Consumer Behaviour: Efficacy of Anti-Smoking Initiatives on Continuance by Young Adults in Australia

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Abstract

Tobacco smoking is a preventable cause of illness, disability and death in Australia. Despite the rigorous implementation of anti-smoking initiatives since 2013, the Australian Bureau of Statistics (ABS) national and state-based surveys for 2018-2019 revealed that the reduction of smoking rate in Australia has halted for the first time since 2013. Furthermore, the number of young adults that continue smoking has remained relatively stable. Based on the patterns of continuance of smoking by young adult smokers, the efficacy of anti-smoking initiatives on consumer behaviour in this demographic is limited.

The aim of this research is to explore the consumer behaviour of young adult smokers, to understand why they continue to smoke and to discover factors that support continuance of smoking behaviour. The focus is on young adult smokers between the ages of 18 to 30. The aim leads to the following research questions: First, why do young adult smokers continue with their smoking habit despite the negative health consequences; second, what are the attitudes of young adult smokers towards anti-smoking initiatives in Australia; and do anti-smoking initiatives in Victoria, Australia help discourage young adult smokers from their smoking habit? The Theory of planned behaviour (TPB) is used to examine young adults continuance smoking, as attitude, subjective norms, and perceived behavioral control impact their smoking uptake. The study employs logistic regression and structural equation modelling (SEM) to predict young adults' continuance smoking behaviour, while inferential statistics are used to explore the intensity of the linkages between those significant variables.

Consistent with the general findings in literature, first, the results of the study reaffirm that addiction is a key factor that contributes to continuous smoking behaviour in young people, and second, scare tactics, fear campaigns and anti-smoking advertisements to shock young adults into quitting seems to do little to encourage them to quit. The first factor implies that abstinence (from nicotine) is an important step to stopping ongoing smoking behaviour. Nevertheless, psychological addiction, such as sensory cues (e.g., smell of smoke, heat and sight), might also be a factor. It seems that current anti-smoking initiatives pay little attention on both physiological and psychological addictions and appear to have adopted an 'one-size-fit-all' approach (in term of the use of health terrifying images and warnings) to discourage ongoing smoking behaviour which has diminished efficacy over time and extended exposure. As well, this study supports social-cultural dimensions as being impactful. A SEM results reveal that the socioeconomic

disadvantage, peer pressure, and emotional stress, addiction, habits, and self-identity are major factors that lead to continue smoking.

Reflecting these findings, the implementation of smoke-free policies, increase in tobacco taxation, and the use of plain packaging on cigarette packets are important influences on young adults' smoking consumer behaviour. As well, inferential statistics shows a substantial number of young smokers are resistant to pictorial health images and text warnings on cigarette packets. Reflecting this resistance, young adult smokers appear to pay no attention to Quit Victoria advertising or at best these advertisements do not establish an urgency to quit smoking. In contrast, smoke-free policies are reported as being successful in changing smoking behaviour, and young adult smokers themselves urged increased cigarette prices to discourage smoking and stricter smoke-free policies to position smoking as a socially unacceptable behaviour.

Theoretically, this study adds new insights to consumer behaviour in relation to the efficacy of anti-smoking initiatives in Australia. Some key takeaways include the lack of effect of pictorial health and text warnings to young smokers, the benefits of plain packaging, the significance of cigarette price increments and the effectiveness of smoke-free policies. All these initiatives help deter continuance of smoking behaviour by young adults. Practically, the current anti-smoking initiatives appear to focus on smokers' health, and tobacco control organisations use the harmful impact of cigarettes to dissuade smoking behaviour. In contrast, study findings suggest that anti-smoking messages could be widened to emphasise impact on the environment alongside health impacts of smoking. A more integrated response is also suggested by formalizing links between Quitline and health/ counselling services via a formal referral system, as opposed to generic marketing publicity.

Some study limitations are noted. These limitations generate opportunities for future research. For instance, affections and feelings are useful future areas of study. These factors may indirectly influence intentions and actions, independent to other predictors in the Theory of Planned Behaviour. Also, the demographic composition for this research was only based on participants in metropolitan Victoria, Australia Thus, it is difficult to generalize findings to a national young smoker population as the young smokers in other regions and countries may hold different attitudes and be influenced by different factors.

Declaration of Authenticity

I, CHEE HOW LIAU, declare that the DBA thesis entitled 'Consumer Behaviour: Efficacy of Anti-Smoking Initiatives on Continuance by Young Adults in Australia' is no more than 65,000 words including quotes and exclusive of tables, figures, appendices, bibliography, 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 indicate, this thesis is my own work.

I have conducted my research in alignment with the Australian Code for the Responsible Conduct of Research and Victoria University's Higher Degree by Research Policy and Procedures. All research procedures reported in the thesis were approved by the Victoria University Human Research HRE 19-183.

Date:

6th June 2022

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Liau, CH, White, L, Thomas, K & Tan, ST 2018, 'A Proposed Study in Determining Young Adult Smokers' Responses Towards Anti-Smoking Initiatives in Australia', *Asian Social Science*, vol. 14, no. 10, pp. 91-101.

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Finally, my genuine gratitude goes to the scholarship assistance provided by the Australian Government (under the Research Training Program) and Victoria University. Without the funding support, I would not have the opportunity to pursue my doctoral degree.

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List of Abbreviations

ABS	Australian Bureau of Statistics
ACT	Acceptance-and- Commitment Therapy
ATHRA	Australian Tobacco Harm Reduction Association
CBT	Cognitive-Behavioural Therapy
CES-D	Centre for Epidemiologic Studies Depression Scale
COAG	Council of Australian Government
DLS	Dorsolateral Striatum
FCTC	Framework Convention on Tobacco Control
FED	Federal Excise Duty
GDP	Gross Domestic Product
GP	General Practitioner
INTA	International Trademark Association
MCDS	Ministerial Council on Drug Strategy
MI	Motivational Interviewing
OECD	Organisation for Economic Co-operation and Development
SHS	Second-hand Smoke
SEM	Structural Equation Modelling
SPSS	Social Package for the Social Science
THS	Thirdhand Smoke
TPB	Theory of Planned Behaviour
WHO	World Health Organization
WTO	World Trade Organization

Chapter 1: Introduction

1.1 Background

In the beginning of the 17th Century, tobacco smoking spread all over the world and became popular in many countries. Tobacco was being consumed in various forms such as pipe tobacco, bidis (mini cigars) and cigars. Other forms such as dry and wet snuff, chewing tobacco and rub - known as smokeless tobacco - became popular in the 19th Century (Courtwright 2002). Some countries such as Norway, Sweden, Bangladesh and India continue to have high levels of consumption of smokeless tobacco, but most people now smoke manufactured or commercial cigarettes (Giovino et al. 2012). In total, there are approximately one billion adult smokers continuing to smoke worldwide. However, global daily smoking rates (flammable and smokeless tobacco) have reduced since 1980 (Ng et al. 2014).

1.2 Smoking Prevalence in Australia

The Australian smoking rate is generally consistent with global patterns. Overall, Australia's smoking prevalence diminishes with increasing age (Ferguson & Phau 2013). Young adult smokers (defined between 18-30 years old by the United Nations) that develop nicotine dependence by young adulthood are most likely to become long-term and heavy smokers who are less likely to quit (Ashok & Michael 2014; de Meyrick 2010; Nordstrom et al. 2000; Owen et al. 2018). Table 1.1 highlights those Australian young adults smoke in greater numbers than older age groups. On average, Australian smoking prevalence fell from 34.5% in 1995 to 16.3% in 2013. However, recent reports revealed that the number of smokers has increased by 21,000 to 2.4 million and has remained at that level (Mendelsohn & Kosterich 2018) despite the rigorous implementation of anti-smoking initiatives since 2013 (Creighton 2017). Furthermore, the number of young adults that continue smoking has remained relatively stable (Colin 2018; Gough et al. 2009). According to Pandeya et al. (2015), 18% of young male and female adults smoke regularly in Australia.

Table 1.1 Percentage of Regular* Smokers† from 1995 to 2013, by Age Group—Ages 18–24, 25–29, 30-39, 40-59 and 60+

Age group	18-24	25-29	30-39	40-59	60+
1995	35	37	32	25	13
1998	37	36	29	26	15
2001	27	30	28	22	11
2004	23	29	25	22	9
2007	19	28	23	21	10
2010	19	22	20	20	10
2013	15	18	16	17	10

* Includes those reporting that they smoke 'daily' or 'at least weekly'.

† Includes persons smoking any combination of cigarettes, pipes or cigars.

Sources: Tobacco in Australia, Facts and Issues 2012

1.3 Smoking and Health

Tobacco smoking is a preventable cause of ill health, disability, and death. Tobacco smoking causes approximately six million deaths worldwide each year (Darville & Hahn 2014). Studies (Richard et al. 2004; Sakata et al. 2012) indicate that continuous and heavy smokers shorten their life expectancy by at least 9 to 10 years. An ongoing smoking habit drains approximately a decade of quality-adjusted life years for a young adult smoker (Pirie et al. 2013).

In Australia tobacco smoking is estimated to directly contribute to approximately 19,000 deaths annually (Gravely, Craig, et al. 2021a; Siahpush & Carlin 2006; Vaneckova et al. 2021). Australian tobacco related illnesses were accountable for 142,525 hospital episodes and potentially caused 184,579 lives lost every year (Ridolfo & Stevenson 2001). Smoking remains prevalent and stable at 3.3 million people (Ferguson & Phau 2013; Thurber et al. 2021). Further to having higher smoking rates compared to older age groups (Mannan et al. 2016), young adults are also reported to be one of the highest nicotine dependent groups (Darville & Hahn 2014). According to Nordstrom et al. (2000) , young adult smokers are most likely to become long-term and heavy smokers and have the least intention to quit smoking.

When young adult smokers continue to smoke, they face a higher risk of developing lung diseases, asthma, shortness of breath, coughing, DNA damage, inflammation, stress and diminishing health compared to non-smokers (Gough et al. 2009). According to widespread medical consensus, the extended 1988 US Surgeon General's report (Novello 1990) confirms that the adverse effects of smoking-related morbidity and mortality are caused by over 5000 different hazardous chemical compounds, among which are at least 69 human carcinogens.

The harm of ongoing smoking has been widely reported over many years (Daube et al. 2015; Hill 1999; Hoek et al. 2018; Moodie, Daube & Carnell 2009; Tyrrell 1998). Young adult smokers overall recognise and understand that ongoing smoking has serious negative health repercussions (Novello 1990; Roditis, Lee & Halpern-Felsher 2016; Straub et al. 2003). And yet, many continue with this habit. It remains unclear why they do so while aware of these negative health consequences of their habit.

Quitting smoking can potentially reduce health risks for young adults (Filia et al. 2014). The benefits of stopping smoking have been well documented (Ezzati & Lopez 2003; Hill & Carroll 2003; Lupton 1995b; Novello 1990; Pandeya et al. 2015). For example, smokers that quit before their mid-thirties gain greater health benefits in term of extra life years than those that quit after this time. The occurrence of risky cardiovascular events also reduces when one quits smoking, and the risk of life-threatening cardiovascular diseases vanishes in the first five years of tobacco abstinence. The risk of chronic bronchitis is also reduced within months. According to several studies (Lee, Fry & Hamling 2012; Ostroumova, Kopchjonov & Guseva 2018), the overall well-being and health of ex-smokers improves to a state close to that of those who have never smoked within five years of quitting. For cancer patients whose conditions were attributed to smoking, Hurley and Matthews (2007) reported that they achieved similar health conditions to those who had never smoked within a decade of tobacco abstinence. Ceasing smoking also improves the speed of cancer diagnosis and survival rates, while recent studies (Almadana Pacheco et al. 2017; Carter 2014) also reported that mental disorder patients recover faster from mental illness and ex-smokers showed lower levels of anxiety, depression and improved quality of life compared to those who continue smoking.

1.4 Smoking and the Economy

In some settings such as Russia, beginning in 1596 when the first Russian Romanov Tsar Michael banned the use of tobacco because he viewed smoking as a deadly sin, the practice has been punished with measures as stern as the death penalty (Borio 2010). In the 17th Century, the Roman Catholic Church considered the use of tobacco an abusive behaviour that conflicted with the Fifth Commandment (Siemińska et al. 2004). In the same period, Anglo-American culture viewed smoking as a sinful act and tobacco producers as sinners (Earl 2005). However, with Alexander Hamilton (the first US Secretary of the Treasury) proposing excise taxes on tobacco in 1794, tobacco smoking started to be viewed as an easy way to collect taxes (Raysor 2008). This shift helped reframe tobacco smoking as an acceptable act that should not be forbidden.

As tobacco smoking started being seen as an avenue of tax revenue in most countries (Aloys 2009; Chaloupka et al. 2002), tobacco products such as cigarettes, pipe tobacco, cigars and so on started being legitimised through economic arguments. Some of the arguments included that cigarette taxes were a relatively efficient way to generate government revenue and that thus, cigarette taxes could help sustain countries' long-term economic strength. For instance, an increase of 10% tax on cigarette would yield a nearly 7% of cigarette tax revenue (Mills 2018). Cigarette tax is also used to reduce healthcare costs; tax revenue gained through cigarette sales is channelled to public health services services (Ratajczak et al. 2020; Winstanley, Woodward & Walker 1995).. A 10% increase in the cost of cigarettes would reduce the incidence of smoking among pregnant women by at least 7% and reduce rates of cancer, strokes, heart diseases, improve quality of life, and improve national productivity (Mills 2018). In some African countries, tobacco taxation is in favour to enhance economic growth both in the short- and long-run periods, especially, through its effect on population health (Immurana et al. 2021).

In Australia, Collins and Lapsley (2002) reported that Australia recorded an approximate $21 million economic loss from smoking related illnesses in the 1998/99 financial year and that 45% of those costs could have been avoided. A more recent study indicated that absenteeism among Australian workers due to smoking related illness has cost about $388 million in total financial loss based on gross domestic product (GDP) generated per worker in 2016 (Owen et al. 2018).

1.5 Efficacy of Anti-Smoking Initiatives in Australia

For the past 30 years, anti-smoking initiatives have been implemented with the goal to reduce the pervasiveness of smoking. In most cases, negative attitude towards smoking have increased and messages urging individuals to stop smoking have achieved greater numbers of people (Brennan et al. 2011; Cooper et al. 2010; Germain et al. 2012; Moodie, Daube & Carnell 2009). Nevertheless, the number of young adults smoking has remained relatively stable (Ferguson & Phau 2013; Gough et al. 2009).

In the present study, the issue under scrutiny is the slow reduction in smoking among young adults (Ferguson & Phau 2013; Mathews, Hall & Gartner 2010; Nordstrom et al. 2000; Patton et al. 2006; Tuli et al. 2012), since the prevalence of this habit among this group remains high (Ferguson & Phau 2013; Moodie, Daube & Carnell 2009; Van De Ven et al. 2010). In addition, recent studies (Ashok & Michael 2014; Creighton 2017; Mendelsohn & Kosterich 2018) suggest that the effectiveness of anti-smoking initiatives has been lower

than initially hoped for. In fact, the number of smokers in Australia has increased by 21,000 to 2.4 million and remains at stubbornly high levels despite the rigorous implementation of anti-smoking initiatives since 2013 (Ashok & Michael 2014; Colin 2018; Creighton 2017). Further evidence shedding light on this phenomenon may lie in the findings of Hoek et al. (2018), who found that young smokers in Australia (in this case aged 18 to 24) prefer the latest innovative flavour capsule cigarettes, which release shots of flavour such as menthol, clove, vanilla, fruit, whisky, rum and coffee when squeezed between the index finger and thumb. These flavour capsule cigarettes are perceived to be less harmful, 'cleaner', and less harsh in taste compared to standard cigarettes (Emond et al. 2018; Thrasher et al. 2016).

The expectation that anti-smoking initiatives reduce smoking rates or at least lead to a stepped-decline does not bear out in evidence and does not align to the theory of 'Rational Addiction' (Becker & Murphy 1988). According to this theory, even individuals who are dependent on addictive products such as cigarette can be forward-looking and utilise accessible information to contrast future advantages and present unfavourable conditions. In other words, cigarette smoking can be quit 'cold turkey' or suddenly when the future benefits of quitting smoking - such as saving money and better health - outweigh the present discounted utility of smoking, such as socialising, looking youthful and 'cool'. In the lens of young adult smokers, the benefits of stopping smoking are distant, and the cost of quitting at the present value is high (Sloan & Wang 2008). Therefore, young adult smokers that continue to smoke due to insufficiently effective anti-smoking initiatives (Liau et al. 2018). Ideally, each anti-smoking intervention ought to break the chain of marginal utility and lead to sharp or at least step-declined smoking prevalence (Keeler & Marciniak 1999; Lupton 1995b; Tuli et al. 2012). Diverse studies (Cooper et al. 2010; Wakefield et al. 2015; White, Tan, et al. 2003) report that young adults recognise and understand that continuous smoking is costly and bad for health.

And yet this smoking habit continues, raising another critical research question: what are the attitudes of young adult smokers towards anti-smoking initiatives in Australia?

Further evidence supporting the slowed reduction of smoking prevalence lie in the book *Australia: The Healthiest Country by 2020* (Moodie, Daube & Carnell 2009), propounding that smoking rates in Australia will still be around 14% by 2020 if the reduction rates were to decline at the same rates as they did between 1998-2007 (3-4%). This could potentially hinder Australia's capacity to achieve the goal of 10% in smoking prevalence before 2020, as set out in the National Tobacco Strategy.

1.6 Australian Smoking Rates

After many years of slow but steady reduction in smoking rates, the 2017-18 National Health Survey revealed that the smoking rates in Australia have stagnated for the first time in decades (Claydon, Webber & Sweeney 2017; Martin, Bowden & Miller 2018; Mendelsohn & Kosterich 2018; Queensland 2016). Released by the Australian Bureau of Statistics (ABS), Figure 1.1 showed 13.8% of Australian adults smoked in 2017-18, compared to 14.5% in 2014-15. According to the ABS, the daily smoking rate in 2018 was 13.8%, well above the target of 10% daily adult smoking rate by 2018 set by the Council of Australian Governments (COAG) in 2008 (Claydon, Webber & Sweeney 2017; Mendelsohn & Kosterich 2018; Moodie, Daube & Carnell 2009). The national smoking rate targets have not been achieved.

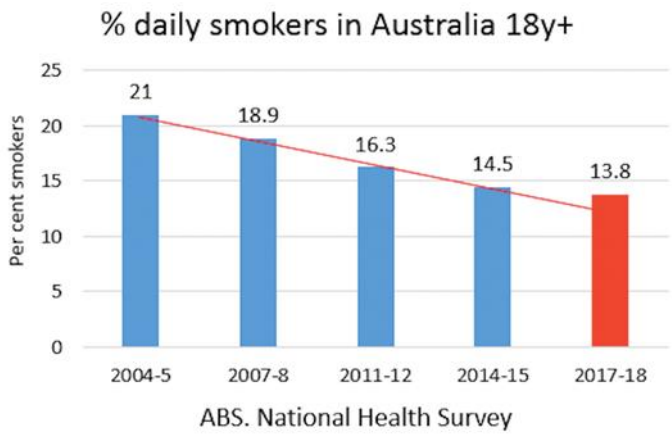


Figure 1.1 Percentage Daily Smokers in Australia 2004 -2018
Source: Australian Bureau of Statistics. National Health Survey: First Results, 2017-18. ABS (2018b)

The Australian Tobacco Harm Reduction Association (ATHRA) provides further evidence that 2017-18 smoking rates have remained similar to those in 2014-15. Conversely, other countries' daily smoking rates, e.g. the US, recorded steep declines between 2013 and 2017 (Williford, Zablotsky & Zelaya 2019). Data collected from ATHRA showed that Australia's reduction in yearly smoking rates has nearly stagented at 0.2% between 2013 and 2016 (Claydon, Webber & Sweeney 2017; Martin, Bowden & Miller 2018). This is despite rigorous anti-smoking initiatives implementation since 2013. Figure 1.2 shows the smoking percentage decline in Australia between 2013 to 2016; Australia fell behind Iceland, Norway, USA, the United Kingdom, Canada and New Zealand (ONS 2018; Wang et al. 2018).

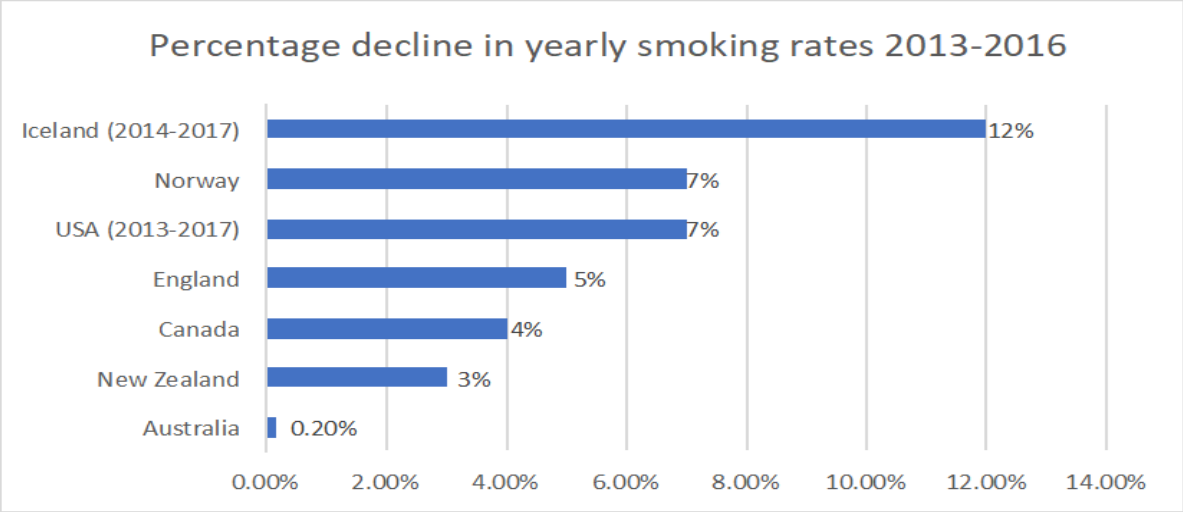


Figure 1.2 Percentage Decline in Yearly Smoking Rate 2013-2016

Sources: Iceland: Directorate of Health (Islands 2017)
Norway: *Statistics Norway/ The Norwegian Directorate of Health (Norway 2018)*
USA: *National Health Interview Survey (Blackwell & Villarroel 2018)*
England: *Annual Population Survey. Office of National Statistics (ONS 2018)*
Canada: *Canadian Community Health Survey 2001-2016 (Bruce 2016)*
New Zealand: *Ministry of Health. New Zealand Health Survey(Came et al. 2016)*
Australia: *AIHW. National Drug Strategy Household Survey 2013, 2016 (AIHW 2017)*

Similarly, the Australian national and state surveys conducted by the ABS revealed that the number of smokers in Australia has increased by 21,000 to 2.4 million and have remained steady since 2013 (Colin 2018; Creighton 2017). Table 1.2 shows the prevalence of regular smoking among Australian men and women aged 18+ by state and territory in 2019. Some states such as New South Wales, South Australia and Western Australia have even indicated rising trends in daily smoking rates. Figures 1.3, 1.4 and 1.5 illustrate the respective spikes of smoking rates between 2011 and 2018 (Martin, Bowden & Miller 2018; Merema & Radomiljac 2018; NSW Health Stats 2018).

Table 1.2 Daily Smoking Prevalence by States/Territories

States/ territories	**Men**	**Women**	**Persons**
New South Wales	12.2	10.7	11.4
South Australia	15.2	11.8	13.5
Victoria	14.0	10.3	12.1
Queensland	17.3	14.1	15.7
Western Australia	16.2	12.1	14.1
Tasmania	13.4	15.2	14.3
Northern Territory	19.8	14.7	17.3
Australian Capital Territory	8.8	9.2	9.0

Source: Centre for Behavioural Research in Cancer analysis of National Drug Strategy Household Survey data 2019.

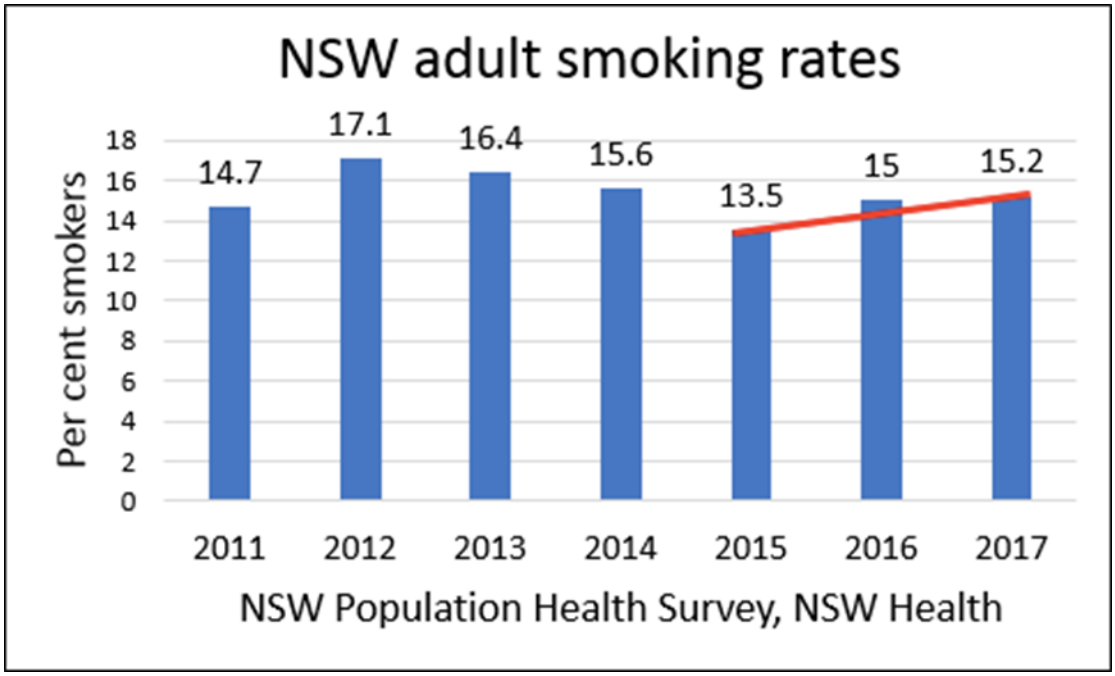


Figure 1.3 New South Wales Adult Smoking Rate 2011-2017
Source: *NSW Adult Population Health Survey. Health Stats NSW(NSW Health Stats 2018)*

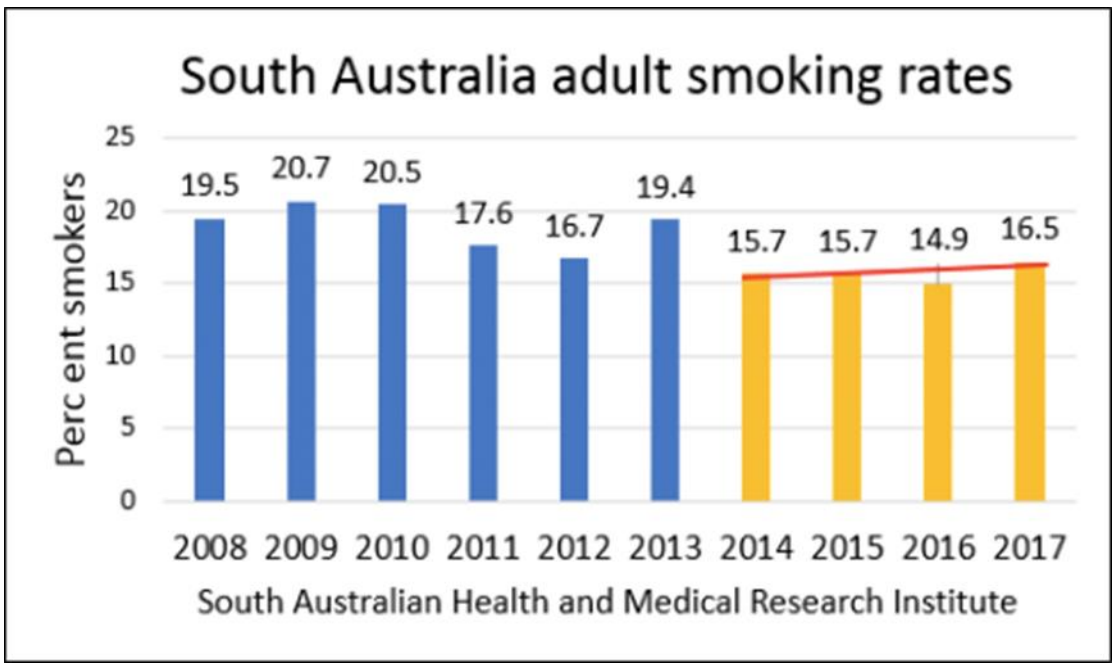


Figure 1.4 South Australia adult smoking rate 2008-2017
Source: South Australian Health and Medical Research Institute (SAHMRI)(Martin, Bowden & Miller 2018)

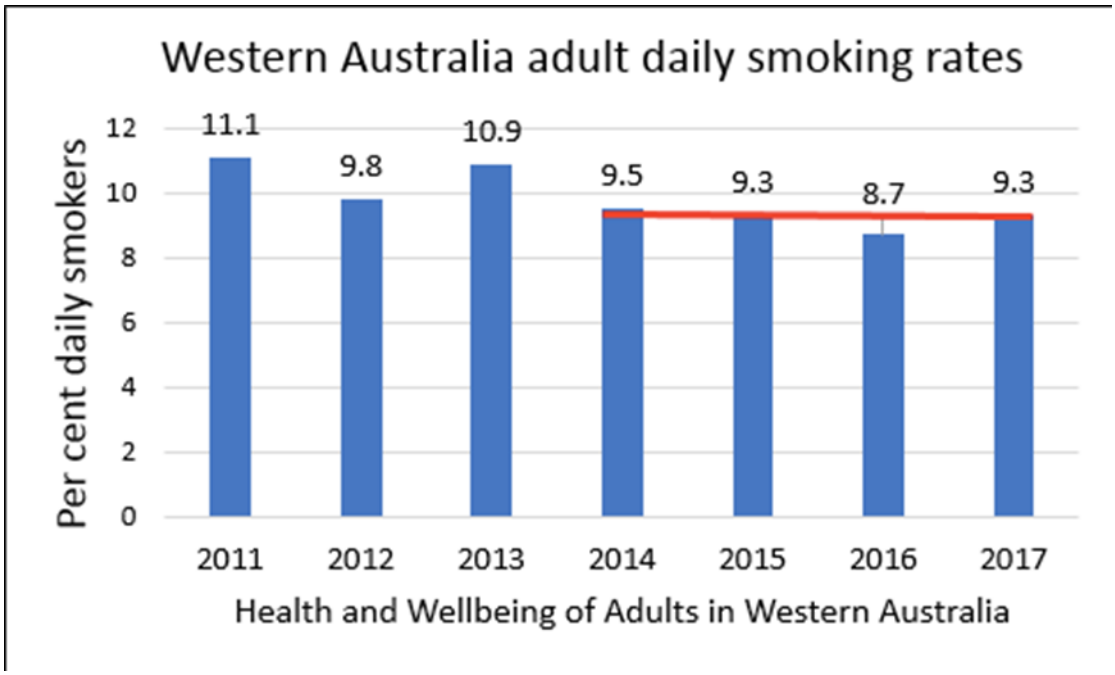


Figure 1.5 Western Australia Adult Daily Smoking Rate 2011-2017
Source: *Health and wellbeing of adults in Western Australia 2017(Merema & Radomiljac 2018)*

1.7 Attitude of Young Adults in Tobacco Smoking

Given the impact of cigarette smoking, considerable effort has been directed at tobacco control, including both prevention and anti-smoking programmes. Moreover, these tobacco control programmes often include messages designed to change attitudes toward smoking to deter young adults from continuance to smoke or to influence young adults to attempt smoking cessation (Ackermann & Mathieu 2015; Lee et al. 2017).

Attitudes have long been considered to be central in predicting tobacco-smoking behavior (Ajzen & Fishbein 1977; Allport, Clark & Pettigrew 1954; Fazio & Petty 2008). According to Fazio et al. (1982) an attitude is an association in memory between an object and an evaluation where the associations may vary in strength, and therefore, in accessibility. In term of cigarette smoking, the more accessible of an attitude is in memory (e.g. cigarette smoking), the more likely it is that the individual considers the attitude object (e.g. cigarette) evaluatively when the individual encounters it (Fazio et al. 1982). The definition in fact lies within spreading-activation theory (Anderson & Pirolli 1984) which underpins a model of memory as an associative network of nodes that are representing concepts and interconnected by links where the activation of one node spreading to other nodes to which it is connected (Fazio et al. 1986). A process is said to be automatic when it does not require any effort, and is initiated spontaneously, without the individual being able to avoid it when exposed to the appropriate stimuli. Based on these characteristics of automatic processes, an

evaluation can be automatically activated upon mere exposure to the attitude object, as long as it is strongly associated in memory with this object (Fazio et al. 1986).

Implicit Attitude

Implicit attitude refers to fast, parallel, effortless, and uncontrolled processes (Jiang & Ling 2011, 2013; Sepe, Ling & Glantz 2002). Implicit attitudes are also less susceptible to socially-desirable responding, which is common in stigmatised behaviors such as tobacco smoking (Gilpin, White & Pierce 2005; Jiang, Lee & Ling 2014). More importantly, tobacco smoking is an addictive behavior, which is thought to be particularly influenced by automatic processes (Hendlin, Anderson & Glantz 2010; Katz & Lavack 2002).

Besides, implicit attitude has been related to motivation to smoke (Payne, McClernon & Dobbins 2007), craving (Mogg et al. 2003), and tobacco dependence (Waters et al. 2007). Two previous studies have tested whether implicit attitude actually prospectively predict smoking behavior. Among a sample of young adult nonsmokers, implicit attitude toward smoking prospectively predicted smoking onset and parental smoking (Sherman et al. 2009). Kahler et al. (2007) found that initial negative associations to the social consequences of smoking among young adult smokers receiving a cessation intervention predicted seven day abstinence and eight weeks after the quit date. Kahler et al.'s findings are an important demonstration that implicit attitude can prospectively predict smoking cessation. However, because most smokers do not receive treatment in the study, the findings may not generalise to community samples, or to long-term cessation outcomes.

In the tobacco intervention context, some researchers have suggested that interventions to change these automatic evaluative associations may be useful in anti-smoking initiatives (Wiers & Stacy 2006). A few studies have observed changes in implicit attitude due to counter attitudinal messages such as anti-smoking television advertisements (Czyzewska & Ginsburg 2007), anti-smoking public service announcements (Rydell et al. 2012), warning labels of cigarette packages (Macy et al. 2016), and approach-avoidance practice interventions (Macy et al. 2015). However, the continuance of smoking in implicit attitude following anti-smoking initiatives have not been investigated.

In the context of tobacco control in Australia, aaccording to the National Tobacco Strategy (Moodie, Daube & Carnell 2009), the anti-smoking campaigns of Victoria is funded by the Victorian government and not the tobacco corporations. For example, in mid-February 2006, the Australian Government committed $25 million over four years to discourage smoking behaviour in young adults. This included deployment of mass media anti-smoking advertisements to inform people about the negative health impacts of smoking. In addition,

the tobacco corporations from tobacco production countries such as Ukraine, Honduras, Dominican Republic, Cuba and Indonesia have lost in the WTO lawsuit by suing the Australia government on infringing the trademark rights of tobacco companies (Newswire 2018). Thus, this shows that the tobacco corporations are not behind the anti-smoking campaigns in Australia. In addition, Australia spent nearly twice as much on tobacco control per capita as countries compared to other Organisation for Economic Co-operation and Development (OECD) countries such as the US and Canada (see Table 1.3), despite the fact that Canada has a higher population than Australia. Similarly, the US spent less on tobacco control expenditure than Australia. Ironically, Canada and the US both recorded lower and almost identical levels of smoking prevalence compared to Australia (Wipfli 2012). This is evidenced by the data presented in Figure 1.6, which compare's Australia's smoking rate of 15.6% in 2016 to that of the US (14%) and UK (15.1%).

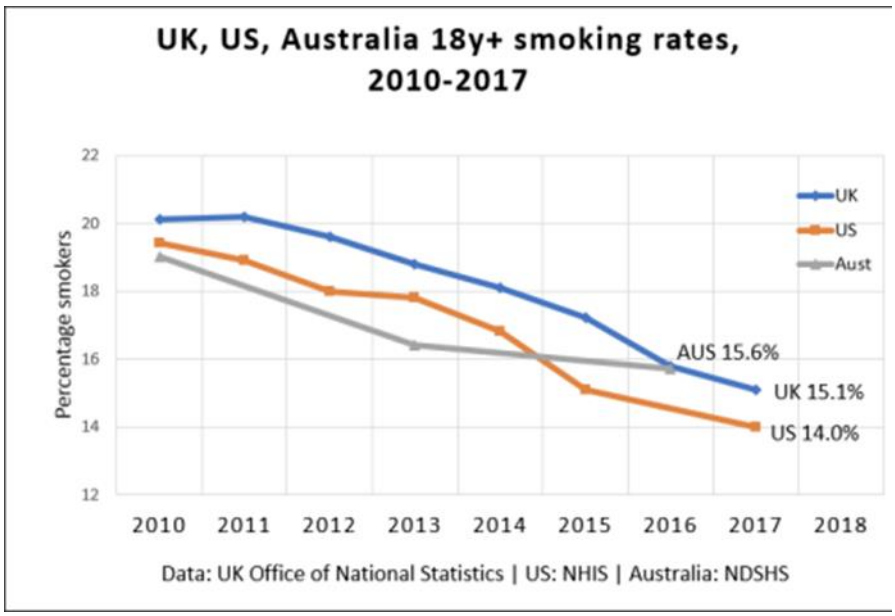


Figure 1.6 UK, US, Australia 18 Years and Above Smoking Rates 2010-2017
Sources:
UK: *Annual Population Survey. Office of National Statistics (ONS 2018)*
USA: *National Health Interview Survey (Blackwell & Villarroel 2018)*
Australia: *AIHW. National Drug Strategy Household Survey 2013, 2016 (AIHW 2017)*

1.8 Implicit Attitude in Consumer Behaviour

In marketing, the cognitive approach, which assumes that the consumer is an individual taking decisions consciously, carefully and analytically, has long been the dominant paradigm (Olshavsky & Granbois 1979). However, the paradigm of the rational consumer has, have been criticised since the 1960s, as it became clear that consumer behavior was not

the result of an entirely rational cognitive process (Maison, Greenwald & Bruin 2001), particularly to stigmatised behaviors such as tobacco smoking (Jiang, Lee & Ling 2014; Wiers et al. 2004).

While the emotions and subjectivity are central to the marketing models developed by affective and experiential approaches (Holbrook & Hirschman 1982), the implicit attitude cognitive approach, centred on the taking into account of non-conscious and automatic processes, is still little used for the study of consumer behavior (Bargh 2002; Brunel, Tietje & Greenwald 2004; Perkins et al. 2008). Nevertheless, research in social psychology on implicit attitude measures, especially the IAT (Implicit Association Test by Greenwald, McGhee and Schwartz (1998), is arousing increasing interest (Dimofte 2010). IAT is a measure that can capture the 'true' response of consumers in a context where behavior is often influenced by automatic processes (Dimofte 2010).

1.9 Implicit Attitude and Issues in Marketing

The initial research conducted between 2001 and 2004 established the validity of the implicit attitude for the study of consumer behavior, and thereby drew the attention of marketing researchers to this new field of research. Consequently, many researchers have used the implicit attitude to support previous studies focused on explicit attitude (a response based on conscious judgment and can be measured by direct self-report) by taking into account implicit attitude in the study of consumer behavior or to reveal non-conscious cognitive processes that cannot, as a result, be captured by explicit measures. The implicit attitude study focuses on a number of major marketing questions, including the impact of persuasion and conditioning on attitude change (Dimofte & Yalch 2007; Gibson 2008; Horcajo, Briñol & Petty 2010), promotional action (Naylor, Raghunathan & Ramanathan 2006), prediction of consumer behavior (Ackermann & Palmer 2014; Gibson 2008; Maison, Greenwald & Bruin 2001), and brand management (Dimofte & Yalch 2011; Maison, Greenwald & Bruin 2004).

The Impact of Persuasion and Conditioning on Attitude Change

Research on advertising persuasion models has shown that persuasive messages have an impact on change in explicit attitude. Horcajo, Briñol and Petty (2010) showed that a traditional persuasive message with regard to a social object can also have an impact on the implicit attitude towards the same object. They then showed that a persuasive message in favor of an attitude object (the color green, in their study) can also change implicit attitude towards other social objects related to this same object (Salem cigarette, in their study).

These results suggest that exposure to a persuasive message can lead to a change in implicit attitude through a process of spreading activation of associations stored in memory activated by reading the message. Similarly, in the area of anti-smoking advertising persuasion, the implicit attitude has been able to tap non-conscious cognitive processes, which cannot be captured by explicit measures.

Implicit Attitude and Promotional Actions

Research on promotional actions has also shown that they influence purchase behavior in accordance with a conscious cognitive process. Naylor, Raghunathan and Ramanathan (2006) showed that the impact of promotions on consumers also operates automatically and unconsciously. Using the implicit attitude measure, they showed that exposure to promotional activities (tobacco product, in the study) generates a positive implicit attitude.

Implicit Attitude and the Prediction of Consumption Behaviour

The predictive validity of the implicit attitude in the field of consumption behavior has been widely demonstrated (Maison, Greenwald & Bruin 2001; Wanke et al. 2002). However, Petty, Fazio and Briñol (2008) shows that implicit measures, although positively correlated with self-reported behaviors in the area of consumption choices (r=0.323), are significantly less effective than explicit measures (r=0.546). A dual implicit and explicit measure of attitude in the area of consumer behavior nevertheless has the major advantage of strengthening the predictive nature of the explicit attitude (Ackermann & Palmer 2014; Gibson 2008). On the other hand, Ackermann and Mathieu (2015) showed that explicit attitude is significantly more effective in predicting usage intent and purchase intent with regard to a new product when it has the same valence as implicit attitude than when it does not. However, Greenwald and Nosek (2008) and Nosek (2005) proposed that dissociation between the implicit measure and the explicit measure may reflect an internal conflict that results in behavior that is more difficult to predict using only explicit measures.

Branding and Implicit Attitude

In the field of brand management, the implicit attitude has been used for its ability to capture memory associations inaccessible to introspection and non-conscious cognitive processes, which cannot be identified by explicit measures. Thus the implicit attitude was able to reveal a brand attachment not identified by explicit measures (Maison, Greenwald & Bruin 2004).

For example, the capacity to differentiate between Coca- Cola and Pepsi-Cola in a blind test (indicated by more developed preference) had an impact on implicit attitude but had no effect on self-reported attitude.

Dimofte and Yalch (2011) showed that an association between two objects not connected by a logical link could be triggered simply by presenting one of these objects, and could influence people's evaluation of them, at both an explicit and implicit level. This association can have an impact on attitudes and choices regarding the brand, without the consumer being aware of it (Dimofte & Yalch 2011).

Implicit Attitude and the Theory of Planned Behaviour (TPB)

Past researchers Jaccard and Blanton (2007) have criticised the manner on the incremental validity of implicit attitude measures. The problem is that researchers have failed to take into consideration that the attitude–behavior relationship in classic models is analysed by other fundamental theoretical constructs in addition to attitudes.

Briefly, behavior is explained by the behavioral intention (e.g. disposition to carry out the behavior) and the perceived behavioral control (e.g. perception of internal and external factors capable of providing control over the behavior). At the same time the intention is affected by the attitude (e.g. favorable or unfavorable evaluation toward the behavior), the subjective norm (e.g. perceived social pressure to carry out the behavior) and the perceived behavioral control. It is indeed the case that research that provides evidence of the incremental validity of implicit attitude measures seldom integrates these important theoretical concepts.

Some studies have evaluated health behaviors by integrating implicit attitude and TPB measures. Millar (2011), in a study on dental flossing behavior, found that implicit attitudes increased the predictive power of the TPB. Warfel (2013) studied attitudes toward blood donation and found very low to non-existent correlations between TPB and implicit attitude. In this particular case, the implicit attitude measure did not show incremental validity over the explicit attitudes.

In conclusion, implicit attitude is an exciting field of research because it provides concepts and tools that can not only distinguish what people think they have in mind from what they really have in mind, but also can capture how human behavior can be influenced by memory constructs and cognitive processes of which people are not aware. In practical, use of the implicit attitude is appropriate to enhance the robustness of marketing strategies, particularly with regard to anti-smoking industry through its capacity to strengthen the predictive nature

of tobacco consumption (Ackermann & Palmer 2014). Another interesting practical consideration is the potential use of implicit attitude measures in the education of anti-smoking in young adults. For example, the implicit attitude of non-smokers could be used to provide reflection and feedback to smokers on their attitudes toward smoking. This feedback could help them learn about their attitudes (which they may be unaware of), and eventually suggest the need for changes. The potential association between changes in implicit attitudes and smoking behavior is important because implicit attitude is only valuable as a treatment target if changes in implicit attitudes contribute to changes in behavior. Nevertheless, there are limited studies in analysing this potential use of the implicit attitude particular on resilient young smokers and thus it would be interesting to advance this line of inquiry.

1.10 Problem Statement

Several changes have been seen in global cigarette usage over the past century. In 1920, there were 300 billion cigarettes sold in the world. In 2009, the number peaked at 5.9 trillion cigarettes sold worldwide, an increase of 20 times. Over ten years ago, the world's cigarette consumption began to decline (Warner 2022). Currently, smoking cigarettes results in the deaths of about 8 million people annually, which is shockingly responsible for 14% of smokers' fatalities (Warner 2022). There is also evidence that smoking causes sickness and mortality at different rates across societies. Low-and middle-income countries account for a large majority of deaths and this percentage is increasing (Noosorn, Manoton & Robin 2021). For many governments, supporting smokers to stop is a top priority because quitting is vital to health and lowers health care costs (Dono et al. 2022). In order to reduce smoking prevalence, one of the main strategies is to provide support for quitting (WHO 2019). Although nearly 50% of smokers said they were considering quitting because of the pandemic, changes in smoking status were minimal, according to a cross-sectional research study conducted in Australia, Canada, England, and the United States: only 1.1% reported trying to quit, 14.2% reported cutting back, 14.6% reported continuing their smoking, and 70.2% reported no change (Gravely, Craig, et al. 2021b).

Various efforts have been made to address this need over the past 20 years, including government regulation and commercialisation of smoking cessation products (Massil 2021). In Australia, there are few culturally and linguistically appropriate smoking cessation programs (FitzGerald, Poureslami & Shum 2015; Liu et al. 2013). Community-based cessation initiatives that specifically target the demographic and have proven success, such as the Quitline, typically reach a smaller audience (Tsoh et al. 2015; Zhu et al. 2012). Nevertheless, the utilisation of the Quitline service is low (1.3%) among the multilingual

smokers such as the Chinese, Korean and Vietnamese (Chen et al. 2021). The population impact of the cessation programme has been constrained by this restricted reach.

Base on the stagnating and incremental smoking trends in Australia, it appears that anti-smoking initiatives have limited effect (Lupton 1995a) upon certain populations. Therefore, there is a need to examine the attitudes of young adult smokers' in order to explain continuance of behaviour despite anti-smoking initiatives. Over a century, yearly increases in global cigarette usage were seen. The world consumed 300 billion cigarettes in 1920, one hundred years ago. The number of cigarettes sold worldwide peaked in 2009 at 5.9 trillion, a 20-fold increase. Just over ten years ago, the world's consumption started to decline (Warner, 2022). Currently, smoking cigarettes results in the deaths of about 8 million people annually (Source: The Lancet. the cost of tobacco globally. https://www.thelancet.com/ infographics/tobacco), which is shockingly responsible for 14% of fatalities overall (Warner, 2022). Additionally, smoking causes sickness and mortality in different societies and at different rates. The majority of deaths worldwide, by a significant margin and increasing, take place in low- and middle-income nations (Noosorn eta., 2022). Supporting smokers to stop is a top goal for many governments because quitting is crucial for health and lowering the strain on the healthcare system (Dono et al., 2022). One of the main global strategies for lowering smoking prevalence is to provide support for quitting (WHO, 2019). Although nearly 50% of smokers said they were considering quitting because of the pandemic, changes in smoking status were minimal, according to a cross-sectional research study conducted in Australia, Canada, England, and the United States: only 1.1% reported trying to quit, 14.2% reported cutting back, 14.6% reported upping their smoking, and 70.2% reported no change (Gravely et al., 2021).

In the past 20 years, a number of attempts to address this need have started, including government regulation and the commercialization of cessation products (Massil, 2021). In Australia, there are few smoking cessation programmes for smokers that are culturally and linguistically suitable (FitzGerald et al., 2015; Liu et al., 2013). Furthermore, community-based cessation initiatives (Tsoh et al., 2015) and programmes that specifically target the demographic and have a track record of success, such the Asian Smokers' Quitline (Zhu et al., 2012), frequently have a smaller audience. With an estimated 2010 Chinese, Korean, and Vietnamese-speaking smokers using the Asian Smokers' Quitline annually, utilisation of the service is low (1.3%). (Chen et al., 2021). The population impact of the cessation programme has been constrained by this restricted reach. The government's efforts to assess its policies and examine them are not yet the subject of published statistics. For resource allocation and

the creation of policies and interventions that best support smokers in their attempts to quit, trends in the quit attempt strategies of smokers must be identified (Dono et al., 2022; Massil, 2021; Smith, 2020).

In addition, it is also arguable that Australia's level of expenditure on tobacco smoking cessation interventions may be of limited impact considering the currently low rate of decline in tobacco smoking. It is fair to assume that the effort to discourage smoking through anti-smoking initiatives may not have borne fruit among young adults. Given that such initiatives are supposed to reduce ongoing smoking, it was hoped that the prevalence of smoking would reduce fairly sharply or at least step-decline (Becker & Murphy 1988; Keeler & Marciniak 1999; Tuli et al. 2012) through significant health behavioural change among young smokers in different intervention stages. However, the gap between the effectiveness of smoking cessation interventions and their result is apparent (Table 1.3). This leads to a critical research question: do anti-smoking initiatives in Victoria, Australia effectively discourage young adult smokers from continuing to smoke?

Therefore, the following three research questions are proposed:

1. Why do young adult smokers continue with their smoking habit despite the negative health consequences?

2. What are the attitudes of young adult smokers towards anti-smoking initiatives in Australia?

3. Do anti-smoking initiatives in Victoria, Australia effectively discourage young adult smokers from their smoking habit?

Table 1.3 OECD Tobacco Control Expenditure Ranking 2012

OECD Countries	Tobacco Control Expenditure Per Capita (Per Person) (US$)	Ranking	Tobacco Control Expenditure (Dec 2012)*** (US$)	Country Population (million)***	Current Tobacco Smoking Rate (%) ***	Ranking	Cigarette Consumption Per Capita (Cigarette Per Person)**	Ranking
New Zealand	1838.2	1	44,565,612	4,461	18.4	3	579	2
Norway	820.9	2	14,542,329	4,960	28	13	534	1
Australia	512.15	3	65,210,642	22,919	18	2	1,034	10
United States	334.9	4	556,578,000	315,791	19	4	1,028	9
Canada	205.8	5	41,255,616	34,675	17.3	1	809	6
France	197.8	6	37,235,671	63,458	33.7	15	854	7
Denmark	155.9	7	3,588,682	5,593	24.3	10	1,413	12
Sweden	109.3	8	4,717,293	9,495	22	8	715	4
Finland	41.6	9	952,137	5,403	23.6	9	671	3
Germany	20.7	10	6,591,719	81,991	25.7	12	1,045	11
Italy	5.6	11	1,560,040	60,964	21.9	7	1,475	13
Japan	5.2	12	3,276,981	126,435	20.1	6	1,841	15
Ireland	Not available	Not ranked	Not available		29	4,579	1,006	8
Switzerland	Not available	Not ranked	Not available	7,734	24.8	11	1,722	14
United Kingdom	Not available	Not ranked	Not available	62,798	20	5	750	5

** Sources: The Tobacco Atlas, Fourth Edition, 2012. *** Sources: WHO Report on the Global Tobacco Epidemic, 2012

1.11 Aims and Objectives

The aims and objectives of this study are to:

1. Examine the attitudes of young adult smokers' in order to explain continuance of behaviour despite anti-smoking initiatives

2. Identify factors that lead to ongoing smoking behaviour in young adult smokers.

The consensus view seems to be that smoking is averse (antagonistic) to the physical and economic health of the community (Almadana Pacheco et al. 2017; Cuijpers et al. 2007; Moodie, Daube & Carnell 2009; Wakefield et al. 2015; Wipfli 2012). More anti-smoking initiatives have been introduced in recent years in response to this view (Chan et al. 2020; Dono et al. 2020), such as cigarette packet health warnings (Bonfrer et al. 2020; Brennan et al. 2011), the imposition of higher tobacco tax (Guillaumier, Bonevski & Paul 2015), bans on branding on small cigarette packs, bans on smoking advertising and sponsorships (Moodie, Daube & Carnell 2009), mass reach anti-smoking campaigns (Germain et al. 2012), and the implementation of smoke-free workplaces and licensed venues (Cooper et al. 2010). However, the efforts to dissuade young adults from smoking have only led to a slow decline in smoking rates among this demographic (Darville & Hahn 2014; Docherty et al. 2014; Mathews, Hall & Gartner 2010; Moodie, Daube & Carnell 2009; Tuli et al. 2012). From the viewpoint of the marketing and tobacco industries, this slow reduction could be viewed positively (Ashok & Michael 2014; Becker & Murphy 1988; de Meyrick 2010;

Lupton 1995b). Ideally, each anti-smoking intervention ought to break the chain of marginal utility (the satisfying fulfilment of smoking) and lead to a sharp decline or at least step-decline in smoking prevalence.

This study begins with a review and categorisation of the different reasons why young adults continue to smoke. The reasons to smoke include addiction, stress, habit, socio-economic factors, self-identity, and peer pressure. This study will then discuss anti-smoking initiatives, particularly those that employ mass marketing to convince young adults to discontinue smoking. The rationale behind anti-smoking initiatives is then compared to see if these initiatives effectively discourage young adult smokers from continuing to smoke. This research is significant for formulating anti-smoking marketing messages and policies in Australia.

1.12 Structure of the Thesis

This thesis comprises five major chapters.

Chapter 1: This chapter sets the background and context of the study. It addresses the core issues relating to the prevalence of smoking in Australia, outlines the relationship between smoking and ill-health, and discusses the efficiency of anti-smoking initiatives in Australia as well as tobacco control expenditure between Australia and other countries. The problem statement and research gaps are identified, followed by the aims and objectives of this research. Research questions and the significance of this study in the context of Australia are also outlined.

Chapter 2: Comprises a review of the literature related to tobacco consumption, including a discussion of relevant theories that contribute to addressing the identified research gaps as well as assisting with the outlining the conceptual framework on smokers' ongoing habit that this research rests on. This chapter outlines and discusses the variables that constitute ongoing smoking in young adults, followed by various hypotheses.

Chapter 3: Covers the theory, research philosophy and methodology adopted in this research. This chapter is divided into three discussion sections: section one addresses the philosophical aspects of this research; section two outlines the research application and justification; and section three highlights the methods of data collection.

Chapter 4: Findings from various research questions are the focus in this part of the thesis, where theoretical and managerial implications stemming from the findings are discussed. This chapter also explains data analysis procedures, reliability and validity of the data,

testing on the conceptual model, and quantifies the degree of ongoing smoking behaviour using various tests.

Chapter 5: This is the discussion and conclusion chapter, where research limitations and recommendations for future study are discussed.

1.13 Chapter Summary

Despite substantial progress in tobacco control over the past 30 years in Australia, the evidence presented in this chapter suggests that ongoing smoking among young adults remains a prominent health and economic issue. There are a range of anti-smoking initiatives being developed to reduce the prevalence of smoking, but the impacts of these controls were not representative and conclusive, especially in relation to young adults, many of whom continue smoking at a relatively stable rate. Moreover, research reports indicate that there may be an incremental increase in smoking prevalence in Australia. This evidence points to the possibility that anti-smoking initiatives are no longer effective at discouraging young adults from continuing to smoke.

Chapter 2: Literature Review

2.1 Historical Background of Tobacco

It is important to outline the history of tobacco in the context of modern society to understand its current use. Overall, tobacco has always been viewed as an influential commodity in developing modern societies. For instance, the United States of America was established through the acquisition of tobacco crops, where tobacco sales were used to support its independence. From the 17th to the 20th Centuries, the size of the tobacco industry expanded and employed an increasing number of people, at first in the US and later in Europe. To control the sales of tobacco, many modern consumer laws started to emerge.

The Origin of Tobacco

Tobacco is a plant that belongs to the Nightshade family. Some of the other members of this plant are petunia, henbane, mandrake, tomato, pepper, potato, and eggplant, many of which remain most important food plants. Tobacco is considered indigenous to the Andes Mountains of South America, where at least 45 species grow wild. Other unknown tobacco species are believed to have originated in Australia and the islands of Polynesia (Schultes & Raffauf 1990).

Among all the tobacco species, only two hybrid species have been commercially cultivated: the *Nicotiana* and *Nicotinia rustica*. Besides being served for human consumption, tobacco is also commercially used as an insecticide, since minute quantities of nicotine can be poisonous and in many cases lethal to numerous animals and insects (Negrete, Edwards & Savva 1999).

The contemporary use of tobacco is through smoking, where it is treated as a herb (Henningfield & Higgins 1989). However, this was not always the case. Across history, tobacco and its extracts have been consumed in various forms. This includes ingesting, smoking or applying through topical ointments whose use was understood to produce calmness and pleasure (Jaffe 1995). When taken in large enough quantities, tobacco was also used to induce hallucinations (Negrete, Edwards & Savva 1999).

Tobacco as Medicine

The medical properties of tobacco have been documented for thousands of years. For example, the Mayas, Aztecs and Incas of South America used tobacco to treat abdominal pains and intestinal worms, and to prevent lice, flesh flies and insect infestations (d'Ardois

1948). Also in South America, the Jivaro clan drinks tobacco juice to cure snakebites and heal colds (Peter 1989).

Tobacco is also effective in suppressing hunger (Perry 2004). In some hunter gatherer societies where food supplies could at times be scarce and/or unreliable, people chewed tobacco to lessen their hunger pangs. In Australia, some Aboriginal groups have distinct ways of chewing tobacco, including by mixing it with fire ash (Jaffe 1995). This would make tobacco more alkaline, thus amplifying its intensity and hunger suppressant effects.

Tobacco Cultivation

In many settings, tobacco has historically and continues to play an important role in agriculture. It is believed that tobacco was first discovered by the native people of Mesoamerica, from where it was later introduced to Europe and the rest of the world (Chambers 1938; Loughmiller-Cardinal & Zagorevski 2016). Tobacco was one of the most harvested plants around 6000 B.C.E. (Mary 1982). In Mesoamerica, tobacco planting appears to have preceded corn farming, with evidence indicating it was being grown in Mexico as far back as 4000 B.C.E. (Siano 1997). Historically, potato, corn and tobacco were always grown together. For example, Chambers (1938) found that tobacco and corn were often grown and cultivated together by South American Indigenous tribes. In fact, tobacco was viewed as being equally important to potato and corn among such cultures.

Tobacco first reached the northern shores of Australia in the beginning of the 18th Century (Brady 2002). Macassan fishermen travelled from the Indonesia island now called Sulawesi, bringing pipes, tobacco and other valuable goods as tokens of acknowledgement to the local tribes. Such gifts were highly prized by their recipients, even finding their way into the interior of the Australian continent, indicating their status as highly tradeable items. McNiven (2008) asserts that tobacco was also found in Cape York and the Torres Strait region; there is evidence that Torres Strait Islanders were the first Australians to start planting crops that contained nicotine and to smoke pipes made of bamboo.

2.2 Uses in Religion, Custom and Society

Tobacco was deeply interwoven with adulthood and tribal rituals in many ancient societies, including the Maya, Inca, Toltec and Aztec (Michael 1992; Negrete, Edwards & Savva 1999). In the early days, tobacco was used in ceremonies for the preparation for war, as gestures of goodwill, at victory feasts, for diplomacy, as symbols of adulthood, for trade, as medicine, a social recreational tool, and as a signal of solidarity (Longmore 2001). Many ancient societies viewed tobacco as an important and highly valued commodity in religion

and custom. For instance, the Aztecs believed that their goddess Cihuacoahuati had a body made of tobacco, with her priests wearing tobacco gourds as a sign of holiness (Peter 1989). They also believed that evil spirits could be kept away using tobacco smoke (Cunningham 1996; Peter 1989).

It is arguable that Aboriginal and Torres Strait Islander people in Australia had similar customs as ancient societies. Aboriginal people viewed smoke and smoking as an important part of their culture (Tane, Hefler & Thomas 2018). Until first contact with Europeans made tobacco accessible, Aboriginal people believed that smoke could heal diverse ailments and ward off bad spirits (Briggs, Lindorff & Ivers 2003).

Smoking and Societal Status

The way one consumed tobacco signified the social status of a person (Borio 2019; Dani & Balfour 2011), and this was particularly the case in Aztec society. For example, nobles such as the members of the royal court would mix clear resin into their tobacco and normally smoked it at important events, rituals, and after dinner. In contrast, lower classes typically rolled tobacco into a corn leaf, finishing with a product similar to the present-day cigar (Hinds 1882). In Western society, people from different classes consumed tobacco differently. For instance, in Victorian times, people from different social classes would use different smoking tools (Longmore 2001). The upper class tended to smoke pipes, while tradesmen smoked cigars and sailors smoked cigarettes (Males 1999). One could even identify the social standing of a person by observing their smoking patterns. For example, a gentleman would smoke with a cigarette holder to avoid biting the cigarette and thus protect his teeth. Meanwhile, individuals engaged in clandestine trades tended to smoke cigarettes by covering them with the palm of their hands so as not to expose the lit ember and thus attract attention in dark passages and corners. The paraphernalia that the smokers used, such as the pipes, tobacco leaves, smoking jackets and even the smoking rooms all signalled the background, upbringing, personalities and social status of the smokers (Longmore 2001).

Smoking as Friendship

When smoking was widely practiced in pre-modern South America, cigars were viewed as an important commodity to build and foster friendship. In fact, cigar was often offered to visitors as a sign of welcome (Loughmiller-Cardinal & Zagorevski 2016). As tobacco smoking spread across the rest of the world, the Japanese (who initially did not welcome tobacco, viewing it as an imported foreign product) rescinded a long-term ban on its use in

1640. In fact, offering a pipe as a token of welcome for visitors became a custom for many households in Japan (Redesdale 1871).

Like pre-modern South America, Aboriginal and Torres Strait Islander people practiced traditional welcoming ceremonies as a token of friendship to people who visited their traditional lands. Traditionally, such ceremonies are performed at the beginning of a function by an Elder or appropriate member of the community. The welcoming rites could range from speeches, traditional dance, and smoking ceremonies. Following the tradition introduced by the Macassan fishermen and trepangers (fishermen who intended to trade seafood delicacies to China) about 400 years ago, some Aboriginal people were still believed to use 'pituri' dry leaves containing nicotine in smoking ceremonies (Briggs, Lindorff & Ivers 2003; Ratsch et al. 2017).

Smoking as a Sign of Coming-of-Age

Traditional custom in most Indigenous American societies mandated tobacco smoking in important rituals (Loughmiller-Cardinal & Zagorevski 2016). For example, a young boy was considered an adult when given tobacco, being able from that point onwards to participate in the rituals as an adult. It is even believed that many young Indigenous Americans occasionally stole a puff or two from the tobacco pipes of adults so that they could pretend to be grown up.

Smoking was viewed as a marker of the transition from boyhood to manhood (Loughmiller-Cardinal & Zagorevski 2016). Some occupations, such as doctors, politicians, schoolteachers and judges were encouraged to smoke as a sign of their status and power. As a result, many boys pretended to be adult men by taking up smoking. Sweets, chocolate and other confectionaries in the shape of cigarettes were manufactured and popular among boys so that they could practice the act of smoking. As soon as these boys became young adults, they were allowed to smoke and were thus introduced to all the paraphernalia of pipe smoking. Arguably, adolescents these days are also introduced to smoking when they reach adulthood. However, this practice may have diminished somewhat because of the low status attached to smoking by contemporary society.

Tobacco as Money

According to Davies and Davies (1996), tobacco was also traded as money. In 1642, there was of shortage of coinage in Virginia, Maryland and North Carolina. As a result, the authorities decided to decree that high quality tobacco leaves equalled three shillings and made tobacco legal tender.

Another example where tobacco was traded as a commodity occurred in Virginia. In the early 1600s, the Virginia colony had few women, with the majority of settlers being male. It was thus difficult for settlers to find wives (Borio 2010). The settlers solved the problem by purchasing wives from England. According to the literature (Gately 2001), the first batch of mail order women arrived in Virginia in late 1619. Each woman was purchased for 120 pounds of tobacco leaf. Due to popular demand, marriage agents started to multiply, and the price of a woman increased to 180 pounds of tobacco leaf (Borio 2010). In 1775, the American Revolutionary War broke out and caused the value of tobacco to fluctuate. Tobacco was no longer in use as legal tender in the second half of the 18th Century.

2.3 Tobacco in Some Non-Western Countries

Tobacco was long cultivated in North and South America and initially arrived in some non-western countries in the 16th Century. World explorer Christopher Columbus and his crew created new trade webs across the world's oceans, across which were carried New World crops such as tobacco to places as far away as Southeast and East Asia including the Philippines, Japan, Korea, the provinces of Ming, Qing and Manchuria in China (Benedict 2011b), as well as Cuba and Spain.

China

When tobacco was first introduced into some areas of Ming China, local farmers started to cultivate this New World crop along the seaboard of Southern China. During the political and military disorder marking the transition from the Ming to the Qing dynasties in the 17th Century, numerous migrants brought tobacco to non-coastal areas. In 1644, Qing troops entered Beijing and tobacco was extensively planted in the communities of the southeast and northeast coasts, in the lower reaches of the Yangzi Delta, and on the plains of north China. By the 1750s, Qing troops had successfully conquered the entire Chinese empire and tobacco spread throughout the Yangzi River and southern and central China. At this time, tobacco became an important commercial crop in the Qing political economy and to local Chinese communities. Revenues gained from tobacco were the livelihood local government and millions of citizens at that time. Both men and women of all ages enjoyed tobacco and the New World crop become a key component of local agricultural production and consumption for the Chinese.

Besides, tobacco was identified as an important substance that accompanied the consumption of wine or tea during leisure activities, as well as an important offering when receiving guests. The use of tobacco to express respect, generosity, good manners and refinement

towards visitors become common practice among the Chinese (Benedict 2011b). For those engaged in literary creativity, tobacco pouches were always found alongside the ink stone, brush pot and fine book, where a puff of tobacco could clear the mind of many poets and scholars (Benedict 2011b).

Japan

Japanese smoking pipes, called *kiseru*, were highly in demand in the early 17th Century (Kingsberg 2013). *Kiseru* has a mouthpiece and small bowl that are made from metal with a bamboo or wooden rod-pipe stretched in between. When smoking, users place a small ball of tobacco string, resembling hair, light the charcoal fire and then discard the ash into the ash container. Due to the structure of *kiseru*, where it has a rod with metal ends, a long *kiseru* could be carried as a weapon. *Kiseru* were widely used by gangsters-like samurai during the Edo period (1603 to 1868). Skilled artisans carved the tubular shaft of wood with careful details and a sophisticated *kiseru* signalled the affluence of its owner (Kingsberg 2013).

Korea

Kim (2017) indicates that tobacco arrived at Korea through Japan in the late 16th Century. During the Choson Dynasty (1392-1910), tobacco spread substantially, with many farmers planting tobacco as a cash crop. Often, lands traditionally designated for grain crops shifted to tobacco. Due to widespread tobacco planting and smoking in the country, smoking controversies surrounded the late Choson Dynasty. For example, a social status effect developed where younger or lower-class people were prohibited from smoking in front of the elderly or high-class, affluent Koreans. In fact, it was considered not polite if a young adult smoked in front of an elder in Korea. The introduction of tobacco was considered influential in early Korean society. It became even more widespread during 1876–1905, when tobacco arrived as a luxury commodity into the open ports of Korea after the invention of the Bonsack cigarette rolling machine (Kim 2017).

Philippines

The Spanish introduced tobacco in the Philippines when Augustinian monks brought cigar seeds for cultivation in Mindanao (Bruce 1982). By 1686, tobacco was widely consumed and a foreign trade agreement between the Dutch and Spanish was established under the Governor-General Jose Basco with the intention to increase government revenue.

