for real. After the ball goes to the hole, see yourself pick up the ball from the hole, feeling a total sense of control and be in the moment.

The video will stop after you have picked up the ball and move on to the next hole and you will feel relaxed, rested, and remember all the senses as if you have just performed the successful putt right now. Very soon I will start counting slowly from 1 to 10, with each number I count, the video will replay one more time, and the image and movement will

merge into every part of you, making you feel as if you have just made another successful putt.

Now I want you to imagine you are holding the putter in your hand. I want you to transfer all the successful feelings and sensations that you have just experienced into that grip of the putter. So that at any time in the future when you hold your putter again, the same sensation of confidence, calmness and trusting your ability comes back to you. From now on, every time your putter is in your hands like this, you will immediately get back into this state of calm, relax, and fully focus on the putting task. Anything or anyone else does not bother you at all. You are able to estimate the right speed, right break to putt. As you stand next to the ball ready to putt, you can feel that pressure from your hand to your putter which is just right. That same sensation brings your mind back to the automatic putting ability, which you can do comfortably in competition. The hole seems bigger, the distance seems shorter, you may even experience a distorted feeling of time and space, in which the ball seems to have no other way, but to go in the hole in a slow motion. It is as if there is a magnetic bond between the ball and the hole, so that with your touch through putting, the ball just follows its course to go easily into the hole while time seems to stay still. You feel an internal joy through the putting process because you are following your process and performing well.

Now let's replay the video ten times, starting with 1,2,3 …10.

Imagine yourself two days from now performing the same perfect putt just like what you have seen on the video. All your senses: seeing, hearing and feeling are back to the same sensation as they are when you do well like in the video. You walk to the ball with confidence, feeling calm and relaxed. You are not concerned with the putt at all because you have done putts like this thousands of times in your mind before. When your hand hold the putter grip, the grip triggers all the confident, focus, and enjoyment sensations of the previous perfect putt to come back. As you make the putt, you feel, hear and see as if you are right back in the video that you have watched….

Imagine yourself one week from now performing the putt in the same situation. See, hear and feel as you perform with great confidence, calm and no worries. When you putt, the ball will go in the hole easily. The time seems to slow down, while you are experiencing a total sense of control in the situation. Any competition pressures have no impact on your putting game. Imagine yourself one month from now...your putting confidence just grows more and more with time. When you putt, your body knows what needs to be done, so the mind will step aside and let the body do what it knows best. All the senses: seeing, hearing, feeling…return to your body instantly the moment you grab your putter grip and feel ready to putt. You follow the pre-shot and post-shot routine with ease.

Imagine yourself six months from now… You always perform at your peak in your putting game. When you are preparing for your performance, you concentrate on your breathing ... If you find yourself getting nervous or anxious at all … all you need to do is to hold on to your putter … and you will immediately come back to this relaxed feeling that you are experiencing right now … being relaxed and in control … You will be at you peak … giving your full attention and focus … so you can putt at your best potential.

You are putting to the best of your abilities … Imagine it as clearly as you can … … and as you do ... imagine taking a deep breath … and you notice that you are feeling calm and relax. Putting game becomes easier and easier for you with each breath you take. You are confident

with your putting skill because your logical mind can step aside to let your body perform the putt automatically.

Before and during competition round, you can access these same sensations by the trigger in your putter grip, which allows you to attain your goal, achieve your personal best performance, and winning ... You now have a laser beam focus on your tasks and the putting games ... Nothing takes you away from your goal. Imagine yourself right now in a competition situation one year from now… see yourself performing amazing putt and excelling in your progress ... See yourself giving 100% in your abilities and commitment to your pre-shot and post-shot routine. Get it as clear in your mind as you can ... See it … feel it, hear it, all the confident sensations ….. You can be the winner that you are imagining ... Your imagination can and will become your reality ... You are successful … you are a winner.
Each and every time you listen to this audio file again, your mental abilities will become stronger, clearer and with great feeling in your body. You are excelling and are the best at both your putting game and golf in general… Your concern is not only if you will win … but rather how much joy and fun you can continue having while performing at your peak state? You will and can be so much ahead of your competition … as you realize you have no limitations...
Now that you are a master of your putting skill, you can slowly let the scene fade, with the computer and the video drift into your subconscious mind and becomes an anchor to remind you about your putting ability, while you will slowly pay attention to your breathing.

Awakening

Soon I will begin to slowly bring you back to consciousness, and as I bring you back your subconscious mind will transfer all of these positive relevant new learnings to your conscious mind. When you come back they will all seem very real to you and your conscious mind will believe them. They will all be real to you and you will permanently believe them and act according to what best suits your desired outcome. You will accept and believe all the new learning's and act accordingly in a happy safe and positive way.

To bring you back to full alertness, I am going to count slowly from one to ten, and with each forward count you will become a little more alert. Your eyes can remain comfortably closed until I get to ten. Then when I do get to ten I'll click my fingers, your eyes will open and you will come back to complete full alertness, feeling calm and peaceful. Your body will be filled with energy and your mind relaxed… looking forward to whatever it is you do for the rest of the day. Now you can get ready to slowly come back.

ONE – Feeling just fine
TWO – Realise right here right now, just how deep you were in trance right there right then
THREE – Beginning to feel so very, very good … Remembering all the suggestions
FOUR – You can putt automatically with ease, you can perform at the same level with your best performance.
FIVE – You can experience the flow of performance within yourself emerge in the putt with total concentration
SIX – the feeling starts to return to your hands and feet… and moves all the way up through your arms and legs.
SEVEN – the feeling moving right up through your body now as you start to come closer and closer to full awareness.

EIGHT – the energy moves up through your waist and into your chest… you heart-rate, breathing and blood pressure returning to the normal and healthy level for you.
NINE – Energy flows up through your shoulders and into your neck right up into your head…so that the skin on your face and your scalp start to tingle now with vitality as you come all the way up to the surface now.
TEN – Eyes open, fully alert now. How do you feel?