Due to the lucrative nature of tobacco revenue, farmers were forced to plant tobacco and were given quotas each year to cultivate and sell back to the government under strict government control. The leaves of the tobacco were then transported to Manila and cigarettes

were manufactured in government-owned factories. Cigarettes were then exported, thus turning tobacco into a lucrative commodity for the government. Tobacco was a profit-earning and self-sustaining commodity, where the government earned a net profit of 500,000 pesos in 1808 and 3,000,000 in 1881. As a result of the monopoly strategy, the Philippines emerged as a significant tobacco producer in Asia (Bruce 1982).

Cuba and Spain

Christopher Columbus and his crew landed in Cuba and encountered the natives (Borio 2019) in 1492. The natives welcomed them with fresh fruits, wooden spears and aromatic dried leaves (Hinds 1882; Longmore 2001). Columbus and his crew ate the fruits and kept the wooden spears as souvenirs. However, they discarded the dried leaves, which appeared to be tobacco, as they did not know what to do with them.

During Columbus' exploration, he encountered more natives and noticed most of them carried a piece of burning wood with them. This burning wood was used to light the dried tobacco leaves rolled into corn leaves. The natives smoked the wrapped tobacco leaves similar to cigars (Hinds 1882). After some time, the natives started to consume tobacco in powder form, which the Westerners called snuff. The natives used a Y-shaped pipe known as *tobaco* to inhale the snuff powder through their nostrils (Borio 2019). They put the Y-forked end of the *tobaco* into their nostrils and sniffed the tobacco powder, which was placed at the other end of the pipe. The name tobacco is believed to have been derived from these pipes (Hinds 1882). Another popular way to consume tobacco was smoking chopped dried tobacco leaves packed in reeds, which later became known as 'extra-long' cigarettes.

In the same year that Columbus first encountered tobacco, two Spanish explorers, Luis de Torres and Rodirgo de Jarez, arrived in Cuba. They also met natives who smoked tobacco leaves. Jarez picked up the habit of smoking and brought it back to his home country. Within a few years smoking became a common practice in Spain (Borio 2019). Smoking diffused successfully into Spain through word-of-mouth (Longmore 2001).

Tobacco Spread in Western Countries

Sailors from Portugal and Spain visited the Americas and it is believed to have been them to have brought tobacco to Europe (Cunningham 1996). At that time, syphilis (a sexual transmitted disease) infected many of these sailors and they used tobacco to effectively alleviate the pain associated with this condition (Longmore 2001). Tobacco instantly became popular among sailors, who continued to use it widely in their home countries. For tobacco merchants, trading tobacco was an exceptionally lucrative business. Due to high demand of

tobacco in Portugal, the Brazilians started to plant, cultivate and export tobacco to their colonial masters (Borio 2019).

Tobacco Diffusion in The Royal Families

The spread of tobacco accelerated when some royal families, such as those of France, Portugal, and Spain, started consuming tobacco. As tobacco signified higher standing in the social hierarchy, many non-royals started viewing tobacco whose consumption signalled that one was an important person (Benedict 2011a). If one could not be directly associated with royalty or nobility, tobacco at least created a more indirect link with these classes. Tobacco consumption signalled a person's wealth and reputation in society, with most people smoking chopped leaves in pipes at the time (Courtwright 2009).

According to (Cunningham 1996), France's diplomat Jean Nicot sent a parcel of snuff (powdered tobacco) to the French queen, Catherine de Medici, as a cure for her husband King Francis II's long-term headaches in 1560. The King sniffed the powder and found the snuff an effective product for alleviating his headaches. The snuff healed Catherine's headaches as well (Borio 2019). Tobacco instantly became popular in France, especially among the nobility. In return, the tobacco plant was named after Jean Nicot (*Nicotiana*). In 1805, the nicotine chemical within tobacco was extracted by Cerioli and became widely used as an insecticide (Cunningham 1996).

In England, royals and nobles increasingly smoked since Queen Elizabeth I had herself started smoking. At that time, a segment of the royal family emerged that was called the funky-valiant. These were gentlemen who would bring smoking pipes with them on their visits to the theatre. Many people aspired to be part of this group, as the funky-variants were believed to have better lifestyles and to enjoy leisure most of the time. Because of the popularity of smoking, tobacco was high in demand, further legitimising tobacco smoking among the working class (Borio 2019). More than 7000 tobacco stores were established in London in the beginning of the 17th Century (Rich 1614).

The Englishmen and Tobacco from Virginia

Tobacco persistently appeared to be a valuable and seductive trading commodity. As demand for tobacco continued to remain high, numerous entrepreneurs started searching for cheap, reliable, and long-term supplies of the leaves. These merchants sought to colonise North America, since the Spanish and Portuguese had conquered the Southern and Central parts of America (Gately 2001). The British decided to colonise Virginia after seizing a Spanish ship loaded with tobacco from North America (Musk & De Klerk 2003).

The British colonised Virginia, thus controlling the planting and trading of tobacco completely (Leavey 1998). Due to the fertility of Virginian soil, tobacco crops were abundant, particularly Bright leaves (also known as flue-cured tobacco), Burley and Oriental tobacco (Borio 2014). Harvesting tobacco crops was a labour-intensive undertaking, and Virginia needed a massive workforce to work in the tobacco farms and factories. Virginia companies started to advertise profusely in England by portraying Virginia as a place of fortune and bounty (Gately 2001). Within a few years, tobacco became the cash crop of choice in the colony and thus started playing an increasingly important role in its economy (Borio 2001).

Tobacco Supply from Virginia

English settler John Rolfe and his Native American wife Pocahontas harvested their very first tobacco crop in Virginia. The tobacco farmers, by luck, found a new way of curing tobacco leaves (known as 'yella cure'), which produced smoother inhalation while smoking. As a result, Virginian tobacco became the most expensive tobacco sold in European markets (Cunningham 1996).

The rapid diffusion of tobacco was partly linked with English literature. In 1598, the English playwright Benjamin Jonson ridiculed the use of tobacco in one of his famous plays, *Every Man in His Humour*. Arguably, the play accelerated the popularity of tobacco (Borio 2014). The only English playwright who did not mention tobacco at all was William Shakespeare. As the demand for tobacco increased significantly in England, Virginia responded by expanding the size of tobacco plantations. Colonists planted tobacco along rivers and tidewater regions such as the famous Chesapeake Bay (Gately 2001). During that time, there were labour shortages, leading to increased importation of slaves from Africa to work in the tobacco farms, curing barns and factories by Dutch merchants (Gately 2001).

Tobacco in The Western Politics

Among many other tobacco planters, a remarkable tobacco plantation owner worth mentioning is George Washington, the American revolutionary leader that later served as the first president of the United States. George Washington had a large tobacco farm in Mount Vernon, which was managed by his wife, Martha. At that time, he had about 300 slaves working for him (Borio 2010). However, he decided to diversify to other crops (such as wheat and grain) because his farm did not yield good quality tobacco in 1760 (Gately 2001). Washington's 8,000 acre farm encompassed five different farms, which required stern and

close monitoring, particularly of his slaves. Arguably, his strict practises on slavery helped start the American civil rights movement (Rozell, Pederson & Williams 2000).

According to history, the American Revolution erupted when dissatisfied Virginians revolted against the British in Chesapeake. Chesapeake Bay (also known as the Tobacco Coast) was a rich place that produced an abundance of high-quality tobacco (Agbe-Davies 2015). During the Revolution, Virginians sold tobacco to finance the American independence movement, leading to the American Revolution being branded the 'Tobacco War' by some (Brandt 2016). Benjamin Franklin (one of the founding fathers of the US, as well as a scientist and diplomat) used Virginia leaf as the collateral to borrow five million pounds from the French Government to support American independence. According to history (Borio 2014), the newly independent US Government gradually escaped such indebtedness by exporting tobacco.

Tobacco Arrival in Australia

Tobacco first arrived on Australian shores when introduced to northern Indigenous communities by Macassan fishermen and trepangers who intended to trade it for seafood delicacies to export to China from Indonesia (Mackay, Eriksen & Eriksen 2002). It is believed that the introduction of tobacco occurred before the First Fleet arrived in 1787. During the years of British colonisation, tobacco smoking was practiced among officers, new settlers, and convicts, as well as Indigenous people (Goodman 2005). However, the supply of tobacco was scarce, leading to usage among convicts being strictly controlled in the early days of colonisation (Mackay, Eriksen & Eriksen 2002). Nevertheless, due to the oversupply of tobacco from North America, tobacco became a popular commodity that was frequently provided to prisoners and servants as an incentive to work or withheld as a form of punishment (Goodman 2005).

2.4 The Production of Cigarettes

An American inventor, James Albert Bonsack, was offered a reward of US$75,000 by the Allen and Ginter Company in Richmond, Virginia for successfully inventing a cigarette-rolling machine. Bonsack accepted the challenge and spent numerous hours in designing and inventing such a machine. In 1881, the first cigarette-rolling machine was created, which could produce 120,000 cigarettes within 10 hours (Tilley 1948). This machine revolutionised the tobacco industry.

The novel cigarette-rolling machine was described as "comparatively clean, easy to use, modern and cheap" (Amos & Haglund 2000, p. 3). Its invention brought the tobacco price

down, with cigarettes becoming cheaper than cigars, cigarillos and snuff. Manufacturers were able to produce cigarettes in large quantities while selling them for a lower price, enticing smokers to shift from smoking cigars, snuff and cigarillos to cigarettes.

The technology for the mass production of cigarettes was patented on the 8th of March 1881 (Tilley 1948). As Bonsack's invented machine was patented, there were limited tobacco companies that could mass-produce cigarettes. As a result, those who could not produce cigarettes in huge quantities chose to advertise cigars instead, hoping to entice smokers to switch back to cigars and other tobacco products.

Despite increasing cigar advertising, consumers generally continued to prefer cigarettes over cigars (Borden 1942). This was often because cigarettes were cheaper and more convenient to consume. This indicates that the popularity of cigarette smoking was not due to advertising, but rather because of the lower price of cigarettes. Other factors that accelerated the dominance of cigarette smoking were word-of-mouth recommendations (Borio 2010). The popularity of smoking among pre-modern societies such as the Aztecs, Maya, Native Americans and Australian Aborigines supports this thesis, since no advertising existed in these contexts (Peter 1989; Ratsch et al. 2017).

The uptake of cigarette smoking among young adults could be ascribed to other possible factors such as peer pressure, the challenges of transitioning from boyhood to manhood, the quest for self-identity, and as a proof for becoming a mature individual (Gately 2001). Similarly as within many pre-modern societies, these young adults used cigarette smoking to indicate their intention to acquire freedom and independence (Gately 2001). Young men started to behave like adults by imitating the behaviours of adults. According to Borio (2014), most young adults seek to consume prohibited products to signal their independence and freedom to act, with cigarette smoking represents such a prohibited product. For young men seeking such freedom, cigarette smoking becomes a badge of one's individual independence and freedom. It is plausible to conclude that young adult smoking arose because of such social norms.

2.5 Emergence of Anti-Smoking Initiatives in The Early Days

In Spain, The Roman Catholic Church initiated a motion to ban smoking within church compounds (Borio 2010). The ban stemmed due to many worshippers smoking during church services. However, people ignored the smoking ban and continue with the habit. In 1575, the Pope proclaimed the penalty for smoking to be excommunication (officially exclude someone from taking part in the church service) as he thought that smoking (and

taking snuff) was sinful (Gately 2001). The Pope viewed the sensation produced by smoking as being similar to that felt during sexual intercourse, which was viewed as inherently sinful (Gately 2001).

In Asia, countries such as Mongolia and China had more severe punishments in place for tobacco smoking. The death penalty was imposed on those who grew, traded and consumed tobacco (Cunningham 1996). Similarly, the Russian government applied severe legal restrictions on tobacco; a person could have their nose slit off for producing, supplying, and using tobacco, followed by execution. According to the Russian Orthodox Church "tobacco had intoxicated Noah, causing him to reveal his genitals to his children, and therefore banned its use in 1624" (Gately 2001, p. 85).

In 1623 to 1640, the Ottoman Sultan Murad IV (who was known for his brutal punishments) banned tobacco, alcohol and even coffee during his governance. According to (Cunningham 1996), Murad IV would dress as an ordinary man and travel the country seeking to buy tobacco to catch wrongdoers. A trader was once beheaded for trying to sell him tobacco, with the trader's head left to rot on the street. The reason for such harsh punishments was the Sultan's perception that smokers were responsible for burning half of his city because of lit embers. Murad IV also felt that tobacco must be prohibited since the Kuran (or Koran) did not allow Muslim to consume tobacco (Cunningham 1996). However, in the eyes of some modern Muslims, there is no evidence for tobacco being a prohibited substance in the Kuran.

2.6 Evolution of Anti-Smoking Initiatives

Legislation that Based on Morality and Religion

Tobacco smoking faced frequent criticism on moral and religious grounds. Activist Lucy Page Gaston established the very first American Anti-Cigarette League, whose view was that cigarette smoking was inherently evil and destructive (Pennock 2002). Between 1899 and 1909, the Anti-Cigarette League had cigarette bans successfully passed in twelve states and had approximately 300,000 active members. The Anti-Cigarette League perceived that cigarette smoking was diabolic and possessed destructive capacities like alcohol. In its members' view, cigarette smoking indicated moral defect, with the habit associated with corrupted members of society such as prostitutes.

Anti-tobacco legislation movements often targeted women (Amos & Haglund 2000). For instance, a woman was arrested for smoking in the street of New York City, while the city of Columbia in South Carolina prohibited women from smoking and jailed a woman for doing so (Amos & Haglund 2000). However, in many European countries such as Spain and

France cigarette smoking was only viewed as an unpleasant habit and a waste of money (Hinds 1882). Anti-smoking movements in European countries were not as active as those in the US.

The use of religious-moral arguments to dissuade people from smoking was not very successful between 1909 and 1930. In response to that, the Anti-Cigarette League tried to focus on the negative health impacts of smoking (Pennock 2002). However, it did not yield much positive results, since many health practitioners smoked at the time. The public broadly felt that cigarette smoking could not be all that harmful if health practitioners personally used it and deployed it to treat some chronic illnesses (Borio 2014).

Legislation that Based on Scientific Findings

In the early 1940s, more Americans started to pay attention to the rapid developments in medicine and science. Americans were particularly obsessed with outer space exploration and medicine discoveries (Pennock 2002). The success of science led Americans to hold it in greater esteem than religion when seeking health advice and information.

This was particularly true when medical scientists discovered penicillin and antibiotics, which were widely deployed to contain and eliminate contagious diseases in the 1940s. According to Pennock (2002), Americans perceived themselves as enjoying the 'good life' if they experienced less or no disease. In fact, Americans associated good life with good health. In the 1960s, the Anti-Cigarette League started to switch from moral and religious arguments and slogans to health-focused slogans asserting that "smoking was harmful to health" (Cunningham 1996).

Nevertheless, the success of new scientific discoveries in eliminating contagious diseases did not translate to cancer, stroke, or heart disease. The American medical professions began to investigate other agents that caused such illnesses, including study of environmental and lifestyle factors. Some of the study areas included diet, exercise and cigarette smoking (Pennock 2002). Due to numerous proven linkages between tobacco smoking and ill-health, on 11 January 1964, the U.S. Surgeon General's 1964 Report affirmed that tobacco smoking caused lung cancer and laryngeal cancer in men and probably caused lung cancer in women. Tobacco smoking was also the main cause of chronic bronchitis (Alberg, Shopland & Cummings 2014). For the first time in the history of tobacco, a medical report spelled out the adverse health impacts of cigarette smoking and thus shook the world.

Reasons for not Banning Tobacco

Following the 1964 U.S. Surgeon General's Report, anti-smoking activists and non-profit organisations increasingly demanded legislative constraints on the production, sale and promotion of tobacco products (Leavey 1998). Nevertheless, most legislators and tobacco companies felt that a total ban on tobacco products was not achievable (Males 1999), opting for tobacco marketing restrictions for several reasons.

First, it was more convenient for governments to control tobacco promotion activities over tobacco production (Males 1999); tobacco companies could continue to manufacture tobacco products while the government would continue benefiting from tax collection on those products without excessive objections from the public. This was an effective and efficient way to secure government revenue. This approach would also not cause too much social discontent due to job losses in the tobacco industry.

Second, restricting tobacco companies in their marketing activities was an easier way to monitor tobacco publicity. Legislators and policymakers would not want to prosecute smokers, which could be viewed as excessively repressive (Pennock 2002). This would damage the public's view of the political class, who could potentially lose their positions should the public wish to punish them at the ballot box. Ultimately restrictions on marketing activities would encourage tobacco companies to self- regulated (Glantz & Balbach 2000).

Third, without sufficient evidence, the public perceived that smoking prevalence would automatically reduce if the government carefully controlled the marketing activities of tobacco companies. The total banning of tobacco products was thus viewed as unnecessary (Pennock 2002). Tobacco smoking was a complex mechanism influenced by many other factors (Diemert et al. 2013; Distefan, Pierce & Gilpin 2004).

Last, the public did not want to relive the failure of alcohol prohibition, assuming that problems that plagued the prohibition era such as illegal trading, corruption, violence and smuggling would happen with tobacco should it be prohibited (Glantz & Balbach 2000).

Because of these reasons, the anti-tobacco movement seemed to come to an implicit view that monitoring and restricting cigarette publicity would be a better and safer platform to deal with this controversial issue. In other words, if cigarette promotion was the only area where tobacco companies needed to be regulated, then they would still be able to function and survive, albeit with marketing restrictions in place. Anti-tobacco activists felt that controlled and limited cigarette advertising and promotion would lead to reduced smoking (Pennock 2002).

The Spread of Anti-Smoking Promotional Activities

Control of cigarette promotion was a popular theme in public discourse in the US. It was believed that cigarette promotional activities influenced young adults to start smoking (Henningfield & Higgins 1989). Massive anti-smoking campaigns brought attention to the vulnerability of youth and the enticing nature of cigarette advertising. It was with this view in mind that the US Federal Trade Commission decided to protect the nation's youth by supporting the establishment of legislation to control tobacco promotion activities, arguing that mere information campaigns would not suffice, since young adults seldom followed the news on TV, radio or newspapers. Besides, young adults also did not pay attention to the warning labels on cigarette packaging (Sweeny 1965), making harsh legislation necessary. However, there were no studies elucidating the reasons why young adults did not follow news on mass media and did not respond to warning labels (Pennock 2002).

In the mid-1960s, cigarette advertising came into focus as potentially the main cause for young adults starting smoking. It was felt that young adults would not quit smoking once they picked up the habit (Borio 2001). This shift in perspective led to greater attention within anti-tobacco legislation from getting smokers to quit smoking to preventing young adults from starting.

Nevertheless, the issue raised strong and growing concern around freedom of speech, with many human rights activists arguing that consumers should be given the right to choose what they liked and preferred to consume, including smoking products; consumers should decide whether cigarette smoking was harmful for them. Cigarette manufacturers immediately took this opportunity to support the argument around smokers' rights. In this environment, President Richard Nixon outlawed the first anti-smoking advertisement, although the *Public Health Cigarette Act* eventually prohibited cigarette advertisements aired on television and radio in 1970 (Borio 2010).

Building upon the findings of the 1964 General Surgeon's Report, subsequent research revealed that cigarette smoking also harmed the health of people surrounding smokers that were not smoking themselves, an issue that came to be known as 'second-hand smoke' (Schroeder & Koh 2014). Anti-smoking advocates recognised that young adults should be their main focus, as this vulnerable target audience tended to initiate smoking in their early teenage years (Glantz & Balbach 2000).

2.7 Attitudes towards Smoking in Australia

2.7.1 Attitudes to Smoking by Indigenous and Torres Strait Islander Community

According to (Mackay, Eriksen & Eriksen 2002), Indigenous people view smoke and smoking as an important part of their culture (Tane, Hefler & Thomas 2018). For example, they believed smoke could heal and ward off bad spirits, with smoking practiced in traditional welcoming ceremonies as a token of friendship towards people arriving or passing through their traditional land (Briggs, Lindorff & Ivers 2003). Some Indigenous people still smoke 'pituri' dry leaves that contain nicotine in their smoking ceremonies (Briggs, Lindorff & Ivers 2003; Ratsch et al. 2017). Smoking is viewed as a socially acceptable activity in the Indigenous community (Bond et al. 2012b), and it has been a traditional feature in the Indigenous cultural life for a long time. Roche and Ober (1997) assert that cigarette sharing among Indigenous communities has also become a practice to reaffirm, foster and maintain their cultural identity in an environment that they often experience as malicious and uncertain.

In contemporary Indigenous society, cigarette smoking is viewed as a reasonable and accessible medication for the racism, poverty and oppression experienced by many Indigenous people (Bond et al. 2012b). These negative experiences can be viewed as trigger points for ongoing smoking and incremental increases in tobacco consumption (Bond et al. 2012b). As a result, smoking prevalence in Indigenous and Torres Strait Islander populations is high (Johnston & Thomas 2008; Tane, Hefler & Thomas 2018). For example, the prevalence of daily smoking among Indigenous people was recorded as 42% in 2012-2013 (Gould et al. 2018), with the life expectancy of Indigenous smokers being about 10 years lower compared to non-Indigenous Australians (Hyde et al. 2018).

Attitudes towards smoking among Indigenous and Torres Strait Islanders are not straightforward. According to Christakis and Fowler (2008), social networks, social position and norms play significant roles in smoking behaviour among these groups. For instance, smoking in the Indigenous community has always been associated with being able to cope, being in control and competent in oppressed situations (Roche & Ober 1997). The relationship between smoking and economic deprivation is also well acknowledged. Smoking is always an easy way to escape from financial stress and a pathway to a sense of luxury (Roche & Ober 1997).

According (Israel et al. 1994), Indigenous and Torres Strait Islanders link important life events with a sense of embracing a new identity. For those who smoke, quitting smoking is not only a behavioural change, but also a formation of a new identity. Hence, Indigenous Australians tend to be sceptical about quitting smoking, and seldom believe the intention underlying quitting aids such as nicotine replacement therapy (NRT), Quitline, and

counselling (Bond et al. 2012a). Indigenous smokers perceived NRT as an alternate addiction, rather than a cure for smoking addiction (Bond et al. 2012a). In addition, Indigenous and Torres Strait Islander often feel that quitting smoking could change their traditional identity by reordering their life events through the acquisition of new skills and social networks (Willms 1991).

Therefore, cultural challenges and unexpected attitude outcomes on anti-smoking campaigns play a significant role when developing anti-tobacco messages for Indigenous Australians (Gould et al. 2018). However, with the efficacy of the current anti-smoking initiatives, it seems not warranting attention of the salience of anti-smoking messages for Indigenous peoples. Anti-smoking initiatives should refocus and address the reason why the Indigenous people continue to smoke.

2.7.2 The Stage of Change Application on Indigenous and Torres Strait Islander Smoking Behaviour

There are several studies using different behavioural models that aim to understand smoking behaviour among Indigenous people. These include the 'health belief model', 'social cognitive theory', 'stage of change model', and the 'social-ecological model'. Among these models, the stage of change model (also known as the 'transtheoretical' model) by Prochaska, Norcross and DiClemente (2013) remains the one that is most widely used. In general, James Prochaska and Carlo DiClemente developed the model in the early 1980s, with the model conceding that individuals find themselves in different stages of inclination for change. The model has been widely used to understand the process of quitting smoking, where smokers would progress through several stages (e.g., precontemplation, contemplation, preparation, action, and maintenance) in the behaviour change process (Colonna et al. 2020).

A study conducted by Campbell et al. (2013) on Indigenous smokers in north Queensland found that Indigenous smokers in the early stage of change smoked more cigarettes than those in the later stages. The authors also found that there were more attempts to stop smoking in the contemplation and preparation stages compared to the precontemplation stage, regardless of age and gender differences. Their study found that 62% of Indigenous participants smoked daily, while 80% were in the precontemplation and contemplation stages. Only 3.2% of participants were actively trying to quit smoking.

The high percentages in the precontemplation and contemplation stages indicate that there might be other influencing factors at play, such as historical and cultural factors that hinder the process of quitting from progressing from one stage to the next. According to Prochaska, Norcross and DiClemente (2013), smokers need to change their knowledge, beliefs and attitudes in order to progress through the stages. For instance, at the very least, smokers must acknowledge that their smoking behaviour harms their health. However, the National Aboriginals and Torres Strait Islander Tobacco Control Project in 2001 revealed that such an acknowledgment among its target communities did not necessarily lead to quitting smoking (Campbell et al. 2013; Heris et al. 2020). Personal factors such as addiction, habit, stress and depression may influence individual smoking behaviour (Campbell et al. 2013). Nevertheless, while the stage of change model managed to classify Indigenous smokers into different stages of behaviour change, most smokers would not consider reducing their cigarette smoking. The model also indicates that there is a gap that needs further

investigation regarding which factors that constitute smokers' attitudes and beliefs that would motivate them to quit (Adams & White 2003, 2005; Sheeran 2002).

It is evidence by recent studies (Colonna et al. 2020, Heris et al. 2020) that the Stage of Change Application has some limitations in identifying the factors that can lead to the changes in smoking attitudes and behaviours in Indigenous Australians. Hence it is significant to understand the historical and social determinants of tobacco use; legislation and policies; social marketing; comprehensive and appropriate anti-smoking initiatives.

2.7.3 Attitudes of Young Adult Smoking Behaviour in Emerging Economies

According to (Boutayeb 2006), approximately one in three young adults smoke worldwide, and about 80% of these live in developing countries.

China

China appears to be the world's largest tobacco producer and consumer. In 2002, there were about 350 million adults smoking daily in China (Leng & Mu 2020; Mackay, Eriksen & Shafey 2006), with over eight billion packets of cigarettes sold in 1998. According to the 2010 China Global Adult Tobacco Survey, smoking prevalence in China is high, while smoking cessation is low (Ding et al. 2014), withe 53% of men and 2.4% of women aged 15 years and over smoking daily. This smoking epidemic poses a great threat to the public health and well-being of the Chinese population, with some estimates indicating that one in three Chinese men will die if the current smoking prevalence continues (Leng & Mu 2020;. Liu et al. 1998).

Chen et al. (2006) report that adolescents in China perceive smoking with peers to be an influential factor in their smoking behaviour. Peer smoking was found to be positively associated with smoking initiation, smoking experimentation and smoking progression (Epstein, Botvin & Spoth 2003; Fagan et al. 2001). Similarly, adolescents were reported to positively perceive the psychological value, social value and physical consequences of smoking (Chen et al. 2006). In the perspective of most Chinese adolescents, the perceived benefits of smoking outweigh its negative consequence. This is because they did not perceive the adverse physical consequences due to cigarette smoking as apparent and immediate.

India

India is the second largest tobacco producer in the world, with an annual production of 800 million kilograms of tobacco (Palipudi et al. 2012; Sabbagh et al. 2022). Tobacco sales have contributed approximately 80% of the country's tax revenue. In 2010, there were about 120

million Indian adults smoking, making India the country with the second highest number of smokers after China (Leng & Mu 2020;Shafey et al. 2009).

Over the last few decades, India has experienced high population growth and an increase in its middle class and its disposable income (Jha et al. 2011). However, tobacco control efforts have been modest. For example, tobacco excise taxes have not substantially kept up with the increase in disposable income ((Jha et al. 2011; Sabbagh et al. 2022; Jha et al. 2011). This has allowed tobacco to remain relatively affordable in comparison to many other countries. As a result, cigarette consumption increased, with approximately 110 billion cigarettes sold in 1995 (Nichter, Nichter & Van Sickle 2004). In a global survey on young adult smoking, most youths in India were found to have started smoking at the age of 13 (Nichter, Nichter & Van Sickle 2004). In general, young smokers in India perceived smoking as a way to foster friendship; they would accompany their friends who smoked and avoided being labelled a 'Gandhi' by their friends (Goyal & Bhagawati 2016; Kobus 2003). They also perceived smoking as a sign of maturity, a tension-reduction remedy, a boredom eliminator, and a way to enhance their status as being fashionable and stylish ((Sabbagh et al. 2022; Kobus 2003).

Another notable point is that most young smokers in India felt that the more expensive the cigarette, the less harm it would do to them. It is widely believed that affluent people able to smoke more expensive and better quality cigarettes experience less negative impacts compared to poor people who smoke cheap cigarettes (Kobus 2003). As a result, many young smokers adopted harm reduction behaviours to alleviate the negative consequences of cigarette smoking.

Indonesia

Tobacco was introduced to Indonesia in the late 16th Century (Husodo et al. 2020; Reid 1985). Similar to China and India, smoking prevalence in Indonesia is considered high, with 38% of boys and 5.3% of girls smoked (Mackay, Eriksen & Eriksen 2002). The high smoking rate in Indonesia can be ascribed to at least three factors: 1) internal cultural acceptance, 2) masculinity, and; 3) addiction (Ng, Weinehall & Öhman 2007).

According to Spruijt-Metz et al. (2004), tobacco plays an important role in Indonesia, where consumption of tobacco is socially accepted among adolescents. Cigarette smoking is viewed as a culturally significant life transition from childhood to adulthood (Nichter 2003). In general, smoking initiation starts at the age of 10- to 12-years-old (Husodo et al. 2020).

Cigarettes would normally be offered to young people as a gift - a sign of entering adulthood and as a token of maturity - in most Indonesian traditional religious ritual ceremonies. It

would be considered impolite to refuse the offering, particularly from elders (Ng, Weinehall & Öhman 2007). Male adolescents also perceive smoking as an act to increase their 'manliness' and social status. According to local tradition, smoking enables adolescents to become adults that possess the power to control their own lives and that can be confident and brave in dealing with life obstacles (Ng, Weinehall & Öhman 2007).

Conversely, women and girls who smoked are often perceived as ill-mannered, impolite and inappropriate (Richmond 2003). Nevertheless, due to globalisation and increasing imitation of Western lifestyles, the cultural resistance to women smoking has started to soften. Tobacco companies in Indonesia portray smoking among women as socially desirable and indicative of independence and success (Husodo et al. 2020; Amos & Haglund 2000).

Cummings et al. (2004) report that young adults are widely informed and understand the health hazards of smoking in Indonesia, but that they do not understand how lung cancer, heart disease and chronic coughing can be caused by smoking. Broadly speaking, this population underestimates tobacco risk and ignores the advice that nicotine can lead to health problems. This population also struggles to withdraw from nicotine addiction. Although some young smokers reported that they have the intention to quit smoking, they later found that quitting was not as easy as they initially thought (Ng, Weinehall & Öhman 2007).

Jordan

Smoking prevalence in Jordan has no difference to China, India, and Indonesia. In 1998, Jordan recorded high smoking prevalence in both men and women, at 31.7% and 6% respectively (Ajlouni, Jaddou & Batieha 1998). A more recent study found that 21% of adolescents engaged in smoking, and that their smoking behaviour was heavily influenced by their peers (Haddad & Malak 2002). Other factors that contributed to Jordanians' smoking behaviour were lack of motivation towards healthy activities, stress, and the influence of role models that frequently smoke, such as teachers and parents (Sabbagh et al. 2022;Stead, Hastings & Tudor-Smith 1996).

According to Haddad and Malak (2002), Jordanian smokers display avoidance behaviour in relation to smoking; they tended to give excessive weight to the perceived benefits of smoking and diminish its negative impacts. Jordanian smokers tend to ignore or deny the adverse effects of smoking, focusing instead on the immediate pleasure, enjoyment, and relaxation that smoking might bring. While some smokers acknowledge the harm of cigarette smoking, their intention to quit smoking is typically not strong enough to lead them to quit (Sabbagh et al. 2022).

South Africa

Public health awareness and views on the adverse impacts of smoking have increased significantly in many developed countries, particularly among young adults (Martin, Steyn & Yach 1992). However, in many developing countries such as South Africa, there has been no substantial reduction in smoking prevalence among young adults (King et al. 2003; Mashita et al. 2011). For instance, Swart et al. (2004) point out that at least 37.6% of young adults smoked during their lifetime, with 18.5% of young adults in South Africa identifying as ex-smokers (Bosire et al. 2020).

A recent study by Brook et al. (2006) uncovered that internal factors such as personal attributes and external pressure from friends, family and culture contributed to smoking initiation among young adults. They found that young adults who were depressed and low in self-confidence tended to smoke, relying on cigarette smoking to alleviate internal distress and mood swings (Brook et al. 2006; Khantzian 1997).

However, external influences also play an important role in smoking initiation among many South African young adults. For example, family members such as parents greatly influence their children to experiment cigarette smoking; adolescents were found to imitate their parents' smoking when they had a conflictual relationship with them (Brook et al. 1990). Similarly, peer pressure was reported to be a determining factor in smoking initiation, where young adults tried to internalise and connect with their group's norms. These young emphasise a perception that cigarette smoking helps them foster friendships and deemphasise its negative impacts (Bosire et al. 2020; Oetting et al. 1998).

In South African communities, it is common for adults to send children on chores to purchase cigarettes. This is aided by the fact that it is legal for children to buy cigarettes on behalf of adults (Egbe, Petersen & Meyer-Weitz 2013). According to one study, at least 90% of South African children have been on errands to purchase cigarettes for adults (Egbe, Petersen & Meyer-Weitz 2013). As a result, young people have relatively easy access to cigarettes, which in turn strengthens their intention to smoke.

Mexico

According to Williams (2010), social bonds in Mexican neighbourhoods are weak, with social issues such as family violence, suicide and homicide drastically increasing in the past two decades. Family violence in such contexts can contributed to smoking prevalence in young adults (Fleischer et al. 2015). A study by (Hall et al. 2015) indicates that there 11

million Mexican adults smoked daily, with more than 27% of young adults aged 13-15 regularly smoking cigarettes (Rodríguez-Bolaños et al. 2021)..

In Mexico, single cigarettes (also known as 'singles') are popular and more commonly purchased by adolescents than cigarette packs or cartons (de Ojeda, Barnoya & Thrasher 2012). One of the main reasons for the sale of singles is that it is more lucrative; singles can sell for double the per-unit price of packaged cigarettes (Hall et al. 2015). For many socio-economically disadvantaged people, single cigarettes are more affordable and accessible, being available in places such as convenience stores and roadside stalls (Stillman et al. 2014). Nevertheless, the sale of singles erodes the public health benefit of warning labels on cigarette packaging, since smokers are not exposed to these when buying singles (Stillman et al. 2007). As a result, young adults smoking singles seldom perceive cigarette smoking as harmful to their health, instead viewing the behaviour a way to relieve stress from family violence (Rodríguez-Bolaños et al. 2021; Fleischer et al. 2015).

2.7.4 Attitudes to Smoking in Specific Communities

Since 1999, the Australian Government has exercised legislative control on tobacco advertising, labelling, packaging, taxation, promotion and smoke-free policies in public places with the aim of reducing smoking prevalence. As a result, smoking prevalence decreased from 29% in 1991 to 16% in 2013 (Deacon & Mooney-Somers 2017; Deacon & Mooney-Somers 2017). Nevertheless, smoking rate remains high in some quarters, including among lesbian, gay, bisexual or transgender (LGBT) individuals between the ages of 13-24 (Kelly, Davis & Schlesinger 2015; Leonard et al. 2012). According to the 2013 Australian National Drug Strategy Household Survey, at least 30% of gay and bisexual women and men were regular smokers, compared to 15% of heterosexual people (Kelly, Davis & Schlesinger 2015). A 2012 report resulting from the Private Lives Survey further indicated that 26% of LGBT people smoked daily (Leonard et al. 2012; Huang et al. 2020).

The discrepancy between heterosexual and LGBT individuals in smoking is notable. For instance, the Australian Longitudinal Study of Women's Health (ALSWH) showed that 25% of 22-27 year-old heterosexual women smoked, compared to 47% of bisexual and lesbian women (Hillier et al. 2003). Similarly, community surveys in New South Wales and Western Australia revealed that at least one third of lesbian and bisexual women were regular smokers (Mooney-Somers, Deacon & Comfort 2013; Richters et al. 2004). However, it should be noted that international evidence does not indicate a significant difference in

smoking prevalence between heterosexual and LGBT individuals (Blosnich, Lee & Horn 2013).

Understanding differences between the smoking behaviour of heterosexual and LGBT individuals is a complex task. However, the evidence indicates that one prominent reason for LGBT individuals to smoke is related to the distinct stresses experienced by this community (Blosnich, Lee & Horn 2013; Pachankis, Westmaas & Dougherty 2011). According to Meyer (2013), there were at least three distinctive stressors that influence LGBT smoking prevalence: 1) prejudice towards homosexuality; 2) anticipations of stigma, and; 3) experiences with discrimination. Interestingly, gay and lesbian bars are often experienced as places of 'stress reduction' for LGBT individuals (Achilles 2013). Unfortunately, these settings can simultaneously present risks common to all bar settings, includes exposure to smoking (Patwardhan & Selket 2020; Blosnich, Lee & Horn 2013).

Historically, cigarette smoking has been associated with gender stereotypes of masculinity (Hunt, Hannah & West 2004). In the beginning of the 20th Century, cigarette smoking was predominately the domain of men, with smoking becoming associated with the most popular and distinguished symbol of masculinity in the late 20th Century: the Marlboro man, a rugged, confident and fearless cowboy. This character emerged in mass media and explicitly linked the act of cigarette smoking to the quality of manliness (Starr 1984). For gay men who felt pressured for not conforming to societal gender norms, smoking may have been seen as an easy way to confirm and bolster their masculinity (Taywaditep 2002). This perception of their own masculinity reduced their stress from being discriminated against for their sexuality (Pachankis, Westmaas & Dougherty 2011).

When LGBT smokers are asked about their reasons to smoke in social surveys, many of them report that they smoke when stressed (Falkin, Fryer & Mahadeo 2007; Nichter et al. 2007). Specifically, LGBT individuals are found to use cigarette smoking as a strategy to cope with depression, anxiety and other difficult mental states (Rosario, Schrimshaw & Hunter 2011; Wills & Cleary 1996). However, some studies (Conklin & Perkins 2005; Goodman & Capitman 2000; Parrott 1999; Steuber & Danner 2006) contradict this finding, indicating instead that for many respondents' cigarette smoking reinforced psychological distress because of the withdrawal symptoms associated with attempts to quit. This was consistent with a laboratory result on the effects of nicotine, where cigarette smoking was found to increase stress and decrease relaxation (Kalman & Smith 2005).

The current anti-smoking initiatives have failed to address the persistently high prevalence of smoking among the LGBT smokers. Tailored interventions may find utility focusing on personal resilience to deal with general and sexuality-specific stressors. Acknowledgment of LGBT smokers as a priority group for tobacco reduction is urgently needed. Therefore, this study calls on tobacco control marketers to consider sexuality and gender orientation in policy and partner with lesbian, gay, bisexual and transgender community organisations to develop culturally appropriate interventions (Glover, Patwardhan & Selket 2020).

2.7.5 Attitudes to Smoking by More Recent Immigrants to Australia

Australia is a highly diverse country, with approximately 5.3 million people (25% of the total population) born overseas and representing approximately 200 nationalities (Weber, Banks & Sitas 2011). Around 62% of migrants originated from non-English speaking countries, with 16% of the Australian population speaks their own native languages at home and approximately 3% not being proficient in English (Karuppannan 2011). Understanding smoking behaviour across such a dynamic and diverse population is important for developing effective smoking interventions, particularly among overseas-born and native-born Australians (Kalubi et al. 2020; Weber, Banks & Sitas 2011).

According to several studies (Abraido-Lanza, Chao & Flórez 2005; Jayaweera & Quigley 2010; Newbold & Neligan 2012; Weber, Banks & Sitas 2011), smoking prevalence among immigrants is low in most developed countries. For instance, the Australian health survey and a cross sectional study (Newbold & Neligan 2012; Weber, Banks & Sitas 2011) revealed that smoking prevalence among immigrants from Asia and Africa was low compared to European and North American migrants. In addition, previous research by Li and Wen (2015) ascertained that the age that a migrant arrives to a new country is an important determinant of smoking behaviour. Research indicates that over time, the behaviours of migrants start to become more consistent with those of native-born people, including the adoption of practices such as drinking alcohol and smoking cigarettes (Joshi, Jatrana & Paradies 2018; Kalubi et al. 2020).

A predominant reason for smoking among immigrants is acculturation (Ganeshasundaram & Henley 2008; Joshi, Jatrana & Paradies 2018; Reiss, Lehnhardt & Razum 2015). Acculturation refers to the process of behaviour change in immigrants as a result of interactions with their new social and cultural environment (Rudmin 2003). Acculturation occurs when immigrants try to connect with locals and generate new social networks. Often, cigarette smoking is used as practice to maintain social relationships, alleviate stress

resulting from being in a new environment, and cope with discrimination and poverty (Glenn, Frohlich & Vallée 2020; Abraído-Lanza et al. 2006).

According to a study by Mao et al. (2015), male immigrants from Asian countries such as China, where smoking is viewed as being particularly socially acceptable among men, show little intention to quit smoking in their new environment. The impact of anti-smoking initiatives and efforts in their new country is limited by their ongoing connections with peers from their same country of origin, who share similar views about smoking and help to reinforce them. The same researchers also report that immigrant Chinese men who are perceived to be the traditional breadwinner in their family tended to continue smoking in contexts where smoking is perceived as an important activity, such as in social and business. This is regardless of their awareness of its negative health impacts (Mao et al. 2014). Li (2014) discovered that there is a long history of smoking among immigrant Chinese men.

In other words, the country of origin could also underpin differences in smoking prevalence between immigrants and non-immigrants. In a recent study (Glenn, Frohlich & Vallée 2020), which differentiated immigrants from English- and non-English speaking countries, more important differences in prevalence were noted in the latter. Current anti-smoking initiatives should ensure that immigrants from non-English speaking background are able to access the information about the hazards of tobacco consumptions and are aware of the available smoking cessation services. Efforts to prevent smoking uptake among non-English speaking immigrants and those who arrive as children or adolescents and live longer than 20 years is especially important for anti-smoking interventions (Kalubi et al. 2020).

2.8 Issues Related to Cigarette Smoking

Adverse Health and Economic Losses

The adverse health and economic impacts of cigarette smoking are well established (Andrews & Heath 2003; Bardsley & Olekalns 1999; Choi et al. 1997; Collins & Lapsley 2008; Cuthbertson & Britton 2010; Daly et al. 2018; Daube et al. 2015; Eiser, Sutton & Wober 1978a; Mills 2018; Owen et al. 2018). There are at least 50,000 studies associating cigarette smoking with increased rates of mortality and morbidity, with particularly strong links with different types of cancer, cardiovascular diseases, and chronic lung diseases (Klesges et al. 1989). In Australia, smoking-related often illnesses often causing death include lung cancer, coronary heart disease and stroke (Daube et al. 2015). Past studies (Heckler 1985; Mattson, Pollack & Cullen 1987; Perkins 1992) affirm that cigarette smoking is the main determinant for all three diseases. According to Klesges et al. (1989), cigarette

smoking doubles the risk of heart diseases when combined with high blood pressure and hypertension.

Cigarette smoking is estimated to contribute to about 19,000 deaths annually in Australia (Siahpush & Carlin 2006). Australian tobacco-related illnesses were accountable for 142,525 hospital episodes, and potentially caused 184,579 lives lost every year (Ridolfo & Stevenson 2001). Approximately one third of heavy smokers aged between 20-30-years old will pass away due to smoking-related diseases (Mattson, Pollack & Cullen 1987). Klesges et al. (1989) argue that cigarette smoking contributes to issues such as work absenteeism, increased cost of medical care, a reduction in productivity, and fire accidents. Evidence to support these claims can be found in a report for the 1998/99 financial year, which recorded an approximate $21 million economic loss due to smoking-related issues; the same report found that 45% of those costs could have been avoided (Collins & Lapsley 2002). A more recently study revealed that work absenteeism due to tobacco-illness in Australia shaved off about $388 million from the gross domestic product (GDP) for 2016 (Owen et al. 2018).

Despite the fact that cigarette smoking triggers adverse health and economic impacts, many young adults continue smoking (Ferguson & Phau 2013). Moreover, recent reports (Colin 2018; Creighton 2017) indicate that there is an incremental increase in smoking prevalence in Australia. Such a finding indicates that anti-smoking initiatives are no longer effective (Lupton 1995b) at discouraging young adults from smoking (Ashok & Michael 2014). This is because many of the benefits of smoking, such as stress relief and a feeling of euphoria, are viewed by this group as immediate (Wang et al. 2016); (Weinberger & Sofuoglu 2009). In contrast, the disadvantages of smoking are delayed and probabilistic (Klesges et al. 1989).

In addition, some studies (Klesges & Glasgow 1986; Pomerleau 1980) report that immediate withdrawal from smoking can be very uncomfortable. For example, smokers may experience short-term coughing and sputum, alongside temporary craving for nicotine. On the other hand, the advantages of smoking cessation may not be immediately evident, with substantial health impacts only be experienced in the long-term. According to Klesges and Glasgow (1986), compared to non-smokers who contracted smoking-related diseases, many smokers never experience smoking-related illnesses in their journey of smoking. In a nutshell, smoking cessation is a situation of short-term pain and long-term gain that is seldom appreciated by stubborn young smokers (Bade & Cruz 2020)..

Impact on Life Expectancy

The adverse health impacts of cigarette smoking are widely acknowledged by the public (Moodie, Daube & Carnell 2009; Pierce, Lee & Gilpin 1994; Pirie et al. 2013; Schane, Ling & Glantz 2010). In 1986, more than 70% of people understood that any amount of cigarette smoking is harmful and that heavy smoking is particularly hazardous (Bade & Cruz 2020; Rogers, Hummer & Nam 2000). However, most people have a limited understanding of what the terms 'harmful' and 'hazardous' mean since these terms are not precisely defined.

Many studies (Doll et al. 2004; Ezzati & Lopez 2003; Organization 2013; Pandeya et al. 2015; Richard et al. 2004; Sakata et al. 2012; Schroeder & Koh 2014) assert that cigarette smoking - especially heavy smoking – can negatively impact life expectancy regardless of age, gender, race, socio-economic status, marital status, education, or income. However, heavy smokers and individuals who stop smoking later in life were reported to have greater risk of premature death than people who did not smoke or those that stopped smoking when younger or only smoked occasionally (Rogers, Hummer & Nam 2000). This is further evidenced by a study by (Rogers & Powell-Griner 1991), who found that on average, 25-year-olds that never smoked would live to the age of 81. In contrast, 25-year-olds who smoked heavily die at the age of 63, a shortfall of 18 years. Furthermore, heavy smokers would have a higher chance of experiencing a range of potentially life-threatening smoking-related illnesses. Those who smoked occasionally and quit intermittently would typically die later than heavy smokers but earlier than those who never smoked.

One can argue that other behavioural factors such as heavy alcohol drinking and obesity could contribute to earlier mortality among such individuals. However, past studies (Rogers, Hummer & Nam 2000; Rogers, Nam & Hummer 1995) assert that under normal circumstances, not many heavy smokers are high-risk drinkers and obese. In addition, heavy smokers and individuals who quit later in life have a higher risk of dying from lung cancer. However, most of them die due to cardiovascular issues (Bade & Cruz 2020).

Second-hand and Third-hand Smoking Effects

According to Guindon and Boisclair (2003), the number of cigarette smokers is estimated to reach 1.9 billion by 2025. Data from the WHO indicates that there are about 6 million people that die annually due to smoking-related illnesses, with the global economic burden costing hundreds of billions of dollars in productivity losses and medical costs (WHO 2013). However, many people possessing little knowledge about the harm that their habit could have on the health of their family members, friends, colleagues and public continue smoking (Zhou et al. 2014). However, even those that understand and acknowledge the adverse health

effects of smoking found it difficult to quit due to the addictive nature of nicotine (Hartmann-Boyce et al. 2014; Lynch & Bonnie 1994; Weinberger & Sofuoglu 2009; Rashiden et al. 2020;).

Many studies (Barnoya & Glantz 2005; Cuthbertson & Britton 2010; Moodie, Daube & Carnell 2009; Sureda et al. 2012; Zhou et al. 2014; Rashiden et al. 2020) report that non-smokers can be exposed to tobacco smoke in multiple ways, including second-hand smoke (SHS) and third-hand smoke (THS). Second-hand smoke is the exhalation of smoke and the smoke released from burned tobacco during smoking. Although smoking prevalence has been reported to decline in most developed countries, the negative health impacts from second-hand smoke are similar to those of first-hand smoke (Moodie, Daube & Carnell 2009; Zhou et al. 2014). In other words, non-smokers are not shielded from the harm of tobacco smoke even though they do not smoke. Second-hand smoke contains more than 4000 chemicals, 250 of which are carcinogenic and thus poisonous to humans (Rashiden et al. 2020; Zhou et al. 2014). These include hydrogen cyanide (a substance used in chemical weapons), butane (used in lighter liquid), carbon monoxide (a key component of vehicle exhaust), arsenic (used to kill pests), cadmium (the main substance in batteries), and ammonia (used in many household cleaning products).

A positive links between the hazardous chemicals in SHS and human health has been demonstrated. Epidemiologically, the risk of heart disease among second-hand smokers was found to be almost double that of regular smokers (Law, Morris & Wald 1997). According to Glantz and Parmley (1995), the risk of heart disease stems from malfunctioning platelets leading to greater likelihood of thrombus development (blood clog) and the destruction of artery lining (Burghuber et al. 1986; Davis, Shelton & Watanabe 1989). In a human experiment by (Rubenstein, Jesty & Bluestein 2004), the platelets of non-smokers were extracted and placed in cigarette smoke. The result was that the mediator of platelet activation (fibrinogen) was found to have inflammatory marks similar to those found in individuals suffering from heart disease (Davis et al. 1985). Platelet activation caused by SHS also damaged the artery linings of the endothelium, which is the first layer in the arterial bed. Plaque formed and ruptured in the endothelium, greatly reducing blood flow (Puranik & Celermajer 2003). Besides blood flows reduction, SHS impairs the ability of blood vessels to dilate (Widlansky et al. 2003), causing arterial stiffness (Mack et al. 2003) and cardiovascular disease (Mahmud & Feely 2004). A study by (Mahmud & Feely 2003) found that a healthy male significantly increases their risk of aortic arterial stiffness when exposed to fifteen cigarettes, or an unventilated SHS environment for just one hour. Other

human experiments showed that SHS can cause insulin resistance, particularly in women (Kendall et al. 2003), inconsistent heart rate (Pope et al. 2001), DNA damage (Howard et al. 1998), oxidative stress (Sabatine & Antman 2003), antioxidant depletion (Jacob 2000), low level of high-density lipoproteins (HDL) in children (Moskowitz, Schwartz & Schieken 1999), and many other life-threatening heart diseases (Rashiden et al. 2020).

Similarly to SHS, THS has deleterious health impacts on non-smokers (Zhou et al. 2014). The concept of THS originated in 2006, and refers to the residual smoked tobacco that remains on surfaces and in dust and that compounds with other components in the environment to form secondary pollutants (Sleiman et al. 2010). According to Ferrante et al. (2013), SHS and THS are both present at the commencement of smoking. Later, SHS is ventilated and THS pollutants remain in the indoor environment. The residuals could persist for number of days and/or months after tobacco consumption (Ferrante et al. 2013). Although non-smokers may not be smoking, they may nevertheless inhale tobacco smoke involuntarily, including by touching the residual of smoked tobacco present on surfaces and by indirectly intaking THS pollutants in the air (Ferrante et al. 2013). Therefore, non-smokers are still exposed to THS risk after a cigarette has been extinguished. Of great concern, THS can be present and persist in households where there are no smokers. A study by Matt et al. (2011) found that THS particles could remain in new occupants' urine and blood up to two months after a house was cleaned and after a smoker moved out. This study underpinned a statement released by the Surgeon General of the U.S. Public Health Service that the home is one of the most common places that children can be exposed to THS (Zhou et al. 2014).

When children are exposed to THS particles, they are exposed to the risk of pulmonary damage, low level of HDL, endothelium breakdown, and vascular system failure. Children also tend to experience slower brain and lung development, alongside other smoking related illnesses (Cuthbertson & Britton 2010; Moodie, Daube & Carnell 2009). High concentration of THS particles can be found on surfaces such as carpet, doors, clothes, floors, pillows, mattresses, walls, and even skin and hair (Sleiman et al. 2010). Other common surfaces where THS has been reported include vehicle cabin surfaces such as dashboards, window screens and car seats. The existence of THS in cars can persist for several days someone has smoked (Ferrante et al. 2013). Similar negative health impacts were reported in pregnant women who were exposed to THS environments. According to Rehan, Asotra and Torday (2009), nicotine particles that remained in THS are able to transfer across the placenta. Specifically, nicotine transforms into the metabolite 'cotinin' and assembles in foetal tissues

and maternal milk. THS components that a foetus is exposed to in utero can increase the risk of pulmonary damage, lung impairment, preterm delivery, impetuous abortion, low birth weight, childhood asthma and many other smoking-related illnesses (Cui et al. 2016; Rashiden et al. 2020; Harding & Maritz 2012; Huynh et al. 2006; Leonardi-Bee, Britton & Venn 2011).

In summary, the adverse health impacts of passive smoking have been reported in many studies. Nevertheless, there is little awareness about the hazardous impacts of THS among the public, especially in relation to its risks for children and pregnant women. For example, Winickoff et al. (2009) reported that only 43.2% of smokers and 65.2% of non-smokers considered THS hazardous to children. Public health officials and policymakers should further investigate which anti-smoking initiatives (plain packaging, health images, warning labels, smoke-free policy and Quitline facility) could reduce smoking among young adults (Bade & Cruz 2020; Ferrante et al. 2013).

2.9 Anti-Smoking Initiatives in Australia

Anti-smoking policy and practice in Australia is like that in the US. Table 1.3 depicts the history of anti-smoking initiatives that were used to reduce tobacco smoking in Australia from 1980 to 2012.

The first national campaign on smoking was the National Warning against Smoking Campaign in 1972, which used posters and slogans with anti-smoking messages asking smokers not to smoke near one another. Due to a lack of formal evaluation at the time, no information is available about the campaign's impact on smoking prevalence. The only information known is that the campaign cost $1.5 million in three years.

The next significant anti-smoking initiative was the National Campaign against Drug Abuse in 1985, which was later renamed as The National Drug Strategy by the Ministerial Council on Drug Strategy (MCDS). The Quitline telephone support service was established in conjunction with a mass media anti-smoking campaign (Germain et al. 2012; Durkin et al. 2021). The campaign was launched with the main aim of getting women and young adults to stop smoking. At that time, smoking rates were 42% and 30% for men and women respectively.

Smoke-free policies were introduced in 1986 in federal workplaces, and successfully reduced male smoking prevalence from 42% to 37%, while women recorded a reduction from 30% to 29%. In 1987, smoking on domestic flights was banned. By 1989, tobacco advertising was prohibited in print media. Smoking prevalence among men and women reduced further to

31% and 26% respectively (Wilkinson et al. 2019). However, the increase in the negative perception of smoking and intention to quit stalled in the early 1990s. As a response, a $9 million National Tobacco Campaign (NTC) was launched by the Australian Government to regain momentum in tobacco control (Durkin et al. 2021; Winstanley, Woodward & Walker 1995).

The NTC was designed to encourage quitting more forcefully. For instance, it increased the legal age for the purchase of cigarette from 16 to 18 through the amended Tobacco Act (1987) and introduced an increase of 18% on cigarette prices through the Federal Excise Duty (FED). In-store advertising and point-of-sale- displays remained the only conventional types of tobacco publicity. These vigorous anti-smoking initiatives led to record low smoking prevalence rates for men and women of 24% and 20% respectively (Winstanley, Woodward & Walker 1995).

Another significant tobacco control measure launched by the Australian Government was in mid-February 2006. The Australian Government committed $25 million over four years to discourage smoking behaviour in young adults (Moodie, Daube & Carnell 2009). This included deployment of mass media anti-smoking campaigns to inform people about the negative health impacts of smoking. This mass anti-smoking campaign was divided into two stages, with the first stage focused on the release of graphic health warnings on tobacco product packaging. All tobacco products manufactured or imported into Australia were required to be printed with the new health warning images. However, some tobacco production countries such as Ukraine, Honduras, Dominican Republic, Cuba and Indonesia considered these actions unfair, and sued Australia for restrictions of trade in the World Trade Organization (WTO) for its efforts to standardise cigarette packaging (Fooks & Gilmore 2014; Frankel & Gervais 2013; von Tigerstrom 2013; Voon 2015;Wilkinson et al. 2019). After six years of bitter legal action, the WTO panel announced that Australia's plain packaging law did not infringe the trademark rights of tobacco companies (Newswire 2018). However, the International Trademark Association (INTA) did not support this decision, claiming that the WTO set a dangerous precedent for intellectual property that could lead to similar action being taken in relation to alcohol, pharmaceutical goods and fast food.

The second stage of the new tobacco control measures was launched at the end of December 2006, and targeted young adults via television, cinema, magazines, radio and outdoor advertising, graphically depicting the range of toxic chemicals in cigarette smoke and linking these to confronting health conditions.

Table 2.1 Preventive Health Actions to Reduce Tobacco Smoking in Australia (1980-2012)

Year	Preventive Health Actions	% of Male Population Smoking	% of Female Population Smoking
1980	1st Quit Campaigns	42	30
	Smoke Free Federal Workplace	37	29
1986	4 Rotate Pack Warning	36	28
	Smoking Ban on Domestic Aircraft	35	27
1989	Tobacco Advertising Banned in Print Media	31	26
	Federal Bans on Tobacco Sponsorship	30	26
1992	Pack Health Labelling Regulations Introduced	29	25
	Nicotine Patches Available	28	24
	Increased Age for Sale of Cigarettes from 16 to 18	28	24
1995	Increases in Federal Exercise Duty	27	24
	Health Warning on Pack (covering 25%)	27	23
	National Tobacco Campaign	26	24
1998	Melbourne Cricket Ground Smokefree	26	24
	Exercise Per Stick	26	24
	Goods and Services Tax on Tobacco	26	24
2001	Remaining Tobacco Sponsorship Banned	26	23
	Smoke Free Dining	26	22
	Point of Sale Advertising Bans	25	21
2004	Gaming Venue Bans	24	20
2007	Graphic Health Warnings	23	19
	Smoke free Bars and Pubs	23	19
2010	25% Tax Increase on Cigarette	22	18
2012	Plain Packaging Implemented	22	17

Sources: State of Preventive Health Report 2013, p 24.

According to Brennan et al. (2011), the campaign increased young adults' awareness of the health consequences of smoking and their motivation to quit. The most prominent strategy to reduce smoking among young adults to date is the implementation of plain packaging (Clarke & Prentice 2012). The *Tobacco Plain Packaging Bill (2011)* took effect in December 2012 with the aim of replacing standard cigarette packaging with prominent and graphic anti-smoking messages and drab dark brown plain packaging with small-font brand names to discourage ongoing smoking, especially among young adults (Brennan et al. 2011; Moodie, Daube & Carnell 2009; Dono, J et al. 2019).

2.10 Claims of Anti-Smoking Initiatives in Australia

Australia has often been at the leading edge of tobacco control in the world, as evidence by the fact that smoking prevalence has consistently and considerably reduced since 1980. This may be credited to the use of, and type of anti-smoking initiatives implemented in the country. However, recent reports (Ashok & Michael 2014; Creighton 2017) indicate that the

prevalence of smoking among young remains relatively stable, with approximately 20% to 18% of young adults regularly smoking in Australia (Pandeya et al. 2015).

While numerous studies (Daube et al. 2015; Dunlop, Perez & Cotter 2011; Pechmann & Reibling 2000; Wakefield et al. 2015; White, Tan, et al. 2003; Winstanley, Woodward & Walker 1995; Wilkinson et al. 2019) assert that anti-smoking initiatives have effectively reduced smoking initiation, none of these authors identify the factors that lead to ongoing smoking among young adults. None of these authors indicate whether anti-smoking initiatives in Australia successfully address the reasons why young adults continue to smoke.

According to some studies (Bardsley & Olekalns 1999; Gilbert 2005; Pechmann & Reibling 2000; Shevalier 2000; Durkin et al. 2021), mass media-based anti-smoking advertisements have no distinguishable impact on smoking pervasiveness among young adults. Others rate the impact of advertisements more positively, arguing that in spite of their limited impact in reducing long-term smoking rates, anti-smoking advertisements nevertheless have short-term positive impacts such as enhanced awareness of health risks, increased motivation and intention to quit, and smoking fewer cigarettes per day (Brennan et al. 2011; Neri et al. 2016; Tyrrell 1998; Wakefield et al. 2015; White, Tan, et al. 2003). Nevertheless, the overall efficiency of anti-smoking advertisements is dubious, with significant evidence that they do not sharply reduce overall smoking rates (Pechmann & Reibling 2000; Shevalier 2000) and do not lead to stepped-decline (Keeler & Marciniak 1999). Indeed, recent data indicates that smoking prevalence is either rising or stagnating, despite the implementation of increasingly severe anti-smoking initiatives (Ashok & Michael 2014; Claydon, Webber & Sweeney 2017; Creighton 2017; Martin, Bowden & Miller 2018; Mendelsohn & Kosterich 2018).

This phenomenon can perhaps be understood in relation to way the anti-smoking advertisements are developed (Gilbert 2005). Such advertisements may not take into account the circumstances, preferences and cultural contexts of young adults. For instance, advertisements focused on health risks have less impact on those who view the advertisement as unrelated to their everyday life context (Shevalier 2000). Young adults simply do not listen to the messages conveyed to them. As a result, young adults that smoke choose their own interpretations of smoking.

The current use of scare tactics, fear campaigns and anti-smoking advertisements seeking to shock young adults into quitting seems to do little to encourage them to quit (Ferguson & Phau 2013; Scudu 2020). Other factors such as stress, depression, peer pressure, low self-esteem, low self-efficacy, addiction to nicotine, socio-economic disadvantage and a frequent

desire to attain a social identity have been ignored in advertising campaigns. These social-cultural dimensions should be considered while designing the anti-smoking advertisements (Gilbert 2005). Instead, current anti-smoking advertisements portray health as a supreme good, with medical science thereby framed as the highest rationality to which young adults should conform.

Anti-smoking advertisements that employed health risk factors to dissuade young adults tend to frame young adults as rational actors whose habit is open to be altered, assuming that if told the risks, they would make effort to change (Lupton 1995b). However, according to the Imperfectly Rational Addiction Theory by Becker and Murphy (1988), not all young adults are rational enough to distinguish and compare the consequences of their actions (Sloan & Wang 2008). Young adults have limited information about the impacts of consuming addictive goods (such as cigarettes) and become addicted 'unexpectedly'(Gough et al. 2009).

Past research by Lynch and Bonnie (1994) found that young adult smokers did not pay much attention to advertisements employing health risks factors to deter them from smoking. Rather, such advertisements were perceived as irrelevant. This is consistent with Petersen and Waddell (1998), who found that where the health risk communicated is not absolute, this has less ability to practically impact on their present lives. For young adults, knowledge about health risks is ambiguous and not a key input into their early decisions to smoke. Ultimately, the medical consequences of smoking are not a priority in young adults' knowledge hierarchy (Guillaumier, Bonevski & Paul 2015; Scudu 2020). As illustrated by Young and Banwell (1993), young adults usually choose to smoke to attain a social identity that they view as more valued.

In light of the problems with the design of anti-smoking initiatives and their limited impact on young adults, one could question whether anti-smoking initiatives have sufficiently addressed the reasons young adults continue to smoke. It is arguable that ineffective anti-smoking initiatives continue to be used merely to show the government is concerned about public health (Lupton 1995b).

However, there is a clear conflict. Anti-smoking campaigns are funded by federal and state governments to facilitate the objectives of the government and merely to maintain the view that governments are authoritative and active in their public health efforts. The consistent appeal to fear and reference to health risks does not lead to individuals moderating their behaviour (Scudu 2020; Gilbert 2005).

Anti-smoking initiatives seek to caution young adults about the adverse impacts of smoking and then allow them to make their own choice. The government is just releasing its duties in saving public health by finding the cause of ill-health at the level of individual responsibility. Perhaps, governmental funding of anti-smoking initiatives may be intended to be of limited effectiveness so that it can to harvest the taxes levied on cigarettes sales (Geis, Cartwright & Houston 2003).

Anti-smoking initiatives ought to consider basic socio-cultural variables and adopt a more holistic view of the formation of smoking behaviour among young adults. They should also acknowledge the importance of young adults' subjective views of smoking and the peculiar meaning that some of them can attach to smoking. It is crucial for those who design anti-smoking programs and policies to target young adults more effectively, and not merely employ medically based anti-smoking initiatives in a 'colonialist' way (Bafunno et al. 2020; Marsh 1997).

2.11 Factors that Influence Ongoing Smoking Among Young Adults

2.11.1 Construction of Self-identity

For many years, smoking has been studied through different perspectives and in different populations. One of the prominent factors that lead to smoking is self-image or self-identity (Falomir-Pichastor et al. 2020; Lloyd, Lucas & Fernback 1997; van den Putte et al. 2009; Walker & Loprinzi 2016). This section discusses young adult smokers' perceptions of how smoking can shape their self-identity (Amos et al. 1997; Bland, Bewley & Day 1975). Construction of self-identity has been reported to be one of the key factors causing young adults to continue smoking (Denscombe 2001; Distefan, Pierce & Gilpin 2004; Dong Hwan 1990; Falomir-Pichastor et al. 2020).

Self-identity

While smoking was an increasingly common habit among both men and women during the 20th Century, women smoking was still widely viewed as impermissible because of social etiquette (Burns 2007). In 1920, less than 2% of women smoked in Great Britain. During Second World War, women started to take over men's jobs in munition factories and possibly picked up men's habits as well. While women started to gain more freedom and independence, men typically continued viewing smoking among women negatively (Fowler & Weinbren 2018). At the same time as women started to smoke, cigarettes started to become scarcer. Many men accused women for this increased scarcity. Male smokers argued that this practice, which they widely viewed as masculine and 'tough', should be limited to

male smokers (Lawton 1962; Todd 1962). Young women who smoked were socially viewed as more masculine opined to enjoy more freedom (Cooper & Kohn 1989). This acquired freedom was also associated with freedom to socialise (Pirie, Murray & Luepker 1991) and the appearance of adulthood (Bennett 1995; Meijer et al. 2020).

With women starting to enjoy greater freedom to socialise, they smoked with their male and female peers and showed no intention of giving up the habit (Branstetter et al. 2012; Emmons et al. 1998; Hämynen et al. 1987; Lipkus et al. 1994; Oakley, Brannen & Dodd 1992). At that time, smoking was heavily associated with social freedom and the attainment of adulthood (Bynner, 1969). As the years passed, more people started to pick up a smoking habit, with the diffusion of smoking became commonly led by younger, more sophisticated and educated men and women (Waldron 1991a). The image of such individual freedom was even being capitalised by tobacco companies, as represented by the iconic representation of the Marlboro man. Nevertheless, after the 1964 General Surgeon Report indicated that smoking would harm smokers' health tobacco advertising was increasingly limited and prohibited in many countries (Novello 1990) .

Adolescent Self-identity

Adolescence is a stage of life where young adults experience a heightened self-awareness and preoccupation with self-identity or self-image (Burton et al. 1989). During this transitional period from teenagerhood to young adulthood, it is quite common for individuals try to discover who they are, both in terms of their social position and their personalities (Meijer et al. 2020; Thoits & Virshup 1997).

According to identity theory (Stets & Burke 2000), individuals play different roles in society (e.g., parent, mentor, employee etc.), with the value of self-identity associated and reflected by these roles. According to this theory, the more dominant a particular role is the more likely an individual's behaviour will match that role (Burke & Stets 2009). Similarly to identity theory, social identity theory proposes that the formation of self-identity is associated with an individual's role within social groups (Abrams & Hogg 1990). According to this theory, an individual will assess the group's norms as appropriate and match these to his or her own behaviour. The characteristics, opinions, values and goals of the group are perceived as reflections of one's self-identity (Hagger et al. 2007). Arguably, an individual's little idiosyncrasies are also partly shaped by social factors and group norms (Hitlin 2003a). Certain behaviour is formed when it matches an individual's value system (Reid & Deaux 1996).

However, there are no criteria determining whether one self-identity is better than another. According to Reid and Deaux (1996), it is more likely that social roles, group norms and individual idiosyncrasies form the sense of self-identity when all these three elements collaborate. In fact, an individual's behaviour is the centre of his or her self-identity. For instance, cigarette smoking may be an important self-identity to certain groups of individuals. These might validate their smoking behaviour by imitating their role models for being glamorous and cool (Scheffels & Schou 2007). This is particularly true when young adults are exposed to scenarios such as watching movies where the main protagonist smokes a cigarette upon their victory against the enemy. Such stories imply that the hero or heroine possesses desirable traits such as success, courage, maturity, coolness and physical attractiveness. If these protagonists smoke, then smoking becomes associated with these desirable traits (Distefan, Pierce & Gilpin 2004; Meijer et al. 2020; Distefan, Pierce & Gilpin 2004). This logic indicates that it is necessary to disrupt smokers' identification with such traits by establishing or shifting them to new self-identities to effectively discourage them from smoking (Finfgeld 2004; Kearney & O'Sullivan 2003).

The idea that a shift in self-identity could cause behavioural changes in relation to smoking has not been tested in recent years. However, several studies have been conducted on the self-prototypes of smokers (Hoffner, Lee & Park 2016; Rivis, Sheeran & Armitage 2006; Walsh & White 2007). Interestingly, Charng, Piliavin and Callero (1988) claim that self-identity can be changed or shifted when an individual performs and repeats a new behaviour, causing it to become part of the their self-identity. In this way, a new self-identity can predict the smoking intention and behaviour of smokers (Åstrøm & Rise 2001; Conner et al. 1999; Sparks 1994; Sparks & Guthrie 1998). However, while other studies did not find a direct link between self-identity and behaviour (Charng, Piliavin & Callero 1988; Lee, Susan, et al. 2018; Smith et al. 2007; Terry, Hogg & White 1999), the broad view is that past behaviour moderates self-identity impacts on intention and behaviour (Davey & Zhao 2020; Moan & Rise 2006; Terry, Hogg & White 1999).

If a new self-identity can be partly established by repetitive behaviour (Charng, Piliavin & Callero 1988), then past behaviour should be an important factor in determining the impact of self-identity on present smoking behaviour. The question that remains to be asked is which past behaviours should be considered in such an investigation. According to Aubin et al. (2004), in the context of smoking the emphasis should be placed on the person's history of smoking and their attempts to quit. Previous studies on past behaviour and quitting smoking have mainly focused on the number of cigarettes smoked each day, numbers of

attempts to quit, or the duration of quitting attempts (Assari et al. 2019; Woodruff, Lee & Conway 2006).

Therefore, it is suggested that transition toward a non-smoker identity may be necessary for successful quitting. Also, successful anti-smoking initiatives should provide strategies preventing the negative effects of tobacco continuance on identity transition such as facilitating overall young adults' career progression, and shame avoidance that are crucial to their social dynamics (Davey & Zhao 2020). Since self-identity plays an important role in smoking behaviour, this study hypothesises that:

H1: The construction of self-identity will be positively related to smoking behaviour in young adults

2.11.2 Peer Pressure

In Australia, young adult smokers recorded higher cigarette consumption and nicotine dependence than their seniors (Al-Nimr, Farhat & Alwadey 2020; Ferguson & Phau 2013). Young adult smokers are most likely to become long-term and heavy smokers with a low intention to quit (Nordstrom et al. 2000). Therefore, it is crucial to understand the factors influencing the initiation and continuation of smoking among young adults to reduce smoking rates among them and the myriad negative health consequences caused by smoking among them (Claydon, Webber & Sweeney 2017).

Although adolescent risk behaviour studies focusing on smoking have received significant attention in the past few years, the understanding of the influence of social dynamics such as friends or peers on smoking remains superficial (Kobus 2003; Leventhal & Cleary 1980; Turner, Mermelstein & Flay 2004; Tyas & Pederson 1998; Al-Nimr, Farhat & Alwadey 2020). According to some studies (Brown, Eicher & Clasen 1986; Steinberg & Silverberg 1986), adolescence is a period when young adults are highly influenced by their peers. At this stage, young adults start to pursue their own independence and seek to determine their self-identities by distancing themselves from their parents and looking instead for peer groups that they may identify with. Often, young adults spend more unsupervised time with friends and start to ascribe greater importance to their opinions, acceptance, comfort and advice of their peers (Brown, Eicher & Clasen 1986; Pentz et al. 2015). Therefore, at this stage of their life, young adults become more receptive to peer influences on some risky behaviours such as smoking.

Some studies on risk behaviour (Akers 1973b; Bandura & Walters 1977; Ross 1999) demonstrate that young smokers might influence one another to smoke in various ways, and

often without direct provocation or invitation. (Steinberg & Monahan 2007), for example, observed the importance ascribed to smoking and how their young adult study subjects admired it among their peers. Young adults tend to adapt and mimic their peers' smoking behaviour when it is prevalent within the group (Cialdini, Kallgren & Reno 1991; Harakeh & Vollebergh 2012; Rivis, Sheeran & Armitage 2006). Occasionally, peer groups may purposefully or incidentally seek to make members conform by giving positive acknowledgement or negative admonishment in their social interactions (O'Loughlin et al. 2009).

The existence of such conformity behaviour is supported by neuroscientific studies (Braams et al. 2015; Chein et al. 2011) that demonstrate that the neural systems of young adults are particularly susceptible to risky social influences. Young adults feel more affective and motivated to carry out risky behaviours such as smoking when their brain system becomes reactive in the presence of their peers (Emily, Baldwin & Agnes 2012; Pfeifer & Allen 2012). The social group, especially one made up of young adults, rewards blending in and imposes a cost on not blending in (Falk et al. 2014; Molenberghs et al. 2014). It is not uncommon for peers to share or distribute cigarettes to one another and teach one another how to smoke. This brings young adults into a situation where they are accepted into to the group and allowed to share their time together. Indeed, most young adult smokers reported that their initial smoking experiences started with their friends (Forster et al. 1997; Yang & Laroche 2011). Smoking behaviour may be further reinforced or maintained by peer influences, and this social smoking may lead to long-term and heavy smoking (Nordstrom et al. 2000; Vries et al. 2006). This is supported by a study by Wayne and Connolly (2002), which found that the prevalence of smoking among young adults is due to peer influence or pressure. If the peer group exerts negative influence among young adults by challenging them to prove their maturity by performing activities such as smoking, young adults are more likely to embrace such behaviour because they view it as the only way of assuring their acceptance by the group (Lakon et al. 2015).

However, early studies (Conrad, Flay & Hill 1992; Dolcini & Adler 1994; Kobus 2003; Mcalister, Perry & Maccoby 1979; Simons-Morton & Farhat 2010; Stern et al. 1987; Sussman et al. 1990) reporting on peer influence in initiation into and maintenance of smoking were predominately narrative. In these studies, the attention was placed on parental and sibling influences. For example, a study conducted by Erlingsdottir et al. (2014) showed that young adults smoking behaviour resulted not solely due to peer pressure, but also parental influences. Young adults whose parents were smokers tended to conform to their

parents' habit without being urged to do so (Bandura 1999). This implies that passive parental influences play a role alongside peer pressure in young adult initiation into and maintenance of smoking. Nevertheless, most previous research focused on cross-sectional studies, rather than the link between smoking behaviour in young adults and their peers or friends (Al-Nimr, Farhat & Alwadey 2020).

Despite most studies affirming that peer influence or pressure is a powerful influencer for smoking initiation and continuation, some important indicate otherwise. For instance, a study conducted by O'Loughlin et al. (2009) indicates that young adults that only had a few friends that smoked were more than seven times more likely than those that had no friends that smoked to go from being a nondaily smoker to a daily smoker. Nevertheless, a longitudinal study in six European countries conducted by de Vries et al. (2006) indicates that the link between peer influence and smoking is not universal, with this link being found to be significant in only one country. According to the authors, young adult smokers select friends that have same smoking behaviour and bonded with them and prefer not to mingle with non-smokers (Al-Nimr, Farhat & Alwadey 2020).

According to homophily theory (Kandel 1978), individuals mostly prefer the company of those who possess similar beliefs, characteristics and behaviours to their own. This is particularly obvious in the context of young adult friendship groups, where peers typically share similar attributes, including risky behaviour (Hogue & Steinberg 1995; McPherson, Smith & Cook 2001). Kandel (1978) explains that there are two mechanisms that underpin homophily: 1) peer influence and 2) friend selection. Peer influence refers to the process by which peers mould one another's attitudes and behaviour, leading to them becoming more similar. Friend selection, on the other hand, refers to the tendency among young adult to establish friendships with peers who share similar traits. A classical theory among influence theories is the differential association theory developed by Sutherland and Cressey (1955). Edwin Sutherland propounded that through interaction, individuals learn the attitudes, values, motives and techniques necessary to perform risky or defiant behaviour from one another. Akers (1973a) extended Sutherland's theory through his social learning theory, which proposed that individuals learn to perform deviating acts through interaction with one other in social environments. According to the theory, individual choices to commit risky behaviour are guided through observations of how this behaviour is penalised or appreciated by peers. Each of the three theories outlined here asserts that homophilous friendship influences peer behaviour.

On the other hand, control theory, as advanced by Gottfredson and Hirschi (1990), postulates that aberrant young adults tend to seek friends who practice the same risky behaviours as their own. This implies that homophily in young adult behaviour is also accountable for friend selection mechanisms. According to control theory, risk behaviour among young adults is not merely the result of peer influence, but also self-control (Gottfredson & Hirschi 1990); their commitment to try delinquent substances is shaped by their individual impulsive regulation. For example, young adults who have low self-control tend to participate in risky behaviour and are more likely to seek friends that also have low levels of self- control. Such young adults always engage in the same risky behaviour as their friends. Therefore, initiation into and ongoing smoking is caused by both peer influence and friend selection.

This finding is further supported by the interpersonal closeness principle (Goldstein, Cialdini & Griskevicius 2008; Hashim et al. 2020; Reese, Loew & Steffgen 2014; Turner 1991), which is also known as social proximity of normative referents. According to this principle, individuals tend to respond to social pressure differently based on the value or relative importance they place on an interpersonal relationship (Leary 2004; Hashim et al. 2020; Weisbuch et al. 2009). The closeness of different types of peer groups (e.g., general friends, close friends, classmates, colleagues etc.) determines different level of influence. Ties are stronger – and influences more marked - in relationships characterised by long-lasting commitment, close contact, emotional attachment, intimacy, and time and energy investments (Cooley, Elenbaas & Killen 2012; Hashim et al. 2020; Wellen, Hogg & Terry 1998). Similarly, several studies on young adult smoking behaviour (Flay et al. 1994; Johnson & Hoffmann 2000; Marvin et al. 1983) affirm that the quality of peer relationships determines smoking initiation and continuation, with mimicry and peer pressure tending to shape young adult smoking behaviour. It is suggested that both peer cues and psychological cues (Hashim et al. 2020) increase the possibility of contingent smoking, and should, therefore, be addressed by anti-smoking policies and anti-smoking advertisement. More specifically, special attention can be paid to help young smokers avoid or counter social pressure to smoke and to help smokers resist the use of cigarettes to relieve distress (Al-Nimr, Farhat & Alwadey 2020). Therefore, it is hypothesized that:

H2: Peer pressure has a positive relationship with ongoing smoking among young adults.

2.11.3 Socio-Economic Conditions

In many early-industrialised countries about hundred years ago, cigarette smoking was limited to male urban elites (Borio 2001; Gately 2001; Gunter et al. 2020; Musk & De Klerk

2003). Today, cigarette smoking can be seen almost everywhere, and in particular among those that live in poor socio-economic conditions (Graham 2009b; Guillaumier, Bonevski & Paul 2015). This section of this thesis underlines the importance of understanding the role that socio-economic factors have historically played in the field of public health. It begins with a discussion of how economics and social change exposed different populations to novel risk behaviours such as cigarette smoking. Then, it explains the association between socio-economic disadvantage and the behavioural risks that certain sectors of society have historically adopted. Last, this section hypothesises the possible relationship between socio-economic factors and young adult smoking behaviour (Gunter et al. 2020).

According to the cigarette epidemic descriptive model by Lopez, Collishaw and Piha (1994), there are four stages that can explain the progressive and differential adoption of smoking behaviour in most developed countries. The first stage was characterised by low cigarette consumption among men (Wald & Nicolaides-Bouman 1991). The second stage saw the introduction of manufactured cigarettes, with men adopting widespread smoking first, followed by women. At that stage, socio-economic radiant in cigarette smoking did not exist and smoking prevalence in more advantaged groups was low. The third stage entailed greater smoking prevalence among highly educated people, while the fourth stage has been marked by the decline and stagnating of smoking prevalence in both men and women and the emergence of more marked socio-economic differences between smokers and non-smokers (Wang, G & Wu 2020)..

Along with the occurrence of socio-economic differences in most developed countries, market liberalisation and investment gained pace in some Asian countries as well. For example, China reformed its economy, leading some transnational tobacco companies to target the untapped female market there (Gong et al. 1995; Kaufman & Nichter 2010; Yang et al. 2001). Today, young adults in China are regularly exposed to cigarette advertising and promotion (Warren et al. 2000). International cigarette brands are widely considered indicative of status attainment (Kaufman & Nichter 2010), and China remains the world's largest consumer market for cigarettes (Warren et al. 2000; Yang et al. 2001). In Western countries such as the UK, USA, Canada, New Zealand and Australia, smoking prevalence was high among young adult males, with low school performance linked to cigarette initiation among both boys and girls (Yang et al. 2004). Adolescent girls were reported to smoke more compared to less advantaged groups (Yang et al. 2004). Such evidence suggests that smoking populations in most countries skew to young socio-economically disadvantaged

adults. As such, socio-economic disadvantage is a strong predictor of tobacco consumption (Wang, G & Wu 2020)..

Since socio-economic disadvantage increases the likelihood of smoking in young adults, attention should be paid to understanding the lives of young adults. Specifically, it is important to appreciate the socio-economic circumstances of young adults and how these influence their smoking habits as they grow up, pass through adolescence and journey towards adulthood.

Studies in some developed countries reveal that children's social starting point (measured by parental occupation) influences their social terminus (their own occupation). According to Breen (2004), while the strength of this association varies across different developed societies, it remains important in all of them. Children born in less socio-economically advantaged situation are at risk of disadvantage throughout their lives. Education is the main pathway for improving socio-economic position (Elgar et al. 2015;Tomioka, Kurumatani & Saeki 2020; Jennie 2008; Mishel, Bernstein & Allegretto 2006). In many circumstances, children who are socio-economically advantaged tend to acquire educational qualifications that enable them to achieve ever higher rungs of occupation and income. Past research (Burton 1990; McDermott & Graham 2005) also indicates that young adults from advantaged backgrounds and with educational qualifications tend to defer marriage and parenthood, as they are more motivated to progress to higher paying jobs. On the other hand, young adults that are poor and possess no educational qualification are more likely to enter the workforce early. Single parenthood was also reported as providing a sense of security and serving as a rewarding route to adulthood (Graham & Der 1999b). Nevertheless, young and single parenthood presents a serious risk of hardship that can persist in adulthood (Graham 2007l ; Gunter et al. 2020).

The relationship between socio-economic hardship and health behaviours is well documented (Lynch, Kaplan & Salonen 1997). Past studies (Barbeau 2004; Healton & Nelson 2004; Wewers et al. 2007) assert that factors such as education, income, and occupation directly influence health behaviours such as cigarette smoking. Socio-economically disadvantaged young adults tend to be less healthy compared to advantaged young adults. This is because disadvantaged young adults are more likely to be exposed to higher levels of stress, typically possess fewer cognitive resources, experience greater environmental constraints, adopt poorer health behaviours, and have lower access to physical and environmental resources (Healton & Nelson 2004). In Australia, the prevalence of smoking has been found to be correlated with greater levels or neighbourhood disadvantage

(Paul et al. 2010), regardless the individual's personal characteristics. This is because socio-economically disadvantaged areas were found to have fewer or lower obstacles to smoking, such as loose smoking ban enforcement and less social stigma attached to smoking, with some even being persuade to smoke through influences in their neighbourhood (Partos, Borland & Siahpush 2012).

The fact that socio-economic disadvantage plays a pivotal role in smoking behaviour has been well documented (Clare et al. 2014; Graham 2007; Graham et al. 2006; Guillaumier, Bonevski & Paul 2015; Hilary 2009; Jennie 2008). Long-term smoking impacts are mediated by people's educational attainments; according to Jefferis et al. (2004b), young adults who dropped out from school or left school early and attained lower educational qualifications showed the lowest level of quitting intention, and were more likely to become heavy smokers. Neighbourhood conditions and domestic pathways are also important. For instance, young mothers living in poor neighbourhoods were found to smoke regularly and showed no quitting intention. This was found to be due to the effects of educational, upbringing and childhood circumstances. Other studies (Graham & Der 1999a; Graham et al. 2006; Jefferis et al. 2004b) report that where young adults that experience disadvantage in relation to their educational pathways, childhood circumstances, domestic pathways, neighbourhood conditions and adult circumstances contributed to a continuation of smoking from young adulthood into adulthood (Gunter et al. 2020).

Tobacco policies and inequality of cigarette consumption in socio-economically disadvantaged populations

In many developed countries, where the smoking epidemic has reached its pinnacle, cigarette smoking has become progressively confined to socio-economically disadvantaged populations (Elgar et al. 2015; Graham et al. 2006; Guillaumier, Bonevski & Paul 2015). Meanwhile, in developing countries where smoking prevalence is rising, poor socio-economic conditions were reported to play a key part in the early stage of the smoking epidemic (Agaku et al. 2020; Hilary 2009).

The prevalence of cigarette smoking can be reduced by tobacco control initiatives, especially when incorporated with a well-funded, comprehensive, and supportive strategy from the government (Levy, Mumford & Compton 2006; Prabhat & Chaloupka 2000). Past studies (Agaku et al. 2020; Chaloupka et al. 2000; Levy, Mumford & Compton 2006; Mark et al. 2008; Takahiro, Hiroyasu & Eric 2018) indicate that government regulation and interventions such as cigarette price increases, smoke-free policies, bans on cigarette

advertising and promotions, consumer health information and mass media campaigns can minimise the harm of cigarette smoking. However, less is known about which measures work to decrease inequalities in use of tobacco. Some tentative conclusions on this from can be drawn from two broad directions.

First, some studies (Carolyn et al. 2011; Pierce & Gilpin 1995; Pierce, Lee & Gilpin 1994) consistently report that weak anti-smoking policies have detrimental effects on tobacco consumption and that these effects are particularly apparent in socio-economically disadvantaged populations. For example, in relation to regulating cigarette prices, Levy, Mumford and Compton (2006) found that policies that reduced cigarette prices were potentially linked to the prevalence of tobacco use, especially among young adults and in poorer populations (Mark et al. 2008; Sarah et al. 2014; Thomas et al. 2008a). Meanwhile, in mostly developing and under-developed countries, weak policies were associated with high smoking rates among young adults, and particularly among young women in socio-economically disadvantaged areas (Andrews & Heath 2003; Gilmore & McKee 2004; Lee, Gilmore & Collin 2004). This evidence indicates that weak policies or nonstrategic anti-smoking initiatives might exacerbate inequalities in smoking (Németh et al. 2018)..

Second, while policies to increase cigarette prices may effectively target socio-economically disadvantaged populations, Franks et al. (2007a) caution that the impact of high cigarette prices may weaken over time among such populations. Young socio-economically disadvantaged smokers tend to smoke more cigarettes and show little intention to change their smoking behaviour (Dorsett & Marsh 1998; John 2008; Thomson et al. 2002). The financial stress associated with their poor socio-economic position is viewed to be factor that most hinders their attempts to quit, as they use smoking as a medium to cope with the stress of their personal circumstances and environment (Guillaumier, Bonevski & Paul 2015; Gunter et al. 2020). In addition, Jones et al. (2009b) affirm that young adult smokers tend to possess shorter planning horizons, and are thus more likely to be present-oriented and impulsive (they are less capable of resisting indulgence) in relation to smoking. These factors help to explain why socio-economically disadvantaged young smokers fail to quit smoking. In summary, all anti-smoking initiatives may have the potential to reduce smoking prevalence, if they continue for a long term, covering and reaching all socioeconomic subgroups such as the young adults. For low socio-economic smokers who engaged in a quit attempt, both socio-economic and mindfulness uniquely influenced smoking continuance through their influence on stress. Recent findings (Gunter et al. 2020, Németh et al. 2018) support that mindfulness presents a promising intervention target to reduce stress and

improve cessation outcomes among low socio-economic smokers. Therefore, it is hypothesised that:

H3: Socio-economic disadvantage has a positive relationship with ongoing smoking among young adults.

2.11.4 Coping with Stress

Adolescence is a stage of life, typically between the ages of 18 and 30, where rapid changes occur. As young adults undergo these changes, it is quite common for some of them to encounter stress caused by their physical, sociocultural, psychological and cognitive development. In the context of young Anglo-Australians, Healey (2002) explains that this transition typically includes greater independence from parents and family members, appreaciation of personal physical appearance and sexuality, preparation to enter the job market, establishment of intimate relationship, and greater cultivation of friendships. Each stage of development presents stresses that young adults must cope with (Cambron et al. 2020).

According to McNamara (2000), there are 3 types of stress that impact young adults: 1) normative stress, 2) non-normative stress, and; 3) daily stress. Normative stress relates to physical or appearance changes, the emergence of sexuality, peer relationship changes, school transition, and parental negotiation. Non-normative stress stems from the occurrence of unexpected situations, such as physical disability, family deaths, parental divorce, and parental mental illness. Last, daily stress refers to small annoying events in everyday life, which can lead to psychological disorder when accumulated (Duijndam et al. 2020)..

Normative Stress

As young adults are at the peak of experiencing changes in their physical fitness, they embrace the attributes of strength, height, coordination, speed of response, and endurance. It is important to keep up with these ideals of physical development. However, McNamara (2000) indicates that such physical changes can cause stresses such as discontentment with physical appearance.

In term of sexual development, McNamara (2000) argues that when children enter into young adulthood, their sexual relationships become more prominent and vulnerable. For instance, family restrictions and societal norms and expectations place great pressure to the emergence of young adults' sexuality. McNamara (2000) also points out that young adults tend to engage in sexual activities that contradict their will. Religious intolerance towards homosexual behaviours by family members, friends and some societies can also cause stress.

Transitions can also cause stress in young adulthood. Transitions can make one feel vulnarable stage at any age, but particularly so when transitioning from childhood to young adulthood. During school transitions, where children move from high school to tertiary education environments, stresses such as grades, assignments, examinations, teachers, peer pressure, sex, rules and regulations as well as uncertainties about the future can cause stress that impact young adults' personal and career development if not managed with care (Cambron et al. 2020)..

Peer pressure is another normative stress that plays a pivotal role in determining life events for young adult (Saunders 1998). According to some studies (Lawless et al. 2015; Saunders 1998), some of the defiing characteristics of young adults are rebelliousness against limitations, trying new things, participating in risky behaviour such as smoking, drug-taking, drinking alcohol, stealing, experimenting with unsafe sexual activities, and speeding in cars, all of which are reckless and dangerous.

Besides peer pressure, young adults are affected by their parents as well. A study by (Peterson 1999) found that when the generation gap between parents and their young adult children leads to conflict, the latter's personality growth, autonomy and cognitive system may be affected. Typically, these conflicts take place with family members and entail verbal or physical attacks. Such can cause emotional stress or physical injuries.

Several studies (Lee, JO et al. 2020; Ager & Maclachlan 1998; McNamara 2000) have also found that unemployment can cause stress to young adults. When young adults start searching for jobs, they are uncertain about their future work situations. Their stress levels can become more intense when/if they fail to find suitable employment. According to Roberts et al. (1999), young adults may then rebel againt society because they are feeling dissatisfied and frustrated about their lives and isolated from the community. In order to alleviate stress, some young adults rely on external supports such as cigarettes (Lawless et al. 2015), which can have serious negative health consequences for their health and wellbeing.

Non-normative Stress

Non- normative stress refers to unanticipated and unusual stressful situations such as physical disability, family deaths, parental divorce, parental illness and family disruption (McNamara 2000). According to (McNamara 2000; Saunders 1998), young adults that encounter such situations tend to develop anxiety, depression, negligence, inattention and stress. Unsurprisingly, young adults will use remedies to ease the emergence of non-normative, which can include cigarettes.

Daily Stress

According to McNamara (2000), daily stress occurs in everyday transactions that can lead to irritation, annoyance, frustration, infuration and displeasure. Numerous studies (Ager & Maclachlan 1998; D'Angelo & Wierzbicki 2003; Duijndam et al. 2020; Lawless et al. 2015; McNamara 2000; Patton et al. 1996; Randall 2002; Saunders 1998) argue that stress has a direct relationship with behavioural outcomes in young adults. For instance, a study conducted by Vollrath (1998) among Swiss university students found that light and heavy smokers reported suffering emotional stress. This stress was due to challenges related to their studies. Also, both light and heavy smokers expressed lower intention to quit smoking. Similarly, a study on the prevalence of smokeless tobacco in Connecticut, USA found that stress was the most important determinant of smoking among students (Duijndam et al. 2020; Randall 2002), with the stress determining perceptions of quality of life. Similarly, D'Angelo and Wierzbicki (2003) found that daily stress was significantly linked to anxiety and depression among students in 34 unversities.

As discussed above, the daily stress due to changes in the physical and cognitive development of young adults and in the nature of the socio-environment challenges they face can be harmful and manifest behaviours such as depression (Berg et al. 2020;bKenny 2000; Romano 1984; Schafer 1992). Numerous studies (Cheslack-Postava et al. 2019; Cohn et al. 2019; Hammett et al. 2019; Ho et al. 2019; Keyser-Marcus et al. 2017; Lee, Kim, et al. 2018; Míguez et al. 2019; Secades-Villa et al. 2019) indicate that compared to non-smokers, young adults that start smoking and continue to do so tend to report greater levels of depressed moods. For example, a study by Breslau, Kilbey and Andreski (1991) reports that nicotine dependent young adults aged 21 to 30 were more likely to have a history of major depression. Because smoking can produce an elevation in mood, depressed young adults often use nicotine to self-medicate their symptoms (Bandiera et al. 2016; Berg et al. 2020; Breslau, Kilbey & Andreski 1991; Gehricke et al. 2007; Schleicher et al. 2009; Windle & Windle 2001).

Ongoing smoking among depressed young adults can be understood through the self-medication theory (Lerman et al. 1998; Robinson et al. 2011). According to the theory, young adults tend to use cigarettes as a self-medication to improve negative moods and depression, since nicotine can shift negative moods to more positive moods (Berg et al. 2020; Khantzian 1997; Siqueira et al. 2000). Specifically, the nicotine in the cigarette is known to activate human neuronal nicotinic receptors in the mesolimbic dopamine system, which is the system in the human brain responsible for the sense of reward and pleasure

(Lerman et al. 1998; Pistis et al. 2004). When the dopamine system is activated, the person begins to feel relaxed and slightly euphoric. This rewarding feeling is welcomed by many depressed young adults, who then tend to continue smoking to sustain it (Audrain et al. 2004).

However, the results of some studies challenge this view. For example, some longitudinal studies (Brown, Clasen & Eicher 1986; Choi et al. 1997; Wu & Anthony 1999) indicate that there is no correlation between depressed mood and ongoing smoking irrespective of gender, vulnerabilities and smoking continuity patterns. A study by (Berg et al. 2020; Duncan & Rees 2005) found no correlation between depression and ongoing smoking among young men and women. This finding is consistent with a study using the Center for Epidemiologic Studies Depression Scale (CES-D), which found that smoking is merely the strongest predictor of depression but does not necessarily lead to depression (Goodman & Capitman 2000). Nevertheless, the CES-D studies did not report the causal nature of the association between depression and continuity of smoking (Patten & Martin 1996). In summary, anti-smoking smoking initiatives need to specifically target psychological symptoms in smokers and focus more psycho-education on the risk of cardiovascular disease in the young adult population. For young female smokers, emotional stress such as anxiety and depression symptoms need to be considered to screening for women at risk of smoking during pregnancy. Future anti-smoking advertisement messages must take into account on this factor (Berg et al. 2020, Keyser-Marcus et al. 2017). Hence it is hypothesised that:

H4: Emotional stress has a positive relationship with ongoing smoking in young adults.

2.11.5 Smoking is a Habit

The definition of smoking behaviour is complex and encompasses the act of smoking as well as puffing style, inhalation depth, tempo, and frequency (Gellman 2020). According to Liu et al. (2017), smoking behaviour is categorised into four groups:

1. The initiation of smoking by 14 years of age is considered early smoking;

2. Smoked at least 100 cigarettes in the past;

3. Smokers at the time of the survey as current smokers and,

4. Heavy smokers who consume 20 or more cigarettes daily.

In addition, ongoing smoking refers to no motivation to stop smoking in existing smokers or do not feel like to quit smoking(Simonavicius et al. 2017). On the other hand, habit refer to unthinkable changes of behavioural outcomes or action-outcomes contingencies that allow

particular actions to be carried out without thought of the action's consequences (Luijten et al. 2020; Ray et al. 2020). Vandaele and Janak (2018) point out that habitual behaviours are executed automatically and aimed towards desirable goals. Interestingly, the decision to consume substances such as tobacco and alcohol has been found to be the result of decision-making processes oriented towards goals viewed as desirable to individuals. These desirable goals are flexible, being readily altered as circumstances change (Graybiel 2008). Recently, there has been growing interest in the habitual networks of the brain and their relevance for understanding cigarette smoking (Dolan & Dayan 2013; Ray et al. 2020; Smith & Graybiel 2016; Vandaele & Janak 2018).

Cigarette smoking is a habit that depends on ongoing substance consumption and which is typically observed in individuals that are diagnosed with addiction (Sjoerds et al. 2013a). Neuroscientists have indicated that the congruent regions of the human brain across neural circuits promote habitual action (Balleine & O'doherty 2010). This habitual action is subserved by a goal-directed approach. Scientifically, the outer part of the lentiform nucleus of the brain (putamen) and the dorsolateral striatum (DLS) are responsible for executing habitual behaviours in a stable context (Malvaez & Wassum 2018). According to some scholars (Aarts & Dijksterhuis 2000; Triandis 1979; Verplanken & Aarts 1999), habits possess the characteristics of automaticity and behavioural repetition. Bargh (1989) argues that there are three categories of automatic processes: 1) preconscious, 2) post conscious, and 3) goal directed. Habitual smoking falls in the third category (Luijten et al. 2020; Aarts & Dijksterhuis 2000; Bargh & Gollwitzer 1994).

As habitual smoking is a functional, goal-oriented, repetitive behaviour that occurs in a stable context, the automaticity of smoking is developed in the association between situational cues, the goal that the behaviour serves, and the actions undertaken. For example, a smoker may always smoke a cigarette in the interim between leaving their office and getting into their car. A stable context is one in which the supporting features of the current environment are like those contexts in which the behaviour was learned and practiced in the past. In other words, a habitual smoker finds the contexts alike in the sense that they do not present different goals or challenges. As a result, the individual executes the practiced responses to the context (the act of smoking). In the long run, smoking behaviour becomes a habit that must be regularly performed.

Bargh (1989) argues that automaticity in habits comprises four dimensions: 1) low awareness, 2) mental efficiency, 3) difficulty to control, and 4) lack of conscious intention, which the author terms the 'four horsemen of automaticity'. In this context, the 'four

horsemen of automaticity' can be viewed as four switches that can be turned on or off depending on the behaviour under study. This explains the variants of automaticity and addresses how habitual behaviour is executed, such as when a habitual car driver knows he chooses the car as their mode of transport without conscious decision-making. A habitual smoker may choose to smoke in the same manner (Luijten et al. 2020).

A notable issue is that there is no clear definition for when a behaviour is considered habitual. For instance, a daily smoker may smoke deliberately and consciously. Even though a person may smoke at the same place and time every day, the smoking activity cannot necessarily be labelled an automatic act (Maddux 1997). In fact, what could be considered as automatic, and may hence be known as habitual, is the *decision* to smoke. When an individual decides to smoke, he or she might pass through a stage in which smoking has to be conscientiously planned and adopted into existing routines. At this stage, the decision to smoke is probably taken deliberately. Once they have been as part of their daily routine for some time, the decision to smoke transform into a habit. At this point, the decision becomes characterised by lack of awareness and it is taken repeatedly and in many circumstances difficult to control (Luijten et al. 2020; Verplanken & Melkevik 2008).

A few scholars (de Angelis et al. 2020; Robinson & Berridge 2008; Shiffrin & Schneider 1977; Wiers et al. 2010) assume that the characteristic of automatic embedding in habitual smoking plays a significant role in the development of addiction. For instance, Logan (1988) asserts that the automatic system is irrational, fast, associative and nurtures cigarette use in addicts. Habitual smoking is also understood to be difficult to control. In line with addiction theory (see Pavlovian conditioning theory), Rescorla and Wagner (1972) emphasise that in the conflict between habitual control and goal-direction in addiction (Everitt & Robbins 2016), there are two regulatory systems that drive smoking behaviour (Balleine & O'doherty 2010; de Angelis et al. 2020). First, the goal-directed system moderates the goal expectancy behaviour. A decision is then made based on positive reward or relief effects due to successful negative avoidance outcomes. Second, the behaviour is automatically triggered by the habitual system, which is stimulated by environmental stimuli linked through previously learned stimulus-response reactions. Regardless of positive or negative reinforcement, habits are learning processes where the expected outcomes of behaviour no longer navigate decision-making activity. Once a habit is formed, the behaviour can persevere regardless of adverse impacts (de Angelis et al. 2020).

Although habit plays a pivotal role in addiction, its role is not conclusive across the stages of the addiction cycle. Habits are typically found to be stronger at higher levels of addiction.

For example, Vollstädt-Klein et al. (2010) posit that compulsive consumption of alcohol and nicotine is denoted by a shift of the signal from ventral to dorsal striatum. This is consistent with a study conducted by Everitt and Robbins (2005), which found that compulsive consumption of alcohol and nicotine is under the control of the dorsal striatum in human brain. The shift to habit-driven behaviour seems to match the addiction model, where habits evolve to compulsivity in the later stage of addiction (Koob 2014). Compulsive consumption refers to the ongoing use of a substance despite any of its negative consequences; it is the outcome of habitual use and poor goal-directed decision-making (de Angelis et al. 2020).

Behaviour such as compulsive consumption is apparent in cigarette smoking (Hirschman 1992). According to Hoch and Loewenstein (1991), individuals that experience compulsive consumption of nicotine are known as sociopathic compulsive consumers. These smokers are impulsive, exhibit sensation-seeking tendencies, and are less likely to show remorse or guilt over their behaviour (Cox 1986; Leone et al. 2020; Zuckerman 2014). Besides, sociopathic compulsive individuals tend to seek out substances or activities that can provide immediate sensory enjoyment. Once they come across the sought-after pleasure (e.g., smoking), it becomes difficult to deprive them of it. As tobacco use could also be considered as a goal-directed choice, driven by the expectation of the tobacco outcomes, neuroimaging studies are suggested to further unravel the nature of the imbalance between goal-directed versus habitual consumption in severely dependent smokers by directly measuring activity in the corresponding brain systems (Luijten et al. 2020). Nevertheless, the current anti-smoking initiatives have not picked up this important factor in discouraging young adults from continues to smoke. Thus, their impulsivity leads them to compulsive patterns of fulfilment that are not easy to stop. It is hypothesised that:

H5: The habit of smoking has a positive relationship with ongoing smoking in young adults.

2.11.6 Smoking is an Addiction

For many years, cigarette smoking has been understood to be addictive (Davies 2013; Eiser, Morgan & Gammage 1987; Elias, Hendlin & Ling 2018; Erzurumluoglu et al. 2020; Hartmann-Boyce et al. 2014). However, the reasons why are still not widely understood by scientists (Weinberger & Sofuoglu 2009; Zwar et al. 2002). Although some substances such as heroin and cocaine have been identified as addictive, the debate on nicotine's capacity to cause addiction continues. If nicotine is indeed addictive, then there is an urgent need to prevent young adults from starting to smoke and discouraging current smokers from continuing to do so.

According to Davies (2013), who reviewed the literature on cigarette smoking, smoking is addictive. In general, there are two kinds of addiction: 1) physiological and 2) psychological. Physiological addiction refers to the effects of nicotine on the body, while psychological addiction (Erzurumluoglu et al. 2020).relates to emotional and social dependence on nicotine.

Physiological Addiction

As cigarettes contain nicotine, it is fair to suppose that tobacco could be physiologically addictive (Borio 2014; Erzurumluoglu et al. 2020; Moodie, Daube & Carnell 2009). According to Tomori et al. (2001), the effects of nicotine on the human brain are comparable to narcotics such as heroin and cocaine, which can also cause dependence. In an experimental study, Conger (1977) found that nicotine displayed homogenous neurochemical attributes in a similar way as other narcotics. Smokers would also experience withdrawal symptoms, similarly to narcotic users.

By nature, nicotine is addictive, even though it can be used as a depressant, downer, tranquilliser or sleeping aid in disease-addiction control (Thornburg 1971). According to tolerance-withdrawal theory, consumption to a particular drug leads to physiological addiction to that drug. In other words, the more an individual takes a drug, the more that individual will crave that drug to meet their physiological needs. When the individual reduces their use of the drug, their tolerance levels will reduce and eventually lead them into withdrawal. In fact, it is the physiological craving that causes the addiction for the drug used (Thornburg 1982). This is evidenced by a study by Behrakis et al. (2003), where more than half the junior high school students smoking 10-12 cigarettes a day that were studied tried to quit smoking and failed. Similarly, in a study on examining the attributes of smokers and non-smokers by Eiser, Sutton and Wober (1978a), 314 smokers reported that it was difficult for them to quit smoking. Interestingly, the findings were not skewed to physiological addiction but rather to psychological addiction.

Psychological Addiction

Psychological addiction plays a pivotal role in smoking behaviour. In an article published by Regis (1990) in Curriculum Guidance 5 (Health Education), the author stressed the key role of psychological addiction and asserted that there is in fact only moderate difficulty in the quitting process. Nevertheless, the article was criticized its lack of support from empirical evidence (Ruzilawati et al. 2020)..

According to Regis (1990), addiction is not a primary supporting factor in cigarette smoking. Despite cigarette smoking being to an extent addictive, the craving for cigarettes may not be as life-damaging and constraining as is often implied. Regis argues that the process of quitting is not complicated and may even be straightforward. For example, heavy smokers could restrain themselves from smoking for short periods of time without much difficulty, even in some demanding circumstances (e.g., religious practitioners observing holy days, miners at coalfields, patients or visitors in hospitals). This finding indicates that it is circumstances, not chemistry, that make quitting difficult (Ruzilawati et al. 2020)..

In Regis's (1990) estimation, one must consume about twenty cigarettes per day to become addicted. In most cases, adult smokers seldom smoke that many cigarettes per day, tending instead to smoke less than half a pack of cigarettes per day. Regis posited that if smoking is controlled by a smoker's physiology, the nicotine injections administered in laboratory experiments would not reduce smoking as much as expected. Regis (1990) work indicates that viewing addiction as the main cause of ongoing cigarette smoking is inaccurate. Besides, his findings also revealed that young smokers do not smoke as much as adults. For instance, he found that 15-year-old heavy smokers typically only smoked five cigarettes a week or less, and successfully quit in a short period of time. If adolescents were more susceptible to addiction compared to adults, this population would not be capable of quitting smoking without much difficulty. Instead, the difficulty of quitting stems from perceptual difficulties (e.g., smokers' belief that they are addicted to cigarettes, the belief of counsellors that smokers are addicted to cigarettes, and the placement of the word 'addiction' in counselling material) rather than addiction to the substance (Regis 1990). Regis also argues that changes in the metabolism of smokers only seem to play a minor role in addiction.

Nevertheless, according to a study by Kokkevi et al. (2000), among a sample of 5000 young adult smokers who tried to quit smoking, only 1% successfully gave up smoking for more than a year. This result contradicts Regis (1990). Kokkevi et al. (2000) assert that their findings might be due to physiological addiction or psychological addiction, influenced by other factors.

In a book called "Myth of Addiction", Davies (2013) explains that a behaviour can become considered an addiction in three ways: 1) an individual is being observed to be, or feels themselves to be, performing some behaviour too often whilst ignoring its perceived moral liabilities; 2) the behaviour consists of acts socially regarded as inappropriate or morally disgraceful, and; 3) the act itself presents consequences on the person involved, but has no direct influence or impact on others.

Another viewpoint about addiction stems from Eiser, Morgan and Gammage (1987), who argue that addiction is a socially learned behaviour and not a physiological reality. In their study of adolescent smoking behaviour, conducted among 10,580 students from ten schools in Bristol, UK, the authors showed that there were significant relationships between variables that are often considered indicators of addictive smoking in young adults. For example, difficulty in smoking cessation, consumption, craving for cigarette, cigarette brand preferences, and the inhalation of nicotine were among the variables that they found to be addictive among smokers. Nevertheless, young smokers' cigarette consumption levels were reported to be lower than those of adults. On average, young smokers smoked four cigarettes per day and around twenty-one sticks per week. The results indicated that certain attitudes, such as 'smoking is hard to give up' and 'smoking calms my nerves' form young smokers' emotional experiences of smoking.

A study by Eiser, Sutton and Wober (1978b) asserted that while nicotine may cause addiction among cigarette smokers, psychological factors are also at play. In a study conducted on smokers aged 18 years and overusing a short postal questionnaire, participants were asked whether they tried quitting smoking, how many cigarettes they smoked, whether they found it difficult to quit, and whether they intended to quit smoking. Participants were also asked if they considered themselves addicted to cigarettes. Interestingly, the study revealed that smokers often used the word 'addicted' to describe their inability to quit smoking. The study ultimately showed that craving for cigarettes and perceived obstacles in quitting were crucial factors in psychological addiction (Ruzilawati et al. 2020)..

A recent study by Hwang and Yun (2015) also asserts that cigarette smoking can cause both physiological and psychological addictions. Cigarettes contain nicotine, which is a stimulant and creates arousal (feelings of euphoria) and relaxation. When smokers inhale nicotine, their body quickly absorbs nicotine. However, the nicotine rapidly disappears, leading to a desire to consume more of it. Baker, Brandon and Chassin (2004) argue that young adult smokers tend to transform from light or social smokers to heavy and long-term smokers because of nicotine addiction. In a nutshell, in order to help young adults to quit smoking, marketeers should increase attention on the social and environmental dimensions of addiction alongside traditional advertising (Ruzilawati et al. 2020). Besides, to improve addiction outcomes, public health authorities should continue expanding and strengthening social and environmental restrictions on cigarette smoking. Marketeers should promote and propaganda that tobacco smoking is an addiction by shaping users' psychology and social

milieu (Swatan, Sulistiawati & Karimah 2020). This leads young adult smokers to continue smoking and makes quitting more difficult. Hence, it is hypothesised that:

H6: Addiction has a positive relationship with ongoing smoking in young adults.

2.12 Anti-Smoking Initiatives on Ongoing Smoking in Young Adult Smokers

2.12.1 Text Warnings on Cigarette Packets

According to Silayoi and Speece (2004), graphic images on a product packet such as colour combinations, layout, style and appearance of printed pictures can influence the tastes of consumer, their ability to recall product brands and product messages, and their ultimate judgments of products. Fonts have been reported to have the ability to affect consumer perceptions and brand personality (Henderson, Giese & Cote 2004; Hwang, J-e & Cho 2020). For example, font characteristics such as ruggedness, excitement, sophistication, competence and sincerity have been found to consumers ascribing personality to products (Grohmann, Giese & Parkman 2013). A study by Rettie and Brewer (2000) showed that the positions of product messages could effectively attract consumer attention and their recall of the product. When a verbal stimulus is placed at the right side of a product packet and a visual stimulus is placed on the left, the lateral human brain will ascribe certain attributes to the product in its evaluation process. (Clarke, N et al. 2020).

In term of cigarette packs, an eye-tracking study conducted by Underwood and Klein (2002) found that text warning messages were more noticeably when they were consistently placed on the same location of the package. Three experimental studies (Maynard, Munafò & Leonards 2013; Munafò et al. 2011; Ramunno, Mandeville & Yarrow 2012) that employed eye-tracking technology in measuring eye movement towards text warnings on branded and plain packaging cigarette revealed that weekly smokers tended to have more eye movements towards text warnings on plain packs than non-smokers. Similarly, Munafò et al. (2011) reported that weekly smokers paid more attention to text warning on plain packs. However, they did not find the same for daily smokers. A study conducted by Ramunno et al. (2012) reported consistent results where weekly smokers spent more time viewing the text warning on plain packs than branded packs. (Ooms, Jansen & Hoeks 2020).

However, health warning messages are not fully observed when placed in different locations. This is because consumers' eyes are being pulled to different directions across the same packet. This has significant effects, since health-warnings may need to compete with other stimuli such as pictorial health images on the same pack (Underwood & Klein 2002). When smokers did not spot the health warning, they were uninformed about the adverse health

impact of smoking and tended to continue smoking (Underwood & Klein 2002). Some studies suggest that the impact of text warnings might diminish over time. For instance, a study conducted by Germain, Wakefield and Durkin (2010) found no difference between the impact of text warnings across branded and plain packs. The authors posited that exposure to text warnings over several years had made smokers immune to them. In some cases, smokers simply ignored the messages (Ooms, Jansen & Hoeks 2020).

2.12.2 Pictorial Health Images on Cigarette Packets

As text warnings can have little impact on quitting (Germain, Wakefield & Durkin 2010), Kallen (1951) argued for a deployment of visual images to better communicate the negative impacts of smoking, stating that graphical or pictorial images could be more effective than text warnings. This suggestion was supported by two claims. First, the claim that pictorial images can produce sensations linked to shape, size and colour (Scott 1994). This idea specifies that pictorial images simply constitute the reality of the object, with images capable of acting as reflectors and descriptors of the product being advertised. The second claim was that pictorial images were perceived differently by viewers from different cultural background. Ultimately, pictorial images represent a thought or symbol of the object being communicated (Scott & Vargas 2007; (Li, Y et al. 2020).

In Australia, the federal government imposed pictorial health images on all cigarette packets, stipulating that these occupy 30% of the front and 90% of the back of the packet. These are combined with detailed explanatory messages (Brennan et al. 2011). The pictorial images used by the Australian government adhere to both the claims outlined in the preceding paragraph. First, the images on the cigarette packs reveal the reality that is caused by excessive smoking, being depictions of the end result of smoking. The images are convincing, since they are actual photographs of individuals suffering the consequences of smoking. According to Messaris (1997), photographs are often regarded as representing reality. This is because photographs directly represent the effect of cigarette smoking, thereby increasing the believability of the claims attached to them. They also facilitate message recall. Second, images can heighten the awareness of an individual's mortality (Ross, JC et al. 2021)

Some researchers also assert that advertised images can increase attention, message processing, and decision-making. McQuarrie and Mick (2003) found that verbal texts were only influential when participants directly engaged with the text. Unlike visual images, pictorial images lead to higher evaluation of incidental exposure of the advertisement. This is

consistent with key studies in the area (Bhalla & Lastovicka 1984; Hammond et al. 2003; Ruiter & Kok 2005), which found that text warnings on cigarette packs had worn out their contribution to promoting quitting. In processing pictorial images, individuals engage with the images and translate their messages into positive intentions and thoughts. In fact, pictorial images elicit greater cognitive processing (Heisley & Levy 1991).

However, the impact of pictorial images in quitting smoking cessation is not conclusive. For example, Hammond et al. (2003) found that text warnings were significant (odd ratio=1.11, $p<0.001$) in quitting smoking. The found cognitive processing on text warnings to be high (odd ratio=1.07, $p<0.001$) within 3 months of actual quitting. These results were consistent with those from a study by Bennett (1996), where warning labels were found to be more effective than horrific images at promoting quitting. In term of the novelty of warning labels, Beltramini (1988) found that new and creative warning labels were more impactful than old warning labels. Interestingly, Michaelidou, Dibb and Ali (2008) found that anti-smoking advertisements using health related images were less effective than text warning messages (Liau et al. 2018)

Conversely, Kees et al. (2006) found that young smokers were more affected by pictorial images than text warnings. In Australia, the government employs fear-based health images to try to dissuade young adults from smoking, hoping that these images will terrify young adults into changing their attitude and behaviour (Ferguson & Phau 2013). However, Ashok and Michael (2014) argue that anti-smoking advertisement combining text and graphic images fail to influence young adults. According to the Terror Management theory (Martin & Kamins 2010), individuals use various mechanisms to protect themselves when they experience stress or anxiety and to not reflect on their own mortality. This behaviour allows individuals to protect and maintain their self-esteem. Nevertheless, the pictorial health images on cigarette packets are still an effective measurement to dissuade young adults from continuing to smoke. The current anti-smoking initiatives could instil element such as seeing a story in a still picture with a slogan that helps to increase the effectiveness of the anti-smoking message. Both narrative and non-narrative visual warnings may persuade smokers directly by the evoking of emotions, although the specific emotions responsible for the persuasive effects may differ (Ross, et al. 2021). In the context of smoking, this means that young smokers who derived a strong sense of self-esteem from smoking tend to smoke more and ignore their own mortality (Ashok & Michael 2014; de Meyrick 2001; Martin & Kamins 2010). Thus, it is hypothesised that:

H7: Pictorial health images and text warnings on cigarette packets have a positive relationship with ongoing smoking in young adults.

2.12.3 Plain Packaging

Every year, tobacco smoking kills almost six million people worldwide (WHO 2004). The WHO responded to this epidemic by negotiating a comprehensive treaty called the Framework Convention of Tobacco Control (FCTC). More than 160 countries have signed the agreement, the aim of which is to promote and implement effective tobacco control policies that include de-normalising smoking by labelling it as a socially intolerable behaviour, excising taxes on tobacco products, and implementing smoke-free policies (Gallopel-Morvan, Hoek & Rieunier 2018). Article 13 of the framework relates to employing plain (or standardised) packaging to dissuade individuals from smoking.

The use of plain packaging is intended to erase cigarette brand images and replace these with deterrent colours and pictorial warnings. On the 1st of December 2012, Australia became the first country in the world to implement plain cigarette packaging (Wakefield et al. 2013). In doing so, the Australian government required tobacco companies to 1) implement standard drab brown packaging; 2) display large health warnings, and 3) minimise brand identification. The purposes of plain packaging are to reduce the attractiveness of tobacco products, enhance the efficacy of health warnings on retail packaging, and reduce the ability of retail packaging of tobacco products to mislead consumers regarding the adverse effects of smoking or the consumption of other tobacco products Gallopel- Morvan, Hoek & Rieunier 2018; Roemer, Taylor & Lariviere 2005).

The implementation of plain packaging has impacted tobacco companies tremendously. Typically, tobacco companies rely on their packaging to appeal to new smokers, reassure their current smokers and differentiate their brands from other competitors, especially when they have fewer and limited product marketing avenues (Wakefield et al. 2002). For these reasons, tobacco companies ardently challenged the plain packaging policy (Fooks & Gilmore 2014), arguing that its implementation would not impact smoking prevalence (Hatchard et al. 2014). Tobacco companies decided to sue the Australian government for restriction of trade in the WTO. Tobacco companies from Honduras, Cuba, Indonesia, Ukraine and Dominican Republic further argues that the policy was not fair and infringed trademarks and intellectual property (Frankel & Gervais 2013).

The Effects of Plain Packaging

The effects of plain packaging have been well documented in several studies (Clarke & Prentice 2012; Daube et al. 2015; Dunlop et al. 2014; Gallopel-Morvan et al. 2015; Germain, Wakefield & Durkin 2010; Maynard, Munafò & Leonards 2013). Compared to branded packaging, plain packaging is deemed to be less attractive, less fashionable, and less likely to heighten smokers' social status (Gendall et al. 2011; Germain, Wakefield & Durkin 2010; Hammond et al. 2009; McCool et al. 2012 ; Underwood, D, Sun & Welters 2020). Plain packaging is found to be less appealing, possessing lower product quality and presenting higher health risks to smokers, thus contributing to de-normalising smoking (Dunlop et al. 2014; Gallopel-Morvan et al. 2015; Moodie & Ford 2011; Scheffels & Lund 2013; Yong et al. 2016). Besides, plain packaging has been found to influence smoking behaviour in several ways, including reduced intention to consume tobacco products (Andrews et al. 2016; Moodie & Mackintosh 2013; Yong et al. 2016), as well as lowered craving for cigarettes (Durkin et al. 2015; Hoek et al. 2011a). However, it should be noted that numerous studies from Australia revealed that smokers tended to cover their cigarette packs from the health warning images (Gallopel-Morvan, Hoek & Rieunier 2018; McCool et al. 2012; Scheffels & Lund 2013; Zacher et al. 2014).

The effects of plain packaging can be understood by priming theory (Iyengar, Peters & Kinder 1982), a theory that explains how information from the media is collected and stored in the brain and influences decision-making. According to this theory, when an individual is exposed to information from the media, it is stored in memory information nodes that are connected to one another to form a network. The information stored in this network then acts as a frame of reference in decision-making. Priming allows individuals to evaluate situations and make conclusions about the effectiveness of the media consumed through this frame of reference. The implication is that media is influential and can guide decision-making (Cohen, JE et al. 2020).

Bargh (1989) explained that a branded cigarette pack may evoke positive perceptions about cigarettes via priming. Conversely, plain packaging de-normalises this reaction. This theory has been validated by several studies (Bargh, Chen & Burrows 1996; Zemack-Rugar, Bettman & Fitzsimons 2007). For example, Pechmann and Knight (2002) found that positive attitudes towards cigarette brands tended to develop when cigarette advertisements were presented before a film. The authors reported that audiences showed high interest in finding out more information about the cigarettes being advertised. These positive images about cigarettes and smoking primed the cognitive behaviour of the audience (Gallopel- Morvan, Hoek & Rieunier 2018).

The findings of Pechmann and Knight (2002) are consistent with those of Grimes and Doole (1998), whose research found that the famous red colour of Marlboro cigarette packets was significantly linked to audience brand imagery. Exposure to Marlboro packs triggered brand impressions that included being rugged, tough and masculine (Gallopel-Morvan et al. 2015). Plain packaging reduces the appeal of smoking (Gendall et al. 2011; Moodie & Ford 2011; White, Williams & Wakefield 2015) and decreases the intention to smoke among young adults, whose impressions of smoking have become increasingly negative in part due to plain packaging and the way it has disrupted the power of brand marketing (Hoek et al. 2018).

However, according to some scholars (Ashok & Michael 2014; Milne, Sheeran & Orbell 2000; Orbell et al. 2006; Ruiter & Kok 2005; White et al. 2012), anti-smoking efforts using pictorial images on plain packaging exert minimal impact on some stubborn young smokers, particularly those that are heavy and long-term smokers. These populations have been found to use coping response strategy to reduce the influence of health images displayed on the plain packaging. According to Leventhal, Meyer and Nerenz (1980), the emergence of behavioural responses against the such warnings can be explained through the common-sense model of illness perception. This model is mainly used to understand people's responses to illness, and states that people's coping strategies are directly influenced by their perceptions of illness perception, which in turn influence outcomes. When an individual is presented with a threat to their health, they will be motivated to search for information about the threat and initiate a response or strategy to cope with it, often via a disagreement process. In the context of smoking, common behavioural responses may include attempting to quit, which is considered an adaptive coping strategy in illness management. However, a coping response may also include other methods such as denial and avoidance, which are considered maladaptive responses (Milne, Sheeran & Orbell 2000; Orbell & Verplanken 2015), since they are attempts to reduce threats through self-adjustment or modification of individuals' own representation of the illness. Ultimately, the reality is that self-adjustment and modification do not reduce the likelihood of illness (Gallopel- Morvan, Hoek & Rieunier 2018; Hagger & Orbell 2006).

Although past studies (Brennan et al. 2011; Clarke & Prentice 2012; Daube et al. 2015; Gallopel-Morvan, Hoek & Rieunier 2018; Manyiwa & Brennan 2012) indicate that pictorial health images on plain packaging is an effective step in promoting quitting smoking by evoking individuals' fear responses (Ferguson & Phau 2013), quitting will only happen if an individual's fear responses are adequately triggered and the individual has sufficient self-efficacy (lack of self-discipline and motivation) to carry out their intention (Peters, Ruiter &

Kok 2013). However, individuals who have low self-efficacy will be less likely to quit. Such individuals (accompanied by the feeling of fear) may look for alternative ways to diminish the presented threat using avoidant responses (Ruiter & Kok 2005). This is consistent with the findings of a study by Hammond et al. (2004), which found that 36% of regular smokers in Canada reported making some effort to avoid viewing the health images on cigarette packs. In general, there are three reasons that contribute to such avoidance: 1) pictorial health images can trigger emotional distress; 2) pictorial health images can erode the reliability of text-based warnings, and; 3) health images can serve as reactants that increase cigarette consumption among rebellious individuals (Hämynen et al. 1987; Rugkåsa et al. 2001; Waldron 1991b). Some research also indicates that health images of lung cancer can be perceived as untruthful and unreliable. Similarly, a recent study by (Borland et al. 2013) indicated that smokers tended to avoid health images more than text-based warnings. In Australia, a study by Ashok and Michael (2014) found that plain packaging was of limited efficacy in reducing smoking prevalence among both minors or adults. Arguably, the slowdown in reductions of smoking prevalence is the result of existing trends, rather than the deployment of increasingly severe anti-smoking measures. Nonetheless, plain packaging still possesses great potential globally to change societal perceptions and thereby demoralised use of tobacco products especially among young adults, who are vulnerable to tobacco industry marketing strategies (Cohen, et al. 2020). This is particularly important to young adult community where the tobacco industry is aggressively marketing their products. The Australian government therefore has a unique opportunity to prevent further growth of the tobacco epidemic through plain packaging along with other evidence-based tobacco control measures. Thus, it is hypothesised that:

H8: Plain packaging on cigarette packets has a positive relationship with ongoing smoking in young adults.

2.12.4 Smoke-Free Policies

Due to the adverse health consequences of smoking and exposure to second-hand smoke, the Australian government has implemented a series of tobacco controls since the 1970s (Moodie, Daube & Carnell 2009), one of the most commonly used of which is the smoke-free policy. In 1986 and 1987, the federal government-imposed smoke-free restrictions on workplaces and Australian airlines. At the time, the restrictions successfully reduced the smoking prevalence rate by approximately 2% (Riseley 2003). On the back of that inspiring reduction, the Australian government implemented more smoke-free policies throughout the

90s, 90s and 00s in different contexts, including public places and restaurants (White, Hill, et al. 2003). Over time, smoke-free policies became acknowledged as the key strategy for reducing smoking prevalence (Moodie, Daube & Carnell 2009).

According to several studies (Borland et al. 2006; Caroline & Stanton 2002; Daube et al. 2015; Goodman et al. 2009; Hyland, Barnoya & Corral 2012; Hyland et al. 2009), smoke-free policies in workplaces are common, with evidence indicating that smoke-free legislation provides clear benefits on those who are exposed to cigarette smoke at work (Goodman et al. 2009; Hyland, Barnoya & Corral 2012). Smoke-free policies were also reported to improve health outcomes by reducing the number of cigarettes smoked and encouraging quitting (Hyland, Barnoya & Corral 2012). Despite intense pushback from the tobacco industry on such restrictions, who claimed they would be unacceptable to the public, that enforcement would be difficult, and that such measures would likely reduce hospitality industry revenues, several studies found evidence to the contrary (Glantz & Smith 1997; Hyland, Barnoya & Corral 2012;Leão, Kunst & Perelman 2018; Sciacca & Ratliff 1998).

Typically, organisations can manage smoke-free policies effectively by using the Theory of Organisational Change. According to Goodman, Steckler and Kegler (1997), there are four stages that organisations pass through during health interventions: 1) increase awareness; 2) adoption; 3) implementation, and; 4) institutionalisation. Increased awareness refers to an increase in awareness of the health issue among senior administrators; adoption is the planning and drafting of policies; implementation refers to the carrying out of the plan / program, and institutionalisation refers to the long-term maintenance of the policy / strategy. In the context of Australian anti-smoking initiatives, smoke-free policy is aligned to the Theory of Diffusion of Innovation (Wood, Sullivan & Donovan 2008). According to this theory, behavioural changes start within certain groups and then diffuse to other groups (Rogers 2002). When a critical mass has changed group behaviour, then new social norms begin to emerge. Over the past few decades, studies have shown that this societal change occurred in Australia, with norms towards anti-smoking initiatives signifying the acceptance of stricter smoking controls by the public (Burns et al. 2013; Leão, Kunst & Perelman 2018;Thomson, Wilson & Edwards 2009). For example, Tasmania imposed a smoke-free policy that stipulated that smoking is not allowed within three meters of a doorway entrance to public buildings (Kaufman et al. 2010; Thomson, Wilson & Edwards 2009). Meanwhile, in other countries, England imposed new smoke-free legislation prohibiting smoking at the entrances of large buildings (Kaufman et al. 2010). The Tokyo city government in Japan banned smoking on streets and crowded areas, with particularly severe restrictions around

government stations and business district centres (Ueda et al. 2011). In the US state of California, Calabasas county adopted smoke-free legislation banning smoking in all parks, playgrounds, on city sidewalks, and within 20 feet of public building main entrances and exits (Larsen 2006).

The effectiveness of smoke-free policies has successfully protected people from direct exposure to direct and second-hand smoke (WHO 2007). During the last decade, smoke-free policies have played a pivotal role in smoking cessation, with such policies now commonly applying to public venues, workplaces, and buildings. According to Callinan et al. (2010), smoke-free policies have reduced exposure to second hand smoke in high-density setting by 80-90%, increased the number of smokers intending to quit (Fong et al. 2006), reduced the number of heart attacks (Lin et al. 2013), encouraged smoke-free homes (Mills et al. 2009), and enhanced positive perceptions of non-smoking among hospitality businesses (Sureda et al. 2015).

Nevertheless, smoke-free policies have also been criticised. Some argue that they are difficult to implement and enforce, especially in outdoor environments. This is due to several factors. First, little is currently known about the impact of outdoor smoking behaviour and public health. Second, the physical and social attributes of outdoor environments can vary considerably from place to place. Frequent changes in conditions due to factors such as the weather, the diverse activities on outdoor sites, and seasonal transformation factors can be barriers to effective smoke-free policy implementation in such settings. Third, the public does not seem to have strong opinions about outdoor smoking. Most people view indoor smoking as more harmful than outdoor smoking (Kaufman et al. 2010). This perception simply motivates smokers to smoke outside rather than inside (Kaufman et al. 2010; Leão, Kunst & Perelman 2018; Sureda et al. 2012;Sureda et al. 2012).

Some scholars argue that no consensus exists for the implementation of outdoor smoke-free policies (Bloch & Shopland 2000; Chapman 2000, 2008; Thomson et al. 2008), with many viewing such policies as infringing on individual freedom. For those that hold such views, smoke-free legislation is unethical. Such individuals also point out that the evidence for the health impact of second-hand smoke in outdoor environments is inconclusive. According to the 2007 European Tobacco Control Report by the (WHO 2007), there is no safe level of exposure to second-hand smoke; non-smokers receive equal harm (or higher) from second-hand cigarette smoke (Bloch & Shopland 2000; Repace 2007). Recent studies even indicate that the exposure level to outdoor second-hand smoke is comparable (and in some cases higher) to indoor settings (Brennan et al. 2010; Cameron et al. 2010).

However, some studies (Hyland et al. 2008; Repace 2005; Travers, Higbee & Hyland 2007) indicate that smokers perceive second-hand smoke in outdoor areas to be mitigated by outdoor conditions; since tobacco smoke in outdoor areas is not contained, it can be dispersed by environmental conditions such as ventilation, temperature and humidity (Leão, Kunst & Perelman 2018; Sureda et al. 2012). This is why smokers in many workplaces with smoke-free policies tend to smoke in outdoor settings such as building entrances, lanes and streets. However, many studies (Burns et al. 2013; Leão, Kunst & Perelman 2018; Thomson, Wilson & Edwards 2009; Lin et al. 2013; Mills et al. 2009) conclude that smoke-free policies and programmes amongst young adults are greatly worth their costs. Generally, smoke-free policies facilitate a process of normalising prohibitions and denormalising smoking. As denormalisation unfolds, care must be taken on an increasing unacceptability of behaviour that may rooted in cultural shifts, which may interrelate with policy changes (Leão, Kunst & Perelman 2018). In terms of younger smokers, some studies (Hyland et al. 2009; Jiang & Ling 2013) report that young smokers tend to smoke outdoors more, despite smoke bans in locations such as bars, nightclubs, and casinos. Therefore, it is hypothesised that:

H9: Smoke-free policies have a positive relationship with ongoing smoking in young adults.

2.12.5 Tobacco Taxation

Research from high-income countries consistently indicates that higher cigarette prices reduce smoking (Chaloupka 2010 Partos et al. 2020). Typically, increases in cigarette prices can: 1) lower smoking initiation; 2) reduce smoking relapse rates; 3) increase intention to quit smoking; 4) increase smoking cessation, and; 5) reduce cigarette consumption (Hsieh & Lee 2016; Laugesen & Meads 1991; Moodie, Daube & Carnell 2009; Ross et al. 2011). Through the lens of public health, higher cigarette prices mean more quitting (Emery et al. 2002). Therefore, raising prices on cigarettes through taxation can be an important step in tobacco control (Jha & Chaloupka 2000).

According to several studies (Chaloupka et al. 2000; Guillaumier, Bonevski & Paul 2015; Moodie, Daube & Carnell 2009; Partos et al. 2020; WHO 2013), increasing cigarette prices through taxation is a common tobacco control practice. Tobacco taxation refers to imposing certain excise duties such as *ad valorem* on specific tobacco products (Scollo & Winstanley 2012). In Australia, there is an approximate 54.7% exercise duty imposed on the retail price of cigarettes, plus the 9.1% of the goods and services tax (GST) (Eriksen, Mackay & Ross 2012; Scollo & Winstanley 2012). In April 2010, the Australian government increased by

25% the duty tax on tobacco products, adding a further $2.20 to a $30 cigarette pack. Nevertheless, the WHO suggests that tobacco excise duty tax should be in the range of 70% of the final price of tobacco products (WHO 2010).

According to Gallet and List (2003), the effectiveness of cigarette taxation depends on the price elasticity of tobacco. A 2003 meta-analysis of 86 studies reported that a 10% increase in tobacco price would yield a 2.4% of reduction in smoking prevalence, indicating a price elasticity of -0.48 (within the range of -3.12 and 1.41) (Ranson et al. 2002). Nevertheless, several studies (Graham 2009a; Regidor, Pascual & Gutiérrez-Fisac 2007; Remler 2004) warn that an incremental rise in cigarette prices impacts social equity. According to such studies, smoking is more prevalent in low socio-economic status (SES) smokers. This is particularly so for low-income smokers that are disadvantaged in education and live in high-income countries (Agrawal et al. 2008; Barbeau, Krieger & Soobader 2004; Franks et al. 2007b; Goel 2017; Graham 2009a; Jefferis et al. 2004a). In other words, the most disadvantaged communities would be most likely to experience financial stress due to an increase in cigarette prices. Unless tax burdens are almost equal across SES strata, it is difficult to maximise the utility of high prices in promoting quitting (Martire et al. 2011 Partos et al. 2020;).

However, the difference in price elasticity between low and high SES smokers is inconclusive. In a study on social inequalities of smokers, (Thomas et al. 2008b) found that tobacco price manipulation could reduce smoking prevalence. Other studies showed results consistent with this finding, and also higher intention to quit smoking and lowered rates of initiation into smoking (Jha & Chaloupka 2000; Townsend, Joy 1987; Yurekli & de Beye 2001). Conversely, some studies (Biener et al. 1998; Farrelly et al. 2001; Regidor, Pascual & Gutiérrez-Fisac 2007; Townsend, Joy, Roderick & Cooper 1994) found that greater price sensitivity occurred among low SES smokers.

One pivotal factor that determined such findings was financial stress among low SES smokers (Scollo et al. 2003; Siahpush, Borland & Scollo 2003; Siahpush, Wakefield, et al. 2009). According to Martire et al. (2011), low SES smokers are often short of money for essential goods and services after buying cigarettes. Also, low SES smokers tend to skip meals, replace foods, avoid health insurance, and pay bills later to accommodate rising cigarette prices (Guillaumier, Bonevski & Paul 2015). Such the findings are not confined to Australia, with evidence from the US, UK and Canada (Siahpush, Yong, et al. 2009) showing that regardless of low SES, smokers that experience financial stress are less likely to quit and have a 48% lower success rate in quitting smoking [95% confidence interval (CI);

18-67%]. This data explains the counterintuitive finding that higher tobacco prices moderate the association between SES and tobacco price elasticity.

Another significant factor that may contribute to this finding is the price-minimisation strategies that most smokers often use to accommodate the rising price of cigarettes (Guillaumier, Bonevski & Paul 2015). According to a study by (Licht et al. 2011), smokers tend to switch to cheaper tobacco sources (e.g., illicit sources), brands, or purchase in bulk. In Australia, the opportunities to purchase low taxed or untaxed tobacco products are limited, while purchasing in bulk attracts little discount. Price-minimisation strategies are most widely adopted by young smokers that experience smoking-induced disadvantage and spend their income on cigarettes instead of family necessities such as food (Partos et al. 2020; Siahpush, Borland & Yong 2007; Siahpush, English & Powles 2006).

This regressive phenomenon can be understood through the 'imperfectly rational addiction model' (Sloan & Wang 2008), which asserts that not every smoker will quit smoking, even when cigarette prices are very high. Social, cultural, and personal factors are important to consider keeping low SES smokers from continuing to smoke. According to Christakis and Fowler (2008), while smoking prevalence has decreased in the past few decades, many smokers have formed their own social smoking networks. This appears to be particularly the case among young smokers from low SES backgrounds (Partos et al. 2020; Paul et al. 2010; Stead et al. 2013; Stead et al. 2001). Smoking prevalence among this group is shaped by social interactions and the perceived need for techniques to cope with personal stress and difficult surrounding circumstances (Paul et al. 2010; Stead et al. 2013; Stead et al. 2001). This is despite the reality that non-smokers appear to generally have lower stress levels than smokers (Parrott, AC 1999). According to Jones et al. (2009a), low SES smokers were reported to have a more short-term planning horizon than high SES smokers. They are also more impulsive, present-oriented, and tend to seek immediate gratification (Peretti-Watel, L'haridon & Seror 2013). By the same token, young low SES smokers are less likely to try quitting and are less likely to succeed in doing so (Partos et al. 2020; Siahpush & Carlin 2006). These factors perhaps help to clarify why young low SES smokers tend to continue smoking despite cigarette price increases. Moreover, there is also possibility of cigarette substitution in young adult smokers. They tend to switch from more expensive to cheaper cigarettes and reduce their overall tobacco expenditure and expenditure intensity (Partos et al. 2020). As smoking became less costly, smokers consumed more cigarettes. To discourage such substitution and to help the anti-smoking initiatives achieve its intended outcomes,

policymakers should consider implementing auxiliary measures, such as taxes or price floors.

Therefore, it is hypothesised that:

H10: A *tax increment has a positive relationship with ongoing smoking in young adults.*

2.12.6 Quit Victoria (Quitline Telephone Support)

Although cigarette smoking is a preventable cause of ill health, disability and death (Darville & Hahn 2014), it contributes to approximate six million deaths worldwide each year (WHO 2004). There are a range of smoking cessation aids available to help smokers to quit, such as individual counselling services, group therapy, medical advice, web-based interventions, and telephone support, all of which seek to maximise intention and motivation to quit smoking (Lancaster & Stead 2017; Shahab & McEwen 2009; Stead & Lancaster 2003; Stead, Perera & Lancaster 2009; West & Stapleton 2008 White, McCaffrey & Scollo 2020;).

The effectiveness of telephone support has been well documented (Daly et al. 2018; Lichtenstein et al. 1996; Schuck, Bricker, et al. 2014; Stead, Perera & Lancaster 2009 White, McCaffrey & Scollo 2020; Zhu et al. 2002), in part because telephone consultations are more convenient and flexible than group counselling sessions, and less expensive than individual face-to-face counselling (Byaruhanga et al. 2020; Daly et al. 2018; Shearer & Shanahan 2006). Telephone support is a commonly used smoking intervention in Western countries. According to Stead et al. (2013), telephone support has a high public health impact, especially for young smokers. Stead et al. found smoking abstinence to be 1.56 times greater (with 95% confidence interval= 1.38-1.77) for smokers that received intensive telephone support compared to those that received less or no such support. Similarly, Schuck, Bricker, et al. (2014) found that assisted telephone counselling in Denmark was more effective than self-help brochures, where respective sustainable abstinence rates were 23.4% and 5.9% ($p<001$) one year after the intervention. Generally, most Quitline telephone support around the world adopts a comprehensive approach to treatment comprising behavioural counselling, supplementary brochures, and recommendations for the of use pharmacological agents or nicotine replacement therapy (NRT) (Schuck, Bricker, et al. 2014; Schuck et al. 2013).

According to Forman et al. (2007), Quitline telephone support predominantly uses three approaches in assisting smokers to quit smoking: 1) Cognitive-Behavioural Therapy (CBT); 2) Motivational Interviewing (MI), and; 3) Acceptance-and-Commitment Therapy (ACT). CBT is a commonly used therapy for quitting smoking that aims to alter dysfunctional

smoking-related cognitions, improve mood management, and educate smokers on ways to avoid smoking cues or situations that could trigger smoking. MI, on the other hand, uses a client-orientated approach where behaviour change strategies will be designed and implemented according to the smokers' personal goals, values and commitments (Miller & Rollnick 2002). Last, ACT focuses on mindfulness of the smokers' feelings, thoughts and sensations without trying to control them (Bricker et al. 2013). Several studies have shown CBT and MI to be effective (Bricker et al. 2013; Heckman, Egleston & Hofmann 2010; Hettema & Hendricks 2010; Perkins, Conklin & Levine 2008; Song, Huttunen-Lenz & Holland 2010), with ACT being found as a good accompaniment to CBT and pharmacotherapy (Byaruhanga et al. 2020; Gifford et al. 2004; Hernández-López et al. 2009).

These three approaches have been reported to yield positive outcomes on smoking-related cognition, with smokers found to be better able to refrain from smoking under stressful and tempting conditions, experience lower negative emotions such as stress and depression, and establishing positive behaviours including avoiding external and internal smoking cues to prevent relapse (White, McCaffrey & Scollo 2020; Schuck, Otten, et al. 2014). According to a study by (Dijkstra, De Vries & Bakker 1996), cognition, emotions and behaviour are three important factors in smoking cessation determining expectations between smokers that planned to quit and smokers that did not. The impact of telephone support interventions can be partially understood through Social cognitive (learning) theory (Bandura 2004; Bandura, Freeman & Lightsey 1999), which seeks to explain how the mutual interaction between personal (e.g., self-efficacy) and social-environmental (e.g., social persuasion) factors determine one's health behaviour (Bandura, Freeman & Lightsey 1999). In this context, self-efficacy refers to the ability and belief of a smoker to perform certain behaviour (e.g., quit smoking) and attain specific outcomes (e.g., good health). It reflects smokers' confidence in their ability to control their motivation, behaviour and social environment (Bandura 2004). The relevance of Social cognitive (learning) theory in the context of smoking is supported by diverse studies (Gwaltney et al. 2009; Schnoll et al. 2011; Shiffman et al. 2000), which found that smokers that possess high self-efficacy can more easily quit smoking and do so unaided.

In Australia, the Minister for Health and Cancer Council of Victoria established the Quitline telephone counselling support service (Moodie, Daube & Carnell 2009). The aim of the Quitline is to facilitate quitting smoking in several ways, e.g., preventing relapse through face-to-face consultations, providing fast medical advice, and as a temporary support for

smokers to quit smoking on their own or as the sole treatment modality (Anita et al. 2014 Byaruhanga et al. 2020). Telephone counselling can be categorised into passive or active counselling. Passive helplines answer calls from smokers or their family and friends. The Quitline provides this type of service to all states in Australia is primarily promoted through the media and healthcare providers such as general practitioners (GPs). Smokers who call the Quitline are either considering quitting or deciding to quit, and require assistance from the counsellors to do so (Vos et al. 2010). Conversely, active phone consultation involves the counsellor initiating calls to support quitting. This call-back counselling is a systematic intervention that can be provided with or without medication. Typically, the call-back protocol includes one or two calls before quitting and approximately four calls after quitting. Usually, call-backs end a months after the craving diminishes (Anita et al. 2014).

A study conducted by (Miller, Wakefield & Roberts 2003) found that Quitline telephone support in Australia was a success with smokers who were motivated to quit. According to the authors, 144,500 calls were received by the Quitline within 12 months of implementation, with 123,600 calls from smokers aged 18 years or older, comprising about 4% of young adult smokers (Carroll & Rock 2003). The study also found that callers were mainly from the Quitline target audience, ranging from 18 to 40-years-old and comprising an even proportion of men and women. As a result, smokers that successfully quit recorded a 29% rate of abstinence within that year, with the high rate of abstinence apparently associated with the Quitline. Moreover, the current anti-smoking initiatives could be further improved by using the real-time video counselling for smoking cessation. In fact the acceptability and helpfulness of video counselling to written materials and illustrates that video counselling is perceived more favorably than one form of smoking cessation support (Byaruhanga et al. 2020). The Quit Victoria could consider incorporating real-time video counselling as another form of support to the young adult smokers.

Thus, it is hypothesised that:

H11: Quitline telephone support has a positive relationship with ongoing smoking in young adults.

2.13 The Stages of Change Behaviour in Young Smokers

The 13.8% rate of smoking prevalence in 2017-18 is generally regarded as a significant failure against the target set by COAG to have a rate of 10% or less by 2018 (Claydon, Webber & Sweeney 2017; Mendelsohn & Kosterich 2018; Moodie, Daube & Carnell 2009). This implies that further research into the factors that contribute to smoking among young

adults could enhance the impact of anti-smoking initiatives (Ferrante et al. 2013). A significant means of achieving this objective is through an investigation of theory-based interventions among young adult smokers. Several studies have focused on the Stage of Change model as a useful explainer for how to reduce smoking among young adults (Armitage & Arden 2008; Campbell et al. 2013; de Granda-Orive et al. 2004; Donovan et al. 1998; Guo et al. 2009; Riemsma et al. 2003). The Stage of Change or Transtheoretical model (Prochaska, Norcross & DiClemente 2013) is a widely used model that aims to discourage smoking and is arguably the most prominent psychological model applied to quitting smoking (Donovan et al. 1998; Rios et al. 2019). According to the model, a smoker that wishes to quit smoking progress through five stages of behaviour change, with these stages of change the central concept of the Transtheoretical model (de Granda-Orive et al. 2004; Prochaska, Norcross & DiClemente 2013). The stages are 1) precontemplation; 2) contemplation; 3) preparation; 4) action, and 5) maintenance. The pattern of diffusion of the stage of change can be an important intervention strategy for young smokers.

The stages of Change

1. Precontemplation

At this stage, most individuals are not aware of the problem/s they face. Therefore, there is no intention to change. However, friends, family members, neighbours or employers are aware of the individual's problems. In the context of smoking, smokers at this stage are unwillingly to recognise or acknowledge their smoking as a problem (de Granda-Orive et al. 2004), with the benefits of smoking apparently outweighing its costs. Smokers at this stage are content to continue smoking.

2. Contemplation

This stage is where people become aware of the problem's existence and seriously consider ways to address it. However, they do not yet commit to any action to do so. Individuals can remain in the contemplation stage for very long periods of time. A smoker at this stage is considering quitting smoking or reducing their cigarette consumption but feel uncertain about the next steps. Smokers continue to experience the pleasure and excitement of smoking. On the other hand, they begin to encounter some of its negative consequences, which may include health, personal, physical, psychological, family, legal or social problems.

3. Preparation

People in this stage display a combination of intention and behaviour towards the problem. Individuals usually make small attempts to overcome the problem but are unlikely to have been successful in these over the preceding year. They believe the time to change is approaching and that it is necessary to act. However, remain determined not to take any meaningful action towards their problems. In the context of smoking, smokers may reduce their cigarette smoking or delay smoking for longer periods than those in stages 1 and 2. However, smokers at this stage have not yet reached total abstinence.

4. Action

In this stage, individuals are actively changing their behaviour and modifying their experiences to overcome the problem they face. Behavioural changes are most visible in this stage, with individuals considered successful if they manage to alter their dysfunctional behaviours within one to six months. Although significant change occurs in this stage, smokers may still experience ambivalence about smoking and are at great risk of relapse.

5. Maintenance

Individuals in this stage consolidate their gains and continue to stabilise their behavioural changes to prevent relapse. In the context of addictive behaviour such as smoking, maintenance can extend from six months to an indefinite (lifetime) period. Smokers learn and adopt new ways of coping with their problems and can avoid the temptation to smoke. Nevertheless, they may experience temporary slips, which should not be considered failures.

The Stage of Change Behaviour is not a Linear Pattern

According to Prochaska, Norcross and DiClemente (2013), behavioural changes are not linear. Rather, most individuals progress through the stages of change in a spiral pattern; individuals do not strictly move from one stage to another, e.g., from precontemplation to contemplation to preparation to action and to maintenance. However, one common pattern among individuals is that they tend to relapse (Armitage & Arden 2008; Rios et al. 2019). When individuald relaspse, they revert to an earlier stage some of them feeling guilty, embarrased and demoralised. Some may become sceptical about their capacity for behaviour change. As a result, they may return to precontemplation, potentially leading them to abandon their quest for change. A key aspect of recovering from a relapse is identifying personal strengths and weaknesses and establishing a plan to resolves those weaknesses and fortify those strengths.

In the context of smoking, it is important for those attempting to quit to review their attempt up to the point where a relapse happened or when they resolved to smoking. Doing so allows

them to identify their weaknesses and develop a resolution plan might avoid a similar situation the next time round. Relapse is an important element in the action and maintenance stages. Many smokers that relapse decide to resume smoking for sevelar reasons. It is therefore worthwhile for this study to examine the reasonbs that lead to ongoing smoking behaviour among young adults.

Issue with the Transtheoretical Model and other Emerging Research

The transtheoretical model of change is regarded as one of the most influential psychological models of behaviour change articulated over the last two decades (Adams & White 2003; DiClemente & Prochaska 1998; Rios et al. 2019; Guo et al. 2009; Sutton 2001). The model has seized the instinctively appealing and commonsense notion that people move through well-defined stages to change problematic behaviours. According to Callaghan and Herzog (2006), at each distintive stage, the model propounds that indviduals need to perform the right things at the right time to progress from one stage to the next. In other words, individuals need to go through the whole process of change, since this is how they are able to change their behaviour. However, not much attention has been given to identifying the factors that lead young adults to continue smoking in the relapse stage (Bledsoe 2006; Ferrante et al. 2013). This study extends the Stages of Change model by investigating ongoing smoking among young adults by applying the insights of Theory of Planned Behaviour relating to the relapse stage.

2.14 An Overview of the Conceptual Framework on Continuance of Smoking Behaviour in Young Adult Smokers

2.14.1 Introduction

Young adulthood is the stage of life where many lifelong behaviours are established. During this emotionally unstable and sensitive stage, young adults tend to resolve their stress by engaging in activities that can include smoking (Ra & Cho 2017). When this population starts to smoke, they are most likely to become long-term and heavy smokers with little intention to quit (Nordstrom et al. 2000); ongoing smoking becomes a difficult behaviour to alter. Unsurprisingly, several studies have shown the link between smoking during childhood and adolescence and continued smoking in adulthood (Myers et al. 2020; Nadia et al. 2018; Nowak et al. 2018; Pabayo, Molnar & Kawachi 2014; Petrou & Kupek 2019; Valencia et al. 2019). This evidence indicates that young adult smokers attracts a higher risk of smoking-related morbidity and mortality (Novello 1990).

Although young adult smokers understand that ongoing smoking is bad for their health, they nevertheless often persist in their habit (Novello 1990; Roditis, Lee & Halpern-Felsher 2016; Straub et al. 2003). It is therefore important for researchers and public health practitioners to investigate *why* young adult smokers continue smoking despite its obvious negative health consequences. Biddle and Nigg (2000) emphasise the need to better theorise on the causes of ongoing smoking behaviour. Since young adults typically have higher smoking rates compared to older age groups (Mannan et al. 2016 Myers et al. 2020;) and are also reported to be the most nicotine-dependent group (Darville & Hahn 2014), it is urgent for researchers and practitioners to better understand why young adults continue to smoke. One of the crucial steps to discouraging ongoing smoking is to examine the factors that constitute this habit in young adult smokers.

2.14.2 Ongoing Smoking Behaviour and Social Cognition Models

Several theoretical models have been developed and used to investigate public health behaviours among different populations. Among these are social cognitive theory (Bandura 1999), the theory of planned behaviour (Ajzen & Fishbein 1980), health belief model (Rosenstock 1977), and the theory of protection motivation (Sturges & Rogers 1996). These are some of the most widely used models to explain the determinants of public health behaviour, and have been validated by many researchers (Armitage & Conner 2001; Barmpagianni et al. 2014; Diemert et al. 2013; Farrimond, Joffe & Stenner 2010; Feng 2005) whose work has contributed to the design of health behaviour intervention frameworks. Such frameworks aim to 1) describe the relationships between various constructs; 2) predict utility; 3) furnish guidelines to measure key constructs; 4) change key constructs in interventions frameworks, and; 5) explain why an intervention fails or succeeds (Brawley 1993 Horne & Weinman 2020;).

In 2005, psychology researchers Conner and Norman (2005) analysed major social cognitive models using the aforementioned characteristics. They concluded that the theory of planned behaviour, social cognitive theory and theory of protection motivation have shown medium to strong predictive utility (Conner & Norman 2015; McLachlan 2011). However, the health belief model did not provide an adequate explanation for the relationship between key constructs. The theory of planned behaviour (but not the theory of protection motivation or health belief model) provides guidelines to measure key constructs and guidance for self-efficacy. However, it provided no clear guidance on the design of intervention frameworks for the theory of planned behaviour, social cognitive theory and theory of protection motivation. All four models can explain the failure or success of an intervention. The theory

of planned behaviour fulfills most of the criteria with an additional benefit, which is that it validates the determinants of health behaviour, including smoking, illegal drug use, road use behaviours, sexual risk behaviours, alcohol use, physical activity engagement, sun protection behaviours, medication adherence, attendance at health screening, dietary behaviours, and self-examination behaviours (Horne & Weinman 2020; Jing Huey & Shaheen 2019).

2.14.3 Ongoing Smoking Behaviour and the Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) is a health behavioural model that predicts an individual's intention to engage in an action at a specific time and place (Ajzen & Fishbein 1980). It posits that there are three different considerations that drive human behaviour (see Figure 2.1):

1. Behavioural beliefs that link between an individual's behaviour to the outcome that the behaviour is expected to bring about or produce (attitude).

2. Normative beliefs involve characters or key persons around the individual, specifically their behavioural expectations, as he or she perceives them to be. Over the above, it is also formed in part by the level of importance that he or she places on these people's expectations (subjective norms). All in all, these decide the subjective norm that will play a pivotal role in his or her decisions on whether to act in a certain way or not.

3. Control beliefs refer to the factors that would assist or hinder on how the performance of the action will go (perceived behavioural control).

While people can have diverse beliefs on a behaviour, they can only attend to a few 'salient' beliefs at any given time. These salient beliefs determine their action.

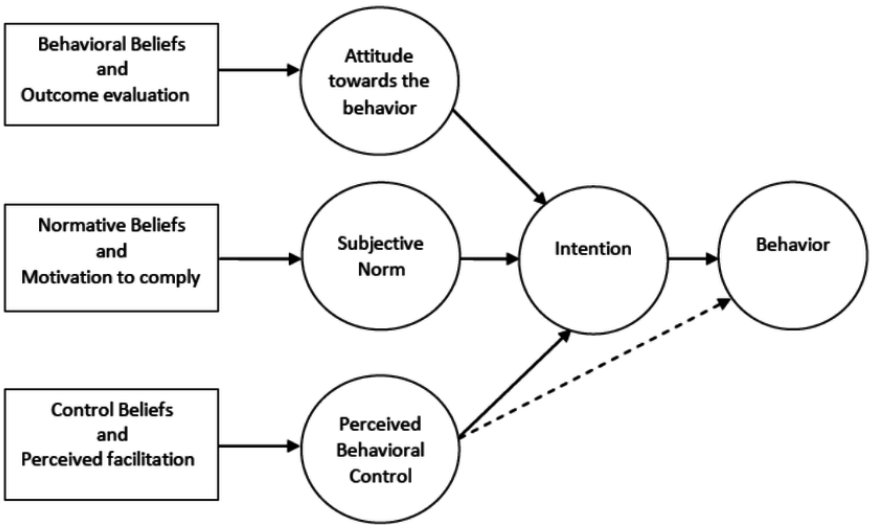


Diagram 2.1 Theory of Planned Behaviour (Ajzen & Fishbein 1980)

Indirect attitude

The total of an individual's salient behavioural beliefs determines their overall attitude towards a behaviour, where attitude consists of positive or negative evaluations of a behaviour. In the context of social psychology, Ajzen (1991b) argues that attitude is the foundation for health behaviours, including ongoing smoking (Chiu, Chou, Chang, et al. 2019 Horne & Weinman 2020;).

Indirect subjective norm

The combination of salient normative beliefs (indirect subjective norm) creates a general subjective norm that leads to behaviour. One of the examples of a subjective norm is the perceived social pressure for an individual to perform or not perform a behaviour. In many cases, social influence has been acknowledged as a reliable and consistent determinant of smoking (Ajzen 1991b).

Indirect perceived behavioural control

The formation of salient control beliefs (indirect perceived behavioural control) establishes overall perceptual behaviour control (PBC). PBC refers to individual perceptions of their ability to perform a given behaviour (Ajzen & Fishbein 2000).

All three constructs (attitude, subjective norm, and perceived behavioural control) are known as 'direct' measures. These three constructs are presumed to appear automatically when central beliefs are formed and linked, thereby establishing an intention to carry out the behaviour. In general, the more positive the attitudes are, the stronger the subjective norm is and the more substantial PBC towards the action or behaviour (Horne & Weinman 2020)

Intention

According to Ajzen (2010), intention is the direct predecessor of behaviour. Individuals act on their intentions when sufficient resources (e.g., skills, time etc.) are available and when an opportunity emerges to do so. The objective of PBC is to consider the determinants or factors that are beyond individual control and that may shape intention and action when in the presence of strong motivation (intention) and capability (behaviour control) (Chang 1998; Montano & Kasprzyk 2015). In some circumstances, individuals may not have sufficient resources or total control over certain behaviours, or may find it difficult to evaluate the degree of their control over them (Rise et al. 2008). In such cases, PBC serves as a substitute for measurement in acting and controlling.

PBC is a reliable measure of actual control in predicting an individual behaviour. Ajzen (1991b) also affirms a direct link between PBC and behaviour when an individual's level of PBC is higher than their behaviour. In such instances, the individual is more likely to carry out the act/s (Sutton 2004). Therefore, PBC is considered to indirectly influence behaviour via intention and directly lead to a behaviour. In situations where individual exhibit high will power, the intention-behaviour relationship is not utilised. In such cases, intention is the only predictor. Nevertheless, if PBC does represent actual control, then it is arguably able to predict non-volitional behaviours independently (Armitage & Conner 2001). Rise et al. (2008) similarly conclude that when an individual possesses higher perceived control, then the intention towards their behaviour tends to be stronger.

Critiques of the TPB

Ogden (2003) critiques the TPB as a model that cannot be adequately tested. The author claims that the model appears to work in theory but not in empirical observation; the measurement tools in the model may change the cognitive behaviour rather than describe them. For example, in a sample of articles that employed social cognitive models to investigate health behaviour, TPB could not be theoretically refuted. This is because the results are deemed to support the theory in studies where one of the variables is unable to predict behaviour or intention in regression analysis.

Ogden (2003) also critiques TPB for relying on evidence that can be easily falsified. For instance, TPB could be inconclusive when attitude, social norms or perceived behavioural control do not significantly predict behaviour (Ajzen & Fishbein 2000). Moreover, Ogden (2003) claims that the relationships between overlapping measurement tools in each construct can be challenged on the ground of 1) the relatedness of the constructs, and 2) the degree of variance in the measurements. Lastly, Ogden (2003) argues that while the measurement tools may change the cognitive behaviour of an individual, they could just as easily yield no changes to individual behaviour. Evidence for this claim came from Ogden's (2003) study, where participants that completed a survey demonstrated no change in their cognitive behaviours.(Horne & Weinman 2020).

Its shortcomings notwithstanding, TPB has been frequently used in the context of predicting smoking behaviour in young adults, and has been proclaimed by some scholars to be the most validated and reliable model to understand *why* young adults smoke (Chiu, Chou, Chu, et al. 2019; Conner & Norman 1996; Karimy et al. 2015).

The ability to add other variables to the model

According to Ajzen and Fishbein (2000), one of the unique features of TPB possesses is that the model is capable of accommodating external variables while not causing additional variance in intention or behaviour above or beyond the components of the TPB model. Sutton (2004) asserts that external variables should be carefully and deliberately added when two conditions are met: 1) there are solid theoretical reasons to indicate that the additional variable would directly impact the study outcome, and 2) the additional variable appears to be an independent predictor in the study while existing constructs continue to operate as outlined by TPB. The relationship between existing constructs and the additional variable should be clearly defined, as the additional variable is anticipated to influence the study outcome under different conditions (Conner & Armitage 1998). Ajzen and Fishbein (2000) contend that the additional variable is mere an alternative representation of the existing constructs that would only yield minute variance. (3) the additional variable is able to be obtained from salient beliefs that relate to the study outcome (4) the additional variable is able to measure a different entity in the existing components.

2.14.4 The Conceptual Framework Developed in this Thesis

According to Ajzen and Fishbein (2000), TPB does not specifically state which intervention is the most effective in predicting human behaviour. Nevertheless, the model was found to perform well on persuasive messages that aim to change human attitudes towards an object with the same consideration for subjective norms and PBC (Ajzen 1991b). Arguably, the persuasive messages should consist of behavioural and factual evidence that are credible and appropriate for forming new beliefs (Chatzisarantis & Hagger 2009 Horne & Weinman 2020).

The theory of planned behaviour is validated for its capacity to forecast intentions to stop up smoking, according to the findings of Saleem et al. (2023). The subjective norms have a higher impact on cessation intentions than attitudes towards smoking cessation. The theory of planned behaviour (TPB) on smoking cessation intentions was examined in this study, which is in line with recent demands for investigating integrated theoretical models for more effective explanations of smoking cessation intentions. (Zhao et al., 2022). According to the TPB model, behavioral intentions are used to describe an individual's propensity towards engaging in a particular behaviour. These intentions are influenced by an individual's evaluation of the potential positive or negative outcomes of the behaviour in question, as well as their perceptions of the social pressure to engage in the behaviour in question and the perceived ease or difficulty of engaging in the behaviour (Saleem et al., 2023). Most previous studies on quitting smoking were done in individualistic societies. Instead, this

study looked at how important normative pressures are in a collectivist culture, where social institutions like the family have the biggest impact on behaviour like smoking. Secondly, because anti-smoking laws vary significantly between nations, corresponding cost structures (such as tobacco prices) and smoking cessation incentives (such as free counselling) can also differ significantly. As a result, cultural contexts must be taken into account when determining smoking cessation intentions. Since then, this study has explored the unusual environment of a nation to shed light on the implications of behavioural issues on smoking cessation intentions and to inform measures to support smoking cessation based on the significant variables. (Tapera et al., 2020). Numerous studies have shown that a person's perception of the benefits of quitting smoking has a big impact on their motivation to do so. (Ahmad, 2015). In this sense, personal norms influence one's perception of what other people who are important to them normally deem appropriate and whether or not they approve of a particular activity. (Mirzaei et al., 2019). Subjective norms can be influenced by the environment, including other social groups like friends, parents, and teachers, just like attitudes. (Su et al., 2015). In the context of this study, earlier work has demonstrated that subjective norms can influence how cognitively an individual judges their smoking habit, which can subsequently result in intentions to stop smoking. (Zhao et al., 2022; Rahman et al., 2018).

This thesis employs the TPB model to investigate the relationship between factors that comprise attitude and subjective norm constructs in ongoing smoking. PBC variables such as plain packaging, health images, health warnings, tobacco tax, smoke-free policies and Quitline have been negatively associated with intention to, and actual, quitting of smoking among young adult smokers (Ashok & Michael 2014; Cooper et al. 2010; Lupton 1995a). Attitude and subjective norm consist of variables such as self-identity, addiction, habit, peer-pressure, stress and social-economics that have been reported to be positively linked to intention to smoke (Charng, Piliavin & Callero 1988; Creighton 2017; Dorsett & Marsh 1998). The hypotheses in this study are consistent with Ajzen (1991b) assertion that the primary determinants to ongoing smoking will be attitude and subjective norm, and that perceived behavioural controls will determine intention to stop smoking among young adults. A conceptual framework for ongoing smoking behaviour in young adult smokers has been developed by drawing on the above theories and is represented in Diagram2.2.

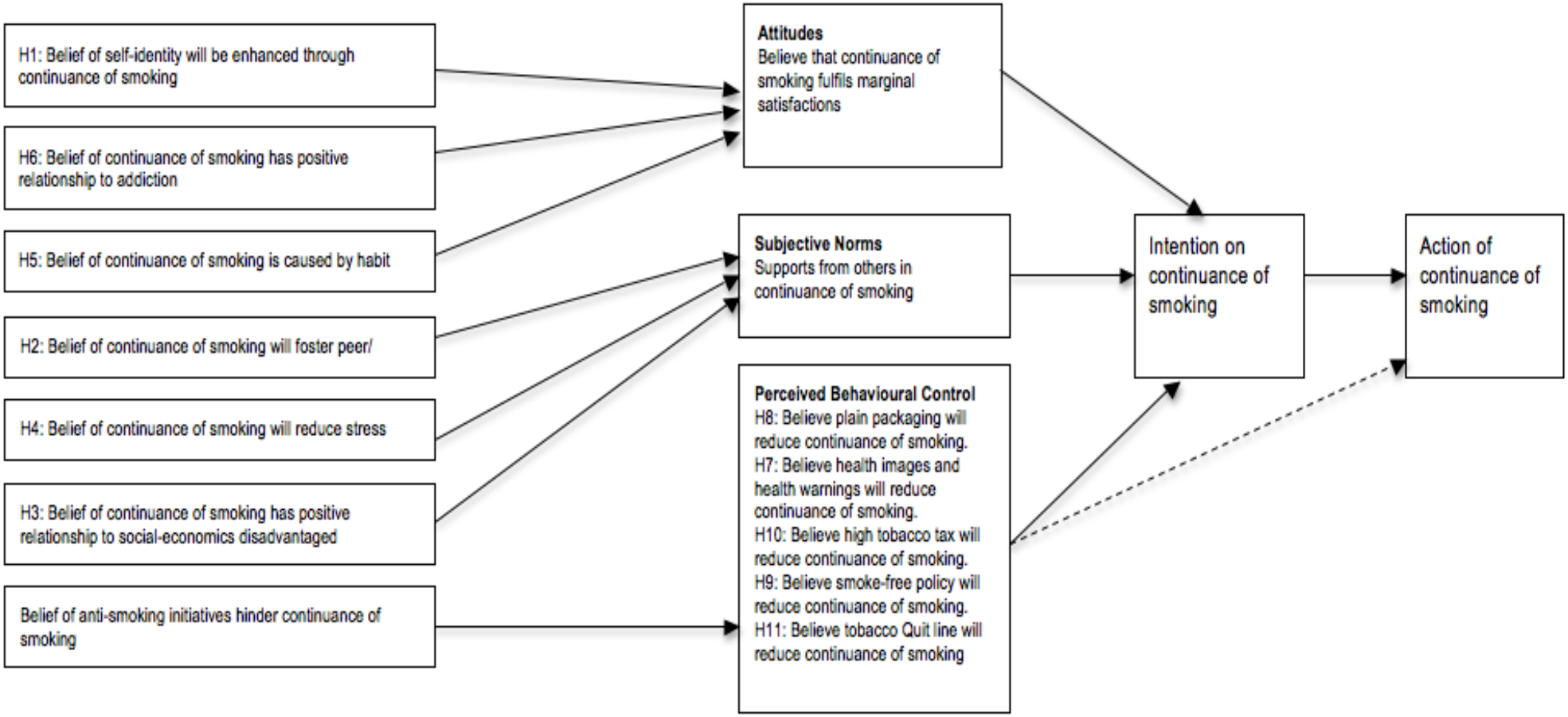


Diagram 2.2 Developed Model of Continuance Smoking Behaviour in Young Adult Smokers. Adopted from Ajzen and Fishbein (1980)

Measurement scales

Scales quantifying participant attitudes and subjective norms relating to ongoing smoking and perceived behavioural controls over their intention to smoke were used to discover the proximal determinants of smoking in young adults. These scales were developed according to the guidelines proposed by Ajzen and Fishbein (1980).

2.15 Chapter Summary

This chapter begins with the origin of tobacco, which has become widely used in different ways and parts of the world. This chapter highlights the importance of tobacco in the early days and outlines how it spread to the other countries through the mass production of cigarettes. This chapter also highlights the establishment and achievement of anti-smoking initiatives in Australia. Unfortunately, the reduction in smoking prevalence in Australia has stagnated, and the country has failed to achieve its target of 10% smoking prevalence by 2018. Therefore, it is important to investigate young adult smoking behaviour against the efficacy of current anti-smoking initiatives in Australia.

Furthermore, several models and theories were discussed in this chapter with the intention to form a strong theoretical basis for this study. The models and theories covered include social cognitive theory, the theory of planned behaviour, the health belief model, and the theory of protection motivation. The principles of these models and theories are relevant to the context of young adult smoking and help form the theoretical framework of this study. This framework has two distinct purposes. First, it helps address the factors that constitute smoking behaviour in young adults. Second, it allows this study to outline and discuss the efficacy of current anti-smoking initiatives.

Chapter 3: Research Methodology

3.1 Research Philosophies and Research Design

The aim of a research is to explore the unknown and discover new knowledge in a systematic way (Saunders, Lewis & Thornhill 2012). This study adopts an appropriate research method to investigate its research questions and test its hypotheses by uncovering the relationship between key variables. According to Johnstone (2004), the best way to answer a research problem is through positivist inquiry and humanistic reasoning. As anti-smoking initiatives are within the public health education and policymaking domains, they have traditionally been investigated through positivist frames (Glanz, Rimer & Viswanath 2008). This is because anti-smoking initiatives are closely related to biomedicine, which relies on positivism to measure quantifiable data (Lupton 1995a). However, the trend has recently shifted in public health research, which increasingly adopts a combination of positivism and humanistic reasoning (Baum 1995; Casebeer & Verhoef 1997; Heath et al. 2004; Sofaer 1999).

3.2 Research in Tobacco Marketing Paradigms

It is important to understand the relative merits of positivism and humanistic inquiries to choose the most appropriate paradigm or combination of these paradigms. According to Howe (1992), researchers should decide and select what works best for their studies. This self-assured attitude proposes that only forward-looking researchers attempt to combine research paradigms. A paradigm is defined as a set of fundamental beliefs or general views that define the nature of the world, the place that individuals occupy, and their possible relationships to the world and its parts (Guba & Lincoln 1994). Paradigms comprise general approaches to the complexities of the real world. Generally, these approaches consist of an epistemology (the nature of knowledge and rationality of belief), ontology (the nature of being, reality or existence), axiology (the nature of value and things that are valuable), and methodology (construction of knowledge) (Guba & Lincoln 1994; Heron & Reason 1997).

The choice of an epistemological position should be based on long and careful philosophical consideration of its appropriateness. Over the past five decades, supporters of positivism (primarily quantitative) and humanistic reasoning (primarily qualitative) have intensely debated the best way to consider these issues (Popper 2005). As a result, purists have appeared on each side (Campbell & Stanley 2015;

Lincoln & Guba 1986). The advocates of positivism subscribe to a philosophy where quantitative purists postulate that social observations should be viewed and treated in much the same way as physical scientists treat physical phenomena (Bryman 1984). According to this view, one must always remain cognisant of the observers' points of view when trying to explain something. In other words, the observer is separate from the subject of observation and should maintain objectivity in their inquiry.

Conversely, supporters of humanistic inquiry embrace constructivism, relativism, hermeneutics, idealism, humanism and postmodernism (Guba & Lincoln 1994; Ritchie et al. 2013). According to Bryman (1984), humanistic inquiry purists use epistemological requirements to justify their preference for participant observation. This includes being more flexible and open-minded in discovering new, unexpected findings, as well as being open to possible alterations of research plans to accommodate unforeseen occurrences (Bryman 1984; Smith 1984). Unlike the quantitative methods that positivists typically rely on, which can be quite rigid (Bryman 1984; Green & Thorogood 2018), qualitative purists argue that their methods tend to be more responsive to complex social phenomena. According to such purists, the pursuit of quantitative insight on complex social phenomena can lead to social relationships being manipulated and to a diminished understanding of the contextual factors that are necessary to understand their complexity (Sale, Lohfeld & Brazil 2002). Besides, qualitative purists claim that close and prolonged involvement with that being investigated provides additional depth to the investigation.

Humanistic inquiry proponents assert that many realities exist, and that context-free generalisation is not desirable or possible for social phenomena. They also argue that when research is value-bound, it is not possible to differentiate cause and effect. Since subjective experience is the origin of reality, it does not make sense to from inductive explanation that is specific to general truths (Guba 1992; Guba & Lincoln 1994). Qualitative purists also do not support passive writing that sounds detached. Rather, they prefer rich, direct writing, sensitive description, and informally detailed writing.

Remarkably, purists on both sides of the divide implicitly and explicitly argue that their respective paradigms are perfect for research. This is because they argue that their own paradigm is perfectly consistent and complete (Howe 1992), and that therefore qualitative and quantitative research methods should not and cannot be mixed. Guba (1992) agrees, postulating that these two paradigms cannot

accommodate one other and inevitably lead to different destinations. Guba and Lincoln (1994) agree and add that qualitative and quantitative methods have different orientations. As a result, two research cultures have emerged: one that claims to generate superior, deep and rich observational data, and another that claims to generate hard and generalisable data (Guba & Lincoln 1994; Sieber 1973).

Despite the cross-sectional difference between qualitative and quantitative approaches to research, it makes sense to combine these two approaches; these two paradigms provide stronger answers to research questions and present broader and divergent points of view (Biesta 2010; Haase & Myers 1988; Sale, Lohfeld & Brazil 2002). This combined approach is supported by Dzurec and Abraham (1993), who highlight that there are consistencies across qualitative and quantitative paradigms in terms of research scope, objectives and the nature of inquiry.

Broadly speaking, the focal point has moved from positivist to humanistic inquiry in research on anti-smoking initiatives. According to several studies (Baum 1995; Caracelli & Greene 1993; Casebeer & Verhoef 1997; Greene & Caracelli 1997; Morgan 1998), insufficient value is obtained from relying on qualitative methods alone, as these cannot shed adequate light on the complexities of public health. Even the WHO has acknowledged that using both qualitative and quantitative approaches can help generate better understanding of issues in public health (Baum 1995). This is because public health issues are related to many other influencing factors, such as social, political, economic and environmental factors that should be considered to understand the influence of issues such as resource allocation, power and status on public health. According to Baum (1995), even a mixed-method approach cannot resolve the difficulties that exist in understanding the complexities of public health strategies, particularly in tobacco control. As a result, researchers in public health regularly debate the suitability of different anti-smoking approaches. Since both paradigms have strengths and weaknesses, it is crucial to acknowledge the need for mixed, flexible studies and approaches that can respond to unanticipated events (Morgan 1998). By utilising mixed methods and mixed data sources and theories, it is possible to avoid the intrinsic bias that can result from single-inquiry, single-theory studies (Baum 1995; Denzin 2017).

3.3 Research Design

Having reviewed different research methods available to the social scientist and explained the reasons for selecting a mixed method approach, the next stage is to

discuss the research design that is applied to this study. This study combines quantitative and qualitative methods to design surveys comprising closed and open-ended questions. This study focuses on analytical and narrative approaches. In order to comprehend complicated research problems, mixed methods research is used in this study. The mixed methods are approaches for gathering, processing, and combining quantitative and qualitative data (Kamstra et al. 2022; Korstjens & Moser 2022). Due to the ability of integration, mixed methods approaches provide more conventional research designs in numerous dimensions (West & Schill 2022). As a result, study using a combination of approaches can draw more firm conclusions on a finding that give different audience such as the vulnerable groups and adolescents a chance to hear from various opinions on the phenomenon being studied (Jordanoska & Lord 2022). In order to understand better on the complexity of tobacco control use in young people and young smokers, the use of mixed methods offers at least two benefits in this study. First, the mixed methods explore different smoking intention, how the intention varies by socio-demographic characteristics and if anti-smoking has addressed the reasons why young smokers continue to smoke. Second, as the mixed methods have become more common in recent years, especially in the domains of the behavioural sciences (Clark & Clark 2022) and medical sciences (Lischer, Safi & Dickson 2022), it has great potential for advancing the understanding of complex behavioural and sociocultural issues for all groups, especially the youth and young adults.

We did not perform pilot study. A pilot study is needed to re-establish the validity and dependability of the revised items if there are substantial changes in the initial items. However, there is little point in conducting a preliminary study for work that has already been thoroughly established by previous research if no significant changes are made (Song et al., 2015).

The analytical approach comprises statistical analysis of attitudes towards ongoing smoking, measurement of outcomes including intention to continue smoking and the action of continuing to smoke, and independent variables such as self-identity, addiction, habit, peer pressure, stress, and socio-economic disadvantage. While Trochim and Donnelly (2001) argue that this approach leads to high validity and reliability, Donnellan (1995) argues that it can hinder respondents from expressing their true feelings. Relying on a survey alone also means that researchers cannot respondents further. Such probing is typically the domain of qualitative methods, which allows researchers to collect rich information about. However, qualitative

methods are often criticised for their inability to generate findings that can be generalised. It is therefore necessary to employ a mixed-method approach to reduce the possibility of making invalid statements (Patton 1990). Finally, this study adopts a narrative approach, which involves open-ended questions to discover the reasons why young adults continue to smoke despite rigorous implementation of anti-smoking initiatives in Australia. The mixed data derived from qualitative and quantitative methods helps to minimise the biases that stem from single method research (Smith 1983).

In term of qualitative technique, this study is designed and built on the grounded theory proposed by Glaser and Strauss (1967) in accordance to the study's goals. In fact, Glaser and Strauss's grounded theory is one of the most well-known and a time-tested qualitative research tradition that has influenced in this study. Understanding the processes of difficult-to-change health behaviour benefits greatly from grounded theory (Charmaz & Bryant 2011; Glaser & Strauss 2017). Since Glaser and Strauss (1967) first developed grounded theory, it has undergone several changes and today comes in a variety of forms. This study drew from the work of Charmaz (2006), Kathy Charmaz, a modern pioneer in the grounded theory field whose approach is perfectly suited to researching action and significance. This approach places a strong emphasis on systematic analysis to uncover the mechanisms underlying social interactions; it is entirely systematic, analytical, and interpretive, and it enables the researcher to seek for novel ideas.

3.4 Quantitative Research and Questionnaire Survey

This section explains the justification for the quantitative research methods employed in this study, and the adoption of a survey using a self-administered questionnaire.

According to Easterby-Smith, Thorpe and Jackson (2012), quantitative methods facilitate deductive reasoning, and are scientific and objective seeking facts. There are diverse stages in quantitative research, such as identifying the research problem, development of a model, data collection, and the interpretation of results. Simply speaking, quantitative research deals with numbers; it is defined as the combination of logic and deduction using empirical observation to predict human activity and behaviour (Bernard & Bernard 2013). Cohen (1980) refers to quantitative social research as research that uses empirical methods and statements. This aligns with Saunders (2011), who highlights that quantitative data is numerical and measured in quantities. Creswell (2008) points out that quantitative research is popular in

investigating social phenomena that can be communicated through numbers, with the outcome of such research normally being comprehensive and succinct.

This thesis uses a conceptual framework that consists of various variables. These variables have been selected from a review of the literature, which led to the articulation of the hypotheses outlined in the preceding chapter. Testing the hypotheses will allow this study to answer its research questions.

While research questions are inquisitive, hypotheses are predictive. Statistical methods will be used to test the relationships between the variables identified in the hypotheses. According to the literature, this approach is appropriate and successful (Alrubaiee & Al-Nazer 2010; Hennig-Thurau, Gwinner & Gremler 2002; Lin, Weng & Hsieh 2003; Sivadas & Baker-Prewitt 2000).

3.5 Types of Questionnaires

In general, questionnaires can be classified into two types: 1) self-administered, and 2) group administered. According to Oppenheim (2000), self-administered questionnaires refer to those distributed by a researcher or individual in an official position. This type of questionnaire possesses some advantages, such as higher response rates, accurate sampling, prompt response rates due to targeted sampling, and the fact that it does not require high distribution skills (Callara & Callara 2008; Oppenheim 2000). Conversely, group-administered questionnaires are distributed to groups of participants that assemble (e.g., university students or invited audiences). This type of questionnaire is more biased but can yield high response rates. In group-administered questionnaires, researchers are responsible for providing clear instructions to participants and set the time limit for completion.

3.6 Self-Administered Questionnaire

This study employs a self-administered questionnaire. According to Saunders (2011), self-administering refers to data collection processes where participants are given the same set of predetermined questions to read and answer in the absence of the interviewer. The self-administered questionnaire remains popular, as it is widely seen as reliable and suited to current technological, cultural, social and economic realities (Easterby-Smith, Thorpe & Jackson 2012).

3.7 Research Sample

This study investigates whether anti-smoking initiatives in Victoria, Australia have effectively discouraged young adult smokers from continuing to smoke. The research

population for this study is male and female smokers aged between 18-30 years that live in Victoria. It is necessary to identify a precise sample to ensure that data collected can support sophisticated analysis. As of March 2020, the total population in the state of Victoria was 6.5 million and was predicted to increase in the coming years (ABS 2018a). This study makes some assumptions about the population being researched:

- Participants at this age are under less familiar control and thus have more freedom to behave in new ways, than when they were younger.
- Most socialise with their peers/friends.
- They are in control of their own personal time.

This study focuses on the state of Victoria because it appears to have more restrictions on smoking compared to other Australian states and territories (Scollo & Winstanley 2016). A further reason for this study's focus on Victoria is that it recorded an average of 13.5% daily smoking prevalence, and thus has failed to achieve the national 10% target set for 2018 by COAG. Victoria thus has the fifth highest daily smoking prevalence rate of the eight states and territories in Australia (see Table 3.1).

Table 3.1 Daily Smoking Prevalence by States and Territories 2017-2018

States/ territories	Smoking prevalence (%)	Ranking (from the highest prevalence)
New South Wales	13.9	4
Victoria	13.5	5
Queensland	14.9	3
South Australia	12.9	6
Western Australia	11.8	7
Tasmania	16.4	2
Northern Territory	19.6	1
Australian Capital Territory	10.6	8

Sources: The 2017-18 National Health Survey, Australian Bureau of Statistics

The focus on Victoria allows the researcher to understand the attitudes of smoking behaviour in young adults by examining the factors that constitute their ongoing smoking. The outcomes of this thesis could be generalised to other states and territories in Australia.

3.7.1 Sampling Techniques

Sampling techniques can generally fall into two categories: 1) probability sampling (also known as random sampling), and; 2) non-probability sampling (Cohen & Holliday 1979). Some common probability sampling techniques are simple random, clustered, stratified, and systematic sampling (Anderson et al. 2016; Cohen & Holliday 1979; Engel & Schutt 2014). Probability sampling allows every member in a

population to have the same opportunity to be included in the sample (Cohen, Manion & Morrison 2013). In this study we adopted Probability sampling technique. In contrast, non-probability sampling is a purposive sampling technique (Cohen, Manion & Morrison 2013) where the subjects in the selected sample are selected based on the personal judgement and purposes of the researchers. Non-probability sampling does not allow individuals in the study population to be equally represented (Anderson et al. 2016; Engel & Schutt 2014).

3.7.2 Sampling Size

It is crucial to have a sample size that is representative to achieve reliable results in this study. The names of all the participants of a study population can be found in the sample frame (Anderson & Lemken, 2023; Murairwa, 2015; Hays et al., 2015). To achieve this, it is important to have a sample from different locations within the state of Victoria and different campuses of Victoria University. Therefore, this study will collect data from four paramount metro train stations, namely Melbourne Central, Parliament, Flinders Street, and Southern Cross. These stations service most people that live in the North, East, South and West of Victoria. Besides, the researcher will collect data from several of Victoria University's campuses, including the City Flinders, City Queen, City King, Sunshine, Werribee, and Footscray campuses, thus encompassing different university faculties. The researcher managed to collect a total sample size of 250 over a seven-week period. However, only 228 questionnaires were completed and thus analysed. According to Saunders (2011), a sample size of 200 to 300 leads to an acceptable margin of error in analysis and to valid, reliable and precise insights.

According to "https://www.danielsoper.com/statcalc/calculator.aspx?id=89 A-Priori Sample Size Calculator for Structural Equation Models", the sample size is deemed to be reliable and valid. With a statistical power of 0.9, medium effect size (0.3), with three latent variables and eleven observed variables, the tool suggested a sample size of 153. According to Hair et al. (2014) and Tabachnick et al. (2013), a sample size of 200 provides a strong basis for forecast to continue for structural equation modeling. Therefore, in order to increase the reliability of the study's results, we chose to use a sample size of 228 rather than 200 (Kock & Hadaya, 2018; Abdelwahed & Soomro, 2023). In addition, since we are evaluating the theory of planned behaviour (TPB) model to examine the link between variables that comprise of attitude and subjective

norm components in continued smoking behaviour through the structural equation modelling, we deemed 228 respondents to be a suitable sample size (Kline 2015).

3.7.3 Types of Data

Generally, researchers endeavour to create questionnaires that all participants can comprehend in the same way, thus allowing them to answer all questions consistently (Oppenheim 2000). However, developing sophisticated questions is challenging. There are several types of questions in questionnaires: open-ended, closed, multiple choice, and dichotomous (Cohen, Manion & Morrison 2013; Oppenheim 2000). Open-ended questions enable participants to freely express their opinion through detailed answers (Oppenheim (2000). For instance, in this study participants are asked for the reasons they continue smoking despite its health impacts through an open question, thus giving them the opportunity to provide a detailed answer. In this way, the researcher can capture specific insights on why respondents continue smoking. However, while open questions facilitate the detailed exploration of phenomena, the data they generate are not always easy to interpret (Oppenheim 2000). Furthermore, participants are not always motivated to answer open-ended questions, since doing so requires more time and effort than closed questions. Closed questions can point to insights to be followed up through interviews, and allow participants to choose their preferred answers without explaining why they have chosen them (Oppenheim 2000).

3.8 Development of Questionnaire

The questionnaire in this study consists of items that were developed and used in previously tested instruments. A comprehensive questionnaire was developed to achieve higher response and completion rates, higher data quality, and cost utility efficiency. The survey is designed to be completed within ten minutes, representing an ideal survey length to avoid fatigue and lower completion rate (Revilla & Ochoa 2017). In total, 31 questionnaire items were developed relating to the key variables investigated by this study (e.g., self-identity, peer pressure, social-economic, stress, habitual, addiction, pictorial health images and warnings, plain packaging, smoke-free policies, taxation, Quitline and intention to quit smoking).

There are three sections in the questionnaire (See Appendix B). The first section focuses on 11 variables relating to attitude towards anti-smoking initiatives and respondents' reasons for continuing to smoke. The second section comprises seven items to gather insight about respondents' demographic profiles. The third and final section of the survey comprises three open-ended items that investigate the reasons

why young adult smokers continue to smoke despite its negative health consequences and whether anti-smoking initiatives effectively discourage young adults from smoking.

The researcher used a developed questionnaire to collect quantitative data. The purpose of the quantitative data gathered is to furnish a general understanding of the research topic that could help in the second stage of data collection. The developments of the questionnaires are based on old sources as the researcher found that old sources are more pertinent (Church & Waclawski 2017) in understanding smoking behaviour in young adults. APA Style rules make no mention of timeliness. (As defined in the Concise Guide to APA Style (2019), Seventh Edition and Publication Manual of the American Psychological Association). We referenced the work of persons whose concepts, beliefs, or studies had a direct effect on what we did. The publications we cited supplied crucial background knowledge, backed up our conclusions, and offered essential concepts and facts." (American Psychological Association, 2020, p. 253).

The second stage of data collection involved a qualitative approach where data was collected through three sequential open-ended questions intended to collect data to help explain and contextualise the quantitative data obtained in the first stage. Quantitative and qualitative data were analysed concurrently and iteratively.

In the designing stage, all questionnaire items were carefully examined to maximise clarity and user-friendliness. Another possible issue to address is the potential unwillingness of respondents to truthfully answering questions. For this reason, it was important to use simple, short, precise, and carefully considered wording. This study also avoided using ambiguous and emotional statements in the open-ended questions section.

3.9 Construction of Instrument and Scale

This section describes the selection of the questionnaire items. To begin with, each item was carefully selected and constructed to be relevant to the subject in this study in the following ways:

- Only young adults (aged 18-30) that smoke was considered when designing questionnaire items as these are the subject of this study.
- Items were designed to be relevant to those who had smoked 1-2 cigarettes per week in the previous 30 days. This is the definition of ongoing smoking identified in (Schane, Ling & Glantz 2010).

- Items had to be consistent with the Theory of Planned Behaviour model by linking smoker's beliefs and behaviours (Ajzen 2010; Karimy et al. 2015).
- Selected items had to be consistent with items in similar studies, as the validity of these tends to be high (see Appendix A).

The questionnaire constructed for this research is available in Appendix B, while the themes of the 31 items can be seen in Table 3.2 below.

Table 3.2 Questionnaire Number for Collecting Items

Question Number	Item themes
Q1-2	Smoking attitudes towards anti-smoking initiatives
Q3,7	Self -identity
Q4-5	Addiction
Q6	Habit
Q8	Peer pressures
Q9-10	Stress
Q11-12	Social-economics
Q13	Plain packaging
Q14,16	Health warnings
Q15	Heath images
Q17	Tobacco tax
Q18-19	Smoke free policies
Q20-21	Quitline
Q22-28	Demographics
Q29-31	Reason(s) to stop smoking

Questionnaire items are designed with reference to the key dependent variables of this study, its hypotheses, and other crucial independent variables found in the literature. These variables are illustrated in the conceptual framework. Independent variables were measured using a five-point Likert scale, while three open-ended questions sought to gather insight into participants' attitudes towards anti-smoking initiatives and their reasons for stopping smoking. The questionnaire was analysed using SPSS.

3.10 Questionnaire Distribution Procedures

The researcher applied for permission to conduct administered questionnaires from the Victoria University Human Research Ethics Committee on the 2nd of November 2019. Permission to conduct this study was granted on the 5th of February 2020 (a detailed report about this study's ethical clearance can be found in Appendix D). Data collection took place at the Victoria City Flinders, Footscray Park, Footscray Nicholson, City King, City Queens, Werribee campuses of Victoria University and the four main train stations in the Melbourne Central Business District: Parliament, Melbourne Central, Southern Cross, and Flinders Street. The researcher approached

participants aged 18 to 30 years at these locaitons between 8am and 8pm on Mondays to Fridays and asked them to complete the questionnaire

Besides, the researcher did not take any control variables into account. It is because the state of Victoria is the main subject of this study and Victoria appears to have more smoking regulations than any other Australian states and territories (Baker et al. 2020). As a result, the author made an effort to compile a representative sample of participants from each of the chosen locations. Of the participants, the majority (52.2%) were Australian citizens or permanent residents. Furthermore, only young adults (aged 18 to 30) who smoked were taken into consideration. Since no participant was chosen from a distant place and all of the areas are within the urban centres, the findings were reliable and thus there were not required to establish a control variable. When did random sampling where each part of the population has the same chance of being chosen or a known likelihood of being chosen (probability sampling). The sample is said to be representative since the features of a well-chosen sample are the same as those of the whole population (Singh& Masuku, 2014; Sharma, 2023). In this form of selection, all individuals have an equal chance of participating in the study, and the selection procedure is totally solely on chance. It assures that the population is unbiased, representative, and of equal probability (Sharma, 2023; Usmonov, 2021). So, the statistical procedure so adopted did not affect the research outcome. Data collection using questionnaires was conducted in two stages. In the first stage, participants were briefed about the purpose of the survey. Participants were then asked to sign a voluntary consent form, and were then given 5-10 minutes to complete the questionnaire administered by the researcher. Complete and usable questionnaires were collected according to schedule set out in Table 3.3 below.

Table 3.3 Survey Timetable

Venues	Month	Day and Time	Number of Respondents
Victoria University City Flinders Campus	Feb-20	Monday (8 am - 8pm)	27
Victoria University Footscray Park Campus	Feb-20	Tuesday (8 am - 8pm)	24
Victoria University Footscray Nicholson Campus	Feb-20	Wednesday (8 am - 8pm)	25
Victoria University City King Campus	Feb-20	Thursday (8 am - 8pm)	25
Victoria University City Queen Campus	Feb-20	Friday (8 am - 8pm)	24
Victoria University Werribee Campus	Mar-20	Monday (8 am - 8pm)	25
Parliament Station	Mar-20	Tuesday (8 am - 8pm)	25
Melbourne Central Station	Mar-20	Wednesday (8 am - 8pm)	24
Southern Cross Station	Mar-20	Thursday (8 am - 8pm)	25
Flinders Street Station	Mar-20	Friday (8 am - 8pm)	26
Total			250

3.11 Data Analysis

This research employs different data analysis approaches for quantitative (questionnaires) and qualitative (open-ended questions) data. The primary concern for quantitative data analysis was selecting the proper analysis software. There are diverse programs that are widely used in social science, for example, Microsoft Excel, SAS, R, S-PLUS and SPSS. Among these, the Social Package for the Social Science (SPSS) is the most commonly used program in behavioural research as the software is user-friendly and available in many universities (Muijs 2010). For this reason, SPSS version 26 was used for quantitative data analysis.

Conversely, according to Holloway and Galvin (2016), qualitative data analysis is more about generating themes and concepts derived directly from data collected. To obtain open-ended outcomes, a thematic approach is employed in this study. Holloway and Galvin (2016) argue that coding is the primary link between data collection and theory development. Data collected from open-ended questions was thematically analysed. According to (Smith, Harré & Van Langenhove 1995), thematic codes should be identified in the first place and grouped into themes, which should then be organised. The coding process is used to help the researcher stay close to the data and keep away from any preconceived ideas that could influence decisions as to whether more data should be collected.

3.12 Consideration of Ethics Issues

According to Creswell (2014), ethics should be considered at the beginning of research and appropriate procedures should be implemented in different research phases to ensure adherence to ethical standards (Mertens 2014). The researcher is obliged to genuinely explain the rights of participants to them. In this regard, smokers (or ex-smokers) aged 18 to 30 years old were invited to participate in the survey.

This research was conducted according to Victoria University Human Research Ethics guidelines. The ethics application was accepted and deemed to meet the requirements of the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007)' by the Victoria University Human Research Ethics Committee on the 5th of February 2020. A copy of the ethics clearance can be found in Appendix D.

3.13 Chapter Summary

Chapter 3 outlines the research approaches, techniques, and various critical analysis methods used in this study. This chapter also discusses the research paradigm, instruments, and the conceptual framework and constructs examined in the context of ongoing smoking behaviour in young adults. This chapter also tested various hypotheses and research questions stemming from Chapter 2.

Chapter 3 has several sections. In the first section (research philosophies and research design), it gives an overview of the research methodology, ontology and epistemology. In the second section (research paradigms and relevance), it explains the reasons and justifications for employing a mixed quantitative and qualitative research approach. Then, it addresses the research procedures and the use of self-administered questionnaires followed by open-ended questions, methods and procedures for the scale, and instrument development.

In the third section, this chapter addresses the survey procedures, including sampling framework, selection of survey locations, and data collection procedures. The last section discusses data analysis methods, reliability and validity of the variables.

Chapter 4: Data Analysis and Result Findings

In this mixed-methods study, we used quantitative survey data to identify the important variables examined by this study (such as self-identity, peer pressure, social-economic stress, stress, habitual, addiction, pictorial health images and warnings, plain packaging, smoke-free policies, taxation, Quitline, and intention to quit smoking), while qualitative interview strategy to explore / examine the reasons why young adult smokers continue smoking despite its harmful effects. Given the current increase in tobacco use, it is imperative to understand the whole range of reasons why people begin smoking tobacco and why they continue to do so. Particularly qualitative research is ideally suited to this kind of examination. Comparative research, on the other hand, is less concerned with "how much?" or "how many? The underlying causes of a problem or behaviour are addressed by qualitative research. As a result, it frequently contributes to the design of quantitative research that is more targeted and efficient. Furthermore, qualitative research may be especially helpful for politically or socially sensitive topics, such as the study of tobacco manufacturing organisation, tobacco product smuggling, or the effects of tobacco addiction on the family.

4.1 Introduction

This chapter begins with an introduction to the SPSS codebook for data files, followed by reliability and validity tests, demographic profile, descriptive and inferential statistics, binomial logistic regression analysis, structural equation model for behavioural change in formulating tobacco control strategies for young smokers in Australia, thematic analysis, and finally a chapter summary.

4.2 Codebook for Data Files

SPSS Codebook is used to document each of the variables from the collected data. According to Pallant (2020), it is necessary to create research data files to represent individual hypothesis that are related to the questionnaire and participant demographics. Preparing the codebook for each data file (or hypothesis) involves defining and labelling each variable and assigning numbers to each of the possible responses. The codebook for this study can be found in Appendix E.

4.3 Data Cleaning and Testing

Over the last few years, the increasing excitement for data-driven decision-making has increased the significance of exact and precise prediction (Ridzuan & Zainon, 2019).

According to a New York Times story titled "For Big-Data Scientists, " data scientists spend 50% to 80% of their work time cleaning and arranging data, leaving little time for real data analysis (Chai, 2020). Therefore, pre-processing of data is an important step prior to any systematic data analysis, as this helps ensure the accuracy and usefulness of the data. Usually, precise conclusions cannot be extracted directly from raw data. Besides, estimation leads to the possibility of data errors, making it necessary to exclude outliers. An outlier refers to a data point that shows significant differences from other observations and that do not follow the usual observation patterns (Hoaglin 2006). The data set in this study has no outliers. Two hundred and fifty original questionnaires were distributed, with 228 participants fully completing the questionnaire. As the sample size was deemed to be sufficient (Saunders 2011), it was decided to analyse all 228 observations. Before proceeding, the full data set was compared with selected data sets to check for any discrepancies (Hawkins 1980).

4.4 Comparison of Full Data Collected vs. Data Used in the Study

Table 4.1 shows the statistics of the collected data set comprising of total number of observations with the mean of each variable, standard deviation, count of missing data, percentage of missing data, and total number of observations. The comparison of variables with respect to their means is given in Table 4.2. In a T-test analysis, the test variable's mean (referring to the mean of the variable from full data set) was compared against a ‘test value’ (the mean/test value of selected data set used for analysis). The null hypothesis (H_0) and alternative hypothesis (H_1) using two-tailed T-test can be expressed as explained below Table 4.1.

Table 4.1 Statistics of Data Set Collected for Study

Variables	N	Mean	Std. Deviation	Count (Missing)	Percent (Missing)	Total
Q1_F	236	3.94	1.234	14	5.6	250
Q2_F	235	2.67	1.49	15	6	250
Q3_F	238	4.13	0.923	12	4.8	250
Q4_F	241	3.88	1.214	9	3.6	250
Q5_F	232	4.07	0.991	18	7.2	250
Q6_F	232	3.86	1.078	18	7.2	250
Q7_F	241	3.88	1.125	9	3.6	250
Q8_F	235	3.93	1.105	15	6	250
Q9_F	231	4.09	0.942	19	7.6	250
Q10_F	232	3.96	0.986	18	7.2	250
Q11_F	237	3.91	1.234	13	5.2	250
Q12_F	234	1.6	0.808	16	6.4	250
Q13_F	232	1.82	0.971	18	7.2	250
Q14_F	237	3.8	1.138	13	5.2	250
Q15_F	239	1.89	0.944	11	4.4	250
Q16_F	236	3.84	1.105	14	5.6	250
Q17_F	236	3.92	1.034	14	5.6	250
Q18_F	233	4	1.011	17	6.8	250
Q19_F	234	4.03	1.006	16	6.4	250
Q20_F	234	2.08	1.018	16	6.4	250
Q21_F	234	1.79	0.889	16	6.4	250
Q22Age_F	238	1.97	0.763	12	4.8	250
Q23Gender_F	230	1.5	0.501	20	8	250
Q24AustralianPR_F	234	0.52	0.501	16	6.4	250
Q25CountryofOrigin_F	230	5.04	2.49	20	8	250
Q26Occupation_F	236	2.86	1.555	14	5.6	250
Q27SmokingStatus_F	236	3.09	1.425	14	5.6	250
Q28Ihaveintentiontoquitsmoking_F	232	0.56	0.498	18	7.2	250

_F means full data set

H_0: $\mu = \mu_0$ the population's mean (mean of variable taken from full data collected) is equal to the mean of proposed population mean (mean of variable taken from the selected data used for analysis).

H_1: $\mu \neq \mu_0$ the population mean is not equal to the proposed population mean, where μ is the 'true' population mean and μ_0 is the proposed value of the population mean.

In conclusion, the researcher accepted the null hypothesis as the population's mean is equal to the mean of the proposed population mean with P-value >0.05 (refer to Table 4.3). Therefore, there was practically no difference between the two data sets (250 vs. 228).

Table 4.2 Means of Selected Data Set Used for Study vs. Full Data Set Collected for Study

Selected data set used for study	Mean	Full data set collected for study	Mean
Q1_S	3.96	Q1_F	3.94
Q2_S	2.68	Q2_F	2.67
Q3_S	4.14	Q3_F	4.13
Q4_S	3.93	Q4_F	3.88
Q5_S	4.07	Q5_F	4.07
Q6_S	3.88	Q6_F	3.86
Q7_S	3.92	Q7_F	3.88
Q8_S	3.96	Q8_F	3.93
Q9_S	4.09	Q9_F	4.09
Q10_S	3.96	Q10_F	3.96
Q11_S	3.93	Q11_F	3.91
Q12_S	1.6	Q12_F	1.6
Q13_S	1.82	Q13_F	1.82
Q14_S	3.83	Q14_F	3.8
Q15_S	1.88	Q15_F	1.89
Q16_S	3.85	Q16_F	3.84
Q17_S	3.93	Q17_F	3.92
Q18_S	4.03	Q18_F	4
Q19_S	4.02	Q19_F	4.03
Q20_S	2.08	Q20_F	2.08
Q21_S	1.79	Q21_F	1.79
Q22Age_S	1.97	Q22Age_F	1.97
Q23Gender_S	1.5	Q23Gender_F	1.5
Q24AustralianPR_S	0.52	Q24AustralianPR_F	0.52
Q25CountryofOrigin_S	5.01	Q25CountryofOrigin_F	5.04
Q26Occupation_S	2.88	Q26Occupation_F	2.86
Q27SmokingStatus_S	3.08	Q27SmokingStatus_F	3.09
Q28Ihaveintentiontoquitsmoking_S	0.56	Q28Ihaveintentiontoquitsmoking_F	0.56

_S means selected data set

Table 4.3 Summaries of P-values

Variable	df	Mean Difference	Test Value	t	t-test P-value	Status
Q1_F	235	-0.024	3.96	-0.293	0.77	Non-Significant
Q2_F	234	-0.00766	2.68	-0.079	0.937	Non-Significant
Q3_F	237	-0.00555	4.14	-0.093	0.926	Non-Significant
Q4_F	240	-0.05033	3.93	-0.644	0.52	Non-Significant
Q5_F	231	-0.00103	4.07	-0.016	0.987	Non-Significant
Q6_F	231	-0.02224	3.88	-0.314	0.754	Non-Significant
Q7_F	240	-0.04033	3.92	-0.557	0.578	Non-Significant
Q8_F	234	-0.03234	3.96	-0.449	0.654	Non-Significant
Q9_F	230	-0.00342	4.09	-0.055	0.956	Non-Significant
Q10_F	231	0.00121	3.96	0.019	0.985	Non-Significant
Q11_F	236	-0.01861	3.93	-0.232	0.817	Non-Significant
Q12_F	233	0.00256	1.6	0.049	0.961	Non-Significant
Q14_F	236	-0.02831	3.83	-0.383	0.702	Non-Significant
Q15_F	238	0.00703	1.88	0.115	0.908	Non-Significant
Q16_F	235	-0.00678	3.85	-0.094	0.925	Non-Significant
Q17_F	235	-0.01051	3.93	-0.156	0.876	Non-Significant
Q18_F	232	-0.02571	4.03	-0.388	0.698	Non-Significant
Q19_F	233	0.00564	4.02	0.086	0.932	Non-Significant
Q20_F	233	0.0012	2.08	0.018	0.986	Non-Significant
Q21_F	233	0.00487	1.79	0.084	0.933	Non-Significant
Q22Age_F	237	0.00479	1.97	0.097	0.923	Non-Significant
Q23Gender_F	229	0.00435	1.5	0.132	0.895	Non-Significant
Q24AustralianPR_F	233	0.00137	0.52	0.042	0.967	Non-Significant
Q25CountryofOrigin_F	229	0.03348	5.01	0.204	0.839	Non-Significant
Q26Occupation_F	235	-0.01983	2.88	-0.196	0.845	Non-Significant
Q27SmokingStatus_F	235	0.00898	3.08	0.097	0.923	Non-Significant
Q28Ihaveintentiontoquitsmoking_F	231	-0.00397	0.56	-0.121	0.904	Non-Significant

4.5 Reliability and Validity of Data

4.5.1 Error Checking on Research Data

An outlier corresponds to a data point that differs significantly from other measurements and does not meet normal observational trends (Hoaglin 2006). According to Hawkins (1980), outliers in data can cause confusion and scepticism. Therefore, identification of outliers is critical to improve the validity of study outcomes. There are several factors that can lead to the identification of outliers, e.g., errors in data entry, misreporting, and sampling mistakes, among others. The consequence of having an outlier in a dataset is either the misinterpretation of findings or the inaccurate representation of an outcome. Identifying an outlier requires knowledge and experience, as there is no rules of thumb on the 'correct' test to be employed to detect irregularities within datasets.

According to some (Saunders, Lewis & Thornhill 2012; Teddlie & Tashakkori 2003; Zikmund, D'Alessandro & Winzar 2013), there are a range of techniques available to test outliers. These can include boxplots, histograms, scatterplots, Q-Q plots and Z-score, chi-square, Grubbs' test and Kolmogorov-Smirnov tests. Each of these

techniques possesses advantages and disadvantages. However, the Q-Q plot and Z-score are among the most widely used (Aldor-Noiman et al. 2013; Ghasemi & Zahediasl 2012; Park 2015).

Q-Q plots (also known as quantile-quantile plot) are used to determine if two sets of data come from populations that are approximately normally distributed through a graphical technique (Wilk & Gnanadesikan 1968). Park (2015) explains that when plotting data on one axis (sorted from the smallest to the largest) against the other axis, one would expect to see the points lie along a straight line (or near to a straight line) if the data is normally distributed. In this study, all the points plotted for each vector are like a straight line and there are no outliers spotted. This indicates that the quantiles were harmonised (see Appendix F).

4.5.2 Z-score of the Research Data

Z-score (commonly known as standard score) is used to calculate the probability score of data occurring within a normal distribution (Zikmund, D'Alessandro & Winzar 2013). It is a useful statistic for comparing two scores that differ from normal distribution. Z-score value informs how many standard deviations are away from the mean, ranging from -3 standard deviations (to the far left of the normal distribution curve) up to +3 (to the far right of the normal distribution curve). Table 4.4 shows the Z-score results of the dataset, where the table indicates the percentage of the population above or below the mean score. The result revealed insignificant Z-scores most of the data, where no value could be spotted <1 and >5. Furthermore, no missing value is observed in the data. Therefore, the researcher is confident that the data is free from outliers or extreme values. Normal distribution plots of data are shown in Figure 4.1-A to 4.1-U.

Table 4.4 Z-score of the Research Data

Variable	Test Value	Cases < Test Value	Cases >= Test Value	Total Cases	Number of Runs	Z	P-value
Q1_Awareness_anti-smoking initiatives	4	67	161	228	65	-4.902	0
Q2_Influential_anti-smoking advertisements	3	107	121	228	134	2.589	0.01
Q3_Smoking_self-identity	4	59	169	228	81	-1.293	0.196
Q4_Smoking_addictive	4	64	164	228	85	-1.328	0.184
Q5_Smoking_habitual	4	65	163	228	97	0.499	0.618
Q6_Cigarette_habitual buying	4	77	151	228	108	0.744	0.457
Q7_Smoking_self-image	4	71	157	228	101	0.344	0.731
Q8_Smoking_peer pressure	4	65	163	228	77	-2.761	0.006
Q9_Smoking_forget problems	4	61	167	228	99	1.465	0.143
Q10_Smoking_stress free	4	71	157	228	97	-0.276	0.783
Q11_Disadvantaged social economics brand switching	4	69	159	228	77	-3.185	0.001
Q12_Disadvantaged social economics_ borrow cigarettes	1[b]	0	228	228	1[c]		
Q13_Plain packaging_ not influential	1[b]	0	228	228	1[c]		
Q14_Health advertisements reliable	4	82	146	228	107	0.142	0.887
Q15_Health images unbelievable	2	102	126	228	124	1.378	0.168
Q16_Health warnings informative	4	77	151	228	93	-1.483	0.138
Q17_Price increment tax revenue	4	72	156	228	97	-0.388	0.698
Q18_Smoke free policies	4	69	159	228	83	-2.241	0.025
Q19_Smoker free_ reduced smoking	4	65	163	228	93	-0.153	0.878
Q20_Quit Victoria attention getting	2	85	143	228	98	-1.366	0.172
Q21_Quit Victoria_ quit motivation	2	109	119	228	122	0.96	0.337

Figure 4.1-A

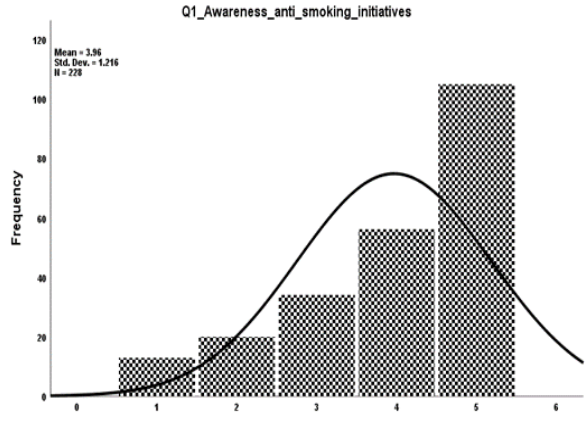


Figure 4.1-B

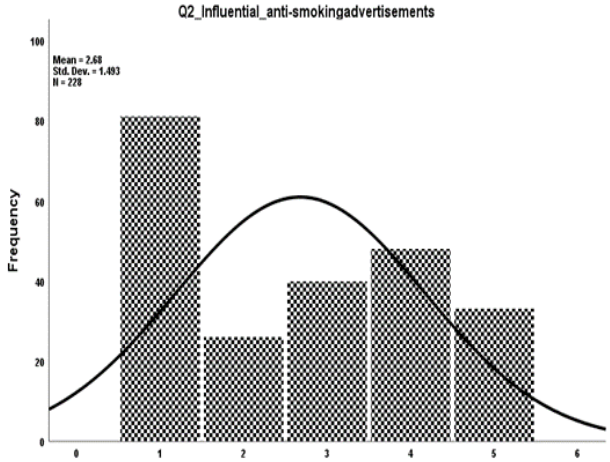


Figure 4.1-C

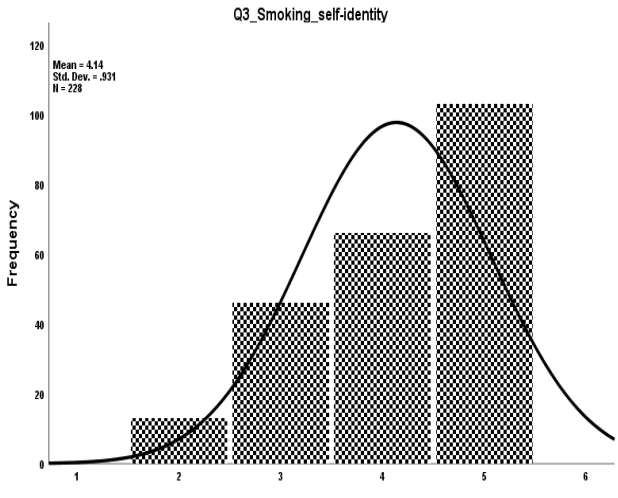


Figure 4.1-D

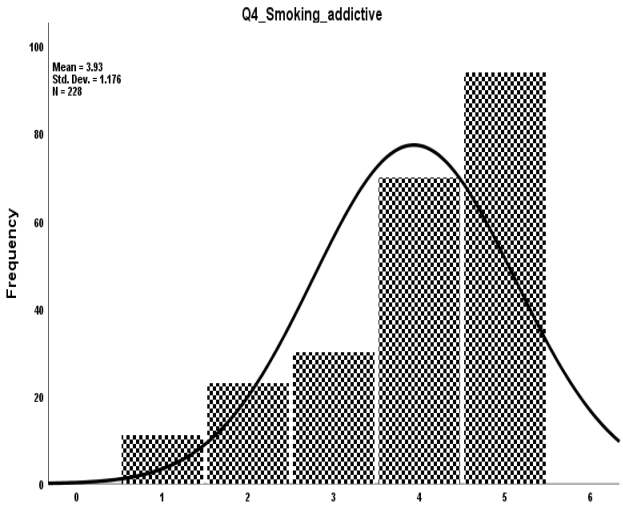


Figure 4.1-E

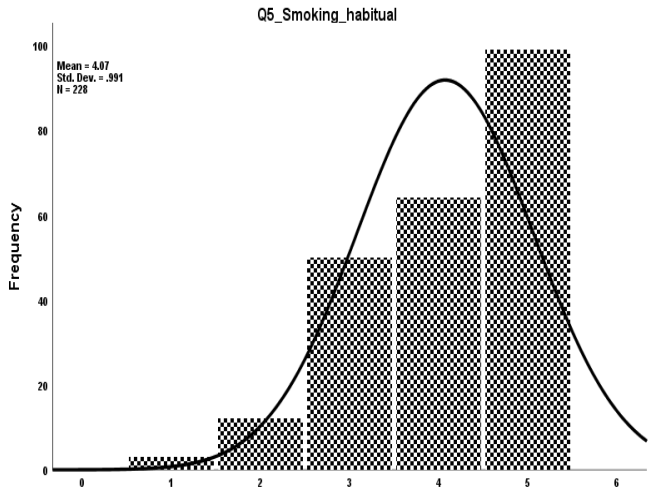


Figure 4.1-F

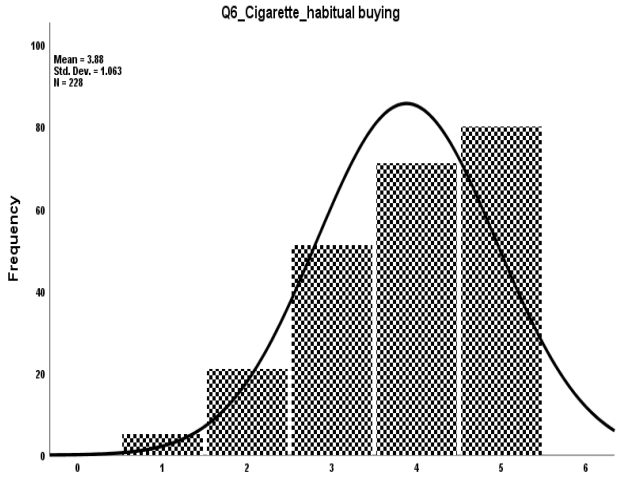


Figure 4.1-G

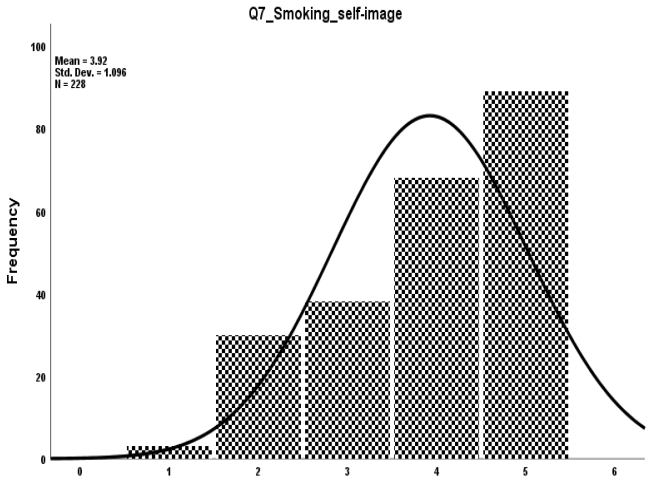


Figure 4.1-H

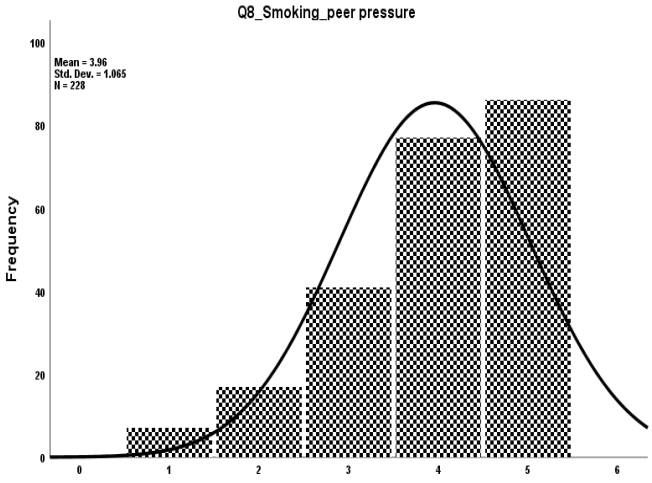


Figure 4.1-I

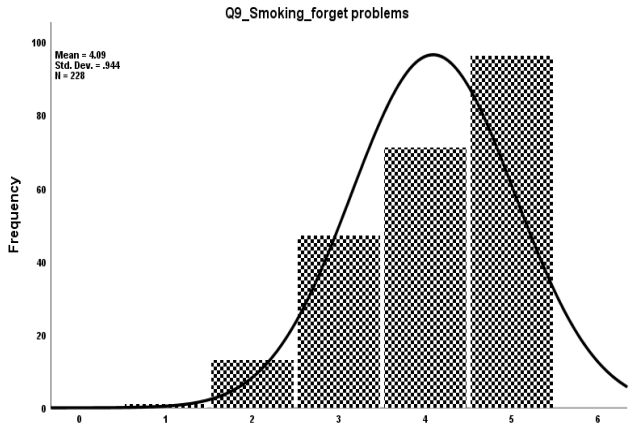


Figure 4.1-J

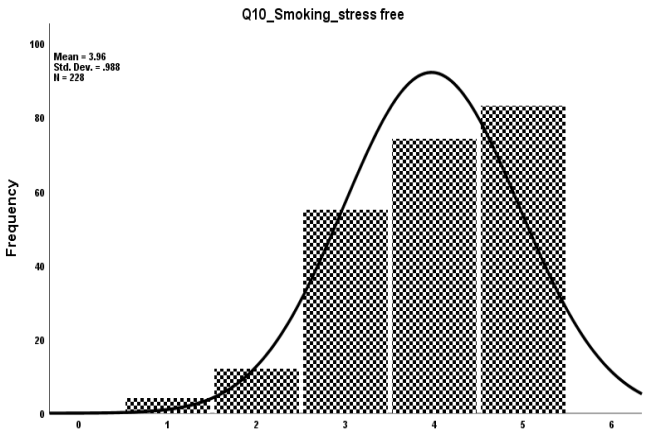


Figure 4.1-K

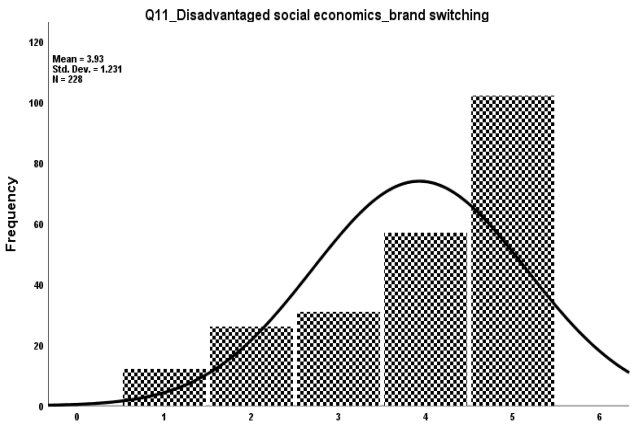


Figure 4.1-L

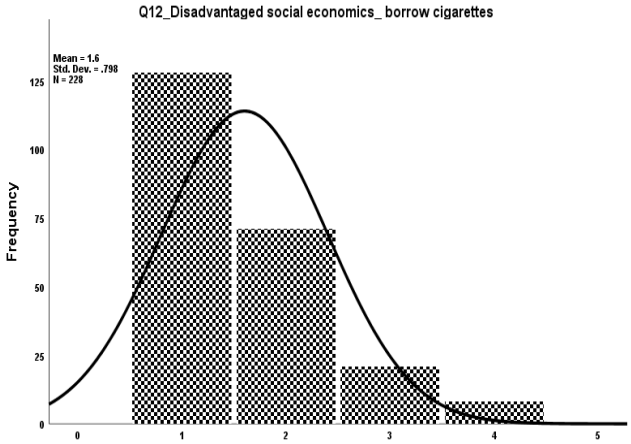


Figure 4.1-M

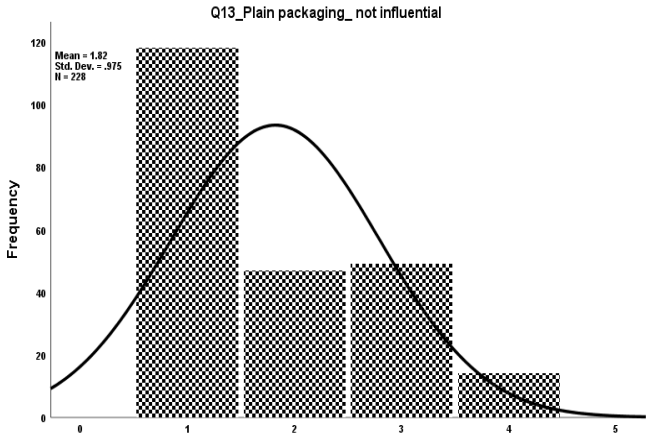


Figure 4.1-N

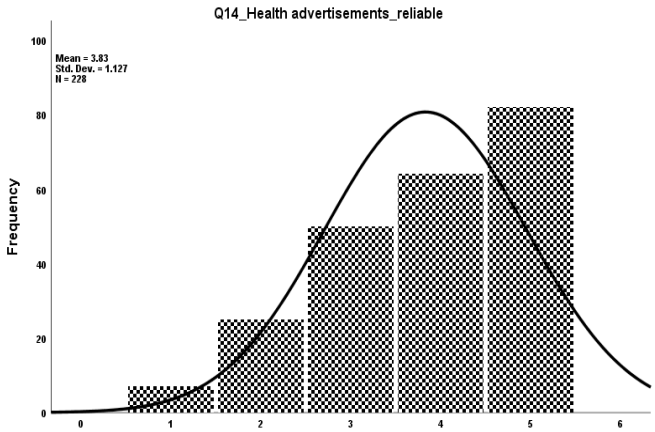


Figure 4.1-O

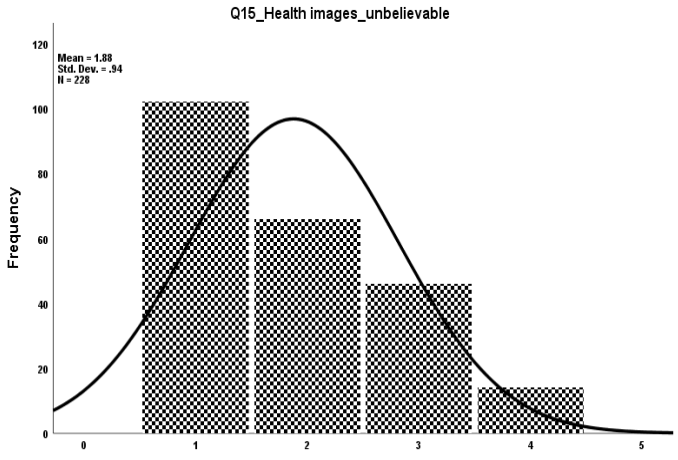


Figure 4.1-P

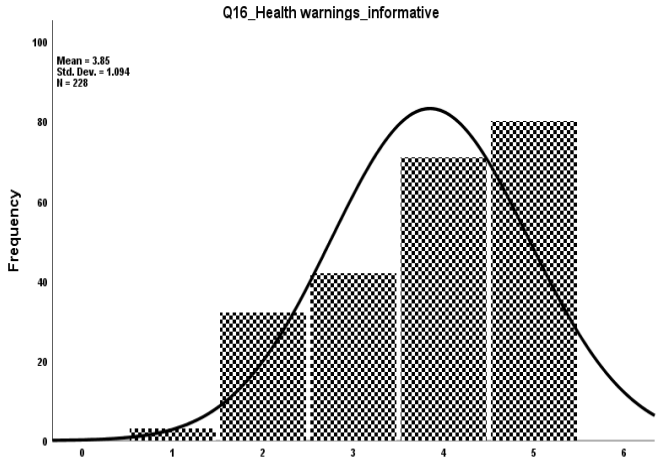


Figure 4.1-Q

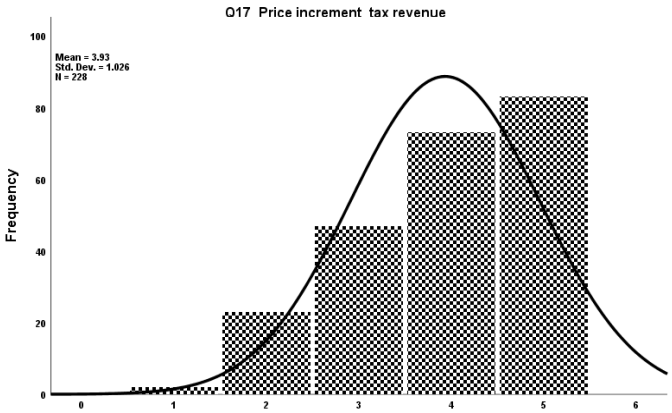


Figure 4.1-R

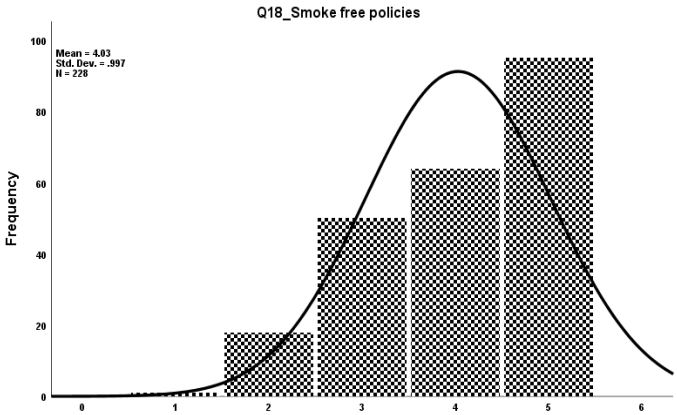


Figure 4.1-S

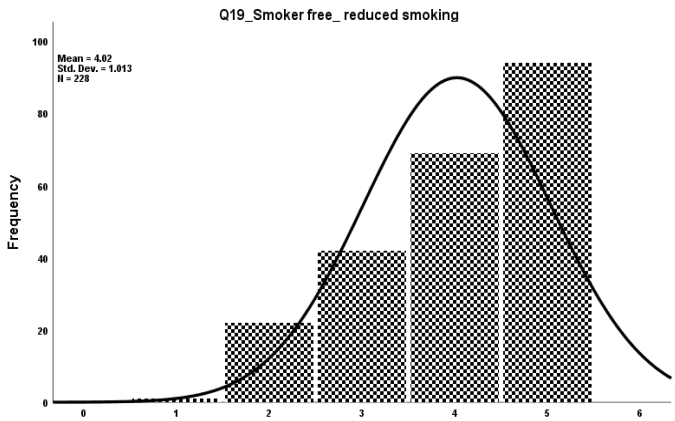


Figure 4.1-T

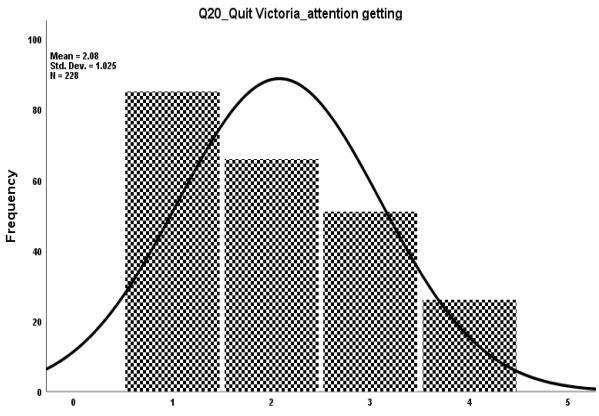


Figure 4.1-U

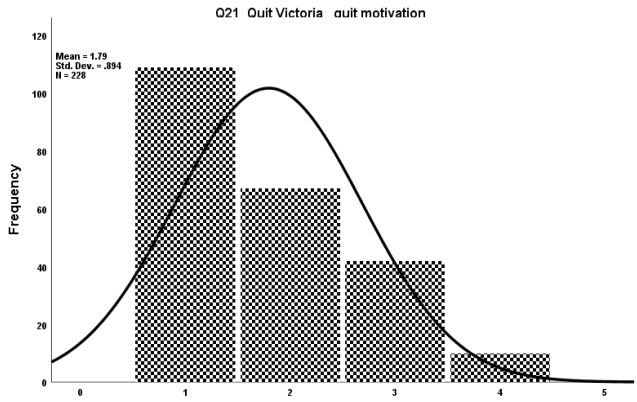


Figure 4.1-A to 4.1-U Normality Plots of the Research Data

4.5.3 Data Validity and Internal Consistency

According to Zikmund, D'Alessandro and Winzar (2013), validity refers to the ability of a scale to measure what was intended to be measured. It is important to have valid (or accurate) instruments or constructs that are reliable, meaning that repeated measurements produce consistent results (Malhotra & Dash 2016). There are two ways to assess the internal consistency of data: 1) repeatability, and 2) internal consistency. In this study, internal consistency is employed to gauge whether multiple questions using a Likert scale are reliable by using Cronbach's Alpha.

Cronbach's Alpha, α (also known as coefficient alpha) was developed by Lee Cronbach in 1951 to measure the reliability or internal consistency of data obtained from Likert questions in surveys or questionnaires. Cronbach's Alpha ranges from 0 to 1, where 0 represents low reliability and values close to 1 represent higher reliability. It is widely accepted that a reliable value for Cronbach's Alpha ranges between 0.7 to 0.8, but that values lower than this range are considered unreliable (Gliem & Gliem 2003; Henson 2001; Streiner 2003; Tavakol & Dennick 2011). A Cronbach's Alpha value of 0.757 was determined in this study, indicating internal consistency and reliability of data (DeVellis 2016) (see Table 4.5 below).

Table 4.5 Cronbach Alpha (α) of Variables

Cases	**N**	**%**
Valid	228	100
Excluded	0	0
Total	228	100
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.757	0.747	21

4.6 Summary

A total of 250 questionnaires were collected during this study, but only 228 questionnaires had all questions completed and were therefore deemed useable and reliable. The use of the parametric T-test confirmed that there was no difference between the two data sets (full data vs. used data). In terms of normality examination, Q-Q plots were used as a graphical technique, revealing that the quantiles were harmonised. There were no values < 1 and > 5 found. Similarly, no outliers or extreme values were found. With a Cronbach's Alpha value of 0.757, the data's internal accuracy and reliability were confirmed. Thus, the data was found to be fit for analysis. In addition, with the 228 sample size that deemed sufficient, it yielded a response rate of 92.8% in our study. We did not identify any particular pattern; however, we did discover missing data on one or more variables.

4.7 Demographic Profile

A functional sample size of 228 respondents was obtained from the survey. Variable outcomes on age, gender, residential status, country of origin, occupations, smoking status and intention to quite smoking were analysed using the Chi Square of goodness of fit test. The Chi Square of goodness of fit test is a non-parametric statistical test to determine how well a population data set fits a normal distribution (Field 2009). In order to interpret the test, the researcher needs to choose an alpha level of either 1%, 5% or 10%. The Chi Square of goodness of fit test will yield a *p*-value. As a rule of thumb, the researcher can reject the null hypothesis if the *p*-value is small (less than the significance level).

Most participants (42.1%; 96) were aged between 22 and 25, followed by the 18-21 year old group (33.3%; 69), and the 26-30 year old group (27.6%; 63). This indicated a significant difference in age ranges, as determined by χ^2 test (2, N = 228) = 7.890, P<0.05 (Table 4.6). Table 4.6 also indicates an equal gender mix (50% male and 50% female). Australian citizens/permanent residents made up the bulk of the population (52.2%; 119), with the rest being migrants (47.8%; 109). Amongst migrants, China (19.7%; 45) had the highest representation, followed by the rest of Asia (14.0%; 32), India (13.6%; 31), rest of Europe (12.3%; 28), Italy (11.4%; 26), and other countries in the range of 3-7%.

Most participants (29.8 %; 68) worked in the hospitality sector, followed by office workers (28.5%; 65), manufacturing or industrial workers (21.1%; 48), and others (21.1%; 48). Most participants smoke less than a pack a day (43.4%; 99), followed by those who smoke more than a pack a day (28.1 %, 64), with a significant number of participants smoking 1-2 cigarettes per week or at least 5 packs in their life, but are no longer smoking (7.9%; 18). More than half of those polled (56 %) expressed the intention to stop smoking, while 44% affirmed they would not (for more details, see Table 4.6).

In this study, the null hypotheses were rejected at χ^2 (2), =8.132, P <0.05, where most respondents fall under category two as shown in Table 4.1 for age group of respondents, country of origin, occupation, and smoking status. However, the null hypotheses were accepted as true in the cases of gender, residency of either Australian citizens or permanent residency, and intention to quit smoking because there were no differences found in the observed and expected frequencies. Demographic characteristics of the respondents are presented in the bar graph format with Q22 as the dependent variable in Figures 4.2A to 4.2F

Table 4.6 Demographic Characteristics of Respondents in the Project Region

Category/Variable		Frequency	Percent	Cumulative Percent	Chi-Square	df	P-Value
Age group	18-21	69	30.3	30.3	8.132	2	0.017
	22-25	96	42.1	72.4			
	26-30	63	27.6	100			
	Total	228	100				
Gender	Male	114	50	50	0	1	1
	Female	114	50	100			
	Total	228	100				
Australian/PR	No	109	47.8	47.8	0.439	1	0.508
	Yes	119	52.2	100			
	Total	228	100				
Country of Origin	Africa	8	3.5	3.5	53.053	9	<0.001
	Asia	32	14	17.5			
	China	45	19.7	37.3			
	England	19	8.3	45.6			
	Europe	28	12.3	57.9			
	India	31	13.6	71.5			
	Italy	26	11.4	82.9			
	New Zealand	14	6.1	89			
	South America	14	6.1	95.2			
	Other	11	4.8	100			
	Total	228	100				
Occupation	Factory or Industrial	48	21.1	21.1	141.649	6	<0.001
	Hospitality	68	29.8	50.9			
	Labourer	25	11	61.8			
	Office worker	65	28.5	90.4			
	Retired	1	0.4	90.8			
	Unemployed	15	6.6	97.4			
	Other	6	2.6	100			
	Total	228	100				
Smoking Status	1-2 cigarettes a week	46	20.2	20.2	130.289	4	<0.001
	At least 5 packs in life, no longer smoking	18	7.9	28.1			
	Less than a pack a day	99	43.4	71.5			
	Less than a pack a day 1-2 cigarettes a week	1	0.4	71.9			
	More than a pack a day	64	28.1	100			
	Total	228	100				
I have intention to quit smoking	No	100	43.9	43.9	3.439	1	0.064
	Yes	128	56.1	100			
	Total	228	100				

Figure 4.2 A

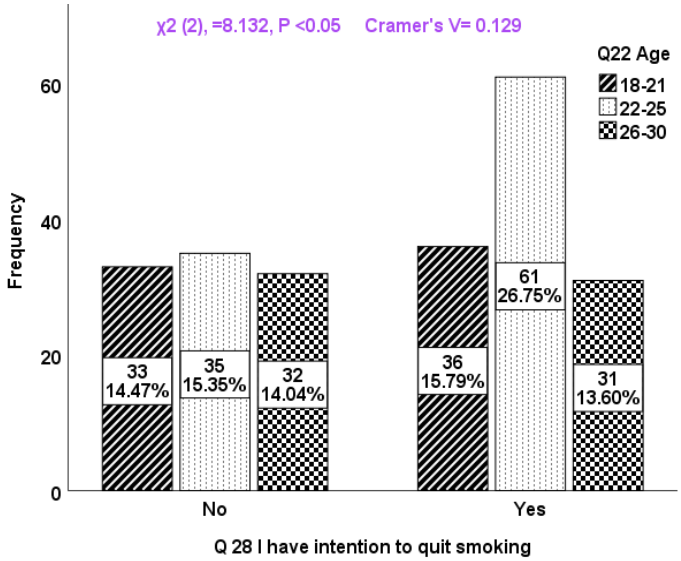


Figure 4.2 B

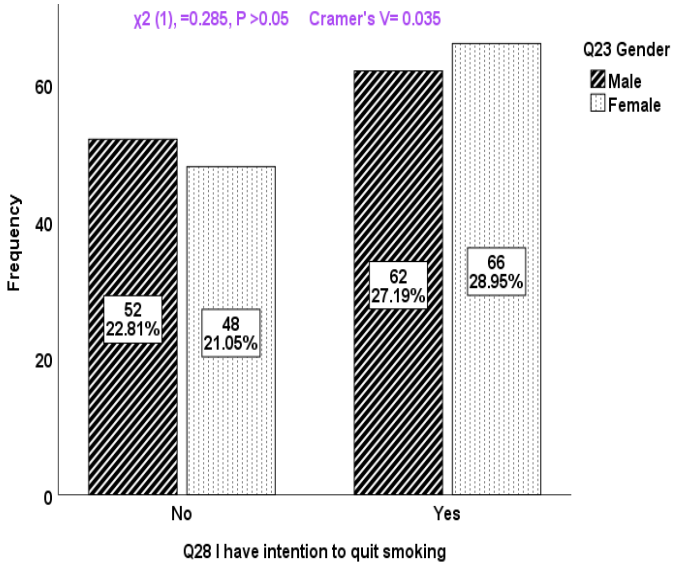


Figure 4.2 C

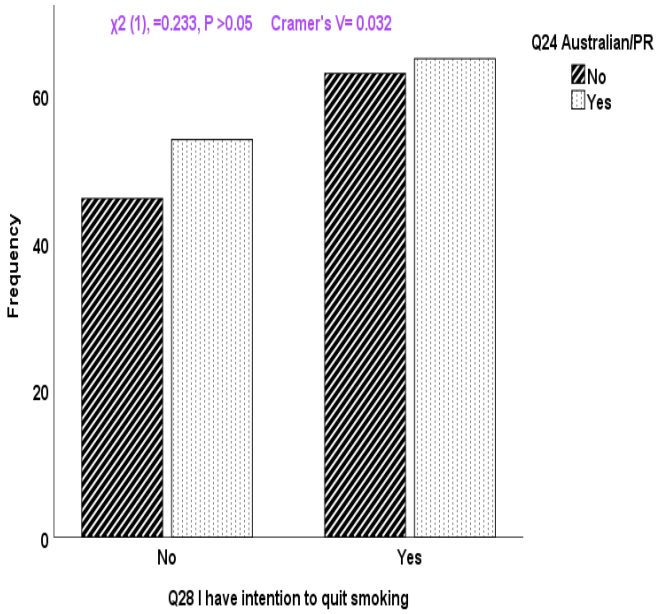


Figure 4.2 D

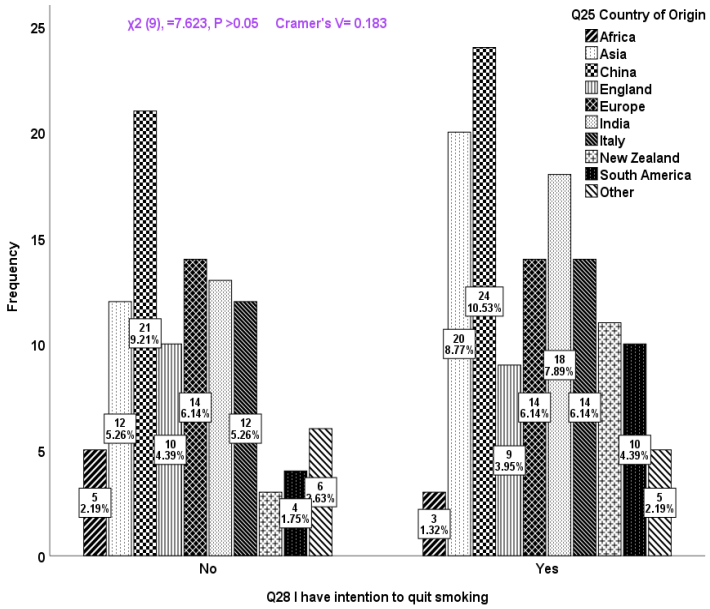


Figure 4.2 E

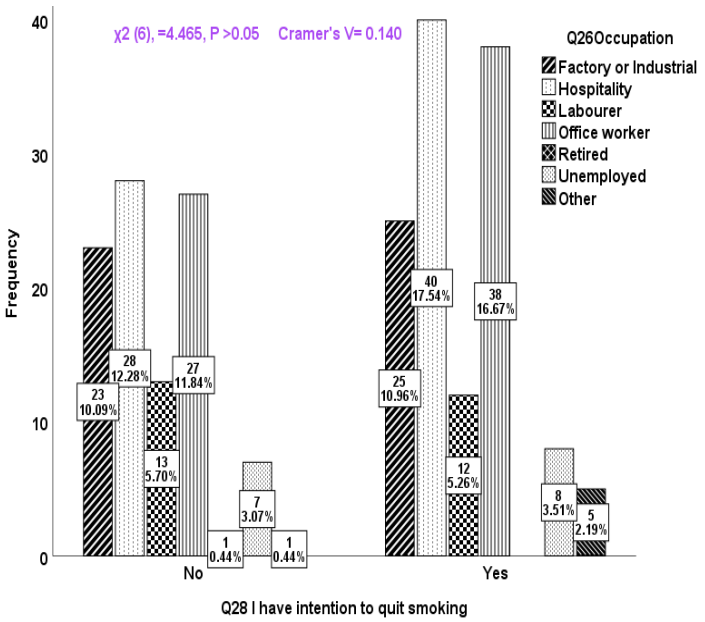


Figure 4.2 F

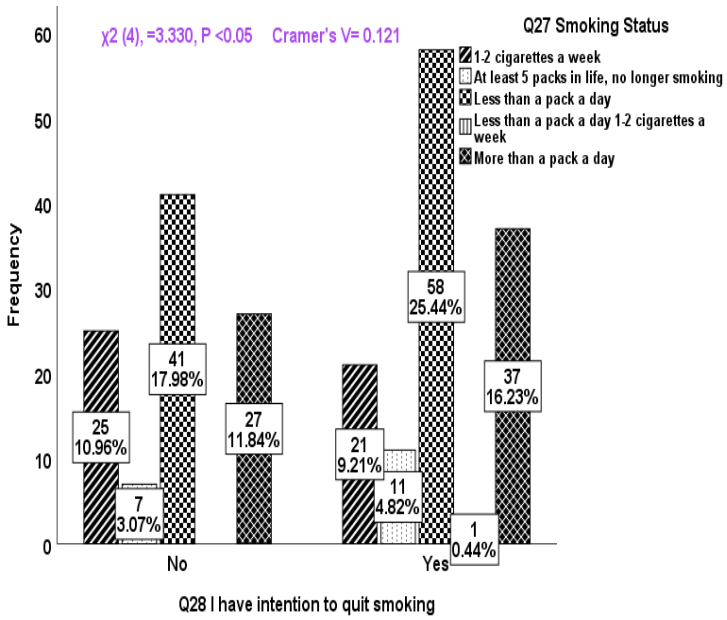


Figure 4.2 A to 4.2 F The Demographic Characteristics of the Respondents in the Project Zone.

4.8 Descriptive Statistics

Descriptive statistics refer data anlysis that helps to describe or summarise data patterns; they allow data to be visualised in different forms such as bar graphs, pie charts or line graphs that are presented in a simple and meaningful way. However, descriptive statistics do not allow researchers to make any conclusions about the research hypotheses (Saunders, Lewis & Thornhill 2012). They are solely a way to describe a researcher's data.

Frequency distributions are often used in analytical contexts and are typically aligned with regular distribution chartings. Frequency distribution is frequently used by researchers to explain or visualise the data gathered in a survey. The Chi Square of goodness of fit measure, denoted by alpha, is applied to the variables in the frequency distribution. Since the frequency-distribution-variables in this analysis are independent, the Chi-Square test's null hypothesis assumes no substantial variations between the categorical variables. If the null hypothesis is valid, the significant level for each hypothesis is responsible for rejecting it. When determining whether to deny or hold the null hypothesis, the outcomes are decided based on the *p*-values. Unless explicitly mentioned, an alpha value of 0.05 was used in this analysis. This research

uses line graphs (Figure 4.3A to Figure 4.3U), as these are considered more appropriate for nominal and categorical data (Pallant 2020). In order to render more comprehensive data visualisation of variables, the frequency distribution, their count as well as their associated Chi Square tests are shown using line graphs.

Figure 4.3 A

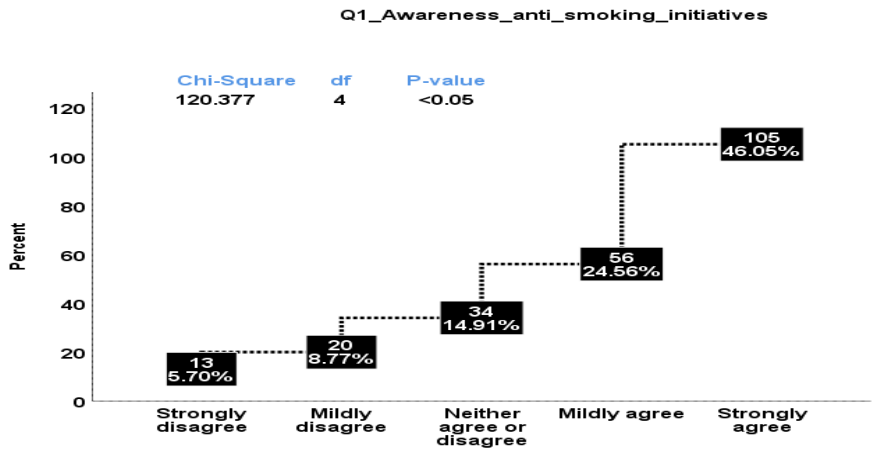


Figure 4.3 B

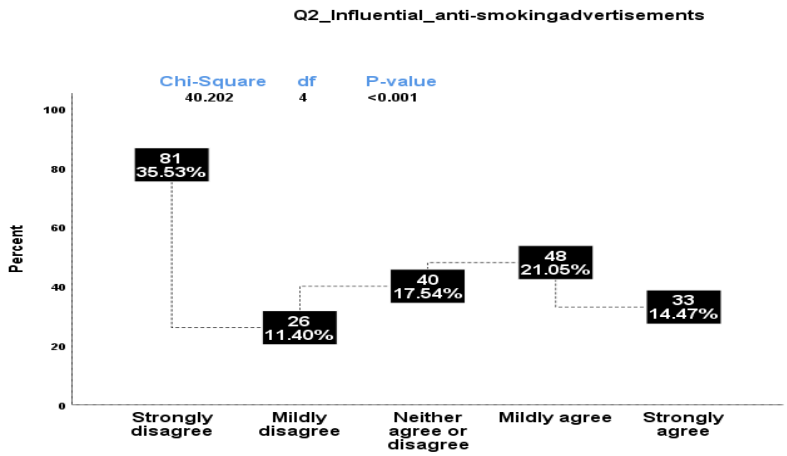


Figure 4.3 C

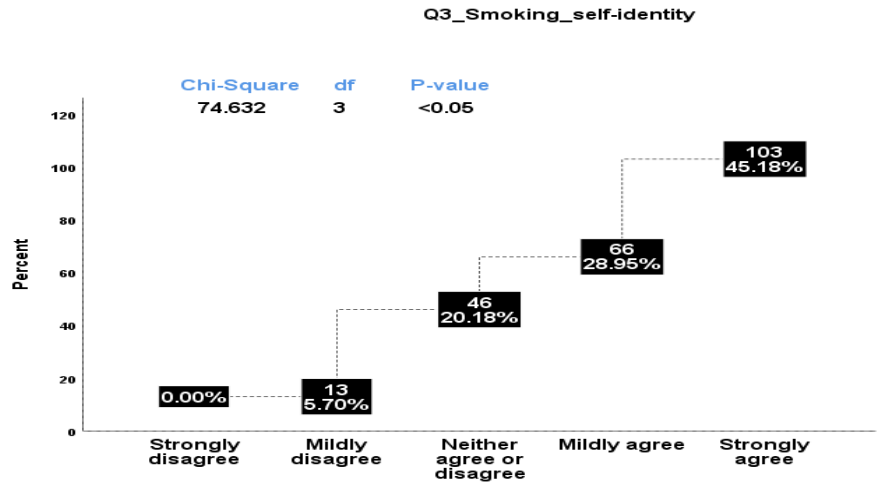


Figure 4.3 D

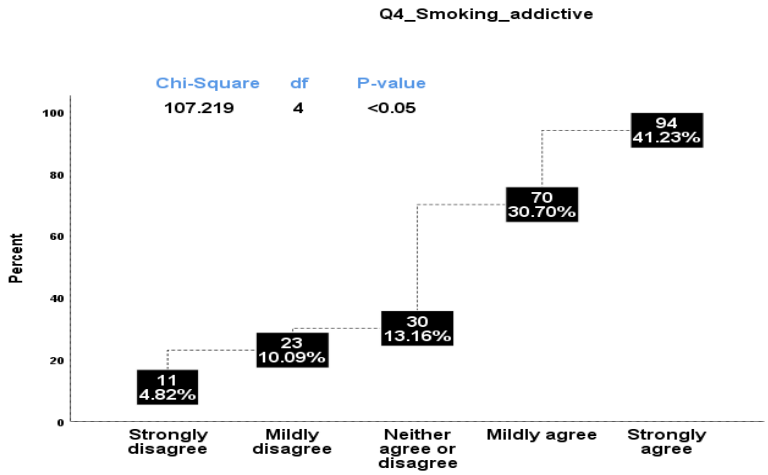


Figure 4.3 E

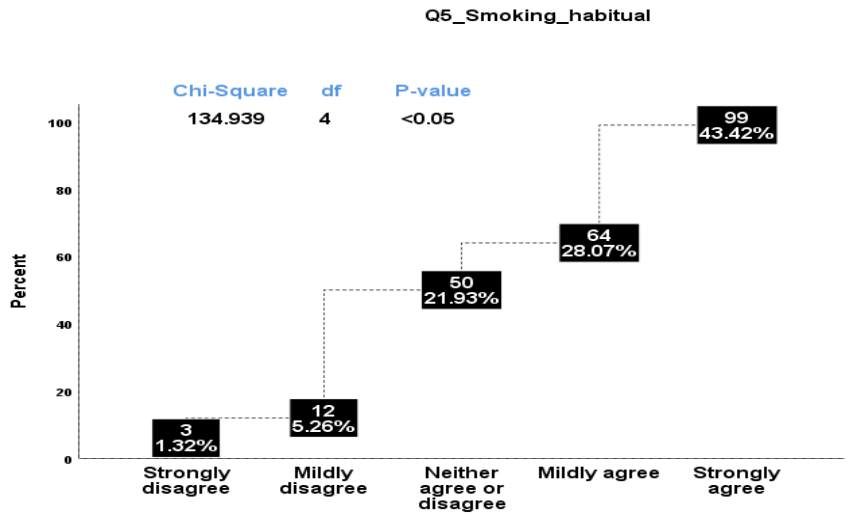


Figure 4.3 F

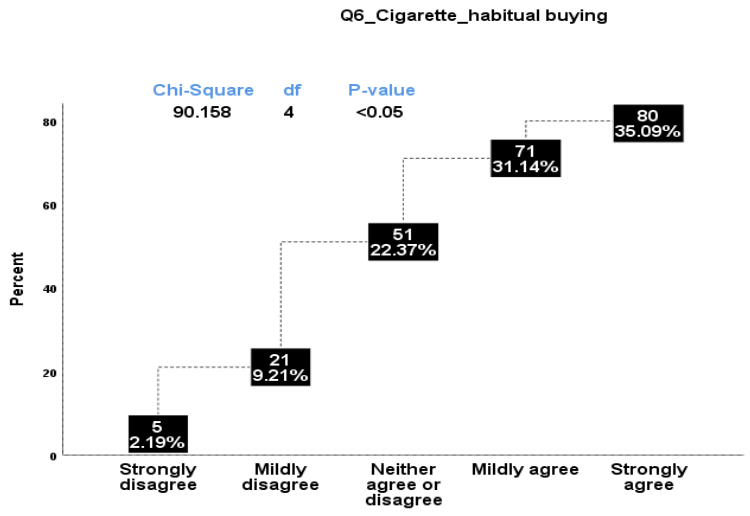


Figure 4.3 G

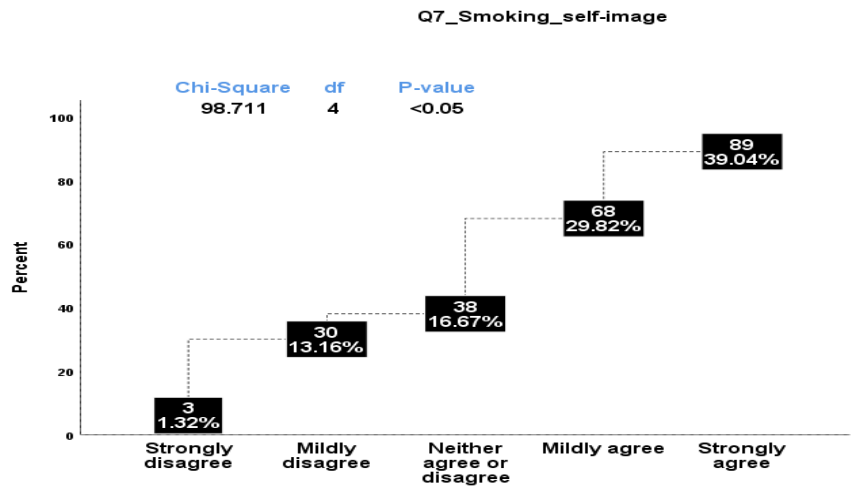


Figure 4.3 H

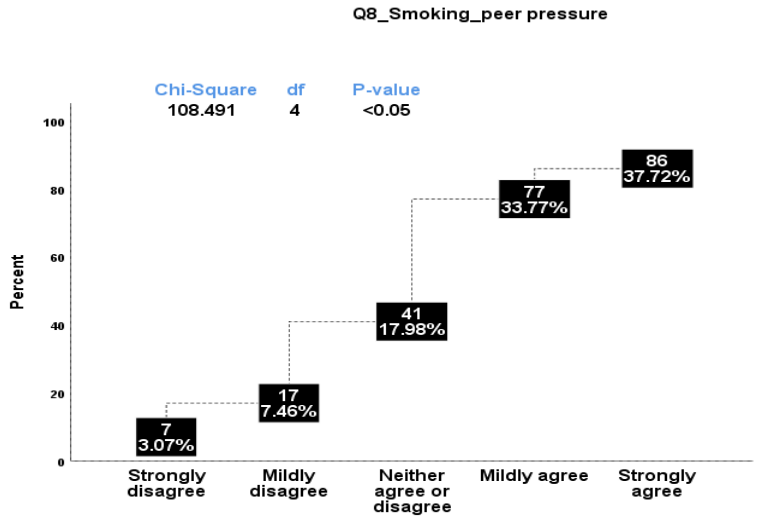


Figure 4.3 I

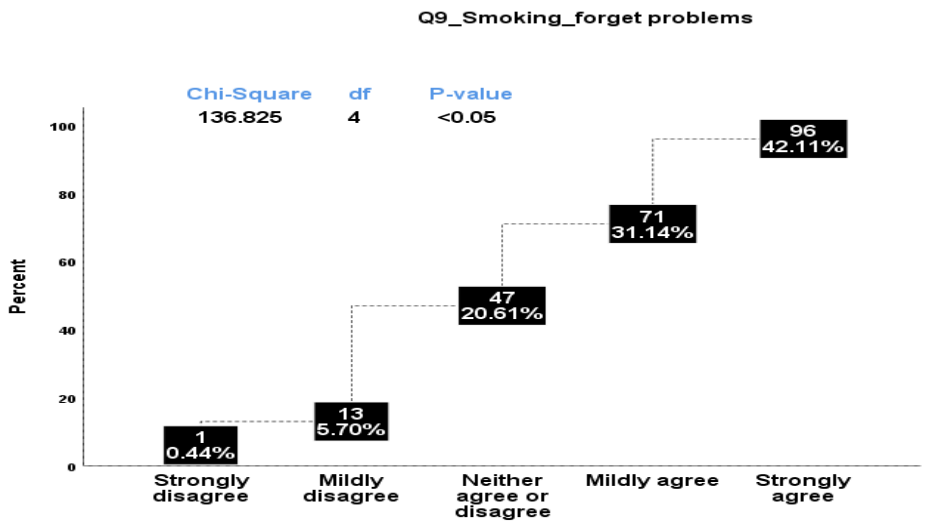


Figure 4.3 J

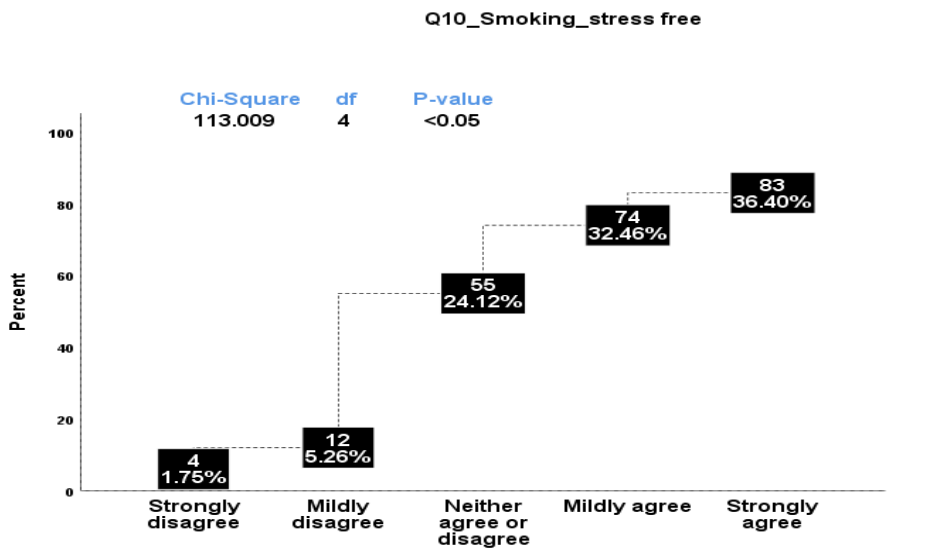


Figure 4.3 K

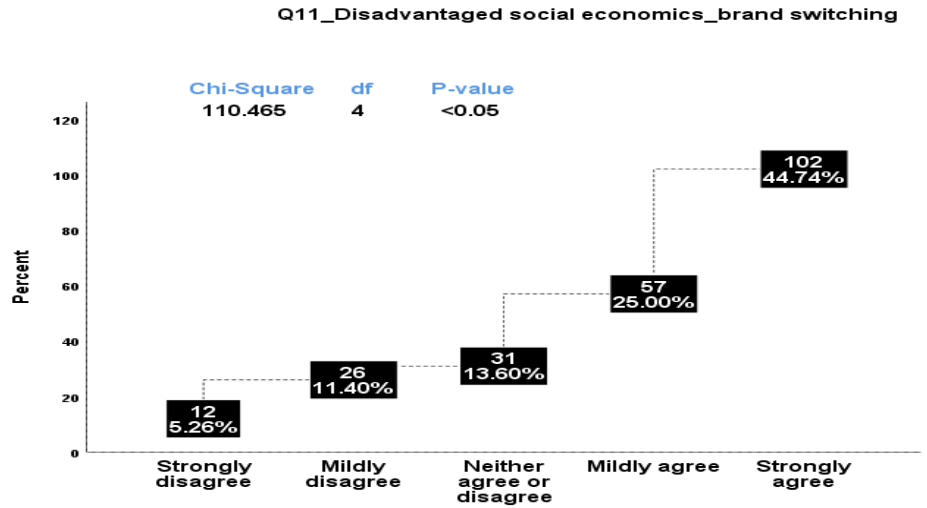


Figure 4.3 L

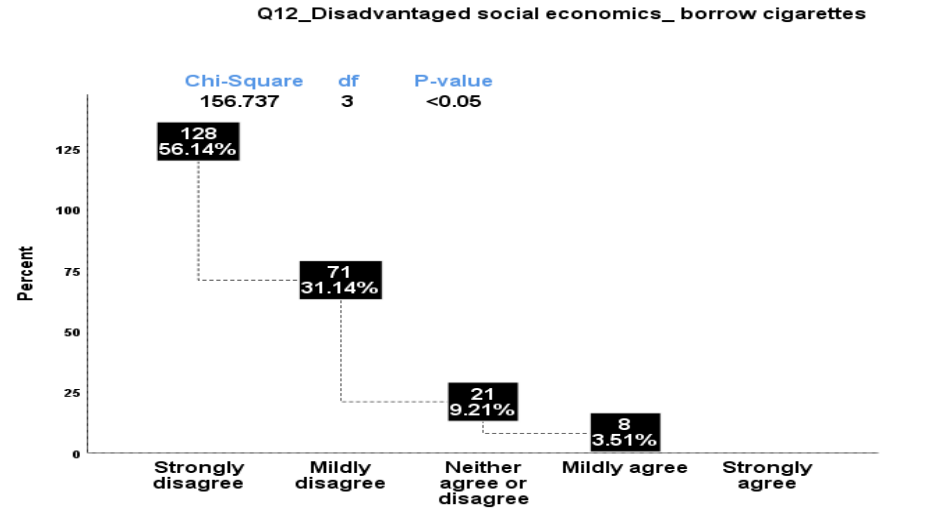


Figure 4.3 M

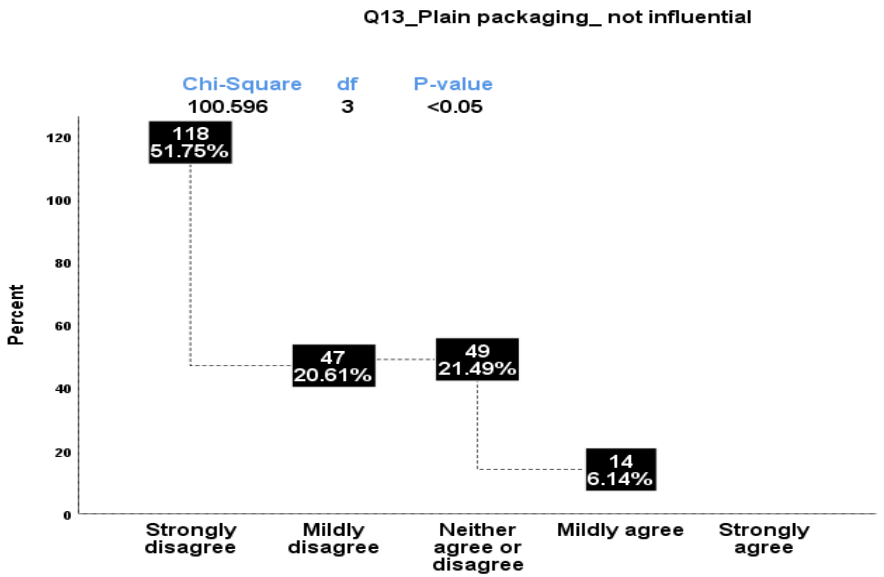


Figure 4. 3 N

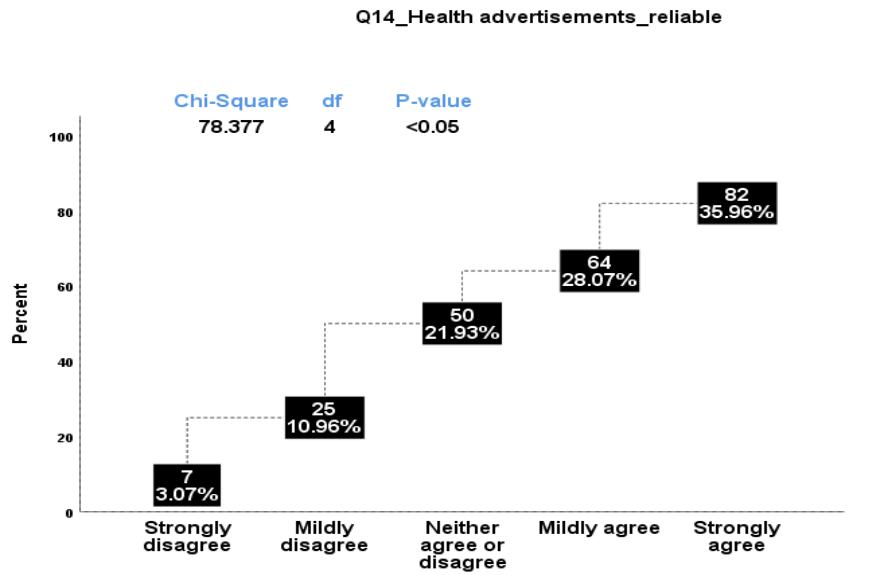


Figure 4.3 O

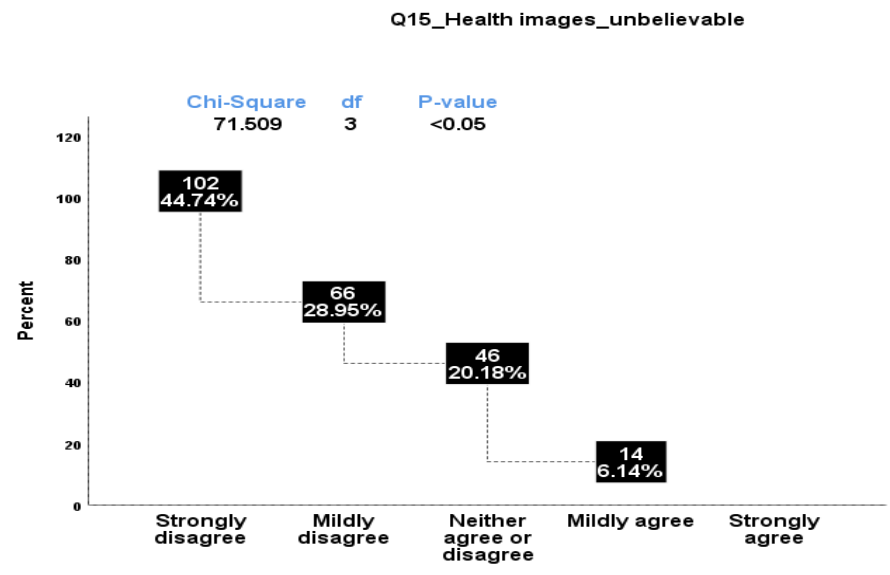


Figure 4.3 P

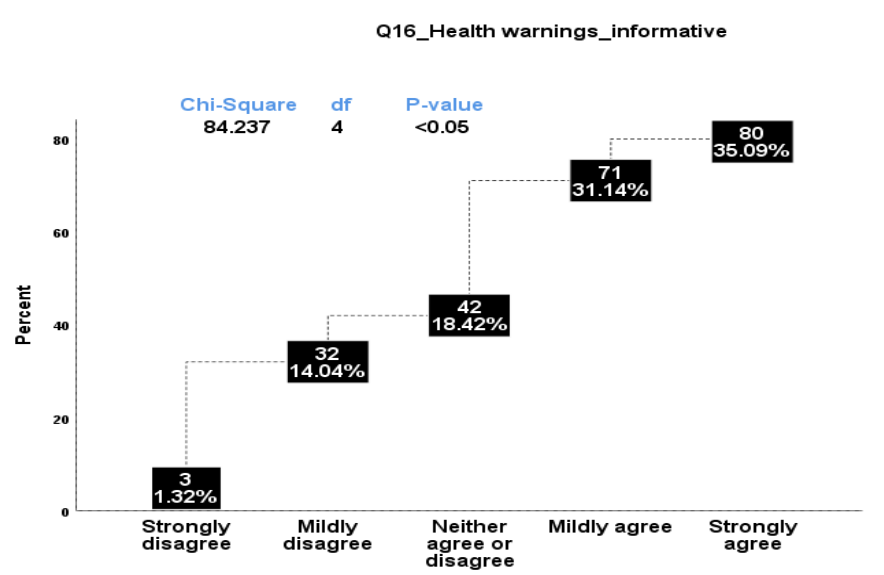


Figure 4.3 Q

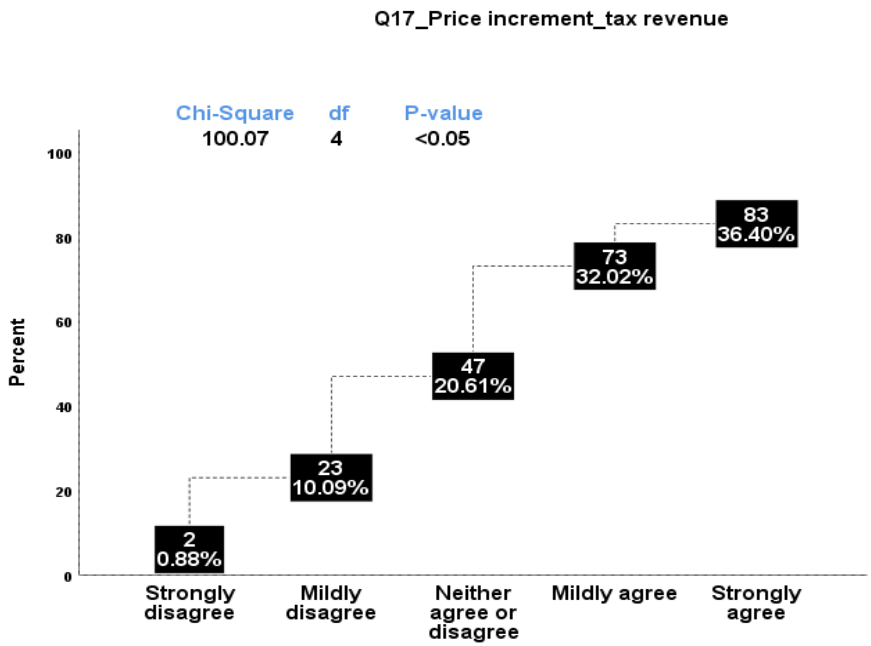


Figure 4.3 R

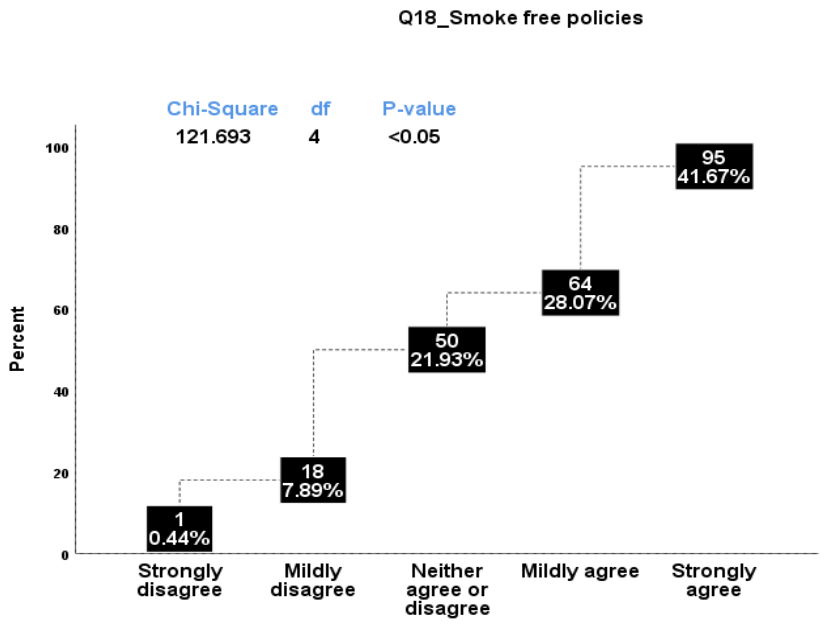


Figure 4.3 S

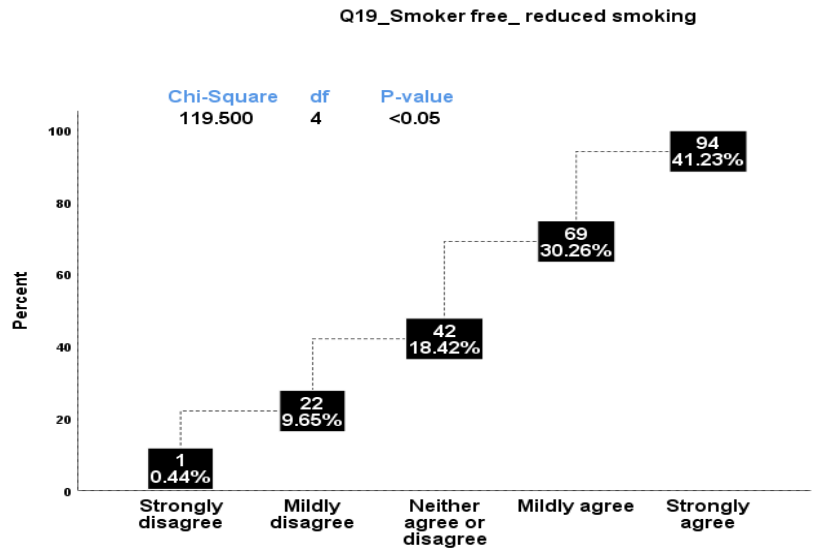


Figure 4.3 T

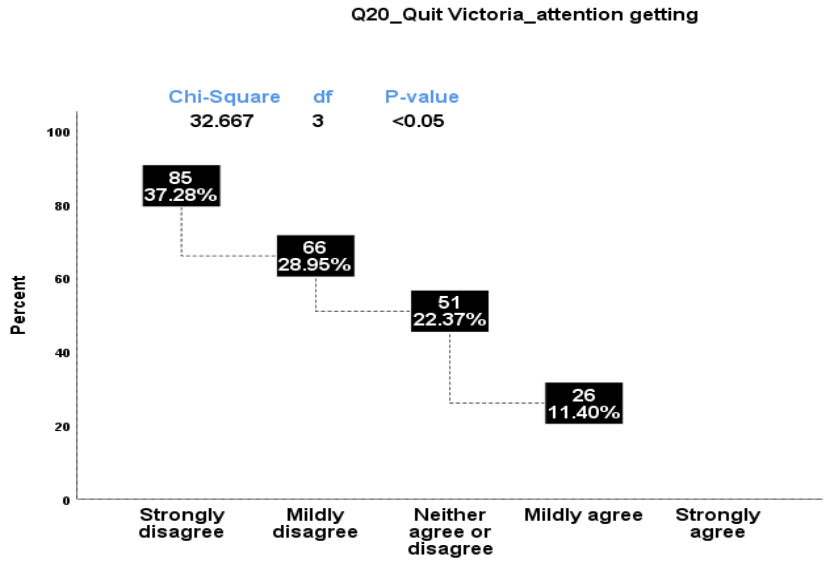


Figure 4.3 U

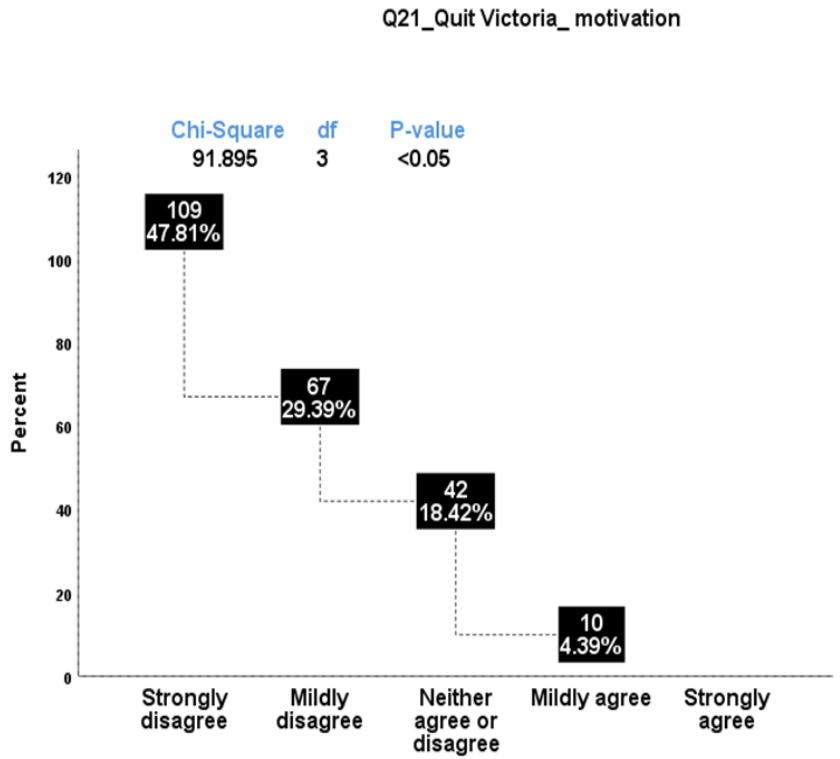


Figure 4.3 A to 4.3 U Line Graphs Depicting Frequency Distribution, Count, and Chi Square Results

4.9 Inferential Statistics

Inferential statistics are a scientific method that allow the researcher to organise findings about a population from which the samples were drawn by forecasting a population's opinions according to the sample of data collected from the population (Pallant 2020). In this thesis, predictions for each independent variable against the dependent variable on young adult smoking behaviour were identified and analysed along with the intensity associated with the nominal variables.

There are many statistics to measure the impact size for nominal factors, and Cramer's V is one of the most commonly used (Cohen 2013; Pallant 2020). Herald Cramer created Cramer's V (also known as Cramer's phi) in 1946 to evaluate the strengths associated with two nominal variables, resulting in a value between 0 and +1. (inclusive). In other words, Cramer's V relies on Pearson's Chi Square statistic to determine the strength of the relationship between two nominal variables. According to Cohen (2013), a small effect size ranges from 0.10 to 0.30, a medium effect size varies from 0.30 to 0.50, and a large effect is anything greater than 0.50.

Survey respondents were asked to respond to the following question: "Were you aware of anti-smoking initiatives in Australia?" One hundred respondents stated that they were aware but had no intention to quit smoking (Table 4.7; Figure 4.4), while, 128 respondents indicated that they planned to quit smoking. Most respondents (92%; 37 mildly agreeing + 81 strongly agreeing = 118) replied 'Yes', acknowledging that anti-smoking advertising campaigns influenced them to cease smoking. A Chi Square result suggested that the observed distribution differed from the predicted distribution and that there was a close association between both categorical variables: χ^2 (4, N = 228) = 71.092, P<00.1 (Q1. vs Q28).

Table 4.7 Q1, I am Aware of Anti-Smoking Initiative in Australia

			Q1_Awareness_anti_smoking_initiatives					
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	Total
Q28 I have intention to quit smoking	No	Count	13	19	25	19	24	100
		Expected Count	5.7	8.8	14.9	24.6	46.1	100.0
		% within Q28 I have intention to quit smoking	13.0%	19.0%	25.0%	19.0%	24.0%	100.0%
	Yes	Count	<5	<5	9	37	81	128
		Expected Count	7.3	11.2	19.1	31.4	58.9	128.0
		% within Q28 I have intention to quit smoking	n<5	n<5	7.0%	28.9%	63.3%	100.0%
Total		Count	13	20	34	56	105	228
		Expected Count	13.0	20.0	34.0	56.0	105.0	228.0
		% within Q28 I have intention to quit smoking	5.7%	8.8%	14.9%	24.6%	46.1%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	71.092[a]	4	0.000
N of Valid Cases	228	a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.70.	

Symmetric Measure	Cramer's V	P-Value
Nominal by Nominal	0.558	0.000
N of Valid Cases	228	

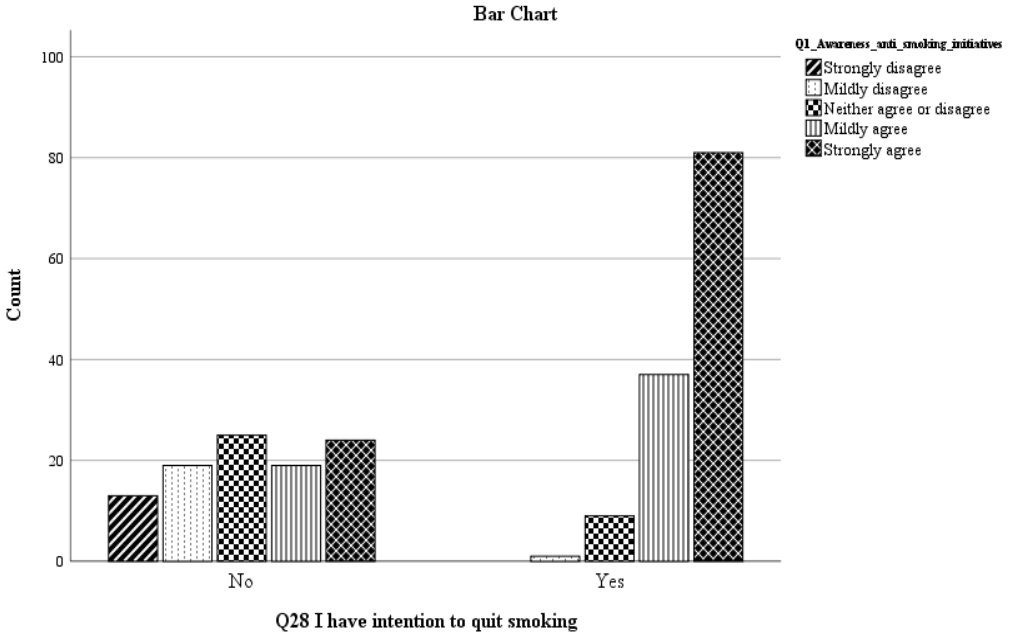


Figure 4.4 Interactive Plot of Q1 vs. Q2

A sufficient percentage of participants strongly disagreed (40.6%; 52) or mildly disagreed (10.2%; 13) that they intended to quit smoking, with a considerable number of respondents strongly agreeing (18.8%; 24) or mildly agreeing (14.8%; 19). 15.6 % (20) neither agreed or disagreed, as showed in Table 4.8. Since responses were almost equally distributed, it is reasonable to assume that the observed distribution is identical to the predicted distribution and that there is no interaction between the two categorical variables. This is supported by insignificant chi-square statistics: $\chi 2$ test (4, N = 228) = 3.909, P>0.05 (Q2. vs. Q28). Besides, Table 4.8 and Figure 4.5 show that the Cramer's V value is low (0.131), indicating that anti-smoking advertisements have little influence in discouraging young smokers from ongoing smoking. These findings are aligned with those of (Liu & Tan 2009), who found that the perceived benefits of long-term smoking discounted the future efforts of quitting smoking.

Table 4.8 Q2, I am Not Influenced by the Anti-Smoking Advertisements Around Me

			Q2_Influential_anti-smokingadvertisements					Total
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	
Q28 I have intention to quit smoking	No	Count	29	13	20	24	14	100
		Expected Count	35.5	11.4	17.5	21.1	14.5	100.0
		% within Q28 I have intention to quit smoking	29.0%	13.0%	20.0%	24.0%	14.0%	100.0%
	Yes	Count	52	13	20	24	19	128
		Expected Count	45.5	14.6	22.5	26.9	18.5	128.0
		% within Q28 I have intention to quit smoking	40.6%	10.2%	15.6%	18.8%	14.8%	100.0%
Total		Count	81	26	40	48	33	228
		Expected Count	81.0	26.0	40.0	48.0	33.0	228.0
		% within Q28 I have intention to quit smoking	35.5%	11.4%	17.5%	21.1%	14.5%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	3.909[a]	4	0.418
N of Valid Cases	228		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.40.

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.131	0.418
N of Valid Cases	228		

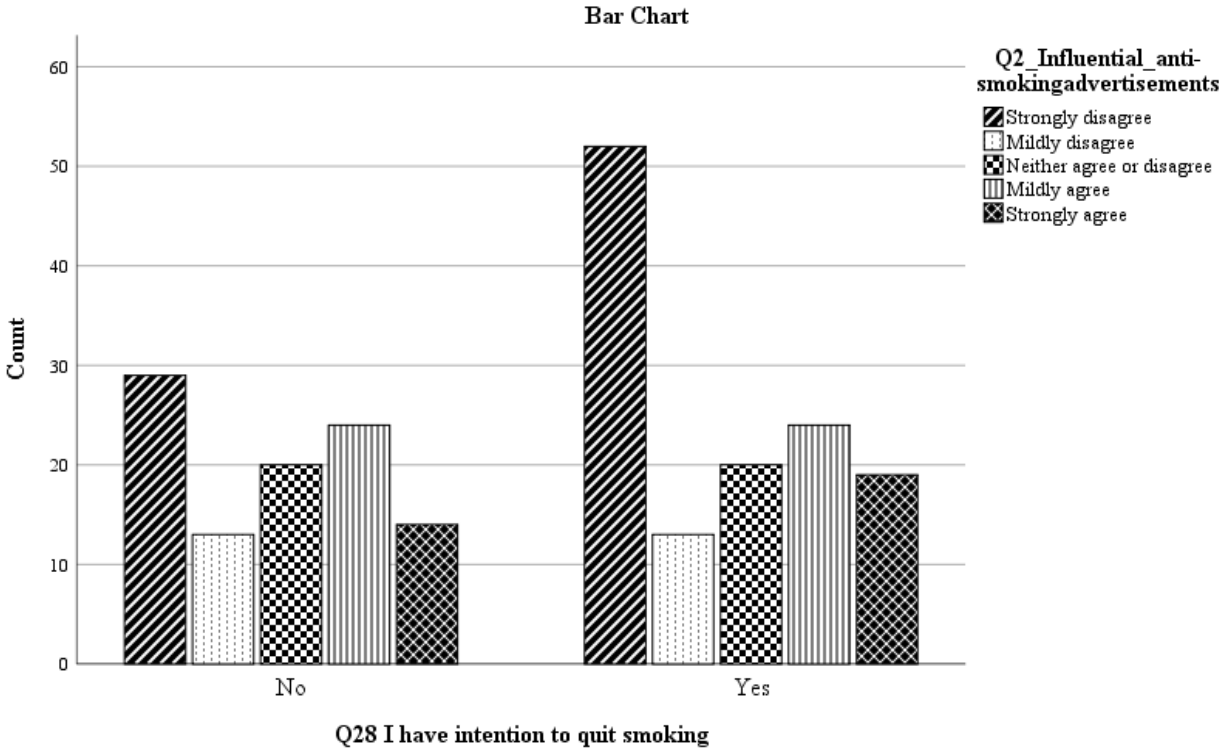


Figure 4.5 Interactive Plot of Q2 vs. Q28

Self-image or self-identity of young smokers is one of the most important factors that leads to ongoing smoking (van den Putte et al. 2009; Wakefield et al. 2002), with young adults continuing to smoke due to the construction of their self-identities (Aloise-Young, Hennigan & Graham 1996; Burton et al. 1989; Dong Hwan 1990). Social identity theory asserts that the creation of self-identity is the association of an individual's position with a particular social class (Abrams & Hogg 1990). A person's self-identity is reflected in their traits, beliefs, ideals, and aspirations (Hagger et al. 2007). Social factors and community expectations arguably sharpen an individual's idiosyncrasies (Hitlin 2003b). When a person's belief structure coincides with their behaviour, they develop a certain type of social behaviour (Reid & Deaux 1996). Table 4.9 and Figure 4.6 show that an overwhelming majority (90.7%; 39 mildly agree + 77 strongly agree = 116) of respondents affirmed that their smoking was a fundamental aspect of their self-identity. These individuals would continue smoking to retain their self-images. A Chi Square test provided sufficient evidence that the actual distribution differed from the expected distribution and that there appeared to be a good relationship between both categorical variables: $\chi 2$ test (3, N = 228) = 48.245, P<00.1 (Q3. vs. Q28). In addition, Table 4.9 shows Cramer's V value of 0.460, reinforcing the societal expectations of self-identity in young smokers.

Table 4.9 Q3, My Smoking Habit is Central to My Self-Identity

			Q3_Smoking_self-identity				
			Mildly disagree	**Neither agree or disagree**	**Mildly agree**	**Strongly agree**	**Total**
Q28 I have intention to quit smoking	**No**	**Count**	13	34	27	26	100
		Expected Count	5.7	20.2	28.9	45.2	100.0
		% within Q28 I have intention to quit smoking	13.0%	34.0%	27.0%	26.0%	100.0%
	Yes	**Count**	<5	12	39	77	128
		Expected Count	7.3	25.8	37.1	57.8	128.0
		% within Q28 I have intention to quit smoking	n<5	9.4%	30.5%	60.2%	100.0%
Total		**Count**	13	46	66	103	228
		Expected Count	13.0	46.0	66.0	103.0	228.0
		% within Q28 I have intention to quit smoking	5.7%	20.2%	28.9%	45.2%	100.0%

Chi-Square Test	**Value**	**df**	**P-Value**
Pearson Chi-Square	48.245[a]	3	0.000
N of Valid Cases	228	a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.70.	

Symmetric Measure		**Cramer's V**	**P-Value**
Nominal by Nominal		0.460	0.000
N of Valid Cases	228		

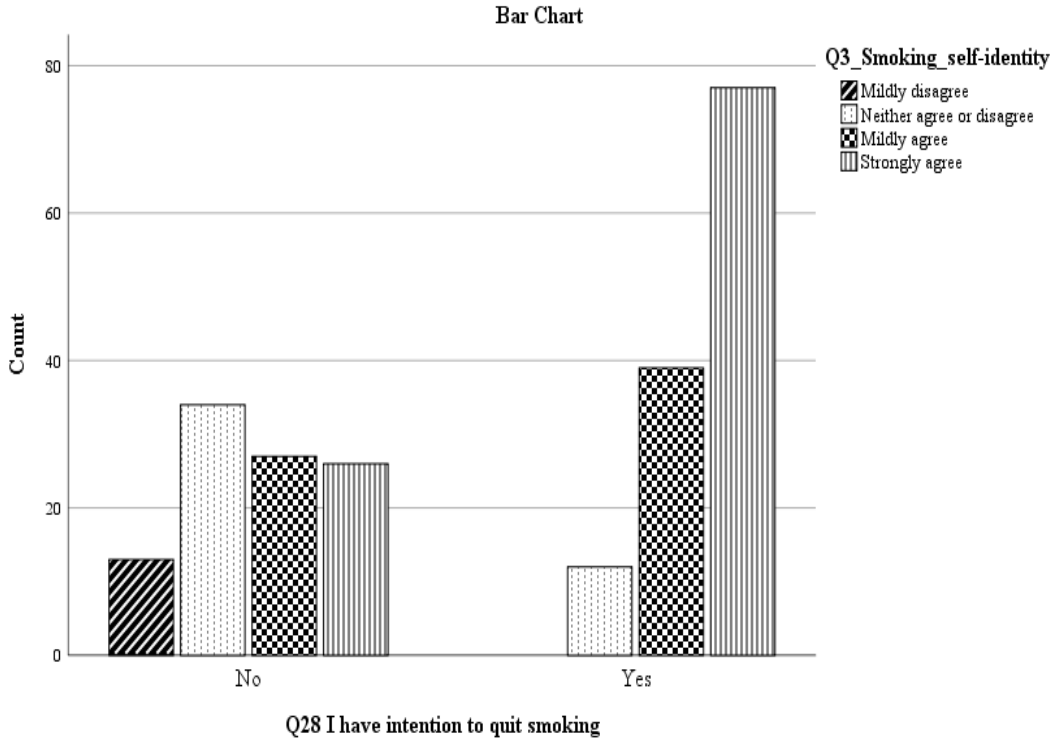


Figure 4.6 Interactive Plot of Q3 vs. Q28

The harm of tobacco smoking has been widely reported and documented for many years (Daube et al. 2015; Hill 1999; Hoek et al. 2018; Moodie, Daube & Carnell 2009; Tyrrell 1998). According to study by Hwang and Yun (2015), cigarette smoking leads to physiological and psychological addiction. Nicotine in tobacco is a stimulant that causes arousal and stimulation in our body. In addition, Baker et al. (2004) found that nicotine addiction causes young adult smokers to shift from moderate or social smoking to heavy and long-term smoking. This encourages young adult smokers to smoke more and delay quitting smoking. As nicotine is addictive, it is important to deter young people from their smoking habit and to discourage active smokers from continuing to smoke. Based on this background, a vast number of participants in both categories chose 'No' (51%; 32 mildly agree + 19 storngly agree = 51) and 'Yes' (88.3%; 38 mildrly agree + 75 strongly agree = 113), which showed substantial variation in actual and predicted distributions, thus suggesting a positive association between the two categorical variables. Table 4.10 (also Figure 4.7) illustrates a significantly high Cramer's V value of 0.521, indicating that young adult smokers were addicted to cigarette smoking. Although many smokers intend to quit smoking (Borland et al. 2013), they find it difficult and relapse after abstinence (Shiffman et al. 2000).

Table 4.10 Q4, I am Somewhat Addicted to Cigarette Smoking

			Q4_Smoking_addictive					
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	Total
Q28 I have intention to quit smoking	No	Count	10	23	16	32	19	100
		Expected Count	4.8	10.1	13.2	30.7	41.2	100.0
		% within Q28 I have intention to quit smoking	10.0%	23.0%	16.0%	32.0%	19.0%	100.0%
	Yes	Count	<5	<5	14	38	75	128
		Expected Count	6.2	12.9	16.8	39.3	52.8	128.0
		% within Q28 I have intention to quit smoking	n<5	n<5	10.9%	29.7%	58.6%	100.0%
Total		Count	11	23	30	70	94	228
		Expected Count	11.0	23.0	30.0	70.0	94.0	228.0
		% within Q28 I have intention to quit smoking	4.8%	10.1%	13.2%	30.7%	41.2%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	61.867[a]	4	0.000
N of Valid Cases	228		

a. 1 cells (10.0%) have expected count less than 5. The minimum expected count is 4.82.

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.521	0.000
N of Valid Cases	228		

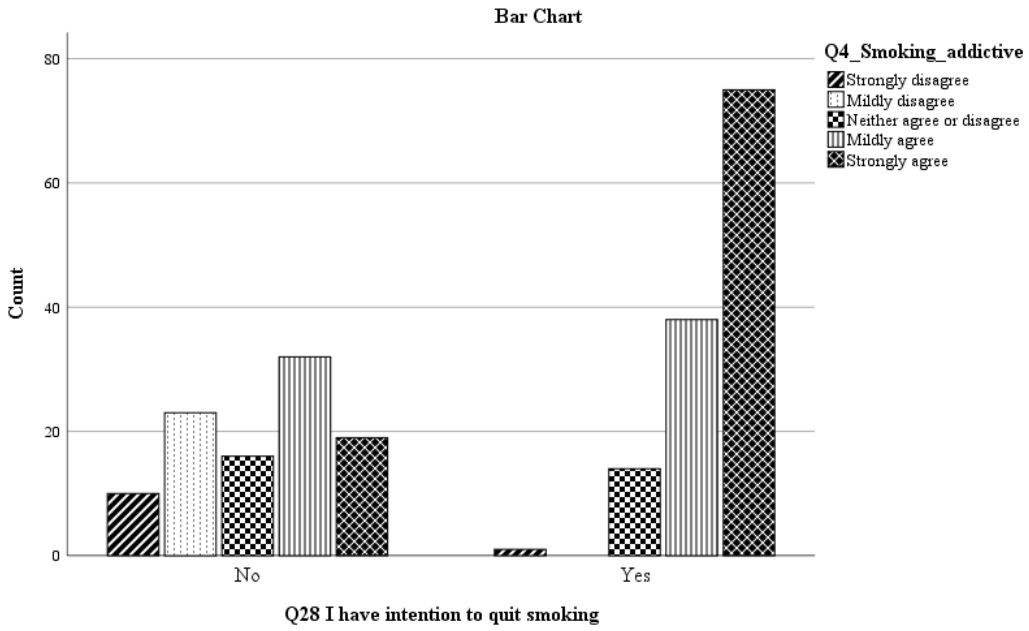


Figure 4.7 Interactive Plot of Q4 vs. Q28

Cigarette smoking is a habitual disorder caused by an overdependence on the consumption on nicotine. Smokers who are addicted to nicotine in particular display this trait and routinely repeat this behaviour (Sjoerds et al. 2013b). According to some scholars (Aarts & Dijksterhuis 2000; Triandis 1979; Verplanken & Aarts 1999), routines are thought to include an element of automaticity and behavioural repetition. In addition, individuals with compulsive behaviours are attracted to substances or actions that lead to immediate physical stimulation such as cigarette smoking. As a consequence of their impulsivity, they grow a difficult-to-break compulsive fulfilment pattern (Hitsman et al. 2010). Table 4.20 shows a sizable proportion of participants (33%; 33) neither agreed nor disagreed with the statement 'There is nothing the average smoker can do to avoid his smoking habit, with a significant number of participants (86.7%; 37 mildly agreeing + 74 strongly agreeing = 111) agreeing with the same statement. Table 4.11 and Figure 4.8 indicate that the predicted number of responses was greater than the actual frequency, so the null hypothesis was rejected, χ^2 test (4, N = 228) = 43.147, P<0.001 (Q5. vs. Q28). As a result, there is compelling evidence that a vast number of participants varied in their responses over the smoking issue. A Cramer's V value of 0.435 (medium effect size), implied a significant relationship between these two variables.

Table 4.11 Q5, There is Little the Average Smoker Can Do to Stop Their Smoking Habit

			Q5_Smoking_habitual					Total
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	
Q28 I have intention to quit smoking	No	Count	<5	12	33	27	25	100
		Expected Count	n<5	5.3	21.9	28.1	43.4	100.0
		% within Q28 I have intention to quit smoking	n<5	12.0%	33.0%	27.0%	25.0%	100.0%
	Yes	Count	<5	<5	17	37	74	128
		Expected Count	n<5	6.7	28.1	35.9	55.6	128.0
		% within Q28 I have intention to quit smoking	n<5	n<5	13.3%	28.9%	57.8%	100.0%
Total		Count	<5	12	50	64	99	228
		Expected Count	<5	12.0	50.0	64.0	99.0	228.0
		% within Q28 I have intention to quit smoking	n<5	5.3%	21.9%	28.1%	43.4%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	43.147[a]	4	0.000
N of Valid Cases	228	a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 1.32.	

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.435	0.000
N of Valid Cases	228		

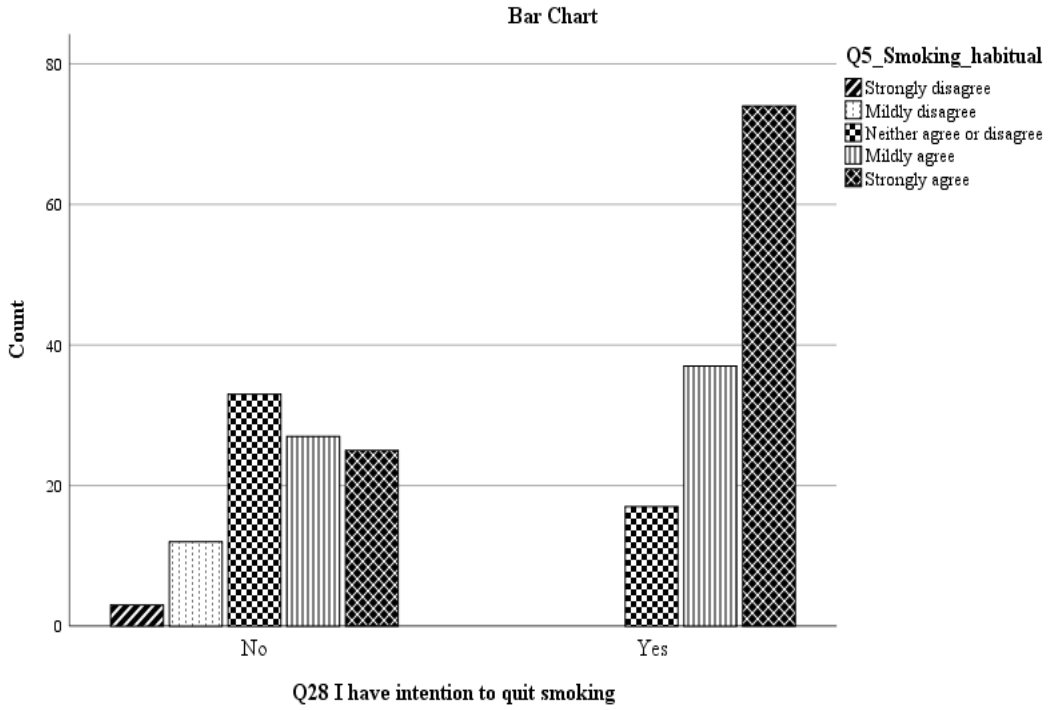


Figure 4.8 Interactive Plot of Q5 vs. Q28

Responses to Question 6 indicate that there is a favourable and significant association between the two factors of habitual buying and desire to smoke, with $\chi 2$ test (4, N = 228) = 74.195, P<0.001 (Q6. vs. Q28). In this analysis, Cramer's V value of 0.57 indicates a very significant impact scale (Table 4.12 and Figure 4.9). These findings are consistent with those of past studies (Aarts & Dijksterhuis 2000; Triandis 1979), which found that habitual smoking plays a key role in young smokers' behaviour.

Table 4.12 Q6, I Buy Cigarette Without Much Thinking of The Consequences

			Q6_Cigarette_habitual buying					Total
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	
Q28 I have intention to quit smoking	No	Count	5	19	37	29	10	100
		Expected Count	2.2	9.2	22.4	31.1	35.1	100.0
		% within Q28 I have intention to quit smoking	5.0%	19.0%	37.0%	29.0%	10.0%	100.0%
	Yes	Count	<5	<5	14	42	70	128
		Expected Count	2.8	11.8	28.6	39.9	44.9	128.0
		% within Q28 I have intention to quit smoking	n<5	n<5	10.9%	32.8%	54.7%	100.0%
Total		Count	5	21	51	71	80	228
		Expected Count	5.0	21.0	51.0	71.0	80.0	228.0
		% within Q28 I have intention to quit smoking	2.2%	9.2%	22.4%	31.1%	35.1%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	74.195[a]	4	0.000
N of Valid Cases	228	a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 2.19.	

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.570	0.000
N of Valid Cases	228		

Figure 4.9 Interactive plot of Q6 vs. Q28

Respondents who responded 'No', mildly disagrees (29%), neither agreed nor disagreed (27%), and mildly agreed (32%), were found to be equally distributed in the survey. However, participants that responded 'Yes' to the question of whether their smoking improved their self-image in front of their peers, represented the majority (90.7%; 36 mildly agreeing + 80 strongly agreeing = 116) (Table 4.13 and Figure 4.10). A Chi Square test statistic showed adequate evidence where the actual distribution differed from the predicted distribution and that both categorical variables have a strong relationship: $\chi 2$ test (4, N = 228) = 90.675, P<0.001 (Q7 vs Q28). In Table 4.13 and Figure 4.10, the impact size is shown to be high, with Cramer's V value of 0.631 indicating that young smokers believe their ongoing smoking would improve their self-image.

Table 4.13 Q7, I Feel that Smoking Enhances the Image My Friends Have of Me

			Q7_Smoking_self-image					Total
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	
Q28 I have intention to quit smoking	No	Count	<5	29	27	32	9	100
		Expected Count	n<5	13.2	16.7	29.8	39.0	100.0
		% within Q28 I have intention to quit smoking	n<5	29.0%	27.0%	32.0%	9.0%	100.0%
	Yes	Count	<5	<5	11	36	80	128
		Expected Count	n<5	16.8	21.3	38.2	50.0	128.0
		% within Q28 I have intention to quit smoking	n<5	n<5	8.6%	28.1%	62.5%	100.0%
Total		Count	<5	30	38	68	89	228
		Expected Count	<5	30.0	38.0	68.0	89.0	228.0
		% within Q28 I have intention to quit smoking	n<5	13.2%	16.7%	29.8%	39.0%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	90.675[a]	4	0.000
N of Valid Cases	228	a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 1.32.	

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.631	0.000
N of Valid Cases	228		

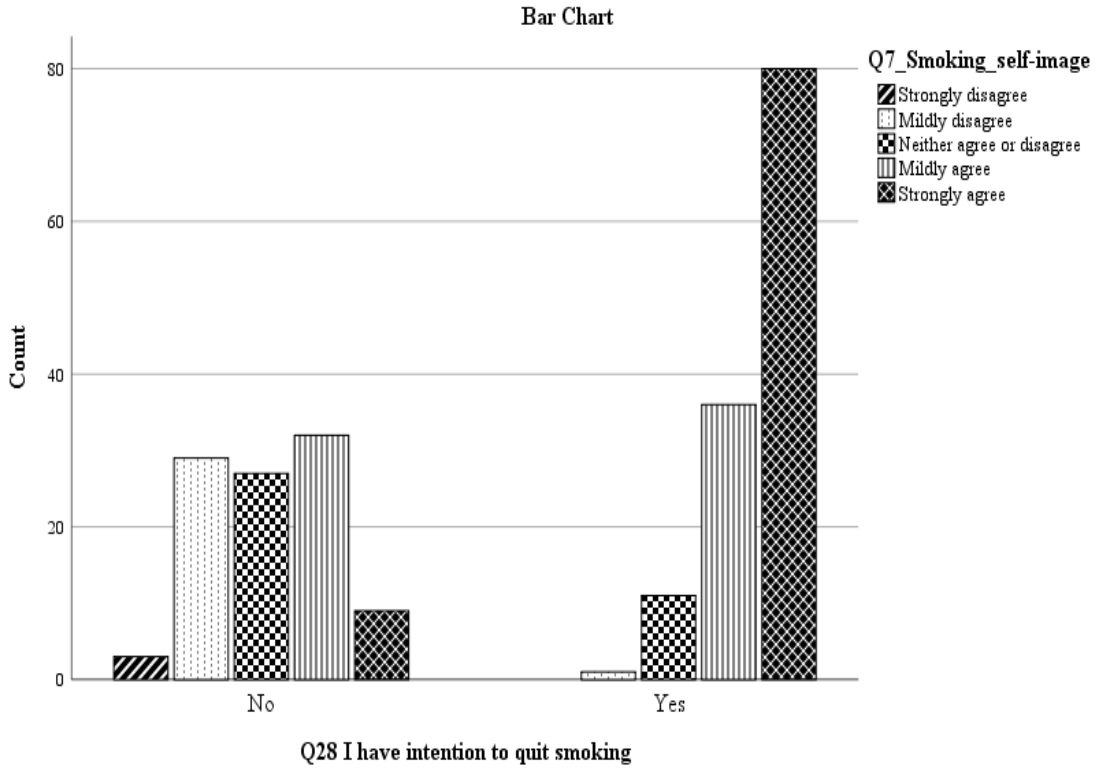


Figure 4.10 Interactive Plot of Q7 vs. Q28

In Australia, young adult smokers tend to have higher tobacco intake and nicotine dependency (Ferguson & Phau 2013), and are most likely to become long-term, persistent smokers with no intention to quit (Moodie, Daube & Carnell 2009; Nordstrom et al. 2000). It is therefore important to understand ongoing smoking behaviour and minimise the negative health effects of smoking (Claydon, Webber & Sweeney 2017). According to previous studies (Cooley, Elenbaas & Killen 2012; Wellen, Hogg & Terry 1998) group norms determine the intimacy level of peer groups (e.g., general peers, close friends, acquaintances, and colleagues). The bonds (as well as peer pressure) become stronger with long-term engagement, interactions, relational attachments, increased intimacy, and resources invested in the relationships. In the case of young adult smoking, previous studies (Flay et al. 1994; Johnson & Hoffmann 2000; Marvin et al. 1983) found that the quality of peer relationships influenced smoking initiation and persistence, with mimicry and peer pressures shaping young adult smoking behaviour. In this study, a minority of respondents selected 'No', with 17% mildly disagreeing, 30% neither agreeing nor disagreeing, 26% mildly agreeing, and 20% strongly agreeing. However, the majority (51.6%) strongly agreed and (39.8%) mildly agreed that their friends influenced their smoking behaviour. (Table 4.14 and Figure 4.11). The actual distribution varied from the predicted distribution, and both categorical variables had a strong interaction.

According to the Chi Square test statistics: significant $\chi 2$ test (4, N = 228) = 63.039, P<0.001 (Q8 vs Q28). A high impact size of 0.526 further verified that young smokers' friends influenced their smoking behaviour.

Table 4.14 Q8, My Friends Influence My Decision to Continue Smoking

			Q8_Smoking_peer pressure					
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	Total
Q28 I have intention to quit smoking	No	Count	7	17	30	26	20	100
		Expected Count	3.1	7.5	18.0	33.8	37.7	100.0
		% within Q28 I have intention to quit smoking	7.0%	17.0%	30.0%	26.0%	20.0%	100.0%
	Yes	Count	<5	<5	11	51	66	128
		Expected Count	3.9	9.5	23.0	43.2	48.3	128.0
		% within Q28 I have intention to quit smoking	n<5	n<5	8.6%	39.8%	51.6%	100.0%
Total		Count	7	17	41	77	86	228
		Expected Count	7.0	17.0	41.0	77.0	86.0	228.0
		% within Q28 I have intention to quit smoking	3.1%	7.5%	18.0%	33.8%	37.7%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	63.039[a]	4	0.000
N of Valid Cases	228	a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 3.07.	

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.526	0.000
N of Valid Cases	228		

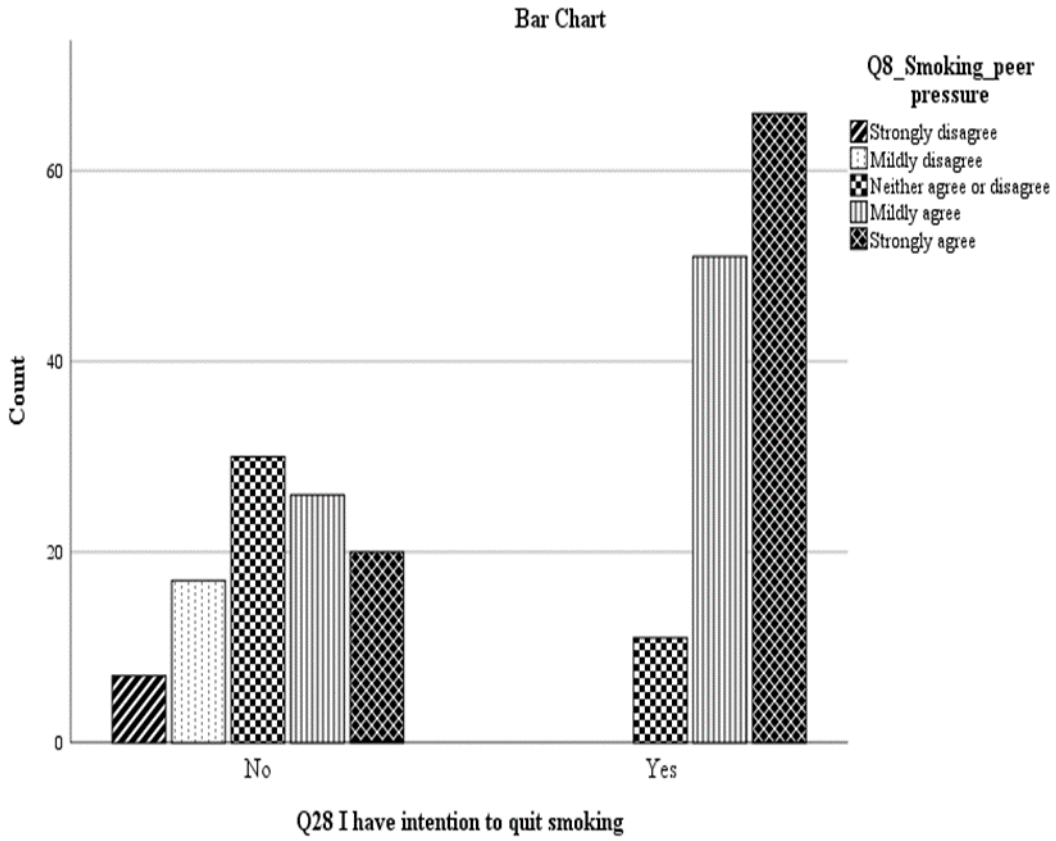


Figure 4.11 Interactive Plot of Q8 vs. Q28

Responses to Q9 indicated a diversity of viewpoints among participants that responded 'No'. This is like Q8, where 57.8% (96) participants strongly agreed that cigarette smoking alleviated their daily problems (Table 4.15 and Figure 4.12). According to the statistical analysis of the Chi Square test, the observed distribution varied from the expected distribution, and both category variables were highly interacting (Q9 vs. Q28). A medium effect size of 0.471 showed that smoking helped respondents forget about their daily problems.

Table 4.15 Q9, Smoking Helps Me Forget About the Day's Problems

			Q9_Smoking_forget problems					
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	Total
Q28 I have intention to quit smoking	No	Count	<5	13	34	30	22	100
		Expected Count	n<5	5.7	20.6	31.1	42.1	100.0
		% within Q28 I have intention to quit smoking	n<5	13.0%	34.0%	30.0%	22.0%	100.0%
	Yes	Count	<5	<5	13	41	74	128
		Expected Count	n<5	7.3	26.4	39.9	53.9	128.0
		% within Q28 I have intention to quit smoking	n<5	n<5	10.2%	32.0%	57.8%	100.0%
Total		Count	<5	13	47	71	96	228
		Expected Count	<5	13.0	47.0	71.0	96.0	228.0
		% within Q28 I have intention to quit smoking	n<5	5.7%	20.6%	31.1%	42.1%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	50.578[a]	4	0.000
N of Valid Cases	228	a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .44.	

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.471	0.000
N of Valid Cases	228		

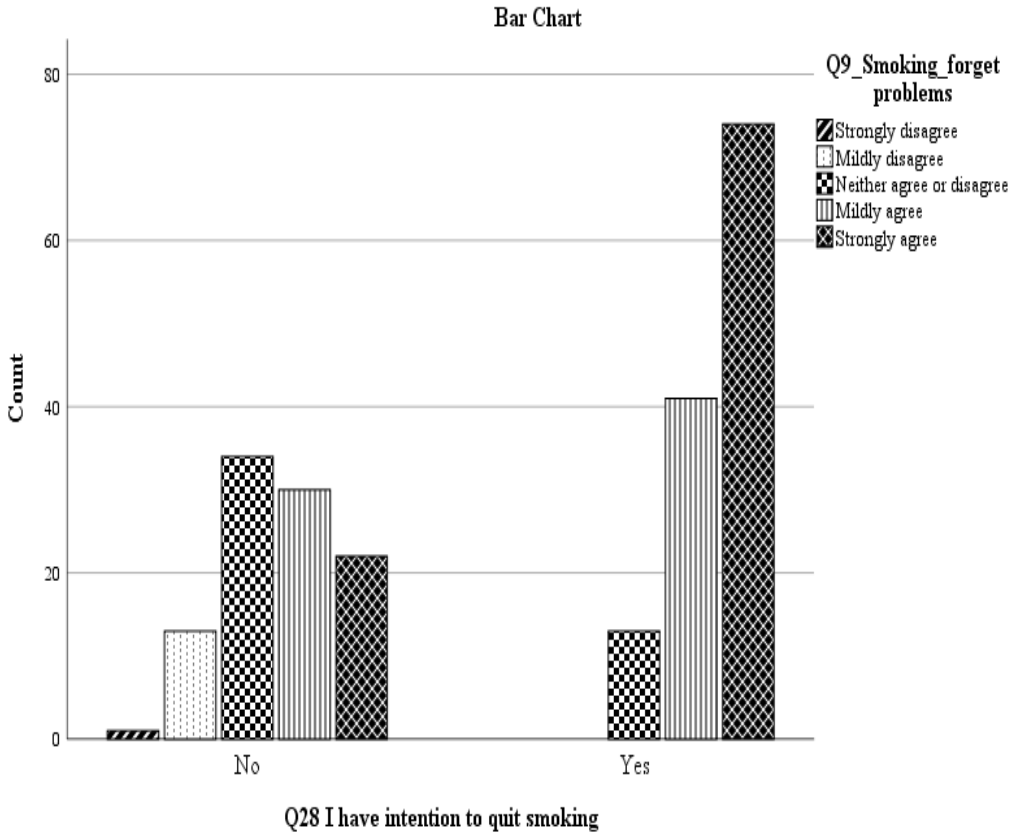


Figure 4.12 Interactive Plot of Q9 vs. Q28

In Q10, the opinions of the participants were evenly distributed between those who responded 'No' and those who responded 'Yes'. Among the latter, a considerable majority (83.6%; 45 strongly agreeing + 62 mildly agreeing = 107) of respondents felt that smoking helped them remain stress-free (Table 4.16 and Figure 4.13). In addition, strong evidence was observed with significant $\chi 2$ test (4, N = 228) = 37.26, P<0.131 (Q10 vs. Q28). A medium effect size of Cramer's V value 0.404 verified the hypothesis.

Table 4.16 Q10, Smoking Helps Keep Me Stress Free

			Q10_Smoking_stress free					
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	Total
Q28 I have intention to quit smoking	No	Count	<5	11	35	29	21	100
		Expected Count	n<5	5.3	24.1	32.5	36.4	100.0
		% within Q28 I have intention to quit smoking	n<5	11.0%	35.0%	29.0%	21.0%	100.0%
	Yes	Count	<5	<5	20	45	62	128
		Expected Count	n<5	6.7	30.9	41.5	46.6	128.0
		% within Q28 I have intention to quit smoking	n<5	n<5	15.6%	35.2%	48.4%	100.0%
Total		Count	<5	12	55	74	83	228
		Expected Count	<5	12.0	55.0	74.0	83.0	228.0
		% within Q28 I have intention to quit smoking	n<5	5.3%	24.1%	32.5%	36.4%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	37.260[a]	4	0.000
N of Valid Cases	228	a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 1.75.	

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.404	.000
N of Valid Cases	228		

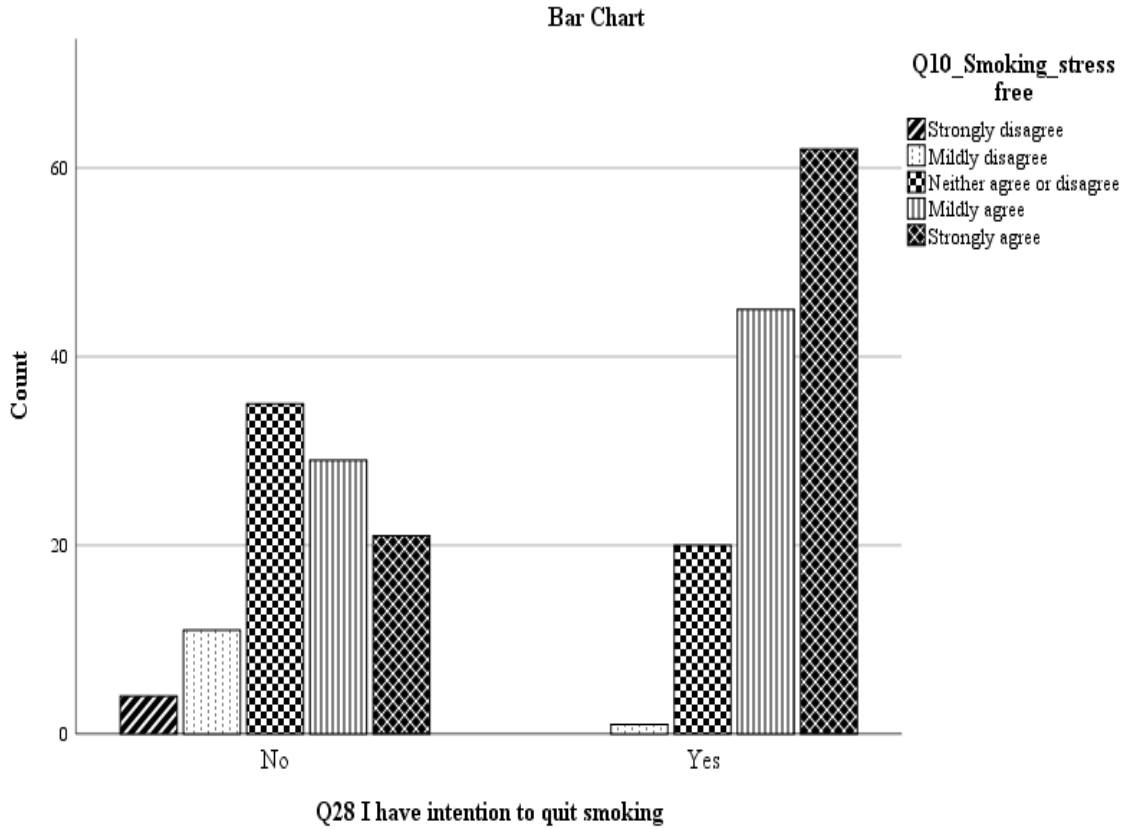


Figure 4.13 Interactive Plot of Q10 vs. Q28

In relation to Q11, most participants (92.2%; 118 participants selected mildly agree and strongly agree) indicated that they would turn to cheaper cigarette products in response to the increasing cost of cigarettes (Table 4.17 and Figure 4.14). A large effect size of Cramer's V value 0.594 indicated considerable differences in respondents' answers, signifying that the null hypothesis is false $\chi 2$ test (4, N = 228) = 80.477, P<0.001.

Table 4.17 Q11, I Have Switched to Cheaper Cigarette Brands to Accommodate the Rising Price of Tobacco

			Q11_Disadvantaged social economics brand switching					
			Strongly disagree	**Mildly disagree**	**Neither agree or disagree**	**Mildly agree**	**Strongly agree**	**Total**
Q28 I have intention to quit smoking	**No**	**Count**	12	24	23	23	18	100
		Expected Count	5.3	11.4	13.6	25.0	44.7	100.0
		% within Q28 I have intention to quit smoking	12.0%	24.0%	23.0%	23.0%	18.0%	100.0%
	Yes	**Count**	<5	<5	8	34	84	128
		Expected Count	6.7	14.6	17.4	32.0	57.3	128.0
		% within Q28 I have intention to quit smoking	n<5	n<5	6.3%	26.6%	65.6%	100.0%
Total		**Count**	12	26	31	57	102	228
		Expected Count	12.0	26.0	31.0	57.0	102.0	228.0
		% within Q28 I have intention to quit smoking	5.3%	11.4%	13.6%	25.0%	44.7%	100.0%

Chi-Square Test	**Value**	**df**	**P-Value**
Pearson Chi-Square	80.477[a]	4	.000
N of Valid Cases	228	a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.26.	

Symmetric Measure	**Cramer's V**	**P-Value**
Nominal by Nominal	0.594	0.000
N of Valid Cases	228	

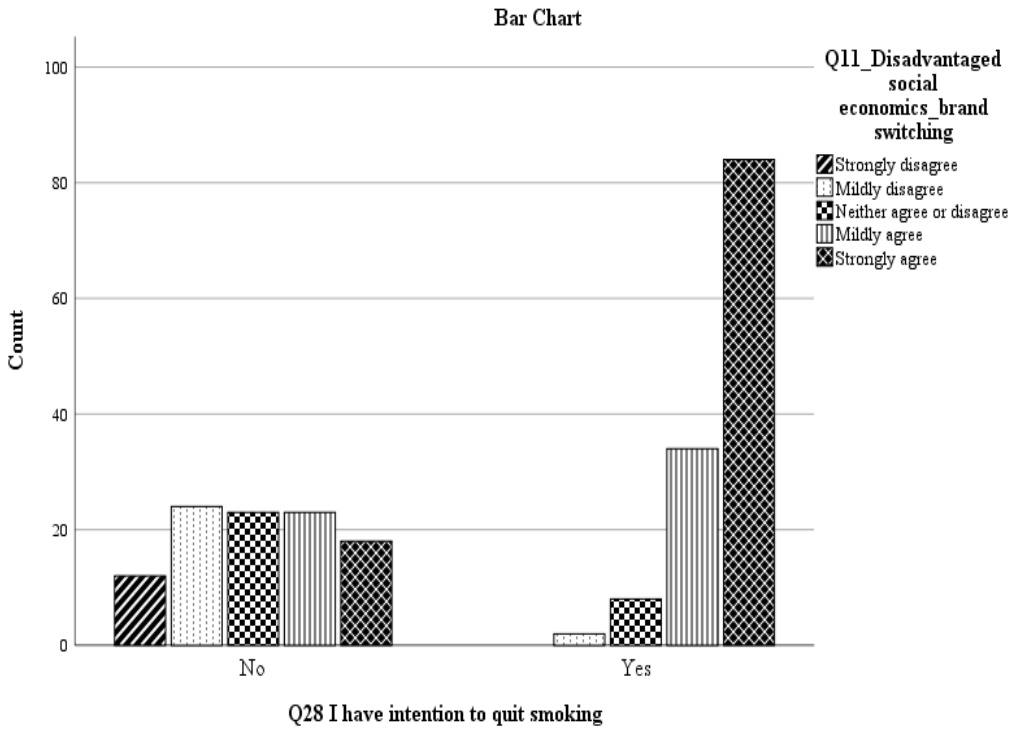


Figure 4.14 Interactive Plot of Q11 vs. Q28

Responses to Q12 indicated no relationship between the borrowing of cigarettes from friends or family when smokers are unable to afford to purchase cigarettes and intention to quit smoking. The null hypothsis is accepted as valid, as suggested by χ^2 test (4, N = 228) = 4.115, P>0.05 (see Table 4.18 and Figure 4.15).

Table 4.18 Q12, I Borrow Cigarettes From My Friends or Relatives When I Cannot Afford to Buy Cigarette

			Q12_Disadvantaged social economics_ borrow cigarettes				
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Total
Q28 I have intention to quit smoking	No	Count	53	30	11	6	100
		Expected Count	56.1	31.1	9.2	3.5	100.0
		% within Q28 I have intention to quit smoking	53.0%	30.0%	11.0%	6.0%	100.0%
	Yes	Count	75	41	10	<5	128
		Expected Count	71.9	39.9	11.8	4.5	128.0
		% within Q28 I have intention to quit smoking	58.6%	32.0%	7.8%	n<5	100.0%
Total		Count	128	71	21	8	228
		Expected Count	128.0	71.0	21.0	8.0	228.0
		% within Q28 I have intention to quit smoking	56.1%	31.1%	9.2%	3.5%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	4.157[a]	3	0.245
N of Valid Cases	228	a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 3.51.	

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.135	0.245
N of Valid Cases	228		

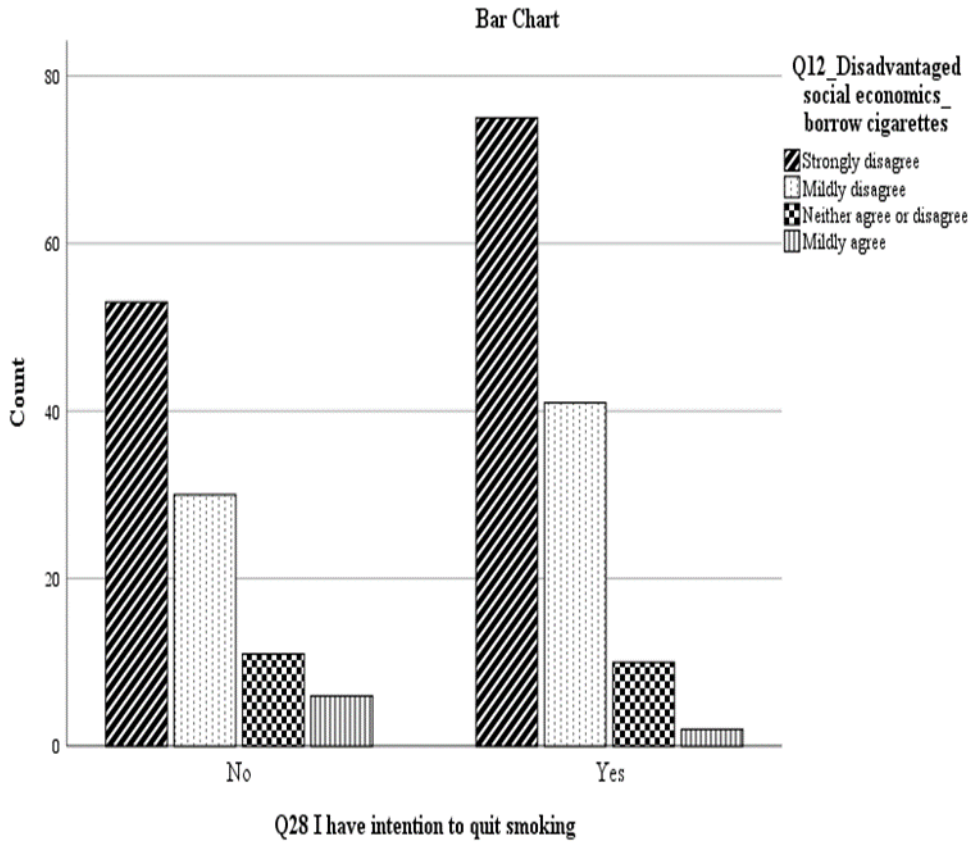


Figure 4.15 Interactive Plot of Q12 vs. Q28

Question 13 examined the effect of plain cigarette package on young adults' smoking behaviours and revealed a small value of Cramer's V 0.248 (see Table 4.19 and Figure 4.16). The null hypothesis was false at χ^2 test (3, N = 228) = 14.065, p<0.0.05 (Q13 vs. Q28).

Table 4.19 Q13, A Plain Cigarette Package Does Not Influence My Habit of Smoking

			Q13_Plain packaging_ not influential				
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Total
Q28 I have intention to quit smoking	No	Count	44	16	32	8	100
		Expected Count	51.8	20.6	21.5	6.1	100.0
		% within Q28 I have intention to quit smoking	44.0%	16.0%	32.0%	8.0%	100.0%
	Yes	Count	74	31	17	6	128
		Expected Count	66.2	26.4	27.5	7.9	128.0
		% within Q28 I have intention to quit smoking	57.8%	24.2%	13.3%	4.7%	100.0%
Total		Count	118	47	49	14	228
		Expected Count	118.0	47.0	49.0	14.0	228.0
		% within Q28 I have intention to quit smoking	51.8%	20.6%	21.5%	6.1%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	14.065[a]	3	0.003
N of Valid Cases	228		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.14.

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.248	0.003
N of Valid Cases	228		

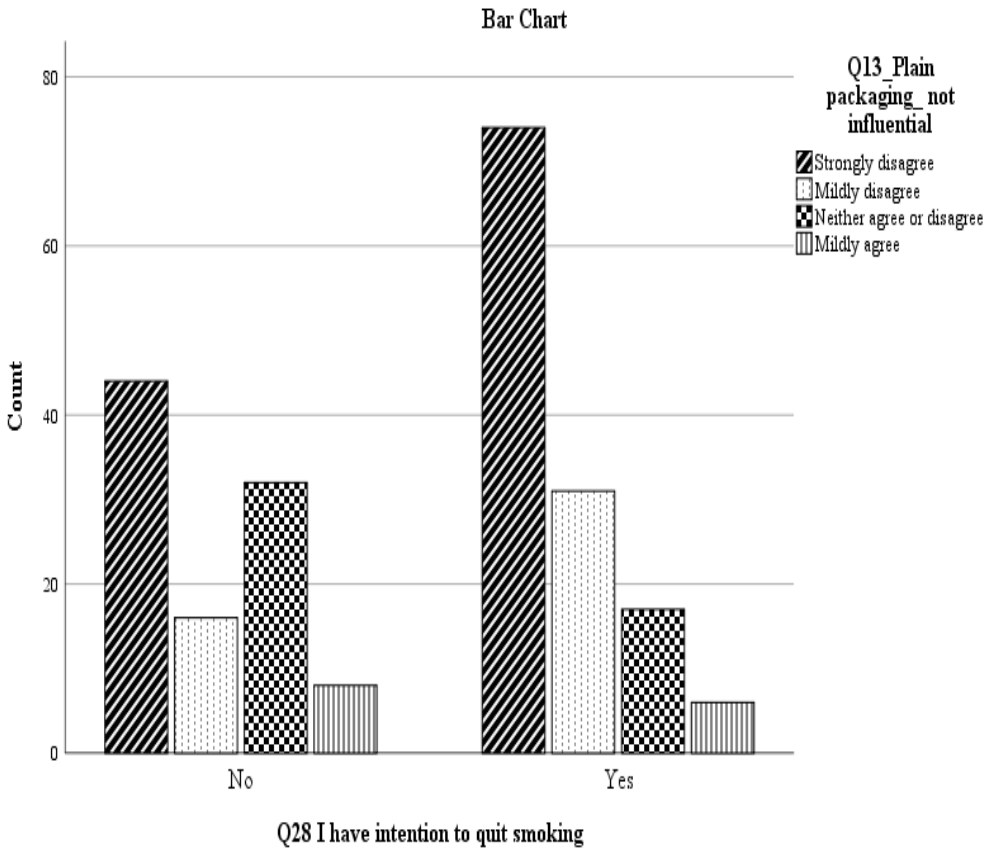


Figure 4.16 Interactive Plot of Q13 vs. Q28

In Q14, responses to the statement "I have intention to quit smoking" verified the association of 'The health advertisements on plain packaging are a reliable source of information' (Table 4.20 and Figure 4.17). The χ^2 test (4, N = 228) = 4.115, P<0.05) of independence positioned to refute the null hypothesis as correct.

Table 4.20 Q14, The health advertisements on plain packaging are a reliable source of information

			Q14_Health advertisements reliable					
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	Total
Q28 I have intention to quit smoking	No	Count	5	14	29	33	19	100
		Expected Count	3.1	11.0	21.9	28.1	36.0	100.0
		% within Q28 I have intention to quit smoking	5.0%	14.0%	29.0%	33.0%	19.0%	100.0%
	Yes	Count	<5	11	21	31	63	128
		Expected Count	3.9	14.0	28.1	35.9	46.0	128.0
		% within Q28 I have intention to quit smoking	n<5	8.6%	16.4%	24.2%	49.2%	100.0%
Total		Count	7	25	50	64	82	228
		Expected Count	7.0	25.0	50.0	64.0	82.0	228.0
		% within Q28 I have intention to quit smoking	3.1%	11.0%	21.9%	28.1%	36.0%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	23.514[a]	4	0.000
N of Valid Cases	228	a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 3.07.	

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.321	0.000
N of Valid Cases	228		

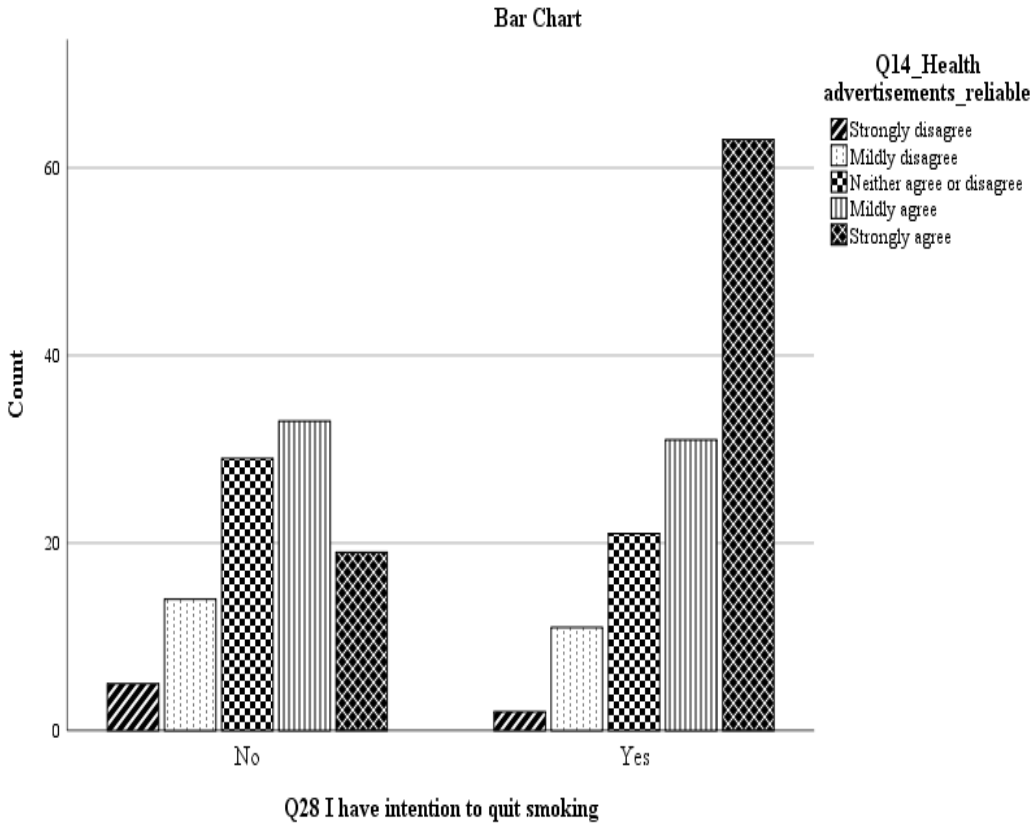


Figure 4.17 Interactive Plot of Q14 vs. Q28

On the other hand, no significant relationship was found between the dependent variable (Q28) and the independent variable (Q15) 'Most health images shown on the cigarette package are not believable', with $\chi 2$ test (3, N = 228) = 6.189, P>0.05). The null hypothesis is accepted as valid, as shown in Table 4.21 and Figure 4.18. (Q15 vs. Q28).

Table 4.21 Q15, Most Health Images Shown On the Cigarette Package Are Not Believable

			Q15_Health images unbelievable				Total
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	
Q28 I have intention to quit smoking	No	Count	38	28	27	7	100
		Expected Count	44.7	28.9	20.2	6.1	100.0
		% within Q28 I have intention to quit smoking	38.0%	28.0%	27.0%	7.0%	100.0%
	Yes	Count	64	38	19	7	128
		Expected Count	57.3	37.1	25.8	7.9	128.0
		% within Q28 I have intention to quit smoking	50.0%	29.7%	14.8%	5.5%	100.0%
Total		Count	102	66	46	14	228
		Expected Count	102.0	66.0	46.0	14.0	228.0
		% within Q28 I have intention to quit smoking	44.7%	28.9%	20.2%	6.1%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	6.189[a]	3	0.103
N of Valid Cases	228		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.14.

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.165	0.103
N of Valid Cases	228		

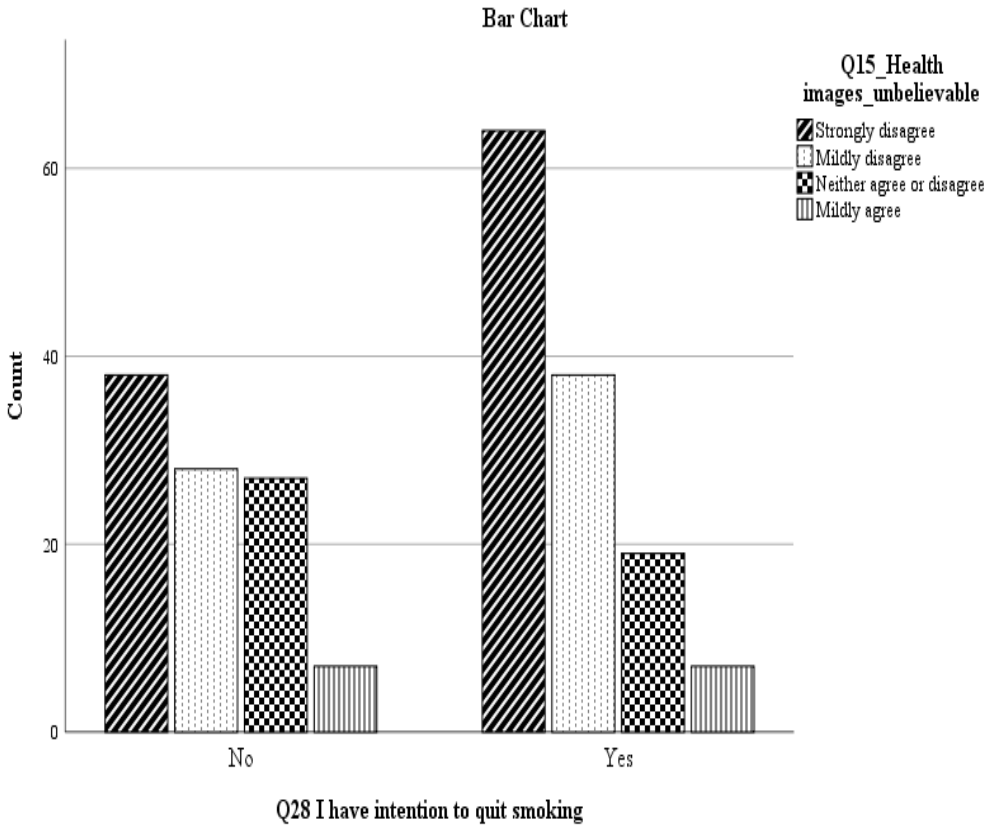


Figure 4.18 Interactive Plot of Q15 vs. Q28

In Q16, health warnings on tobacco packages that provide sufficient information of possible health dangers were found to be an important factor in preventing young adults from smoking. This relationship was investigated using a non-parametric χ^2 test (4, N = 228) = 45.697, P<0.001), as illusrated in Table 4.22 and Figure 4.19 (Q16 vs Q28). A medium Cramer's V effect size of 0.448 was observed.

Table 4.22 Q16, Health Warnings on Cigarette Packages Provide Sufficient Information of Possible Health Dangers

			Q16_Health warnings informative					
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	Total
Q28 I have intention to quit smoking	No	Count	<5	27	23	31	16	100
		Expected Count	n<5	14.0	18.4	31.1	35.1	100.0
		% within Q28 I have intention to quit smoking	n<5	27.0%	23.0%	31.0%	16.0%	100.0%
	Yes	Count	<5	5	19	40	64	128
		Expected Count	n<5	18.0	23.6	39.9	44.9	128.0
		% within Q28 I have intention to quit smoking	n<5	3.9%	14.8%	31.3%	50.0%	100.0%
Total		Count	<5	32	42	71	80	228
		Expected Count	<5	32.0	42.0	71.0	80.0	228.0
		% within Q28 I have intention to quit smoking	n<5	14.0%	18.4%	31.1%	35.1%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	45.697[a]	4	0.000
N of Valid Cases	228	a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 1.32.	

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.448	0.000
N of Valid Cases	228		

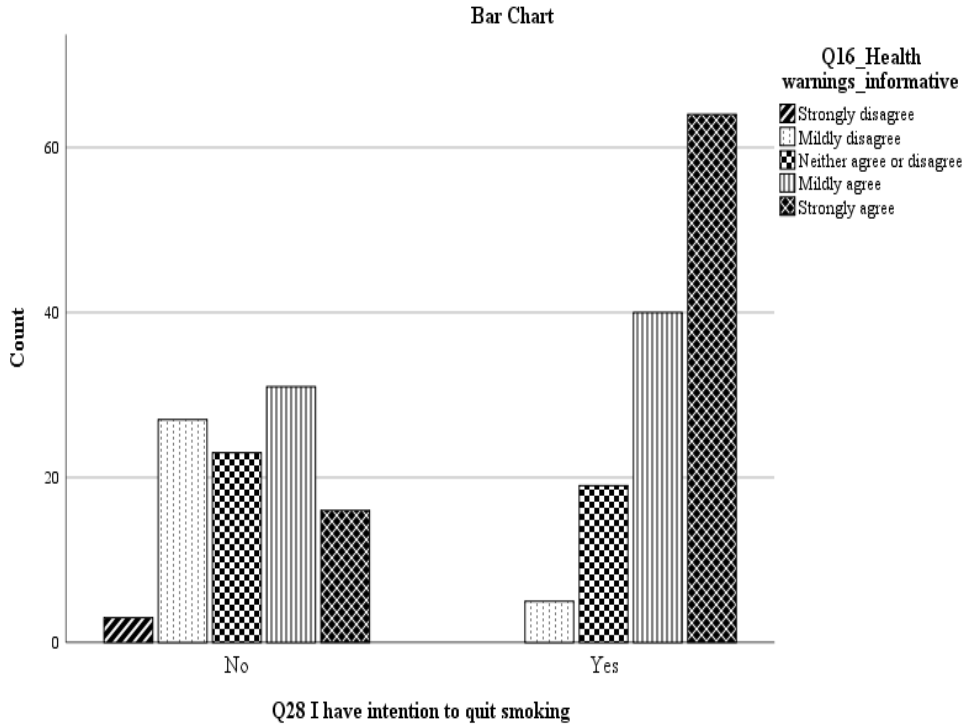


Figure 4.19 Interactive Plot of Q16 vs. Q28

In Q17, the significant variance between the actual and expected distributions of a large number of participants that responded ‘Yes’ (75.0%; 96) in the survey indicated the existence of a favourable relationship between the two categorical variables. Table 4.23 and Figure 20 show the Cramer's V value of 0.269, illustrating that respondents felt that the government’s main motivation for rising cigarette prices is to raise tax revenue.

Table 4.23 Q17, The Main Reason the Government Increases Cigarette Prices is to Earn More Tax Revenue

			Q17_Price increment tax revenue					Total
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	
Q28 I have intention to quit smoking	No	Count	<5	17	21	34	26	100
		Expected Count	n<5	10.1	20.6	32.0	36.4	100.0
		% within Q28 I have intention to quit smoking	n<5	17.0%	21.0%	34.0%	26.0%	100.0%
	Yes	Count	<5	6	26	39	57	128
		Expected Count	n<5	12.9	26.4	41.0	46.6	128.0
		% within Q28 I have intention to quit smoking	n<5	4.7%	20.3%	30.5%	44.5%	100.0%
Total		Count	<5	23	47	73	83	228
		Expected Count	<5	23.0	47.0	73.0	83.0	228.0
		% within Q28 I have intention to quit smoking	n<5	10.1%	20.6%	32.0%	36.4%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	16.524[a]	4	0.002
N of Valid Cases	228	a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .88.	

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.269	0.002
N of Valid Cases	228		

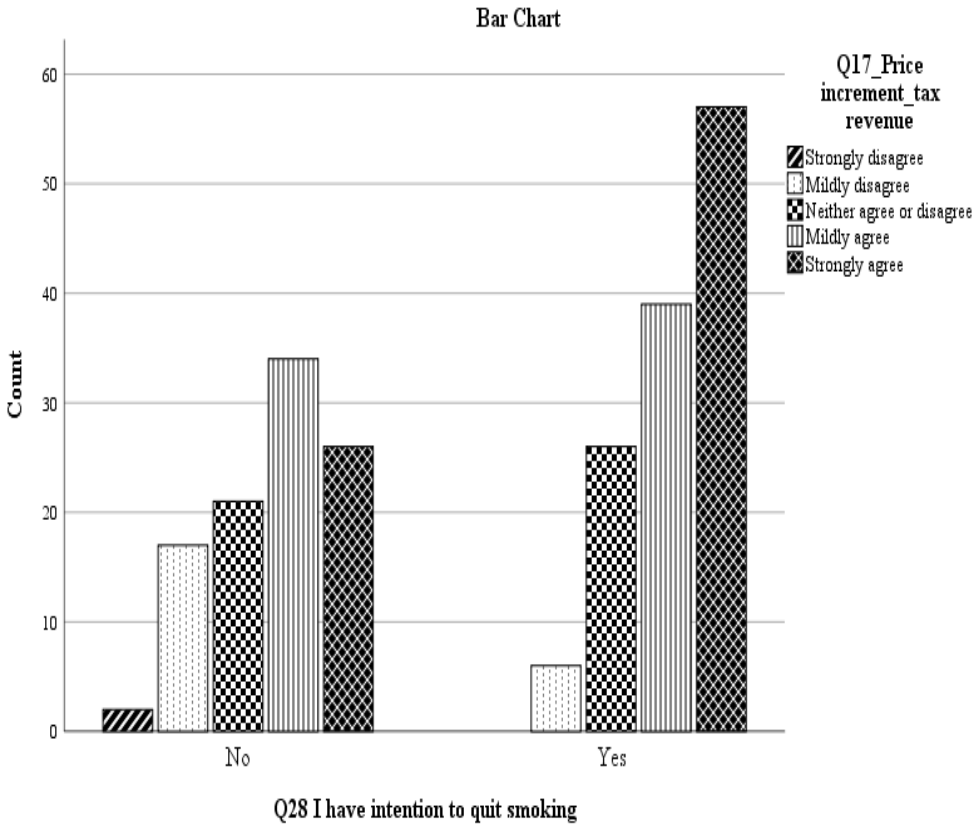


Figure 4.20 Interactive Plot of Q17 vs. Q28

The evidence indicates that smoke-free policies improve or change social norms around smoking among young adults and help them to quit (Castellan et al. 2015). Consistent with this finding, young smokers surveyed felt that the Australian government should implement more severe smoke-free policies to stop smokers from continue smoking. The analysis for Q18 revealed a significant χ^2 test (4, N = 228) = 45.697, p<0.001) of independence between the variables (Q18 vs. Q28), as illustrated in Table 4.24 and Figure 4.21.

Table 4.24 Q18, The Government Should Exercise More Stern Smoke-Free Policies to Stop Smokers From Smoking

			Q18_Smoke free policies					
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	Total
Q28 I have intention to quit smoking	No	Count	<5	17	34	21	27	100
		Expected Count	n<5	7.9	21.9	28.1	41.7	100.0
		% within Q28 I have intention to quit smoking	n<5	17.0%	34.0%	21.0%	27.0%	100.0%
	Yes	Count	<5	<5	16	43	68	128
		Expected Count	n<5	10.1	28.1	35.9	53.3	128.0
		% within Q28 I have intention to quit smoking	n<5	n<5	12.5%	33.6%	53.1%	100.0%
Total		Count	<5	18	50	64	95	228
		Expected Count	<5	18.0	50.0	64.0	95.0	228.0
		% within Q28 I have intention to quit smoking	n<5	7.9%	21.9%	28.1%	41.7%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	44.187[a]	4	0.000
N of Valid Cases	228	a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .44.	

Symmetric Measure	Cramer's V	P-Value
Nominal by Nominal	0.440	0.000
N of Valid Cases	228	

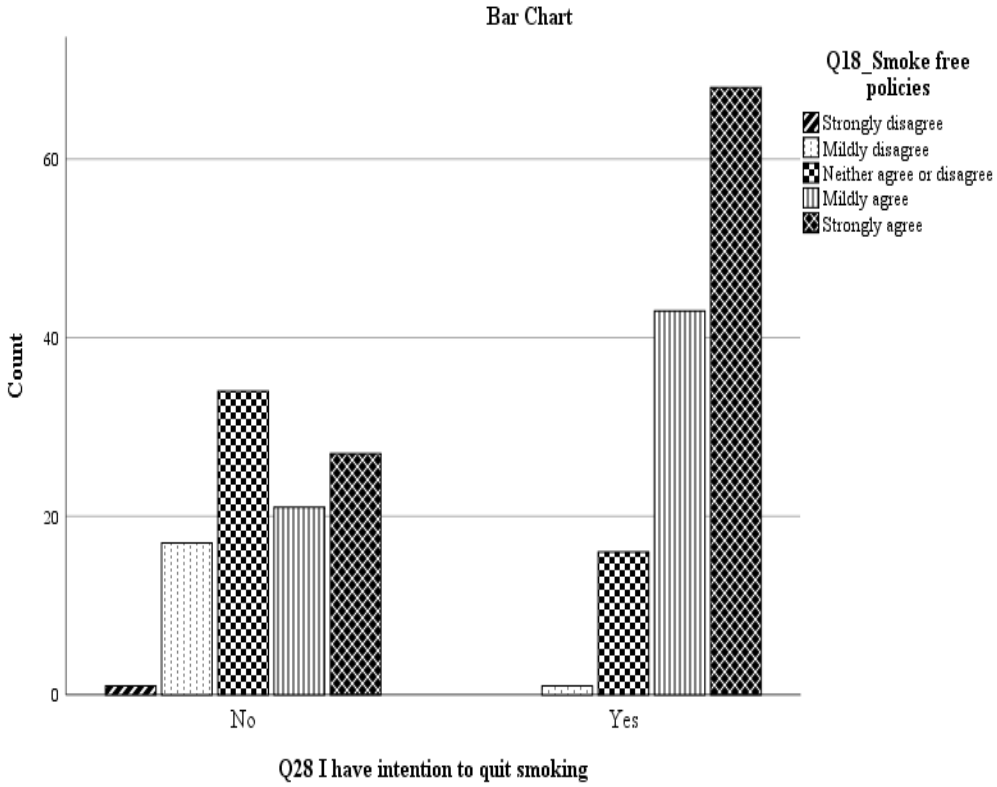


Figure 4.21 Interactive Plot of Q18 vs. Q28

Analysis of responses to Q19 indicated that smoke-free measures have decreased young smokers' intention to continue smoking, with a strong relationship (χ^2, P<0.001) found between the dependent variable (Q28) and the independent variable (Q28) (Q19). Table 4.25 and Figure 4.22 illustrates these results.

Table 4.25 Q19, Smoke-Free Policies Have Reduced My Motivation to Smoke

			Q19_Smoker free_ reduced smoking					Total
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Strongly agree	
Q28 I have intention to quit smoking	No	Count	<5	20	23	28	28	100
		Expected Count	n<5	9.6	18.4	30.3	41.2	100.0
		% within Q28 I have intention to quit smoking	n<5	20.0%	23.0%	28.0%	28.0%	100.0%
	Yes	Count	<5	<5	19	41	66	128
		Expected Count	n<5	12.4	23.6	38.7	52.8	128.0
		% within Q28 I have intention to quit smoking	n<5	n<5	14.8%	32.0%	51.6%	100.0%
Total		Count	<5	22	42	69	94	228
		Expected Count	<5	22.0	42.0	69.0	94.0	228.0
		% within Q28 I have intention to quit smoking	n<5	9.6%	18.4%	30.3%	41.2%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	30.947[a]	4	0.000
N of Valid Cases	228		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is .44.

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.368	0.000
N of Valid Cases	228		

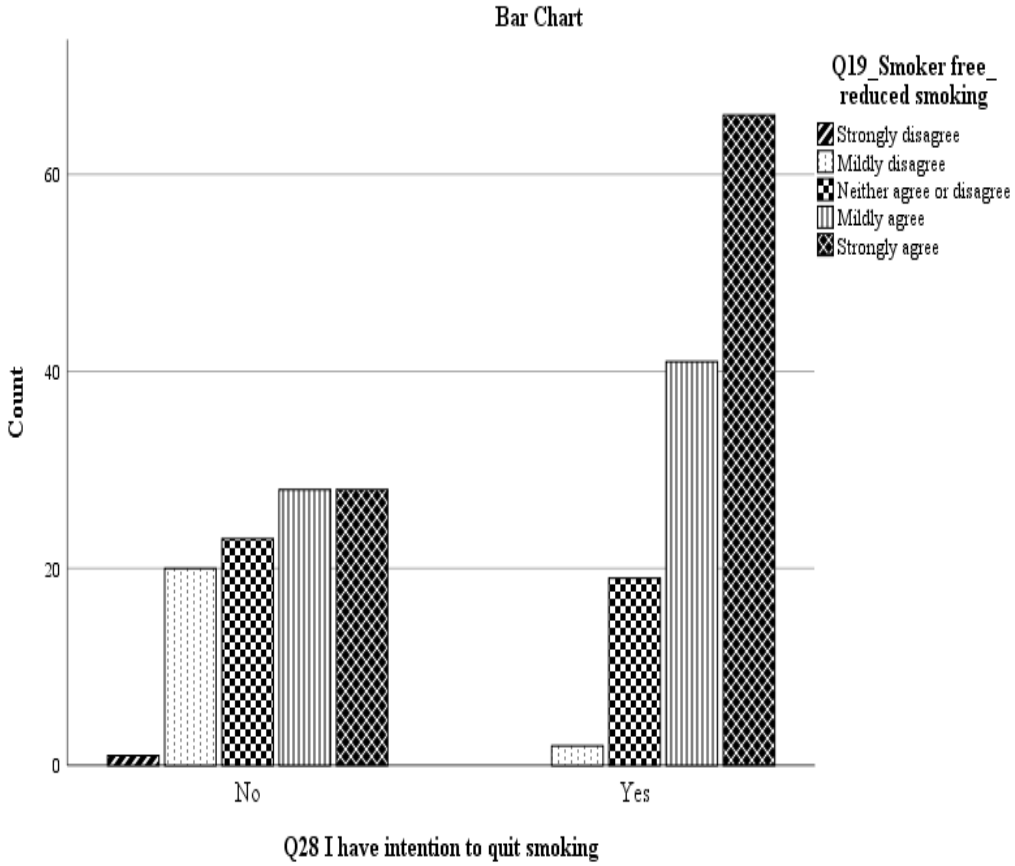


Figure 4.22 Interactive Plot of Q19 vs. Q28

Nevertheless, there is a non-significant $\chi 2$ test shown in Table 4.26 and Figure 4.23, indicating that young adult smokers do not pay much attention to Quit Victoria advertisements, as illustrated in the relationship between Q20 and the dependent variable in Q28. The Cramer's V effect size value is reported at 0.171.

Table 4.26 Q20, I Do Not Pay Much Attention to Quit Victoria Advertisements

			Q20_Quit Victoria attention getting				
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Total
Q28 I have intention to quit smoking	No	Count	32	27	24	17	100
		Expected Count	37.3	28.9	22.4	11.4	100.0
		% within Q28 I have intention to quit smoking	32.0%	27.0%	24.0%	17.0%	100.0%
	Yes	Count	53	39	27	9	128
		Expected Count	47.7	37.1	28.6	14.6	128.0
		% within Q28 I have intention to quit smoking	41.4%	30.5%	21.1%	7.0%	100.0%
Total		Count	85	66	51	26	228
		Expected Count	85.0	66.0	51.0	26.0	228.0
		% within Q28 I have intention to quit smoking	37.3%	28.9%	22.4%	11.4%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	6.670[a]	3	.083
N of Valid Cases	228		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.40.

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.171	0.083
N of Valid Cases	228		

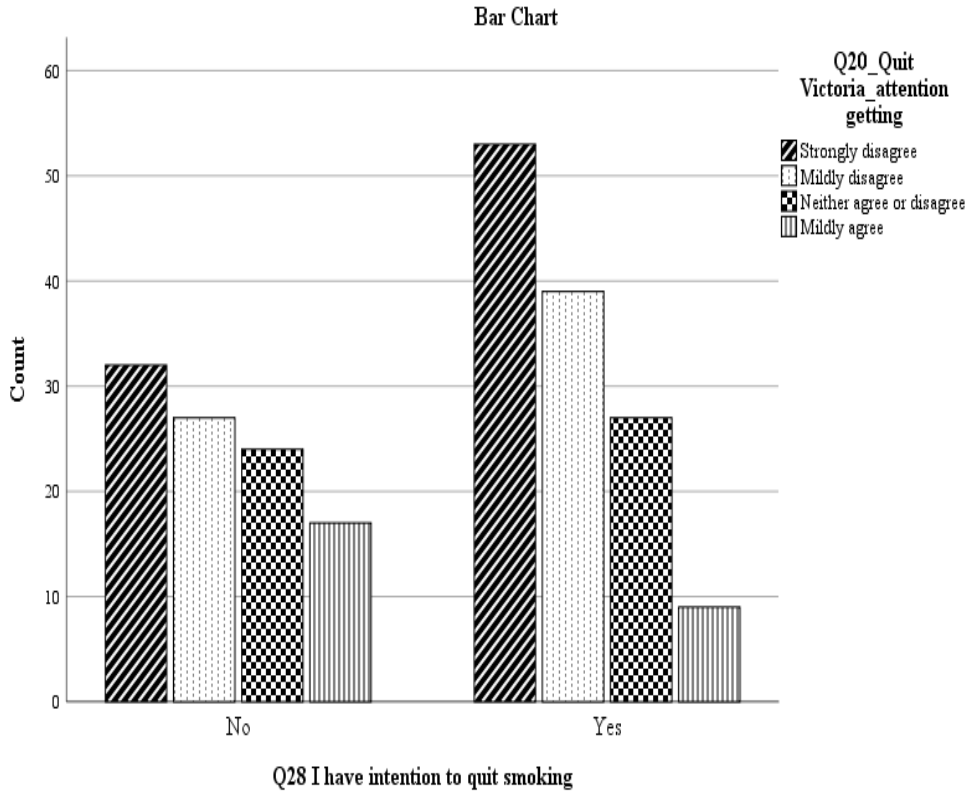


Figure 4.23 Interactive plot of Q20 vs. Q28

Similarly to responses to Q20, the analysis for Q21 revealed that there was a non-significant χ^2 test (3, N = 228) = 1.434, p=0.698) of independence, as shown in Table 4.27 and Figure 4.24. Quit Victoria advertisements had yet to be stronger to influence young adult smoker's motivation to quit.

Table 4.27 Q21, Quit Victoria Advertisements Strengthen My Motivation to Quit Smoking

			Q21_Quit Victoria_ quit motivation				
			Strongly disagree	Mildly disagree	Neither agree or disagree	Mildly agree	Total
Q28 I have intention to quit smoking	No	Count	45	33	17	5	100
		Expected Count	47.8	29.4	18.4	4.4	100.0
		% within Q28 I have intention to quit smoking	45.0%	33.0%	17.0%	5.0%	100.0%
	Yes	Count	64	34	25	5	128
		Expected Count	61.2	37.6	23.6	5.6	128.0
		% within Q28 I have intention to quit smoking	50.0%	26.6%	19.5%	3.9%	100.0%
Total		Count	109	67	42	10	228
		Expected Count	109.0	67.0	42.0	10.0	228.0
		% within Q28 I have intention to quit smoking	47.8%	29.4%	18.4%	4.4%	100.0%

Chi-Square Test	Value	df	P-Value
Pearson Chi-Square	1.434[a]	3	.698
N of Valid Cases	228		

a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 4.39.

Symmetric Measure		Cramer's V	P-Value
Nominal by Nominal		0.079	0.698
N of Valid Cases	228		

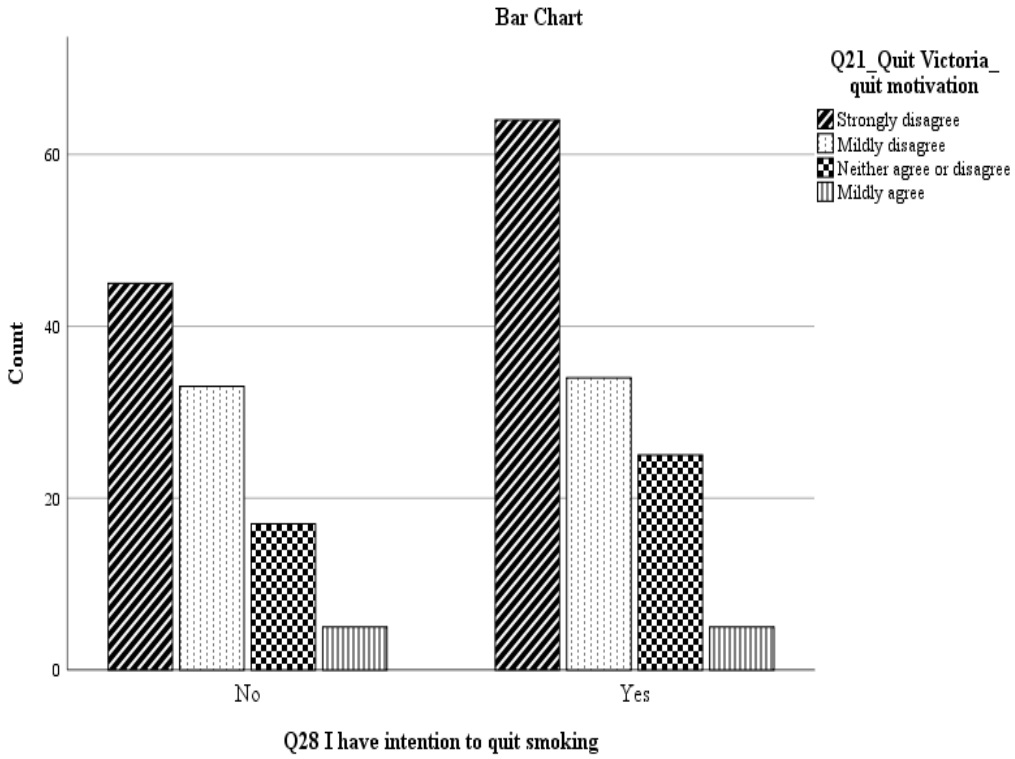


Figure 4.24 Interactive Plot of Q21 vs. Q28

4.9.1 Identification of Factors that Constitute Ongoing Smoking Behaviour in Young Smokers based on Cramer's V

Based on the Cramer's V effect size analysis, there are some important key factors that contribute to ongoing smoking behaviour in young smokers. Figure 4.25 reveals that the six variables of Q7, Q11, Q6, Q1, Q8 and Q4 exhibit Cramer's V >0.5, whereas eight variables exhibited Cramer's V, >0.30 X <0.5 (Q9, Q3, Q16, Q18, Q5, Q10, Q19). The remaining variables (Q2, Q12, Q13, Q14, Q15, Q17, Q20, Q21) portrayed small Cramer's V effect sizes of 0.10 to < 0.30. A summary of the factors that contribute to ongoing smoking behaviour in young adults is shown in Table 4.28 overleaf.

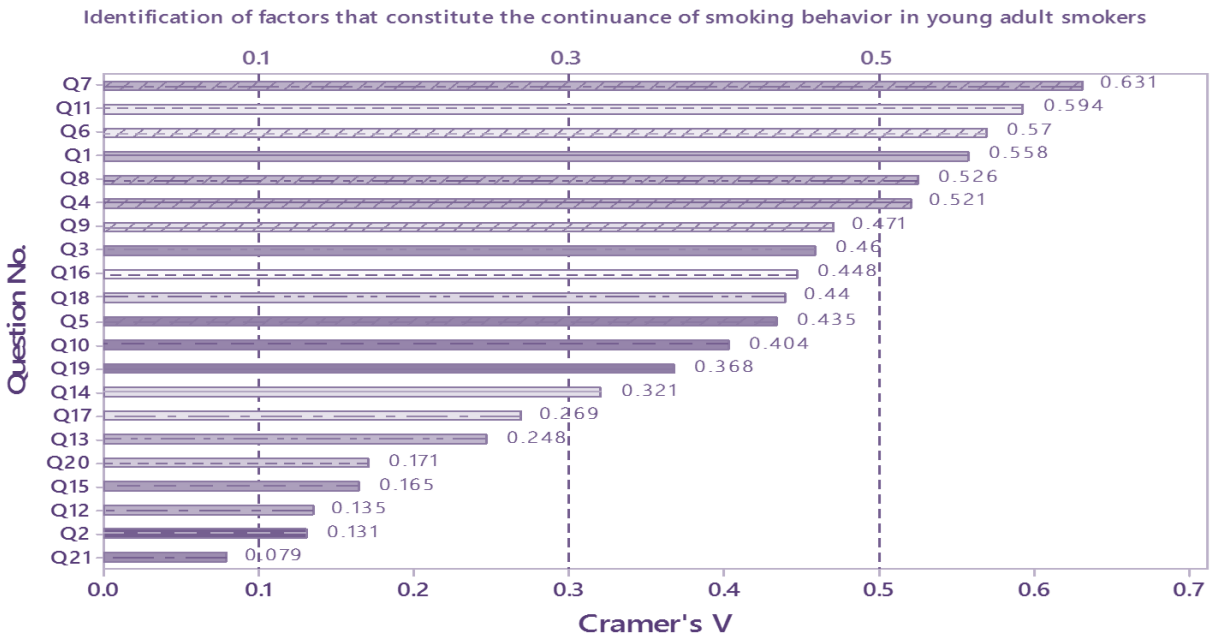


Figure 4.25 Identification of Factors that Constitute the Continuance of Smoking Behaviour in Young Adult Smokers based on Cramer's V

Table 4.28 Summary of Factors that Contribute to the Continuance of Smoking Behaviour in Young Smokers

Large Cramer's V effect size >0.5	
Questions	Independent Variables
Q7	Self-image
Q11	Disadvantaged social-economic condition on brand switching
Q6	Habitual buying
Q1	Unaware of anti-smoking initiatives
Q8	Peer-pressure
Q4	Addiction
Medium Cramer's V effect size >0.30 X <0.5	
Q9	Stress free
Q3	Self-identity
Q16	Health warnings
Q18	Smoke free policies
Q5	Habitual
Q10	Stress free
Q19	Smoke free policies
Small Cramer's V effect size 0.10 to < 0.30	
Q2	Anti-smoking advertisements
Q12	Disadvantaged social-economic condition on borrowed cigarettes
Q13	Plain packaging
Q14	Health advertisements
Q15	Health images
Q17	Tax increment
Q20	Quit telephone supports
Q21	Quit Victoria

4.9.2 Description of Hypotheses

Responses to this study's hypotheses based on analysis of the evidence are provided in Table 4.29 overleaf. Nine hypotheses (H1-H6 and H8-10) are found to support the theories. However, hypthesis H7 (Pictorial health images and text warnings on cigarette packets have a positive relationship with the continuance of smoking in young adults) was rejected, indicating that the message conveyed by pictorial health images and text warnings on cigarette was not important to participants. Similarly, Quitline telephone support (H11) did not motivate smokers to quit.

Table 4.29 Hypothesis Description of Various Variables

Hypotheses	Description	Chi-Sq. Statistics	Decision on null hypothesis
H1	The construction of self-identity will be positively related to smoking behaviour in young adults.	$\chi 2$ test (3) = 48.245, P<00.1	Rejected
H2	Peer pressure has a positive relationship with ongoing smoking among young adults.	$\chi 2$ test (3) = 63.039, P<00.1	Rejected
H3	Social-economic disadvantage has a positive relationship with ongoing smoking among young adults.	$\chi 2$ test (4) = 80.477, P<00.1	Rejected
H4	Emotional stress has a positive relationship with ongoing smoking in young adults.	$\chi 2$ test (4) = 43.147, P<00.1	Rejected
H5	The habit of smoking has a positive relationship with ongoing smoking in young adults.	$\chi 2$ test (4) = 37.260, P<00.1	Rejected
H6	Addiction has a positive relationship with ongoing smoking in young adults.	$\chi 2$ test (4) = 61.867, P<00.1	Rejected
H7	Pictorial health images and text warnings on cigarette packets have a positive relationship with ongoing smoking in young adults.	$\chi 2$ test (3) = 6.189, P>0.05	Accepted
H8	Plain packaging on cigarette packets has a positive relationship with ongoing smoking in young adults.	$\chi 2$ test (3) = 14.065, P<00.1	Rejected
H9	Smoke-free policies have a positive relationship with ongoing smoking in young adults.	$\chi 2$ test (4) = 30.947, P<00.1	Rejected
H10	A tax increment has a positive relationship with ongoing smoking in young adults.	$\chi 2$ test (4) = 30.947, P<00.1	Rejected
H11	Quitline telephone support has a positive relationship with ongoing smoking in young adults.	$\chi 2$ test (3) = 1.434, P>0.05	Accepted

4.10 Conclusion

The purpose of this study was to reveal the answers to the following questions:

1. Why do young adult smokers continue with smoking despite the negative health consequences?
2. What are the attitudes of young adult smokers towards anti- smoking initiatives in Australia?
3. Do anti-smoking initiatives in Victoria, Australia effectively discourage young adult smokers from smoking?

This study developed a set of hypotheses stemming from these questions. The key findings relating to these hypotheses are that:

- Despite the prevalence of anti-smoking initiatives, 100 respondents reported that they had no intention to quit. On the other hand, 128 respondents (56.1%) planned to quit. According to most participants, anti-smoking campaigns influenced young smokers to quit (Gravely, Cummings, et al. 2021a).A significant percentage of participants (50.8%) indicated that they were not affected by anti-smoking advertisements.
- A majority of respondents (90.7%; 116) indicated that their smoking habits were central to their identity (Callaghan et al. 2021).
- Most respondents (88.3%; 113) indicated that they were addicted to smoking (Debenham et al. 2021).
- Most respondents (86.7%; 111) agreed with the statement that ‘There is little the average smoker can do to stop their smoking habit’.
- There is a favourable and significant association between habit and intention to continue smoking with $\chi 2$ test (4, N = 228) = 74.195, P<0.001, indicating that habitual smoking plays a key role in young adult smoking behaviour (Ray et al. 2020).
- Most respondents (90.7%; 116) and a high Cramer's V value of 0.631 indicated that young smokers felt that smoking improved their self-image in front of their peers (Callaghan et al. 2021).
- Most respondents (91.4%) contended that their peers significantly influenced their smoking behaviour, with a Cramer’s V impact size of 0.526(Callaghan et al. 2021).

- More than half (57.8%; 96) of respondents strongly agreed with the sentiment that smoking helps them forget about their daily problems (Mounir et al. 2021).
- Most (83.6%; 107) respondents indicated that smoking helps keeps them stress free. A medium impact size of 0.404 Cramer's V value was observed (Mounir et al. 2021).
- Most (92.2%; 118) respondents indicated a willingness to switch to a more affordable cigarette brand to accommodate the rising price of cigarettes (Kong & King 2021). The outcome was further supported by a large Cramer's V value of 0.631.
- There was no correlation between borrowing cigarettes from friends or relatives when smokers could not afford to buy cigarettes and their ongoing smoking.
- Question 13, which investigates the impact of plain packaging on young adult smoking behaviour, showed a minor Cramer's V = 0.248, indicating that the null hypothesis was rejected (Eijk & Yang 2022).In Question 14, 'I have intention to quit smoking', with $\chi 2$ test (4, N = 228) = 4.115, P>0.05) of freedom points contradicted the null hypothesis. 'The health advertisements on plain packaging are a reliable source of information' refuted the null hypothesis and is thus correct.
- There was no significant relationship between the dependent variable (Q28) and the independent variable (Q15) on 'Most health images shown on the cigarette packages are not believable'; the null hypothesis was correct (Eijk & Yang 2022) as evidenced by $\chi 2$ test (3, N = 228) = 6.189, P>0.05).
- In Question 16, health warnings on cigarette packs providing information of possible health dangers were found to be an effective tool in discouraging young adults from continuing to smoke (Gravely, Cummings, et al. 2021b). This is determined by a non-parametric $\chi 2$ test (4, N = 228) = 45.697, P<0.001), with a Cramer's V effect size of 0.448.
- Participants felt that the government's main reason for increasing tobacco prices was to increase the tax revenue. This was evidenced by a substantial difference between the real and predicted distributions (75.0 %; 96), suggesting a positive association between the two categorical variables in Question 17(Gravely, Cummings, et al. 2021b).

- Smoke-free policies were reported to improve or change the social norms around smoking. Young smokers felt that the Australian government should implement more severe smoke-free policies to discourage smoking. (Gravely, Cummings, et al. 2021b).
- Analysis of Question 19 indicated a strong correlation (χ^2, P<0.001) between the dependent variable (Q28) and the independent variable (Q19), indicating that smoke-free policies reduce young smokers' intention to continue smoking. (Gartner et al. 2021).
- There was a non-significant $\chi 2$ test in Question 20 against the dependent variable (Q28), indicating that young adult smokers paid little attention to Quit Victoria advertisements (Gravely, Cummings, et al. 2021a).
- Analysis of Question 21 showed a non-significant $\chi 2$ measure (3, N = 228) = 1.434, p=0.698), indicating that Quit Victoria advertisements did not strengthen young smokers' motivation to quit (Gravely, Cummings, et al. 2021a).
- Of eleven hypotheses, nine (H1-H6 and H8-10) are found to be supportive.

4.11 Factor Analysis

In general, factor analysis is a technique that reduces mass data into a smaller data set, allowing the researcher to identify any hidden pattern, pattern overlapping, and the characteristics of those patterns (Cokluk, Sekercioglu & Buyukozturk 2010). It is important to assess the appropriateness of data for factor analysis to carry out the analysis.

4.11.1 Factor Analysis using Principal Component Analysis Method (PCA)

PCA is a statistical dimension-reduction method that helps reduce a large data set of variables into a smaller one while still containing most of the information in the large data set (Cokluk, Sekercioglu & Buyukozturk 2010).

In this study, Kaiser–Meyer–Olkin (KMO) and the Bartlett test of sphericity were employed to evaluate how suitable the data is for factor analysis and to measure sampling adequacy for each variable (Cokluk, Sekercioglu & Buyukozturk 2010). According to KMO, if the value is lower than 0.50 it is considered unsuitable for factor analysis (Comrey & Lee 2013). Field (2009) notes that 0.50 should be the threshold limit for the KMO test, and if the value is lower than 0.50 the data set cannot be factorised. In this regard, it is expected that the Barlett test should be of significant and the KMO test is expected to be larger than 0.50.

In this study, KMO value was reported at 0.859 (Table 4.30). This indicates that the value for the sample size is 'good' for factor analysis (Cokluk, Sekercioglu & Buyukozturk 2010). In addition, the value showed in Bartlett test of sphericity was significant, where chi-square (χ^2 (66) = 748.140, $p < 0.01$).

Table 4.31 illustrates the Cronbach's Alpha coefficient of internal consistency at 0.732, indicating that the reliability of the data was relatively high. In addition, Büyüköztürk (2009) states that the factor loading is sufficient if it is 0.70 or higher. In this context, the findings revealed that the data has a multivariate normal distribution and there is a relationship among the variables that is suitable for factor analysis.

Table 4.30 KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.859
Bartlett's Test of Sphericity	Approx. Chi-Square	748.140
	df	66
	Sig.	.000

Table 4.31 Case Processing Summary

		N	%
Cases	Valid	228	100.0
	Excluded [a]	0	.0
	Total	228	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
0.723	11

4.11.2 Finding Out the Factor Pattern

To find out the factor pattern, the principal component analysis (PCA) was employed as the factor extraction method, with varimax used as the rotation method. Second, eigenvalues and percentage of variance were determined (Comrey & Lee 2013). Table 4.32 shows that there were two components found to have eigenvalues greater than 1. Factor 1 exhibits 36.518% of the cumulative variance, while factor 2 revealed 10.668%.

Table 4.32 Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%
1	4.382	36.518	36.518	4.382	36.518	36.518	4.11	34.254	34.254
2	1.28	10.668	47.186	1.28	10.668	47.186	1.552	12.932	47.186

Extraction Method: Principal Component Analysis

In the factor pattern matrix, it was evident that all the factors have significant positive relationship with each other except Q13 and Q20, which exhibit weak and negative relationships (Table 4.33). Therefore, these two negative items were excluded from the factor analysis to justify the model.

Table 4.33 Rotated Component Matrix

	Component	
	1	**2**
Q3	0.45	-0.317
Q8	0.683	-0.091
Q11	0.779	-0.138
Q10	0.516	-0.066
Q5	0.657	-0.093
Q4	0.711	-0.074
Q15	0.742	-0.006
Q13	-0.118	0.765
Q18	0.468	-0.379
Q17	0.558	-0.149
Q20	-0.004	0.806

Extraction Method: Principal Component Analysis.; Rotation Method: varimax.; a. Rotation converged in 3 iterations.

4.11.3 Communalities of Variables

Communality refers to the degree to which a variable correlates to all other variables (Comrey & Lee 2013). The communality value is a decisive factor to determine whether to include or exclude a variable. In this study all variables have communality values > 0.30, except for H4 (Q10), which has a value of 0.271 (Table 4.34). When the communality value is small, this implies that the variable has nothing in common with the other variables and is probably an exclusion object. In general, a rating over 0.5 is recommended. Osborne, Costello and Kellow (2008) assert that a value above 0.4 is reasonable during exploratory factor analysis (EFA), while Child (2006) argues that values under 0.2 should be abandoned.

Table 4.34 Communalities of Variables

Hypothesis/Question	Initial	Extraction
H1 (Q3)	1.000	0.302
H2 (Q8)	1.000	0.474
H3 (Q11)	1.000	0.626
H4 (Q10)	1.000	0.271
H5 (Q5)	1.000	0.440
H6 (Q4)	1.000	0.511
H7 (Q15)	1.000	0.551
H8 (Q13)	1.000	0.599
H9 (Q18)	1.000	0.362
H10 (Q17)	1.000	0.334
H11 (Q20)	1.000	0.650

Extraction Method: Principal Component Analysis

4.12 Binomial Regression Analysis

Binomial regression (also known as binary regression) is one of the most common types of regressions used to identify a relationship between items and probability of particular outcome (Neuman 2011); it predicts a dichotomous dependent variable based on one or more continuous or nominal independent variables, where either the event happens (1) or the event does not happen (0). In this study, it is either young smokers intend to continue smoking (1) or do not intend to continue smoking (0).

The aim of this analysis is to find the answer to the research question, 'Why do young adults continue smoking despite the negative health consequences?' This research seeks to explore the factors that constitute ongoing smoking behaviour in young smokers, which could be one of the explanations why the goal of reducing smoking prevalence to 10% by 2018 was not achieved. The negative consequences of smoking are expensive to the national economy. According to a recent survey, work absenteeism due to smoke breaks has lost the Australian economy $388 million (Owen et al. 2018). This study improves the efficiency of anti-smoking initiatives by discovering the reasons why cause young smokers continue smoking despite

evermore aggressive anti-smoking policies. Compared to the current anti-smoking framework, which mainly uses scare tactics to dissuade young adults from smoking, this study enables a more nuanced approach by considering the influence of bio-psychosocial factors such as addiction to nicotine, stress, habit, peer pressure, disadvantages of socio-economic condition and desire to attain social/self-identity, which are significant to consider when developing anti-smoking policies (Elias, Hendlin & Ling 2018; Lupton 1995b; Roditis, Lee & Halpern-Felsher 2016).

Before performing the regression, this study will check the following two model assumptions:

1) Independent variables should not show multicollinearity, where multicollinearity refers to two or more independent variables being highly correlated with one another.

In this study all variables (Table 4.35) possessed Variance Inflation Factor (VIF) <5, where VIF is used to assess how much the variance of an estimated regression coefficient increases if predictors are correlated. A VIF between 5 and 10 indicates high correlation, which that may be problematic (Field 2009).

Table 4.35 Collinearity Statistics Describing Tolerance and VIF

Model variables	**Collinearity Statistics**	
	Tolerance	**VIF**
Q1	0.467	2.14
Q2	0.566	1.767
Q3	0.73	1.37
Q4	0.484	2.067
Q5	0.624	1.602
Q6	0.597	1.676
Q7	0.522	1.916
Q8	0.58	1.725
Q9	0.64	1.562
Q10	0.64	1.561
Q11	0.465	2.152
Q12	0.743	1.346
Q13	0.648	1.544
Q14	0.733	1.364
Q15	0.671	1.49
Q16	0.534	1.873
Q17	0.692	1.446
Q18	0.694	1.442
Q19	0.691	1.448
Q20	0.729	1.371
Q21	0.738	1.356

a. Dependent Variable: Q22

2) The sample size should be large, and normality of data should be present

In this study, there is no violation of normality, sample size and standard errors (Figure 4.26). In addition, there no violations in the deviance residual plot (Figure 4.27), where deviance residual refers to how well the response is predicted by the model when the predictors are included.

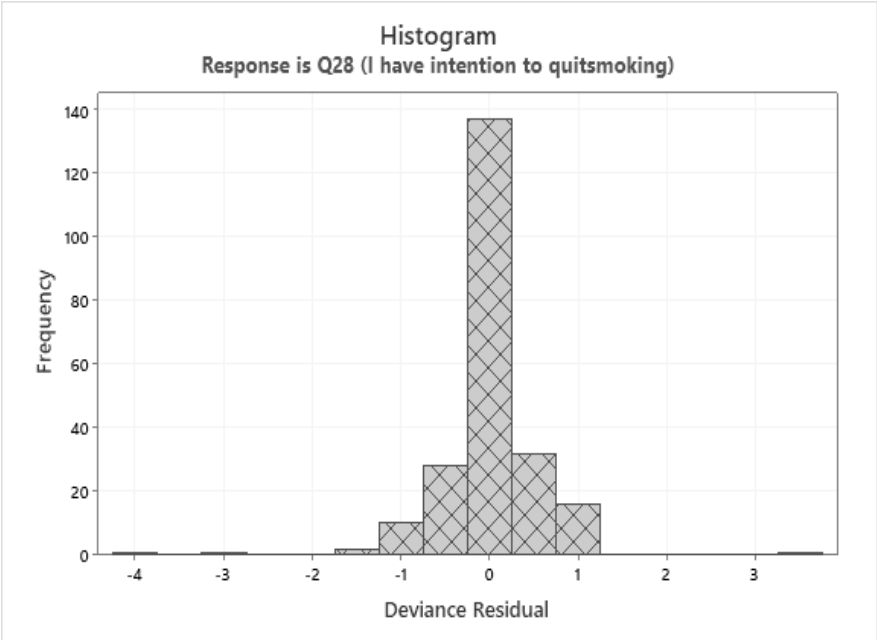


Figure 4.26 Histogram of Binomial Logistic Regression

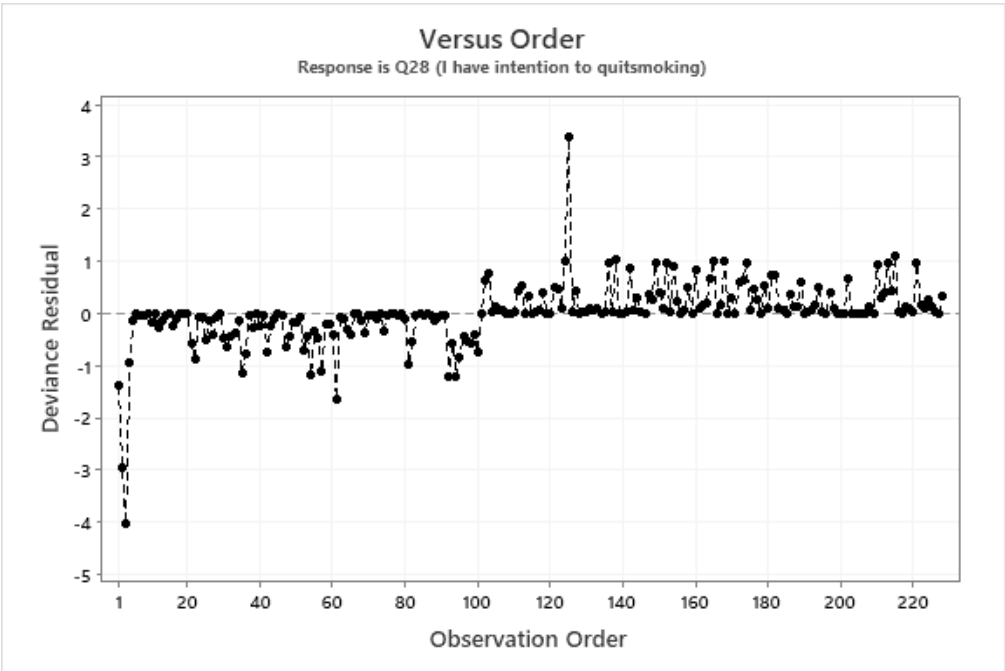


Figure 4.27 Deviance Residual Plot of Binomial Logistic Regression

4.12.1 Model Specifications

In this study, all variables were included in the regression model, and no insignificant cases were reported (Table 4.36). Similarly, the encoding of dependent variables was observed. The developed model was statistically justifiable: $\chi 2$ (5, N=228) = 230.53 P<0.001 (Omnibus Tests of Model Coefficients**)** and exhibiting the dependent and independent variables. The predictor variables explained the variation in the dependable variable to the extent of 85.3% through Nagelkerke R Square (Table 4.36). In term of predictability, a percentage of correctness of 96.9% was obtained, as evidence in the Classification Table under Table 4.36. A full model encompasses the beta coefficient, standard error (S.E.), Wald test (that is similar to $\chi 2$ test), degree of freedom (df), significance level and Exp(B) (odds ratio), as shown in Table 4.37. In general, this can be equated as:

Y= X1 0.556+X2 0.106+X3 1.449+ X4 0.776+ X5 0.762 + X6 1.236 + X7 1.122+ X8 0.956+ X9 1.083 + X10 0.71 + X11 1.121 + X12 0.216 – X13 -0.666 + X14 -0.276 + X15 -0.525 + X16 -0.572 + X17 -0.621 +X18 0.203 + X19 0.018 + X20 0.043 + X21 0.895.

R^2=85.3% (Nagelkerke 1991)

Table 4.36 Binary Multiple Regression Parameters

Case Processing Summary			**N**	**Percent**
	Selected Cases	Included in Analysis	228	100
		Missing Cases	0	0
		Total	228	100
	Unselected Cases		0	0
	Total		228	100

Omnibus Tests of Model Coefficients		**Chi-square**	**df**	**Sig.**
Step 1	Step	230.53	21	0
	Block	230.53	21	0
	Model	230.53	21	0

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	82.097[a]	0.636	0.853

Classification Table

			Predicted		
	Observed		Q22		Percentage
			0	1	Correct
Step 1	Q22	0	94	6	94
		1	1	127	99.2
	Overall Percentage				96.9

Table 4.37 Model Parameters Showing Beta Coefficient, S.E, Wald test, df, p-value and Exp(B)

Questions		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Q1	0.556	0.44	1.598	1	0.206	1.743
	Q2	0.106	0.295	0.13	1	0.718	1.112
	Q3	1.449	0.481	9.072	1	0.003	4.259
	Q4	0.776	0.448	2.992	1	0.084	2.172
	Q5	0.762	0.443	2.961	1	0.085	2.143
	Q6	1.236	0.468	6.982	1	0.008	3.442
	Q7	1.122	0.407	7.587	1	0.006	3.072
	Q8	0.956	0.516	3.424	1	0.064	2.601
	Q9	1.083	0.415	6.832	1	0.009	2.955
	Q10	0.71	0.426	2.78	1	0.095	2.035
	Q11	1.121	0.425	6.95	1	0.008	3.067
	Q12	0.216	0.518	0.173	1	0.677	1.241
	Q13	-0.666	0.451	2.175	1	0.14	0.514
	Q14	-0.276	0.353	0.613	1	0.434	0.759
	Q15	-0.525	0.425	1.529	1	0.216	0.591
	Q16	-0.572	0.437	1.717	1	0.19	0.564
	Q17	-0.621	0.403	2.367	1	0.124	0.538
	Q18	0.203	0.368	0.306	1	0.58	1.226
	Q19	0.018	0.418	0.002	1	0.965	1.018
	Q20	0.043	0.365	0.014	1	0.907	1.044
	Q21	0.895	0.474	3.566	1	0.059	2.448
	Constant	-33.759	6.176	29.875	1	0	0

a. Independent variable(s) in step 1: Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16, Q17, Q18, Q19, Q20, Q21.

With regard to the influence of various independent variables on dependent variables based on beta coefficient values, Figure 4.28 indicates that independent variables such as Q3, Q6, Q7, Q11, Q9, Q8, Q21, Q4, Q5, Q10, Q1, Q12, Q18, Q2, Q20 and Q19 impacted positively in ascending order, whereas Q13, Q17, Q16, Q15 and Q14 impacted negatively, in descending order. In other words, the five most positively influential variables based on beta coefficients values were Q3, Q6, Q7, Q11, and Q9 ($P<0.05$), whereas the 5 most negatively influential dependent variables were Q13, Q17, Q16, Q15, and Q14 ($P>0.05$).

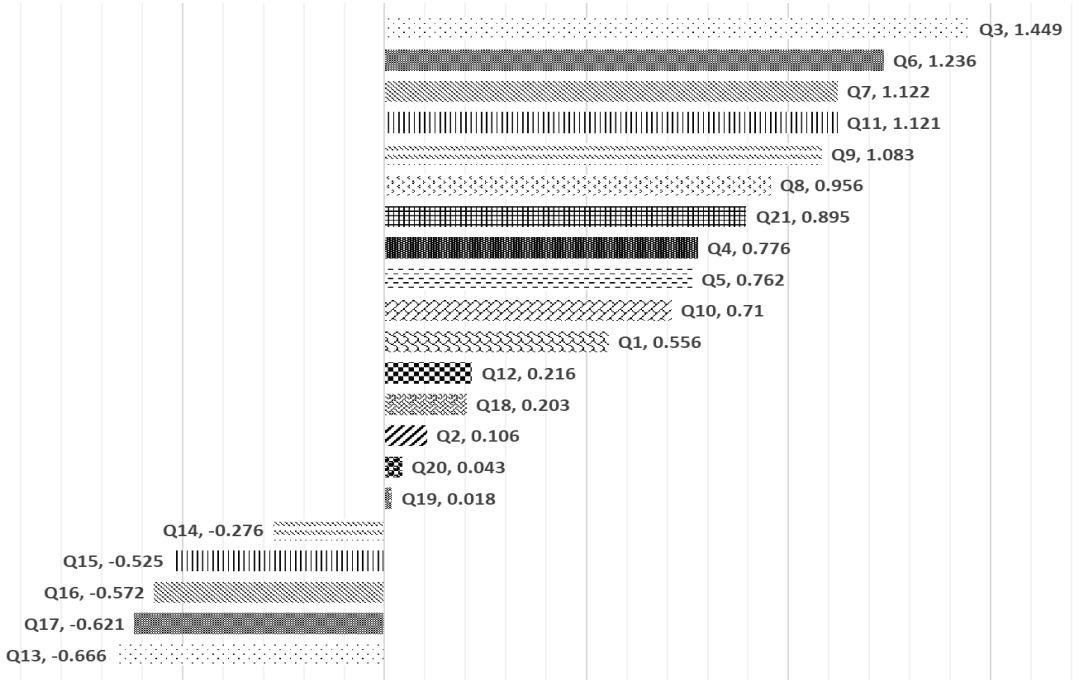


Figure 4.28 The Identification of Various Independent Variables on Dependent Variable Based on Beta Coefficient Values

4.12.2 Salient Findings

Based on inertial statistical outcomes, Q7, Q11, Q6, Q8 and Q4 are significant variables in relation to Cramer's value. The most positively influential variables based on Beta coefficients (Binary regression model) are Q3, Q6, Q7, Q11, and Q9 ($P<0.05$). Thus, it can be concluded that Q6, Q7 and Q11 are the most important variables in contributing to ongoing cigarette smoking in young adults.

In terms of inertial statistics, some variables are found to be insignificant (Q1, Q2, Q12, Q15, Q20, Q13, Q17). These are also negatively correlated according to the regression model. These findings fulfill the second objective in this study, where the factors contributing to ongoing smoking in young adults were found to be Q6, Q7 and Q11. In addition, the findings also provide the following answers the first research question: 1) young adult smokers in general continue smoking because of their habitual purchase of cigarettes and because they want to enhance their self-image among their friends/peers, and 2) socio-economically disadvantaged young adult smokers continue smoking by switching to cheaper brands.

4.13 Reduced Logistic Regression

The aim of this reduced logistic regression analysis based on the binary regression model outlined above is to refine the model to classify the most relevant variables that contribute to ongoing smoking among young adults. A total of 228 observations were included in this study with 'no' for '0' and 'yes' for '1' in the dependent variable

coding. A non-significant Breusch-Pagan Test for Heteroskedasticity shows that the error terms are normally distributed (Table 4.38).

Under the classification table (Table 4.39), 128 respondents selected 'Yes', while 100 selected 'No', resulting in an overall corrected percentage of 55.9 %. The intercept-only model appears as ln(odds) = .239 under 'Variables in the Equation' in Table 4.39. As 128 respondents agreed to stop smoking and 100 decided to continue smoking, the probability of quitting smoking is estimated to be 1.270. Since the complete model (Omnibus Tests of Model Coefficients in Table 3.40) includes all the chosen independent variables except the null model (Block 0), each individual is granted the same chance of deciding the question. The dependent variable (Q22) is used as a response variable in the analysis output. The Chi-Square of 179.895 on 12 df from Omnibus Tests of Model Coefficients is important at P<.001. This is a test of the null hypothesis to indicate that predictor component in the model has not substantially improved our capacity to forecast the participants' decisions. The -2 Log Likelihood statistic is 131.575, as shown in the Model Summary section, indicating how well the model forecasts decisions: the lower the metric, the stronger the model. The Cox & Snell R^2 can be viewed in the same way as R^2 in a multiple regression, but it cannot exceed one. The maximum of the Nagelkerke R^2 is one. According to the Nagelkerke R Square, the predictors will account for 73.3% of the variance in the outcome component. The model will not suit the data if the p-value of the Hosmer and Lemeshow Test is <.05. The Hosmer and Lemeshow Test has a *p*-value of >.05 (Hosmer and Lemeshow Test is under Table 4.40**),** indicating that the model suits the data well and can be further processed for predicting purposes. According to the Classification table, our forecast is accurate at 88.5%, whereas it is only 55.9% for the model with an intercept only.

Table 4.41 shows the logistic regression results for the prediction of attempting to quit smoking. Self-identity (OR=3.092, C.L: 1.705-5.604), addiction (OR=2.795, C.L: 1.659-4.707), peer pressure (OR=2.618, C.L: 1.471-4.659), impact of socio-economic disadvantage on brand switching (OR=2.607, C.L: 1.467-4.659), and habit (OR=1.992, C.L: 1.123-3.533) are the most strongly associated variables to the intention to continue smoking. However, certain factors such as price increment, smoke- free policies, health images perceived as unrealistic, age, gender, and country of origin, are not associated to intention to continue smoking. On the other hand, there is no gender differences in young smokers' behaviour and no unusual smoking habits in different sub-populations.

Our research findings are consistent with those of recent study by García-Rodríguez et al. (2013), who reported that among the 25.9% of participants that were current smokers, 31% were men and 21.2% were women. Their study also found that smoking prevalence decreased with age (multivariable odds ratio [OR] for 65 years, 0.31; 95 % confidence interval [CI], 0.27–0.36), level of education (OR for low vs high, 1.32; 95 % CI, 1.17–1.48), and self-reported household economic status (OR for low vs strong, 2.05; 95 % CI, 1.74–2.42), regardless of age. However, other studies (Jiang et al. 2017; Rissel, McLellan & Bauman 2000) present contrary findings. (Girgis et al. 2009), for example, found that half of Australia men born in China or Vietnam were smokers, while almost one-third of Arabic-speaking respondents in New South Wales were smokers.

Table 4.38 Case Processing Summary

Unweighted Cases[a]		**N**	**Percent**
Selected Cases	**Included in Analysis**	228	100
	Missing Cases	0	0
	Total	228	100
Unselected Cases		0	0
Total		228	100

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	**Internal Value**
No	0
Yes	1

Breusch-Pagan Test for Heteroskedasticity[a,b,c]

Chi-Square	df	Sig.
0.032	1	0.859

a. Dependent variable: Q28 I have intention to quit smoking

b. Tests the null hypothesis that the variance of the errors does not depend on the values of the independent variables.

c. Predicted values from design: Intercept + Q4 + Q5 + Q3 + Q10 + Q11 + Q8 + Q17 + Q18 + Q15 + Q22Age + Q23Gender + Q25CountryofOrigin

Table 4.39 Block 0: Beginning Block

Classification Table[a,b]

	Observed		Predicted Q28 I have intention to quit smoking		Percentage Correct
			No	Yes	
Step 0	Q28 I have intention to quit smoking	No	0	100	0
		Yes	0	127	100
	Overall Percentage				55.9

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	0.239	0.134	3.196	1	0.074	1.27

Table 4.40 Block 1: Method = Enter

Omnibus Tests of Model Coefficients		**Chi-square**	**df**	**Sig.**
Step 1	Step	179.895	12	0
	Block	179.895	12	0
	Model	179.895	12	0

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	131.575[a]	0.547	0.733

a. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	9.837	8	0.277

Classification Table[a]

	Observed		Predicted Q28 I have intention to quit smoking		Percentage Correct
			No	Yes	
Step 1	Q28 I have intention to quit smoking	No	82	18	82
		Yes	8	119	93.7
	Overall Percentage				88.5

a. The cut value is .500

Table 4.41 Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1[a]	Q4_Smoking_addictive	1.028	0.266	14.928	1	0	2.795	1.659	4.707
	Q5_Smoking_habitual	0.689	0.292	5.555	1	0.018	1.992	1.123	3.533
	Q3_Smoking_self-identity	1.129	0.303	13.83	1	0	3.092	1.705	5.604
	Q10_Smoking_stress free	0.82	0.271	9.126	1	0.003	2.27	1.334	3.865
	Q11_Disadvantaged social economics brand switching	0.958	0.293	10.669	1	0.001	2.607	1.467	4.632
	Q8_Smoking_peer pressure	0.962	0.294	10.709	1	0.001	2.618	1.471	4.659
	Q17_Price increment tax revenue	-0.388	0.264	2.156	1	0.142	0.678	0.404	1.139
	Q18_Smoke free policies	0.519	0.258	4.03	1	0.045	1.68	1.012	2.788
	Q15_Health images unbelievable	-0.087	0.247	0.125	1	0.724	0.916	0.564	1.488
	Q22Age	-0.219	0.297	0.543	1	0.461	0.804	0.449	1.437
	Q23Gender	0.465	0.482	0.929	1	0.335	1.592	0.619	4.098
	Q25Country of Origin	0.044	0.093	0.226	1	0.635	1.045	0.871	1.253
	Constant	-22.958	3.811	36.297	1	0	0		

a. Variable(s) entered on step 1: Q4_Smoking_addictive, Q5_Smoking_habitual, Q3_Smoking_self-identity, Q10_Smoking_stress free, Q11_Disadvantaged social economics brand switching, Q8_Smoking_peer pressure, Q17_Price increment tax revenue, Q18_Smoke free policies, Q15_Health images unbelievable, Q22Age, Q23Gender, Q25Country of Origin.

4.13.1 Conclusion

In summary, this study confidently concludes that self-identity, addiction(Debenham et al. 2021) peer pressure(Callaghan et al. 2021) socio-economic disadvantage (Kong & King 2021) and habit are the variables most strongly associated to young adults' intention to continue smoking. However, certain factors, such as incremental price increases, smoke-free policies(Rashiden et al. 2020) shocking health images, age, gender, and country of origin(Eijk & Yang 2022), are not associated to intention to continue smoking. While regression analysis may be an effective technique for evaluating the result of a set of predictors, the issue remains that even if the equation involves non-significant variables, R^2 may increase. Therefore, a researcher cannot completely evaluate the significance of an independent variable based on R^2 increment (Pedhazur & Kerlinger 1982).

This constraint is solved using the structural equation model (SEM), where the confirmatory components identify the structural equations. Confirmatory factor analysis frameworks (CFA) are also often used for several other applications. CFA studies may be used to evaluate prototypes for validation, scaling, and invariance estimation. Measurement error and structural error are accountable in each section. Unlike path analysis, which only admits functional mistakes, SEM analyses all types of errors. Multiple SEM indicators allow for scrutinising complex relationships between latent variables without being corrupted by calculating errors in indicators

(Mehta & Neale 2005). The model will be accountable for design mistakes in this situation. Multiple exogenous and endogenous variables, like the causal relationship of endogenous variables, may be measured simultaneously in a single step. Therefore, the next step in analysis will employ SEM with a special emphasis on attribute, subjective norms and perceived behavioural control.

4.14 Theory of Planned Behaviour as the Model for Behavioural Changed in Formulating Tobacco Control Strategies in Young Smokers

Young smokers' smoking behaviour is influenced by their attitude, subjective norms, and perceived behavioural control. The Theory of Planned Behaviour (TPB) is employed to evaluate young smokers' ongoing smoking. Structured self-administered questionnaires were used to gather data from young smokers on Victoria University campuses for this cross-sectional analysis on demographics, smoking intentions, attitude, subjective norms, and perceived behavioural control. To discuss the study's second goal, the researcher sought to identify and quantify the influences of latent variables and the relationships between various hypotheses that contribute to smoking among young adults.

4.14.1 Context Appropriateness

It is well documented that cigarette smoking is largely introduced during adolescence (Breslau, Kilbey & Andreski 1991; Cooper & Kohn 1989; de la Peña et al. 2015; Diemert et al. 2013; Johnson & Hoffmann 2000; Wu & Anthony 1999) and that the habit of smoking increases over time (Mbongwe et al. 2017). For these reasons, prevention and intervention during early adulthood are critical (Orlando et al. 2004).

It is now well accepted that young adults whose parents or friends smoke are themselves more likely to smoke. This correlation is sometimes viewed as evidence of the influence of peers (Kobus 2003). Individuals who are close to smoking peers, regardless of whether they are offered a cigarette, are more likely to smoke. Young adults are also affected by passive (imitation) peer influence (Harakeh & Vollebergh 2013). Therefore, anti-smoking efforts should emphasise prevention of smoking and call for a better understanding of the adverse health impacts of smoking, especially for young adults, who are more impressionable and susceptible to advertising (Pechmann & Reibling 2006). Parents and guardians should share universal principles, instil ethics, and model exemplary behaviour for their children, a practise known as social modelling (Gass & Seiter 2018). This should be used as a preventive technique.

In this study, the hypothesis of predicted acts (Figure 4.29) is used to explain smoking behaviour in young smokers. TPB was established by Icek Ajzen to model human behaviour (Ajzen 1991a). The TPB takes into consideration perceived behavioural influence (PBC) in addition to behaviours, subjective norms, and intentions. TPB is a framework that defines essential behaviour, norms, and intentions. Smoking interventions could employ TPB to change the beliefs, attitude, subjective norms, or perceived behavioural control of smokers, resulting in a change in their intentions and behaviours (Lin et al. 2017; Montano & Kasprzyk 2015).

Behavioural frameworks such as the TPB involve a computational framework that enables policy makers and legislators to identify the basic characteristics that govern smokers' behaviour. This could help them design effective interventions. If main parental and peer influences (subjective norms) affecting adolescent's behaviour and attitudes toward cigarette smoking are developed, preventive interventions may be effective. According to Ajzen (1991b), intentions often capture the motivational elements that influence individual actions. In general, an individual who has a strong intention to participate in an action is more likely to act on that intention and perform better than someone who does not. The term 'perceived behavioural control' refers to an individual's expectations regarding their ability to control behaviour, which involves internal capabilities for refusing an external constraint on behaviour. Unfavourable attitudes regarding smoking correlate to lower smoking rate in young adults (Lee et al. 2017; Robinson et al. 2005).

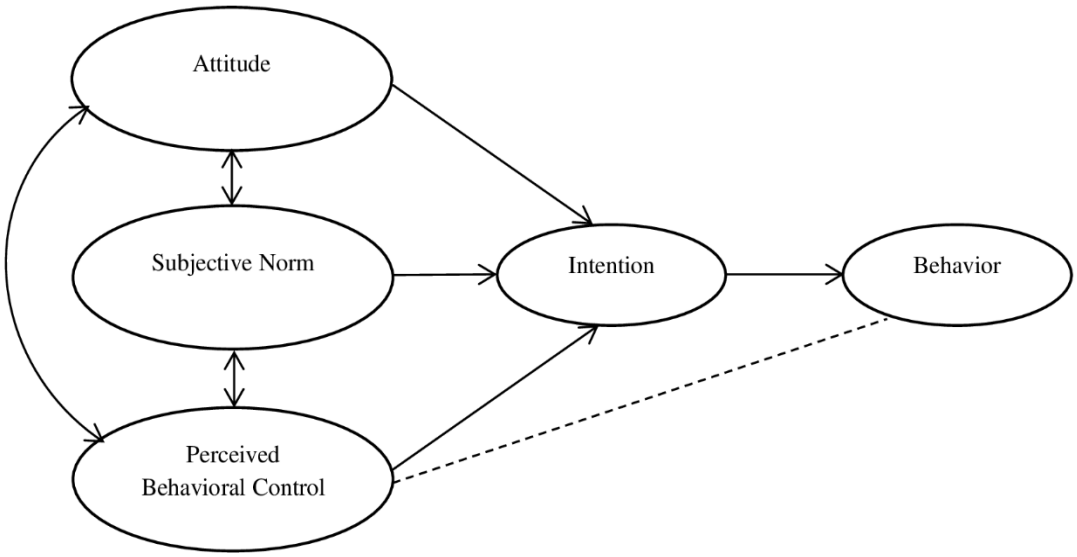


Figure 4.29 Theory of Planned Behaviour (Adopted from Ajzen, 1991)

4.14.2 Theoretical Framework

The TPB is a tool to predict human behaviour (Ajzen 1991b); it claims that mindset toward a behaviour, subjective norm, and understanding of behavioural control impact a person's behavioural intent. The first construct in the theory is behavioural intention, which relates to the cognitive stimuli that control behaviour (Ajzen 1991a). The greater the urge to participate in a certain activity, the more likely it is that the behaviour will be carried out. The second construct is attitude towards the action, which corresponds to a person's positive or negative evaluation of a particular behaviour. Attitude comprises a combination of behavioural principles and evaluations of consequences. The third construct is subjective norm, which corresponds to the external duty to practise or refrain from executing a particular behaviour. Subjective norms are a mix of normative ideals and a tendency to follow rules. TPB also includes an aspect called perceived behavioural control, which refers to people's expectations about how easy or difficult it is to carry out an activity.

4.14.3 Methodology

Young smokers' behaviours, subjective norms, perceived behavioural influence, and smoking intentions were investigated in a cross-sectional sample. The cross-sectional analysis allowed for the calculation of prevalence at a single point of time. Data was collected and relationships between the predictor variables and active smoking were revealed. A total of 228 students were randomly selected using multistage sampling. Self-administered questionnaires were used to gather data. The IBM SPSS version 26 statistical instruments were used to enter and analyse the data. The researcher used informative statistics (frequency and cross tabulation) and the Chi-square statistical test to find associations between results and variables. Path analysis was used to assess the degree of association between the independent variables (attitude, subjective norms, perceived behaviour, and intentions) to the action to continue smoking. In the main trials, Q22 was listed as a dichotomous indicator (Yes vs. No). A *p*-value of less than 0.05 was used to assess statistical significance.

4.14.4 Results

Demographic characteristics

Most participants (42.1%; 96) were in the age range of 22-25, followed by 18-21 (33.3%; 69), and 26-30 (27.6%; 63). This indicates that there was substantial variation in age ranges, as determined by the χ^2 test (2, N = 228) = 7.890, $P<0.05$ (Rolke & Gongora 2021) (Table 4.42).

Table 4.43 shows that there was an equal distribution of men and women. Australian/permanent citizens comprised the majority of the population (52.2%; 119), with foreigners comprising the rest (47.8%; 109). Among foreigners, the largest population was from China (19.7%; 45), followed by rest of Asia (14.0%; 32), India (13.6%; 31), the rest of Europe (12.3%; 28), Italy (11.4 %, 26), and the remaining countries were in the range of >3 % to 7 %.

Most participants worked in the hospitality industry (29.8%; 68), followed by office workers (28.5%; 65), manufacturing or industrial workers (21.1%; 48), and others (1-11%). Most participants smoked 'Less than a pack a day' (43.4 %; 99), followed by those that smoked 'More than a pack a day' (28.1%; 64), participants that smoked 1-2 cigarettes per week, and those that smoked 'At least 5 packs in existence, no longer smoking' (7.9%; 18). About half of those polled (56 %) indicated that they planned to stop smoking, while 44 % indicated they would not stop smoking (see Table 4.43).

Table 4.42 Age as Influenced by Gender

Age Group		**Gender**		**Total**
		Male	**Female**	
18-21	Count	42	27	69
	% within Q22Age	60.90%	39.10%	100.00%
22-25	Count	49	47	96
	% within Q22Age	51.00%	49.00%	100.00%
26-30	Count	23	40	63
	% within Q22Age	36.50%	63.50%	100.00%
Total	Count	114	114	228
	% within Q22Age	50.00%	50.00%	100.00%

Table 4.43 Frequency Distribution of Predictive Variables

Age group	Frequency	Percent	Cumulative Percent
18-21	69	30.3	30.3
22-25	96	42.1	72.4
26-30	63	27.6	100
	228	100	
Gender			
Male	114	50	50
Female	114	50	100
Total	228	100	
Australian/PR			
No	109	47.8	47.8
Yes	119	52.2	100
Total	228	100	
Country of Origin			
Africa	8	3.5	3.5
Asia	32	14	17.5
China	45	19.7	37.3
England	19	8.3	45.6
Europe	28	12.3	57.9
India	31	13.6	71.5
Italy	26	11.4	82.9
New Zealand	14	6.1	89
South America	14	6.1	95.2
Other	11	4.8	100
Total	228	100	
Occupation			
Factory or Industrial	48	21.1	21.1
Hospitality	68	29.8	50.9
Labourer	25	11	61.8
Office worker	65	28.5	90.4
Retired	1	0.4	90.8
Unemployed	15	6.6	97.4
Other	6	2.6	100
Total	228	100	
Smoking Status			
1-2 cigarettes a week	46	20.2	20.2
At least 5 packs in life, no longer smoking	18	7.9	28.1
Less than a pack a day	99	43.4	71.5
Less than a pack a day 1-2 cigarettes a week	1	0.4	71.9
More than a pack a day	64	28.1	100
Total	228	100	
I have intention to quit smoking			
No	100	43.9	43.9
Yes	128	56.1	100
Total	228	100	

Communalities and average variance extracted

Communalities are the proportion of the variable's variance within each factor. In this study, all variables showed communalities value > 0.30, except for H4 (Q10, 0.271), as shown in Table 4.44. The communality value is a decisive factor in factor analysis that determines whether a variable should be included or excluded (Shrestha 2021) When the communality value is small, this suggests that the variable has little in common with the other variables and is probably a target for exclusion. In general, a rating over 0.5 is recommended (Shrestha 2021; Suhr 2006). However, Osborne, Costello and Kellow (2008) suggest that communalities above 0.4 can be considered reasonable in exploratory factor analysis (EFA). Nevertheless, Child (2006) argues that the community value under 0.2 must be excluded.

Average variance extracted (AVE) compares the amount of deviation recorded by a construct due to measurement error; values greater than 0.7 are considered very good, whereas levels ≥ 0.5 are considered satisfactory (Joseph et al. 2010). In this study, the attitude's value obtained for AVE was 0.5458, subjective norms value was 0.6074, and the perceived behavioural control was 0.5382, which are all satisfactory (Table 4.45). In the correlation table (Table 4.46), a close relationship between behavioural variables H1, H2, and H3 and subjective norms variables H2, H3, and H4 and perceived behavioural control variables H7, H9, and H10 is evident (Shrestha 2021).

Table 4.44 Communalities of Variables

Hypothesis/Question	Initial	Extraction
H1 (Q3)	1.000	0.302
H2 (Q8)	1.000	0.474
H3 (Q11)	1.000	0.626
H4 (Q10)	1.000	0.271
H5 (Q5)	1.000	0.440
H6 (Q4)	1.000	0.511
H7 (Q15)	1.000	0.551
H8 (Q13)	1.000	0.599
H9 (Q18)	1.000	0.362
H10 (Q17)	1.000	0.334
H11 (Q20)	1.000	0.650

Extraction Method: Principal Component Analysis.

Table 4.45 Average Variance Extracted

Construct	Average variance extracted (AVE)
Attitude	0.5458
Norms	0.6074
PBControl	0.5382

Table 4.46 Correlation Coefficient Among Instruments of Latent Variables

Attitude	**H1**	**H5**	**H6**	**H2**	**H3**	**H4**	**H7**	**H9**	**H10**	**Intentions to quit smoking**
H1	1.00									
H5	0.275**	1.00								
H6	0.260**	0.312**	1.00							
Subjective Social Norms	H1	H5	H6	H2	H3	H4	H7	H9	H10	Intentions to quit smoking
H2	0.299**	0.390**	0.392**	1.00						
H3	0.324**	0.438**	0.420**	0.465**	1.00					
H4	0.212**	0.271**	0.285**	0.209**	0.373**	1.00				
Perceived behavioural control	H1	H5	H6	H2	H3	H4	H7	H9	H10	Intentions to quit smoking
H7	0.287**	0.336**	0.481**	0.379**	0.482**	0.408**	1.00			
H9	0.266**	0.255**	0.367**	0.238**	0.398**	0.287**	0.273**	1.00		
H10	0.290**	0.383**	0.358**	0.285**	0.256**	0.197**	0.310**	0.196**	1.00	
Intentions to quit smoking	0.433**	0.412**	0.487**	0.479**	0.579**	0.383**	0.434**	0.326**	0.227**	1.00

**. Correlation is significant at the 0.01 level (2-tailed)….Spearman's rho

Model diagnostic characteristics

When researchers collect data from participants within a population, they would like to know whether the patterns of response vary significantly in the group.

Confirmatory Factor Analysis (CFA) is often used to evaluate the invariance of the same factor configuration and model parameter estimates across various groups.(Hox 2021) The understanding of the appropriateness and stability of score analysis allows researchers to make more informed decisions on the usage of instruments. Usually, structural equation modelling (SEM) is used by researchers to assess the potential effect of mediators and moderators (Hoyle 1995).

SEM is a confirmatory data analysis approach in which the researcher can verify the whole theoretical model in a single stage (Chou & Bentler 1995). Researchers use a variety of indices to assess a model's fitness. The findings of numerous pointers in various sample sizes, data types, and sets of appropriateness are critical in determining whether or not a good match happens (Hu & Bentler 1995). Based on the evaluation parameters, the fitness test is a diagnostic criterion to determine if the model is well matched to the data (Alavi et al. 2020)

In this study, the model (Chi-square = 46.024, df=30, N=228) is significant at $P<0.05$, and the CMIN/DF is <5 with a *P*-value of 0.031, as shown in Table 4.47. Other diagnostic functions, such as RMSEA (<0.06), Normed fit index (NFI, >0.90), and Relative fit index (RFI, >0.90), matched the threshold values. Table 4.45 also illustrates the incremental fit index (IFI, >0.95), Tucjer-Lewis index (TLI, >0.95), and comparative fit index (CFI, >0.95). Parsimony-Adjusted Measures >0.60, by arbitrary convention, means a strong parsimonious suit at 0.667, which is sufficient. RMR (0.039) was lower than 0.08 (Hu & Bentler 1995) and GFI was greater than 0.95, whereas the modified goodness of fit index (AGFI) was greater than 0.90.

The Chi-square value was significant ($\chi2 = 46.024$, df = 30, $p <0.05$), the RMSEA was 0.049, and the CFI was 0.976, showing that the model was correct and the results were representative in this study (Browne & Cudeck 1992). Hoelter's vital N (also known as the Hoelter index) in Table 4.47 was used to determine the sufficiency of the sample. According to Hoelter (1983), a sample size is considered sufficient if Hoelter's N is greater than or equal to 200. There are two Ns production, one is at 0.05 and another one is at 0.01 levels of significance, which illustrate the sample size issue. In this analysis, the Hoelter index was deemed appropriate, as it was greater than 200.

In summary, the model satisfied all the necessary scientific criteria and can be used to make predictions with confidence (Figure 4.29). Complete standardised loadings linking individual indicators to a particular construct could be observed (Figure 4.29). As a rule of thumb, standardised loadings should be 0.5 or higher (Shadfar &

Malekmohammadi 2013) and all the items in this study possessed loading factors > 0.5.

Table 4.47 Model Fit Summary Indices

CMIN	**NPAR**	**CMIN**	**DF**	**P**	**CMIN/DF**
Default model	25	46.024	30	0.031	1.534
Saturated model	55	0	0		
Independence model	10	704.156	45	0	15.648
RMSEA	**RMSEA**	**LO 90**	**HI 90**	**PCLOSE**	
Default model	0.049	0.015	0.075	0.506	
Independence model	0.254	0.238	0.271	0	
Baseline Comparisons	**NFI**	**RFI**	**IFI**	**TLI**	**CFI**
	Delta1	**rho1**	**Delta2**	**rho2**	
Default model	0.935	0.902	0.976	0.964	0.976
Saturated model	1		1		1
Independence model	0	0	0	0	0
Parsimony-Adjusted Measures	**PRATIO**	**PNFI**	**PCFI**		
Default model	0.667	0.623	0.65		
Saturated model	0	0	0		
Independence model	1	0	0		
RMR, GFI	**RMR**	**GFI**	**AGFI**	**PGFI**	
Default model	0.039	0.962	0.93	0.525	
Saturated model	0	1			
Independence model	0.341	0.452	0.33	0.37	
HOELTER	**HOELTER**	**HOELTER**			
	0.05	0.01			
Default model	216	252			
Independence model	20	23			

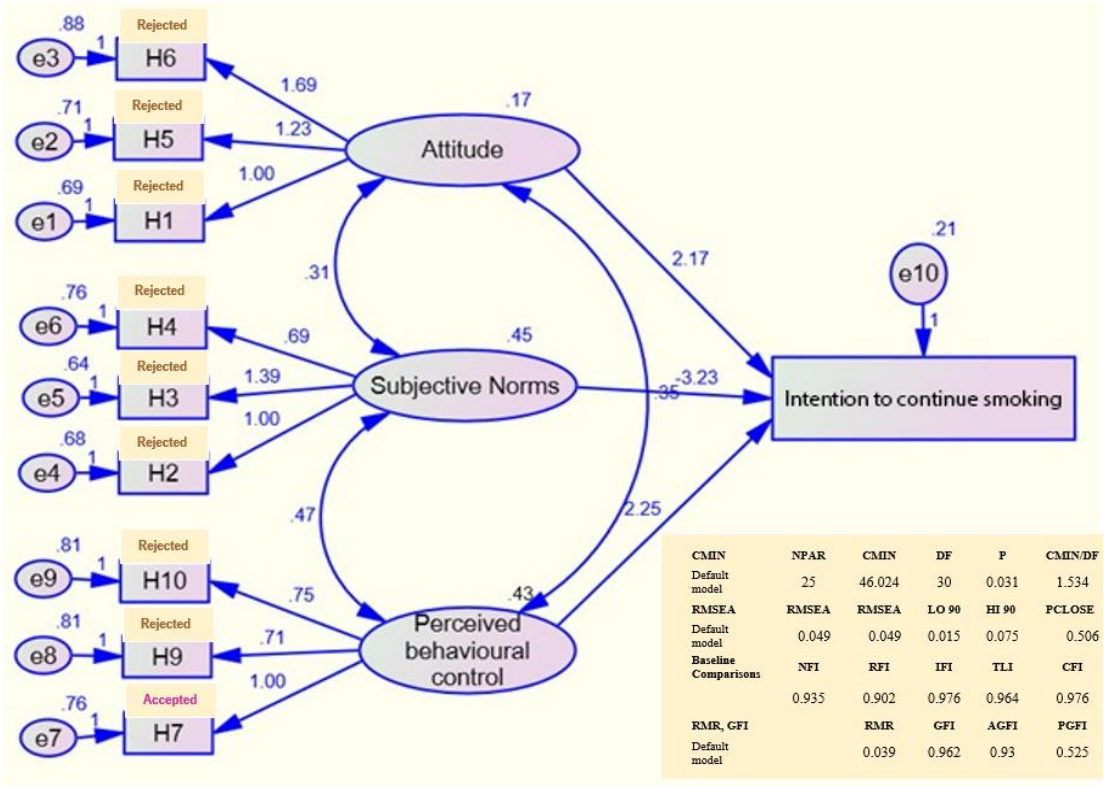


Figure 4.30 Assessment of Latent Variables through SEM as envisaged by Theory of Planned Behaviour

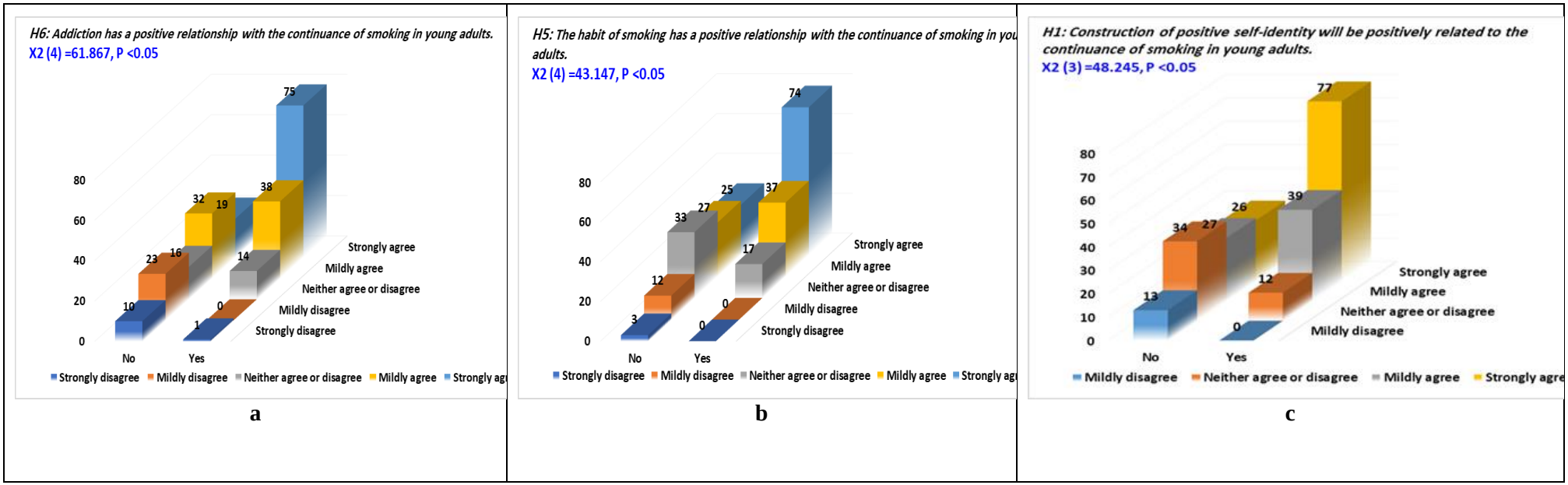
Attitudes

Hypothesis 6 posited that emotional stress had a positive relationship with ongoing smoking in young smokers. Exogenous latent constructs Hypothesis 6 and Hypothesis 5 had a good positive impact on the mediator latent model of attitude, with Hypothesis 6 having the main effect of 1.691 and Hypothesis 5 having the lowest influence of 1.231, all of which were important at P<0.05. As attitude increased by 1, Hypothesis 6 increased by 1.69, while Hypothesis 5 increased by 1.231, indicating that the alternative hypothesis was correct. Hypothesis 1 was taken as a reference (Table 4.48 and Diagram 4.3); it had less than 0.001 chance of having a vital ratio as high as 6.706 in absolute value. In other words, at 0.001, the regression weight for attitude in the prediction of Hypothesis 6 was substantially different from zero (Alavi et al. 2020). Addiction is one of the main factors influencing young adults in their ongoing smoking. A significant $\chi 2$ test (3, N = 228) = 61.867, P<0.001; (Table 4.48, Figure 4.31a) of independence asserted this. This is also well supported by the literature, with Volpp et al. (2009) finding that 70% of smokers desire to quit, but only 2 or 3% succeed in doing so permanently. According to the SEM, as attitude rose by one, Hypothesis 5 improved by 1.231, which was significantly positive at P<0.05.

Regarding Hypothesis 5, a large proportion of participants that refused to quit smoking did not accept or disagreed with the statement 'There is nothing the ordinary smoker can do to avoid the smoking habit' (Figure 4.31b). 86.7% of participants that chose to stop smoking either agreed or strongly agreed with the same statement. The expected number of responses was higher than the real frequency, so the null hypothesis was discarded, $\chi 2$ (4, N=228) = 43.147, P<0.001. For Hypothesis 1, most respondents (90.7%; 39 mildly agree + 77 strongly agree = 116) indicated that their smoking behaviour was central to their self-identity (Figure 4.31c). A Chi-square test statistic showed sufficient evidence that both categorical variables possessed a strong relationship: (3, N=228) = 48.245, P<00.1.

Table 4.48 Regression Weights Along with SE, CR and P-values

Exogenous		**Endogenous**	**Estimate**	**S.E.**	**C.R.**	**P**	**Label**
H1	<---	Attitude	1				
H5	<---	Attitude	1.231	0.2	6.167	***	par_1
H6	<---	Attitude	1.691	0.252	6.706	***	par_2
H2	<---	Norms	1				
H3	<---	Norms	1.385	0.148	9.351	***	par_3
H4	<---	Norms	0.688	0.112	6.15	***	par_4
H7	<---	PBControl	1				
H9	<---	PBControl	0.708	0.11	6.449	***	par_5
H10	<---	PBControl	0.747	0.114	6.529	***	par_6
Q22	<---	Attitude	2.174	13.23	0.164	0.869	par_7
Q22	<---	Norms	-3.229	20.235	-0.16	0.873	par_8
Q22	<---	PBControl	2.251	11.064	0.203	0.839	par_9

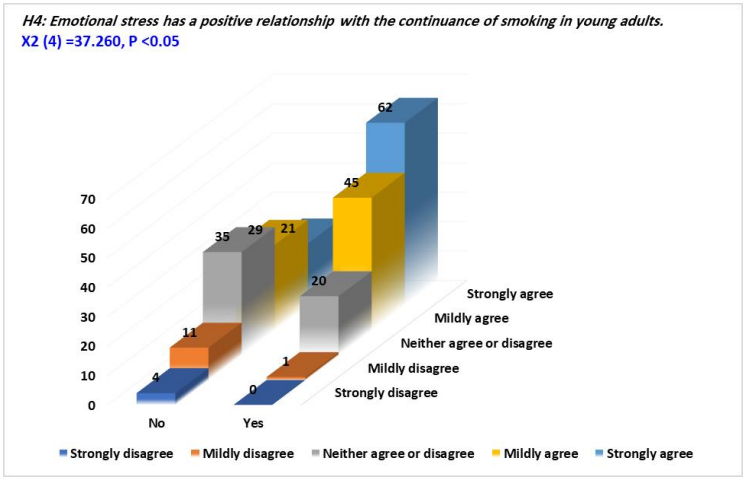


a **b** **c**

Figure 4.31 a-c Components of Attitude Studied in This Research (Figure 4.30a:H6; 4.30b:H5 and 4.30c:H1)

Subjective Norms

Regarding Hypothesis 4, most participants (83.6%; 45 mildly agree + 62 strongly agree = 107) felt that smoking helped people to be stress-free (Figure 4.32a). In the context of an insignificant $\chi 2$ test; (4, N = 228) = 37.26, P>0.05, the null hypothesis was accepted as true. In relation to Hypothesis 3, most respondents (92.2%; 118, mildly agree and strongly agree) indicated that they would switch to cheaper cigarette products in response to price increases (Figure 4.32b). The significant difference in respondents' answers signified that the null hypothesis was false: $\chi 2$ test (4, N = 228) = 80.477, P<0.001. Regarding Hypothesis 2, just over half of respondents (51.6%) strongly agreed that their friends influenced their decision to continue smoking (Figure 4.32c). The two categorical variables interacted strongly, as shown by $\chi 2$ test statistics significant at P<0.05 (4, N = 228) = 63.039. Exogenous latent constructs Hypothesis 3 and Hypothesis 4 seemed to have a substantial effect on the mediator latent framework of subjective norms, where Hypothesis 3 possessed 1.385, Hypothesis 4 possessed 0.688 and Hypothesis 2 with 1.0, all of which were significant at P<0.05 (Table 4.48).



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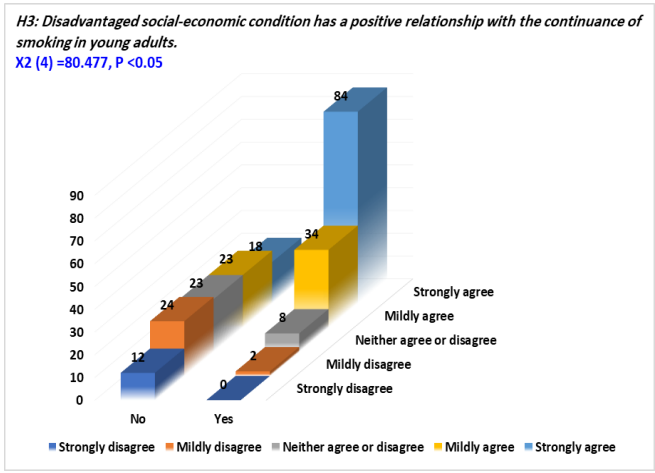

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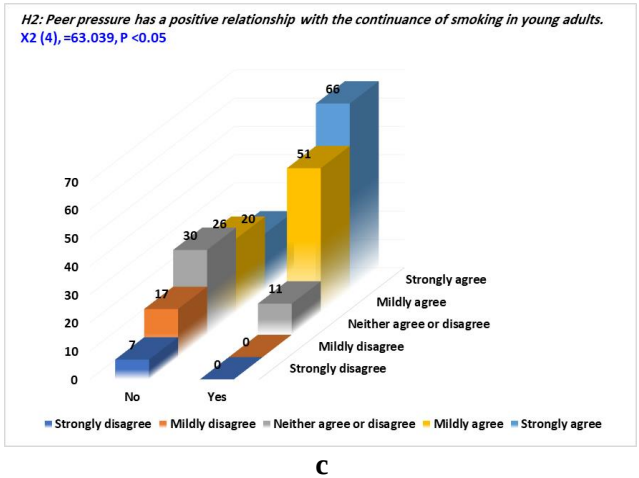


c

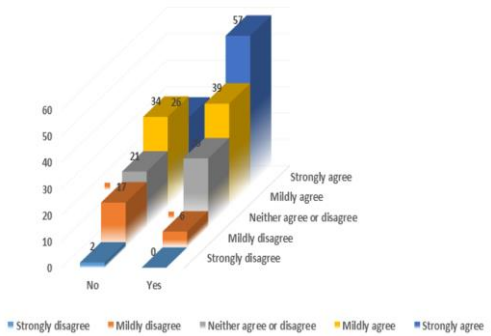
Figure 4.32 a-c Components of Subjective Norms Studied in This Research (Figure 4.31a:H4; 4.31b:H3 and 4.31c:H2)

Perceived Behavioural Control

Participants that responded 'Yes' (75%; 96) showed a major variation in Hypothesis 10, signifying that the two categorical variables possessed a favourable relationship (Figure 4.33a). Smoke-free policy reduces smoking prevalence among young adults (Repace 2007). Young smokers felt that the Australian government should implement stricter smoke-free policies to discourage young adults from smoking (Hypothesis 9). In this study, an important $\chi 2$ test (4, N = 228) = 45.697, P<0.05, Figure 4.33b) of independence between the variables was observed. Hypothesis 7 showed $\chi 2$ test (3, N = 228) = 6.189, P>0.05), indicated that there was no significant relationship between the dependent variable and the independent variable. Figure 4.33c indicates that the null hypothesis was accepted as true. Similarly, Hypothesis 10 and Hypothesis 9 provided a substantial positive effect, where Hypothesis 10 possessed the highest influence effect at 0.747 and Hypothesis 9 possessed the lowest influence effect at 0.708, all of which were significant at P<0.05 (see Table 4.48 and Figure 4.30**)**. A positive relationship between Q22, attitude (2.174), and perceived behavioural control (2.251) was discovered, while a negative relationship between Q22 and subjective norms was found (-3.229). Table 4.48 shows the statistically significant covariance among the three latent variables(Lee et al. 2020)

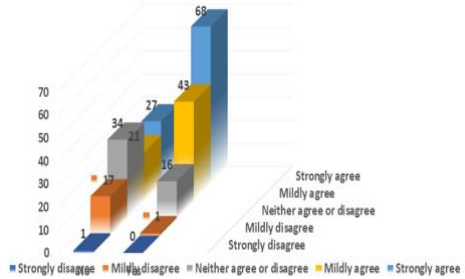
H10: Tax increment has a positive relationship with the continuance of smoking in young adults

$\chi 2 = (16.52), P<0.05$



H9: Smoke-free policies have a positive relationship with the continuance of smoking in young adults

$\chi 2 = (44.18), P<0.05$



H7: Pictorial health images and text warnings on cigarette packets have a positive relationship with the continuance of smoking in young adults

$\chi 2 = (6.18), P<0.05$

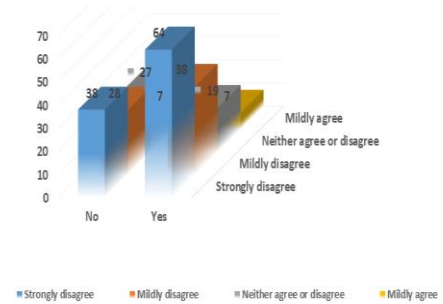


Figure 4.33 a-c Components of Perceived Behavioural Control Studied in This Research (Figure 4.32a:H10; 4.32b:H9 and 4.32c:H7)

Table 4.49 Covariance among the Latent Variables

Relationships			**Estimate**	**S.E.**	**C.R.**	P
Attitude	<-->	Social Norms	.308	.055	5.630	***
Social Norms	<-->	PBControl	.469	.073	6.428	***
Attitude	<-->	PBControl	.352	.061	5.824	***

4.15 Thematic Analysis of Open-Ended Questions

Themetic analysis is an approach to discover the knowledge trends through a dataset (Creswell 2014). For ease of communication, this study employed Excel to analyse responses to the three open-ended questions.

In the final section of the questionnaire in this study, participants were asked to respond to the question 'What reasons, might you have for supporting or opposing the anti-smoking initiatives?' 35.96% of participants supported anti-smoking initiatives with the following reasons: it is good for other people health; it is good for the environment; it prevents young people from starting to smoke; it helps the community to be aware of the dangers of smoking; it helps stop the environment pollution; it helps to stop young kids from trying; it can give me some courage to stop smoking; it helps to reduce bushfires; it helps others like family members from not being exposing to second hand smoke; it helps to protect vunerables people, such as the elderly and babies; it would prevent people from getting sick and dying; it helps school kids not to smoke; it helps my dad to stop smoking; it is good to get back to good health; it helps old people to live longer; it reduces carbon monoxide in the air, and; it will save the country. However, 23.25% of participants supported anti-smoking initiatives without giving any reason. In summary, 59.21% of participants supported anti-smoking initiatives.

Conversely, 22.37% of participants opposed anti-smoking initiatives because of the following reasons: it is people's choice/right to decide whether to smoke or not; smoking has some benefits to me; it is against the basic human rights; it destroys people's choice in life; people are responsible for their own lives; people have their own rights to enjoy their lives; I make my own decisions; it is not fair; unfair to human rights; it is a free country; it is our choice when to start and quit; people are mature and can decide for themselves; other countries do not have such a strong restriction; too many restrictions in this world; no reason to ban people from smoking; it is already hard in life, why ban people enjoyment?; it is cruel; I like smoking; it is inside me, and; smoking should only be banned for young kids, since they cannot control themselves. These participants did not possess strong or solid arguments in support of their smoking. Figure 4.30 showed the outcome for the question 'What reasons, might you have for supporting or opposing the anti-smoking initiatives?'

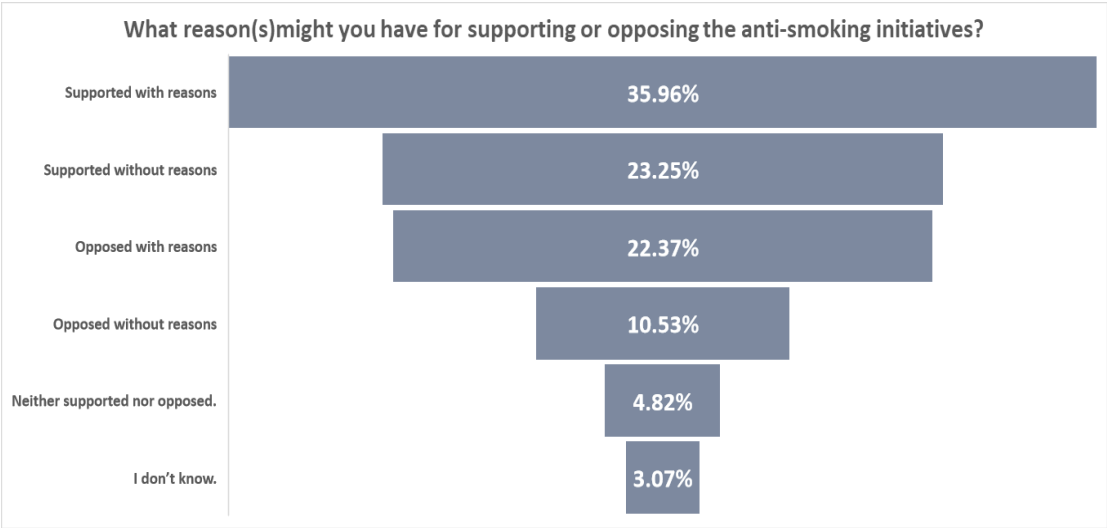


Figure 4.34 Thematic analysis for question 'What reasons, might you have for supporting or opposing the anti-smoking initiatives'

The second open-ended question was 'How effective do you think the anti-smoking initiatives are in discouraging smokers from continuing to smoke?' 57.02% of participants felt that anti-smoking initiatives were ineffective, while 10.09% thought that the initiatives were not very effective (total of 67.11%).

Conversely, 14.04% of participants viewed the initiatives as moderately effective, with only 1.32% feeling that they were quite effective. In summary, the result indicates that many young adults feel that current anti-smoking initiatives have yet to achieve optimal effectiveness (see Figure 4.35).

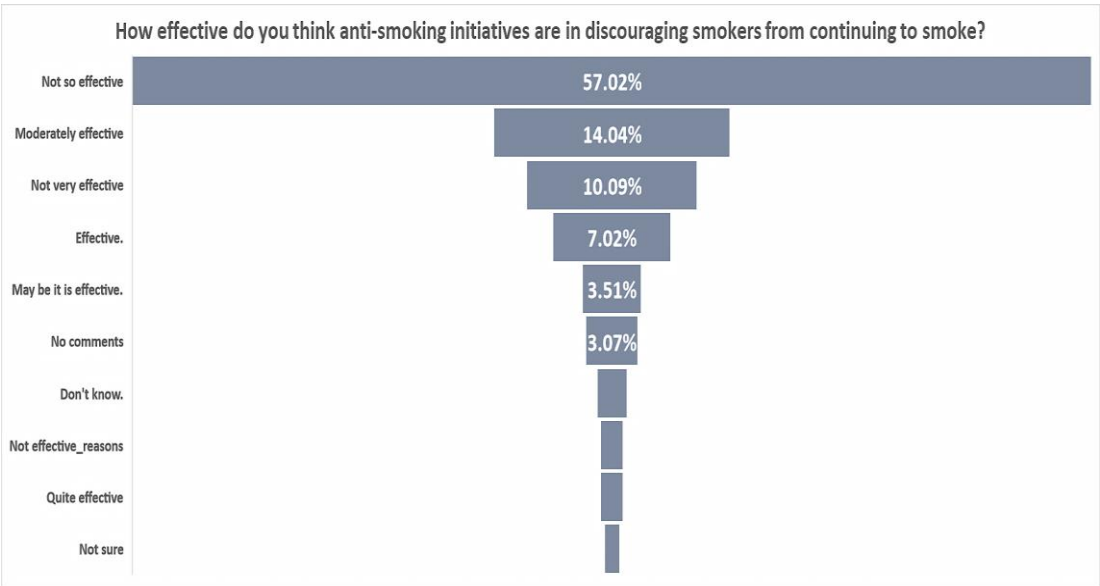


Figure 4.35 Thematic analysis for question"How effective do you think anti-smoking initiatives are in discouraging smokers from continuing to smoke"

In the third and last open-ended question, participants were asked ‘What in your opinion would work to discourage you from continuing to smoke?’ 15.79% of participants felt that more severe anti-smoking policies needed to be implemented by the government (Figure 4.36), while 14.91% of participants suggested an increase to cigarette prices. Counselling was identified as the third most frequently cited suggested factor (9.65%), followed by the need to have more effective anti-smoking advertisements (4.82%), the imposition of heavy fines (3.91%), having more restricted smoking zones (3.51%), printing more health images (3.07%), and greater reliance upon Quitline help (1.75 %). In summary, 57.41% of participants indicated that the Australian government was the key player in discouraging young smokers from continuing to smoke (Campus et al. 2021).

In this mixed-methods study, we used quantitative survey data to identify those important variables examined such as self-identity, peer pressure, social-economic stress, stress, habitual, addiction, pictorial health images and warnings, plain packaging, smoke-free policies, taxation, Quitline, and intention to quit smoking. Then, we employed the qualitative interview strategy to explore / examine the reasons why young adult smokers continue smoking despite its harmful effects. Given the current increment of tobacco use, it is imperative to understand the whole range of reasons why people begin to smoke (tobacco) and why they continue the behaviour. Particularly qualitative research is ideal to suit in this type of examination. Comparative research, on the other hand, is less concerned with ‘how much?’ or ‘how many?’ The underlying causes of a problem or behaviour are answered by qualitative research. As a result, the combination of quantitative and qualitative is more targeted and useful to understand complex behavioural and sociocultural issue such as tobacco smoking in young adults. In addition, research using qualitative method can be especially useful when studying politically or socially sensitive topics, such as the effects of tobacco addiction on the family or the organisation of tobacco (Green & Thorogood 2018; Hanson & Grimmer 2007; King, Keohane & Verba 2021)

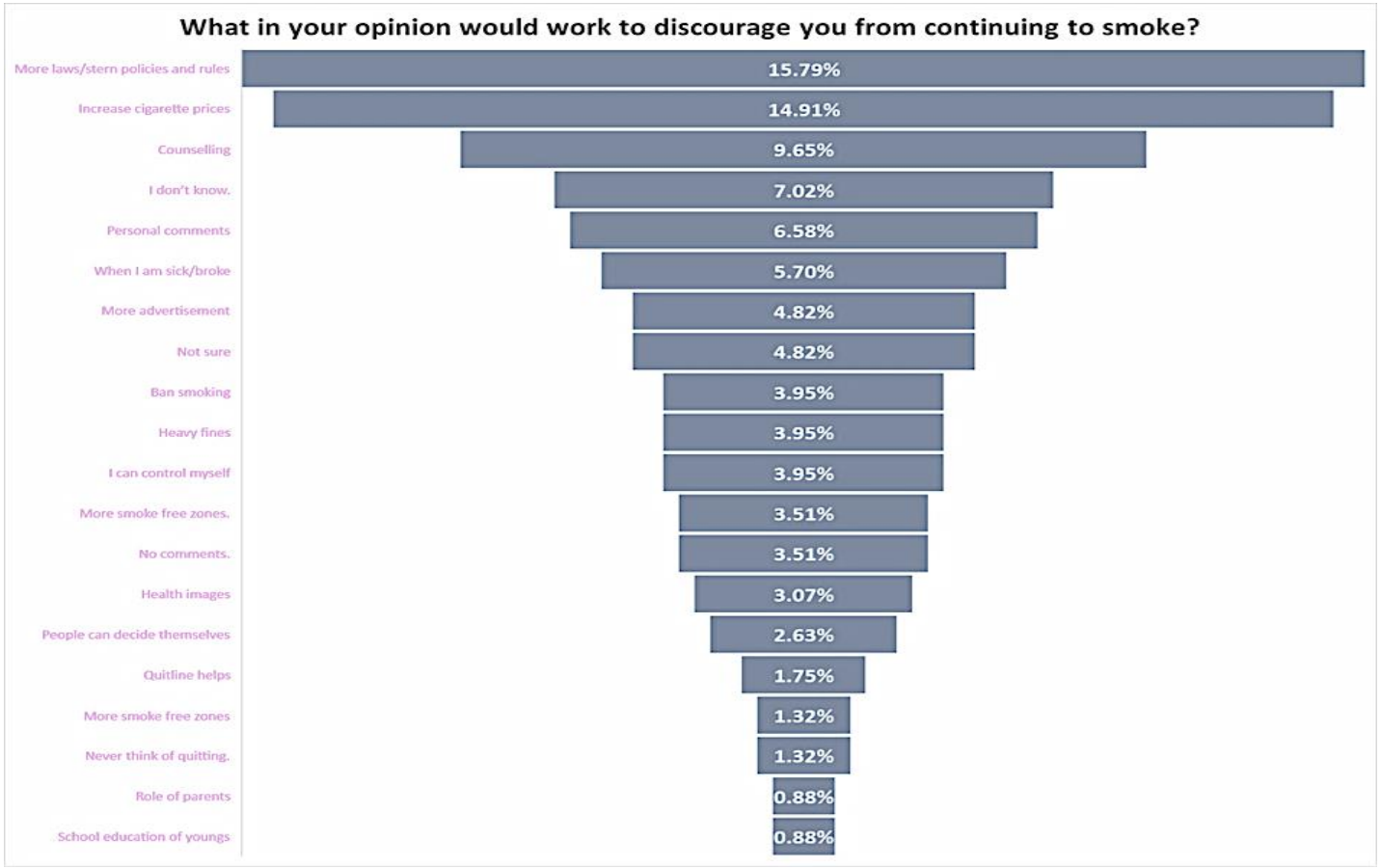


Figure 4.36 Thematic analysis for question 'What in your opinion would work to discourage you from continuing to smoke'

4.16 Chapter Summary

This chapter presented the findings from the analyses of quantitative and qualitative data. The selected data used in this study (N=228) exhibited no difference from the full data set (250 questionnaires). This was confirmed through the non-significant T-test. In the quantitative component, reliablity and validity of data were tested using Q-Q plots, which indicated that all variables were normally distributed. Data validity and internal consistency were achieved with Cronbach's Alpha 0.757, which is considered acceptable. Demographics, respondent profiles and descriptive analyses were performed using the Chi- Square test statistics.

In descriptive inferential statistics, prediction on the population opinions were performed, and each independent variable against the dependent variable of young adult smoking behaviour was discussed. In terms of the identification of the factors that constitute ongoing smoking behaviour (based on the Cramer's V effect size) revealed that six variables were deemed significant in young adult smoking behaviour, with eight variables found to be less significant. Factor analysis was subsequently performed to reduce the data set into a smaller data set to find out any hidden overlapping pattern/s. The Binomial regression analysis was carried out to examine the relationship between items and the probability of the outcomes. Based on the Beta coefficient (Binary regression model), we were confident to conclude that variables Q6, Q7 and Q11 were the most important in constituting ongoing smoking behaviour among young adults. Variables Q1, Q2, Q12, Q15, Q20, Q13 and Q17 were found to be less significant.

Lastly, thematic analysis was performed on the three open-ended questions. The results showed that 59.21% of participants supported anti-smoking initiatives, 67.11% viewed anti-smoking initiatives as ineffective, and 57.41% indicated that the Australian government should play a pivotal role in promoting quitting. This last group proposed that more severe anti-smoking policies should be implemented (15.79%), that cigarette prices should be increased (14.91%), and that counselling services should be expanded (9.65%).

Chapter 5: Discussion and Conclusion

5.1 Introduction

This chapter discusses the research questions in the context of data collected and analysed. It begins with the key quantitative study findings and compares these findings with other findings in the literature. This is followed by a qualitative discussion based around three open-ended questions that were included with the survey questionnaire. The chapter then explores the implications of the findings in relation to the research questions, research aims and literature. The chapter then discusses the theoretical and practical contributions, before concluding by outlining the limitations of this study, some recommendations, and suggested future directions for further research.

5.2 Key Findings

The aim of this study was to examine the attitudes of young adult smokers' in order to explain continuance of behaviour and identify factors that lead to the ongoing smoking behaviour. Appropriate quantitative methodological techniques were used to accomplish these goals. A total of 31 questions framed the study's main variables. The researcher collected data from a total of 250 participants. Of this number only 228 surveys were filled out completely and suitable for further analysed. As the population's mean (250 samples) was found non-significant compare to the mean of the proposed population samples (228), therefore, there was practically no difference between the two data sets (250 vs. 228) used for analytical purposes.

5.2.1 Quantitative Findings

In general, a majority of respondents (90.7%; 116) indicated that their smoking habits were central to their identity. Most respondents (88.3%; 113) indicated that they were addicted to smoking. Most of the respondents (86.7%; 111) agreed with the statement that "There is little the average smoker can do to stop their smoking habit". There was a significant association between habitual smoking and intention to continue smoking with $\chi 2$ test (4, N = 228) = 74.195, P<0.001, indicating that habitual smoking plays a key role in ongoing smoking behaviour in young smokers. Most young smokers (90.7%; 116) indicated that smoking improved their self-image in the lens of their peers. An overwhelming majority of young smokers (91.4%) contended that their peers significantly influenced their smoking behaviours. More than half of respondents (57.8%; 96) strongly agreed with the statement that smoking helps them forget about their daily problems. A significant majority of respondents (83.6%; 107)

indicated that smoking helps keep them stress free. Similarly, a reasonable number of respondents (92.2%; 118) indicated a willingness to switch to a more affordable cigarette brand to accommodate the rising price of cigarettes. However, pictorial health images and text warnings on cigarette packs that provide information of possible health dangers were found not effective to young smokers. In addition, the respondents felt that the government's main reason for increasing tobacco prices was to increase the tax revenue. A significant percentage of respondents (50.8%) indicated that they were not affected by anti-smoking advertisements. On the other hand, smoke-free policies were reported to improve or change the social norms of smoking. According to our findings, young smokers felt that the Australian government should implement more stern smoke-free policies to reduce young smokers' intention to smoke. Our results also show that young adult smokers paid little attention to Quit Victoria advertisements and Quit Victoria advertisements did not strengthen young smokers' motivation to quit.

This study examines 11 hypotheses (H1-H11) and confirmed all hypotheses except the relationships of pictorial health images and text warnings on cigarette packets (H7) as well as the Quitline telephone support (H11). Our findings also confirmed the theoretical model of the study. The following hypotheses were generated and tested in accordance to the literature review in Chapter 2:

Table 5.1: Summary Results of Hypothesis Testing

Hypotheses	**Decision on Null Hypotheses**
H1: The construction of self-identity will be positively related to smoking behaviour in young adults.	*Rejected*
H2: Peer pressure has a positive relationship with ongoing smoking among young adults.	*Rejected*
H3: Socio-economic disadvantage has a positive relationship with ongoing smoking among young adults.	*Rejected*
H4: Emotional stress has a positive relationship with ongoing smoking in young adults.	*Rejected*
H5: The habit of smoking has a positive relationship with ongoing smoking in young adults.	*Rejected*
H6: Addiction has a positive relationship with ongoing smoking in young adults.	*Rejected*
H7: Pictorial health images and text warnings on cigarette packets have a positive relationship with ongoing smoking in young adults.	*Accepted*
H8: Plain packaging on cigarette packets has a positive relationship with ongoing smoking in young adults.	*Rejected*
H9: Smoke-free policies have a positive relationship with ongoing smoking in young adults.	*Rejected*
H10: A *tax increment has a positive relationship with ongoing smoking in young adults.*	*Rejected*
H11: Quitline telephone support has a positive relationship with ongoing smoking in young adults.	*Accepted*

5.2.1.1 Relationship between self-identity and smoking behaviour in young adults (H1)

A logit, or the log of the odds, is the coefficient produced by a logistic regression model. The bigger the odds ratio than one, the more likely an event is to occur, and the lower the odds ratio than one, the less likely it is. The results of the logistic regression revealed that self-identity (OR=3.092, C.L: 1.705-5.604) was a significant variable in the study. Specifically, the logistic regression results indicated that for every one unit change in self-identity, the log odds of smoking behaviour in young adults increases by 3.092 i.e., changing a person's self-image by one unit increases the likelihood of their smoking by 3.092. Thus, the relationship between young people' self-identity and their prolonged smoking behaviour was found strongly positive.

Cigarette smoking may be an important element to self-identity to certain group of individuals, with smoking associated with victory, success, courage coolness, maturity in the movies. Young adults appear to imitate and would like to associate with those desirable traits. Our findings are consistent to previous studies (Distefan, Pierce & Gilpin 2004; Scheffels & Schou 2007), where young adults appear to continue their smoking habit in order to maintain their self-identity or self-image. The implications for public health policy makers is to highlight the need to shift or disrupt the young smokers' past self-images and (re)establish new self-identities. Policy makers could repeatedly expose young smokers to the benefit of quit smoking instead of relying on terrifying health images on cigarette packs. However, the current anti-smoking initiatives, particularly the plain packaging, do not address this key aspect in relation to young smokers. As literature suggests, through repetitive behaviour, self-identity could be changed and new self-identity could be established (Charng, Piliavin & Callero 1988). This study further extend the previous literature by identifying the focus in relation to young smokers needs to shift to developing a new self-identity in any effort to combat their ongoing smoking behaviour.

5.2.1.2 Relationship between peer pressure and ongoing smoking behaviour (H2)

The findings show that peer pressure has a positive relationship with ongoing smoking in young adults (OR=2.618, C.L: 1.471-4.659). This research is consistent with previous studies (Brown, Eicher, and Clasen 1986; Steinberg and Silverberg 1986), which revealed that young people were highly influenced by their friends / peers when it comes to risk-taking behaviour, such as smoking. Nevertheless, some studies (Conrad, Flay & Hill 1992; Dolcini & Adler 1994; Kobus 2003; Simons-Morton & Farhat 2010; Stern et al. 1987; Sussman et al. 1990) reporting on peer influence in initiation and maintenance of smoking, explained behaviour was

predominately due to parental and sibling influences. Young adults whose parents were smokers tended to conform to their parents' habit without being urged to do so (Bandura, Freeman & Lightsey 1999).

This implies that passive parental influences play a role alongside peer pressure in young adult initiation into and maintenance of smoking. Therefore, public health experts should include both parent and peer components when designing anti-smoking initiatives. For examples, anti-smoking campaigns should help parents to learn strategies to connect with their child, set rules and educate the consequences of smoking, monitor their adolescents and even show ways to parents to help them quit smoking. Besides, anti-smoking initiatives should use peer as reinforcement for a tobacco-free life and create a culture of non-tobacco use. Unfortunately, the anti-smoking initiatives seem not targeting the right population with the right messages in the effort of smoking cessation. Thus, there is a need for public health policy to include both parent and peer components in the anti-smoking initiatives.

5.2.1.3 Relationship between socio-economic disadvantage and smoking behaviour (H3)

Socioeconomic disadvantage and continuous smoking behaviour were exposed to be positively connected in our study, with an OR of 2.607 besides a confidence interval of 1.467-4.659, indicating that socioeconomic deprivation had a favourable effect on young people' smoking habits. Study results are consistent with past studies (Clare et al. 2014; Graham 2007; Hilary 2009) where poor socio-economic conditions were reported to be associated with high smoking rates and ongoing smoking behaviour.

Socio-economic deprivation or disadvantage is characterised in terms of education, income and occupation (Barbeau 2004; Healton & Nelson 2004; Wewers et al. 2007). Socio-economically disadvantaged young adults tend to be less healthy compared to advantaged young adults (Lynch, Kaplan & Salonen 1997). This is because disadvantaged young adults are more likely to be exposed to higher levels of stress, typically possess fewer cognitive resources, experience greater environmental constraints, adopt poorer health behaviours, and have lower access to physical and environmental resources (Healton & Nelson 2004).

It seems socio-economic disadvantage is a pivotal factor that reduces the smoking cessation effort for the young adult group. To a broader extent, anti-smoking initiatives do not address this issue on nationally based measures, but rather on individually based psychological factors. There is a need to take into account factors related to education, household support and employment relations. Improved

legislation with regards to smoking intervention will be required to facilitate the adoption and implementation of smoking prevention programmes. Another alternate way of prevention is through the promotion and conception for coping with socio-economic stress in target communities in order to deter the ongoing smoking behaviour in young adults.

5.2.1.4 Relationship between emotional stress and ongoing smoking behaviour (H4)

Our findings show that emotional stress has a positive and significant (P<0.05) relationship (OR=2.270, C.L: 1.334-3.865) with ongoing smoking behaviour. This positive relationship implies that young adults tend to use cigarette smoking to alleviate emotional stress. Similar to past studies (Lawless et al. 2015; McNamara 2000; Saunders 1998), this study found that cigarette smoking provides emotional support to young adults when they are in a stressful condition.

There are 3 types of stress that impact young adults: 1) normative stress, 2) non-normative stress, and 3) daily stress. Normative stress relates to physical or appearance changes, the emergence of sexuality, peer relationship changes, school transition, and parental negotiation. Non-normative stress stems from the occurrence of unexpected situations, such as physical disability, family deaths, parental divorce, and parental mental illness. Last, daily stress refers to small annoying events in everyday life, which can lead to psychological disorder when accumulated (McNamara 2000). It is quite common for adolescent to encounter stress caused by normative, non-normative and daily in their stage of life. Unsurprisingly, young adults will use remedies to ease their emotional stress, which can include cigarettes.

Nevertheless, the current anti-smoking initiatives appear to be inadequate in the effort of smoking cessation for young adults. There is limited smoking intervention that specifically targets on the three different types of emotional stress that young adults would encounter. This study provides new information on stress management that public health could focus on, which includes physical, sociocultural, psychological and cognitive development in young adults. All in all, strong emotional stability influences smoking cessation and traits of an individual.

5.2.1.5 Relationship between the habit of smoking and ongoing smoking behaviour (H5)

As was indicated by the logistic regression OR=1.992, C.L: 1.123-3.533, these findings show that there is a positive relationship between the habit of smoking and ongoing smoking behaviour in young adults. This positive link suggests that habit is

one of the important factors that constitute ongoing smoking behaviour in young adults. Our findings are consistent with past studies (Dolan & Dayan 2013; Ray et al. 2020; Smith & Graybiel 2016; Vandaele & Janak 2018), where cigarette smoking is found to be a habitual behaviour that is executed automatically and leads to desirable goals from the smoker's perspective.

Habitual smoking is a functional, goal-oriented, repetitive behaviour that occurs in a stable context. The automaticity of smoking is developed in association with situational cues, the goal that the behaviour serves, and the actions undertaken (Malvaez & Wassum 2018). In order to discourage ongoing smoking behaviour, the chain of repetitive behaviour should be halted, and this could be achieved through increased intervention and policy action. One such regulatory intervention is to discrupt the easy access on cigarettes - perhaps by limiting retail access and adjusting the legal age of consuming tobacco. Retail access and minimal age of purchase cigarettes are found to associate with habitual smoking for moderate and daily smokers (Lantz 2003). This implies that tobacco retail access laws and the minimum legal age on tobacco should be reviewed and revised. Our findings are substantiated by a recent announcement raising age limit in cigarettes purchase and reduction on the number of tobacco retailers in New Zealand. New legislation will progressively lift the smoking age from 18 and reduce the number of shops that can sell tobacco starting from 2027 and 2024 respectively (Daube & Maddox 2021; Evans & Baker 2021).

This study emphasises that anti-smoking initiatives that have been developed for smokers in general may not be the greatest approach to take with young smokers. Young smokers between the age of 18 to 30 may be more like adolescents than older adults in their perception of risk, their perception on habitual smoking, their attitudes towards different types of anti-smoking messages and thus their responses to behavioural interventions. Therefore, merely increasing the exposure of young adults to the existing anti-smoking initiatives seem not the best way to proceed. Policy makers is recommended to carefully differentiate cessation interventions for young smokers instead of using the 'one-size-fit-all' approach. For instance, it is important to identify precisely young smokers' stage of change/ readiness of change (Armitage & Arden 2008), so that an intervention based on stage specific processes of change can be applied. Besides, the stage of change of young smokers needs to be reassessed regularly, and the intervention should weigh up the changes in young smokers' readiness to change. It is necessary to repeat the elements of the intervention until young smokers have achieved and mainained the changes in their behaviours.

5.2.1.6 Relationship between addiction and ongoing smoking behaviour (H6)

According to the results of the study, addiction is a factor that contributes to continuous smoking behaviour in young people; the logistic regression OR=2.795, C.L: 1.659-4.707 concluded quite so much. The outcomes of this study align with past studies (Davies 2013; Eiser, Morgan & Gammage 1987; Hartmann-Boyce et al. 2014; Moodie, Daube & Carnell 2009) that noted smoking is addictive.

In general, there are two kinds of addiction: 1) physiological and 2) psychological. Physiological addiction refers to the effects of nicotine on the body, while psychological addiction relates to emotional and social dependence on nicotine (Davies 2013). Cigarettes contain nicotine and nicotine is addictive by nature. The more an individual takes nicotine, the more that individual will crave that nicotine to meet their physiological needs. This explains why some young smokers still difficulty have to quit smoking. On the other hand, when the individual reduces their use of cigarettes, their tolerance levels will reduce and this can eventually lead them into withdrawal (Thornburg 1982). This implies that abstinence (from nicotine) is an important step to stopping ongoing smoking behaviour.

Nevertheless, nicotine is not the only component that leads to ongoing smoking. Psychological addiction, such as sensory cues (e.g. smell of smoke, heat and sight), might also be a factor (Le Houezec 2003). Unfortunately, current anti-smoking initiatives pay little attention on both physiological and psychological addictions. Rather, it appears to have adopted an 'one-size-fit-all' approach (in terms of the use of health terrifying images and warnings) to discourage ongoing smoking behaviour which has diminished efficacy over time and extended exposure. This study suggests public health to combine physiological and psychological components in formulating anti-smoking initiatives when targeting young smokers. One such option is using nicotine replacement therapies (NRT) such as gum, transdermal patch, lozenge, nasal spray and inhaler that could relieve withdrawal symptoms and improve abstinence rates, follow by psychology counselling treatment to help young smokers to achieve continuous abstinence.

5.2.1.7 Relationship between pictorial health images and text warnings on cigarette packets with ongoing smoking behaviour (H7)

The results of the study reveal that health warning imagery and text warnings on cigarette packs have a negative link with continued smoking behaviour in young people, however the results are statistically insignificant (P <0.05=0.727). It implies that the effect of pictorial health images and text warnings on cigarette packets is

insignificant in regard to young smokers. These study findings are in contrast to past studies (Maynard, Munafò & Leonards 2013; Munafò et al. 2011; Ramunno, Mandeville & Yarrow 2012; Rettie & Brewer 2000) where pictorial health images and text warnings were seen as an important tool in smoking intervention. One possible reason for this is due to the diminished efficacy of pictorial health images and text warnings in the lens of young smokers. Nevertheless, our findings support past studies' outcomes (Bhalla & Lastovicka 1984; Hammond et al. 2003; Ruiter & Kok 2005) where pictorial health images and text warnings have worn out in its effects.

This implies that new and creative pictorial images and warning labels are needed. However, it seems that the current anti-smoking advertisements using health related images and messages in cigarette packs have not changed since 2012. Our study suggests to combine text warnings with an unknown pictorial content rather than those pictorial warnings already in use. One suggestion is underpinned by the recommendation from WHO Framework Convention of Tobacco Control (FCTC) Article 11 where rotating health warnings and introduce new pictures is necessary in discouraging ongoing smoking behaviour (WHO 2013).

5.2.1.8 Relationship between packaging on cigarette packets and ongoing smoking behaviour (H8)

The findings of the study indicate that there is a positive link between simple packaging and the continued smoking behaviour of young people. Despite this, the relationship was deemed to be insignificant, and it was consequently removed from the model because it made no contribution to R^2 (that is, in the dependent variable). This suggests that simple packaging is a useful technique for preventing young people from starting to smoke. Besides, our findings are consistent to past studies (Gallopel-Morvan, Hoek & Rieunier 2018; Gendall et al. 2011; Wakefield et al. 2013) where plain packaging is found to be less appealing, possessing lower product quality and presenting higher health risks to smokers, thus contributing to de-normalising smoking.

The effects of plain packaging can be understood by priming theory (Iyengar, Peters & Kinder 1982), a theory that explains how information from mass media such as product packaging is collected and stored in the brain and influences decision-making. When young adults expose to plain packaging, priming allows them to evaluate situations and make conclusions about cigarette smoking. The plain

packaging de-normalises the attractiveness of smoking and thus diminish purchase intention and dissuade ongoing smoking behaviour.

Study findings support the use of plain packaging in smoking cessation. Public health policy makers can rely on this evidence to deploy as part of a suite of comprehensive public health strategies to reduce morbidity, mortality and financial costs that caused by tobacco use. To prevail, the Australian government would need to show that plain packaging directly advances the important public interest of promoting the nation's health.

5.2.1.9 Relationship between smoke-free policies and ongoing smoking behaviour (H9)

The findings show smoke-free policies have a positive relationship with ongoing smoking behaviour in young smokers. The results are consistent to past studies (Callinan et al. 2010; Fong et al. 2006; Lin et al. 2013; Sureda et al. 2015), where the effectiveness of smoke-free policies has successfully protected people from direct exposure to direct and second-hand smoke. This study acknowledges that smoke-free policies are a key strategy for reducing smoking prevalence in young smokers.

Earlier literature indicated that smoke-free policies were reported to improve health outcomes by reducing the number of cigarettes smoked and encouraging quitting. Similarly, smoke-free legislation provides clear benefits on those who are exposed to cigarette smoke (Goodman et al. 2009; Hyland, Barnoya & Corral 2012). Despite intense pushback from the tobacco industry, who claimed that such restrictions would be unacceptable to the public, that enforcement would be difficult, and that such measures would likely reduce hospitality industry revenues, several studies found evidence to the contrary (Glantz & Smith 1997; Hyland, Barnoya & Corral 2012; Sciacca & Ratliff 1998).

Public adaptation and diffusion of smoke-free policies are supported by the Theory of Diffusion of Innovation (Wood, Sullivan & Donovan 2008). According to this theory, behavioural changes start within certain groups and then diffuse to other groups. When a critical mass has changed group behaviour, then new social norms begin to emerge. Over the past few decades, studies (Burns et al. 2013; Thomson, Wilson & Edwards 2009) have shown that this societal change occurred in Australia, with norms towards anti-smoking initiatives signifying the acceptance of stricter smoking controls by the public. Our findings are consistent to previous studies and further assure that smoke-free policies remain as an influential anti-smoking intervention and should continue be the priority in public health programme. In addition, this study

provides important insights on support for future possible smoke-free initiatives such as ban on smoking in cars and stricter restrictions in outdoor eating areas (Wilson, Thomson & Edwards 2008).

5.2.1.10 Relationship between tobacco taxation and ongoing smoking behaviour (H10)

Study findings show there is a positive relationship between tobacco taxation and ongoing smoking behaviour in young adults. Although the benefits of increased tobacco taxation is still superficial among young smokers (Bader, Boisclair & Ferrence 2011). The study findings indicate that raising cigarette prices through increased taxes is an effective way for reducing smoking among young adults. For public health, this implies that higher cigarette prices would lead to more young smokers quitting their habit. Besides, our findings are consistent to past studies (Hsieh & Lee 2016; Jha & Chaloupka 2000; Laugesen & Meads 1991; Moodie, Daube & Carnell 2009) were raising prices on cigarettes through taxation is an essential component of a comprehensive tobacco control strategy.

In Australia, there is an approximate 54.7% exercise duty imposed on the retail price of cigarettes, plus the 9.1% of the goods and services tax (GST). In April 2010, the Australian government increased by 25% the duty tax on tobacco products, adding a further $2.20 to a $30 cigarette pack. This practice is aligned to WHO guidelines where tobacco excise duty tax should be in the range of 70% of the final price of tobacco products (WHO 2010). Our findings support the economic literature where the increment of tobacco taxes, passed on to smokers in the form of higher cigarette prices, provide disincentive to young adults who smoke or may be considering smoking. The evidence from this study should be of particular value to public health policy makers and other researchers that increase cigarette prices through tobacco taxation is a key policy measure for achieving reduction in smoking behaviour in young smokers.

5.2.1.11 Relationship between Quitline telephone support and ongoing smoking behaviour (H11)

The findings indicate that there is a negative relationship between Quitline telephone support and ongoing smoking behaviour in young smokers. There are a few reasons that can be deduced from this negative relationship. First, although Australia has had implemented printing Quitline telephone number (not the national Quitline number) on cigarette packs as part of the heath warning material. Nevertheless, the number provided only a recorded message focusing on the health effects of smoking (Borland

& Segan 2006). This does not seem to be an effective measure in a comprehensive tobacco control strategy. The Quitline telephone support should link to a high-quality interactive service, able to provide cessation assistance and promoted in a complementary way.

Second, as our findings show, young smokers seldom pay attention to Quitline advertisement. As a result, it is arguably necessary to use other means of promotion. One such means is through the health system. For example, policy makers should provide incentives and encouragement to health professionals to contact the service. The more comprehensive Quitline service can offer, the more feasible it is to expect health professionals to refer their clients to it. Further, it is perhaps also important for Quitline to formalise links with health services and encourage formal referral systems rather than generic promotion. With this formal referral mechanism, Quitline can call the smoker proactively and discuss best ways to help them.

Overall, however, it seems that the current Quitline telephone support is under-utilised, and the smoking cessation treatment is not well incorporated in the health care system. Study findings suggest that close contact between Quitline, and health professionals is necessary for ongoing, heavy smokers. Improved coordination can assist the health professionals to use feedback from Quitline about smokers' progress in their consultations.

5.2.2 Qualitative Findings

The thematic analysis performed on the three open-ended questions showed that 59.21% of respondents supported anti-smoking initiatives, 67.11% viewed anti-smoking initiatives as ineffective, and 57.41% indicated that the Australian government should play a more active role in promoting anti-smoking initiatives. The respondents proposed that stricter anti-smoking policies should be implemented (15.79%), and cigarette prices should be increased (14.91%), and that counselling services should be expanded (9.65%).

The first open-ended question was: 'What reasons, might you have for supporting or opposing the anti-smoking initiatives?' Of the qualitative data collected, respondents indicated that they supported the anti-smoking initiatives (59.21%). This positive atttitude towards the anti-smoking initiaves is an important enabler to reduce the intention of ongoing smoking in young adults. In our findings, young smokers expressed their concerns on the negativity of smoking that could impact their health, community and the environment. This findings is consistent to past studies (Fong et al. 2006; Huynh et al. 2006) where young smokers believe cigarette smoking are detrimental to health and damaging the environment. Nevertheless, the current anti-smoking initiatives that only focus on smokers' health seem to lack comprehensiveness. Policy makers could also add the harmful impact from cigarette butts on the environment to dissuade ongoing smoking behaviour. In other words, anti-smoking messages could emphasise the deleterious of environment alongside with the individualised health impacts of smoking.

The second open-ended question was: 'How effective do you think the anti-smoking initiatives are in discouraging smokers from continuing to smoke?' Study findings show more than half of the respondents (67.11%) believe that the current anti-smoking initiatives were not effective. The findings are aligned with past study (Wolburg 2006) where young smokers tended to repond negatively to anti-smoking initiatives that produce a perceived loss of freedom. A majority of respondents opined that it is their right to smoke and justify their entitlement to small vices. When asked to answer the effectiveness of the anti-smoking initiatives, young smokers often defend that they understood the consequences of smoking and it is their freedom to draw their own conclusions. Perhaps young adults naturally feel invincible, the consequences are more likely related to threats to personal freedom than fear. Policy makers could use popular spokespersons and youth ambassadors to generate more personalised anti-smoking messages for young smokers. All in all, what works to

restrain young adults from smoking initiation does not necessarily work for those resistent (and more resilient) young smokers.

Lastly, the third open-ended question was: ‘What in your opinion would work to discourage you from continuing to smoke?’.Some 57.41% of respondents indicated that the Australian government should play a more active role in promoting smoking cessation to this third and last open-ended question Respondents proposed that more severe anti-smoking policies should be implemented (15.79%), and cigarette prices should be increased (14.91%), and that counselling services should be expanded (9.65%).

This finding is consistent with other studies (Koh et al. 2011; Leung et al. 2009; Tauras 2004), where young adults agreed that a comprehensive smoking intervention program is the key to reduce tobacco consumption by young smokers. From a public health standpoint, our findings suggest there is a need and receptiveness to implementing stricter smoke-free policies, increased cigarette prices to denormalise smoking and to actions that position smoking as a socially unacceptable behaviour from both an individual, societal (second-hand smoking effects) and environmental (butts and toxic elements) perspective.

5.3 Conclusions

In conclusion, the key findings from the hypotheses in this study are that:

- Despite the prevalence of anti-smoking initiatives, 100 respondents reported that they had no intention to quit. On the other hand, 128 respondents (56.1%) planned to quit. According to most participants, anti-smoking campaigns influenced young smokers to quit (Gravely, Cummings, et al. 2021a).
- A significant percentage of participants (50.8%) indicated that they were not affected by anti-smoking advertisements (Pechmann & Reibling 2006).
- A majority of respondents (90.7%; 116) indicated that their smoking habits were central to their identity (Callaghan et al. 2021).
- Most respondents (88.3%; 113) indicated that they were addicted to smoking (Debenham et al. 2021).
- Most respondents (86.7%; 111) agreed with the statement that 'There is little the average smoker can do to stop their smoking habit' (Ray et al. 2020).
- There is a favourable and significant association between habit and intention to continue smoking with $\chi 2$ test (4, N = 228) = 74.195, P<0.001, indicating that habitual smoking plays a key role in young adult smoking behaviour (Ray et al. 2020).
- Most respondents (90.7%; 116) and a high Cramer's V value of 0.631 indicated that young smokers felt that smoking improved their self-image in front of their peers (Callaghan et al. 2021).
- Most respondents (91.4%) contended that their peers significantly influenced their smoking behaviour, with a Cramer's V impact size of 0.526 (Callaghan et al. 2021).
- More than half (57.8%; 96) of respondents strongly agreed with the sentiment that smoking helps them forget about their daily problems (Mounir et al. 2021).
- Most (83.6%; 107) respondents indicated that smoking helps keeps them stress free. A medium impact size of 0.404 Cramer's V value was observed (Mounir et al. 2021).
- Most (92.2%; 118) respondents indicated a willingness to switch to a more affordable cigarette brand to accommodate the rising price of cigarettes (Kong & King 2021). The outcome was further supported by a large Cramer's V value of 0.631.

- There was no correlation between borrowing cigarettes from friends or relatives when smokers could not afford to buy cigarettes and their ongoing smoking.
- Question 13, which investigates the impact of plain packaging on young adult smoking behaviour, showed a minor Cramer's V = 0.248, indicating that the null hypothesis was rejected (Eijk & Yang 2022).
- In Question 14, 'I have intention to quit smoking', with $\chi 2$ test (4, N = 228) = 4.115, P>0.05) of freedom points contradicted the null hypothesis. 'The health advertisements on plain packaging are a reliable source of information' refuted the null hypothesis and is thus correct.
- There was no significant relationship between the dependent variable (Q28) and the independent variable (Q15) on 'Most health images shown on the cigarette packages are not believable'; the null hypothesis was correct (Eijk & Yang 2022), as evidenced by $\chi 2$ test (3, N = 228) = 6.189, P>0.05).
- In Question 16, health warnings on cigarette packs providing information of possible health dangers were found to be an effective tool in discouraging young adults from continuing to smoke (Gravely, Cummings, et al. 2021b). This is determined by a non-parametric $\chi 2$ test (4, N = 228) = 45.697, P<0.001), with a Cramer's V effect size of 0.448.
- Participants felt that the government's main reason for increasing tobacco prices was to increase the tax revenue. This was evidenced by a substantial difference between the real and predicted distributions (75.0 %; 96), suggesting a positive association between the two categorical variables in Question 17 (Gravely, Cummings, et al. 2021b).
- Smoke-free policies were reported to improve or change the social norms around smoking. Young smokers felt that the Australian government should implement more severe smoke-free policies to discourage smoking (Gravely, Cummings, et al. 2021b).
- Analysis of Question 19 indicated a strong correlation (χ^2, P<0.001) between the dependent variable (Q28) and the independent variable (Q19), indicating that smoke-free policies reduce young smokers' intention to continue smoking (Gartner et al. 2021).
- There was a non-significant $\chi 2$ test in Question 20 against the dependent variable (Q28), indicating that young adult smokers paid little attention to Quit Victoria advertisements (Gravely, Cummings, et al. 2021a).

- Analysis of Question 21 showed a non-significant $\chi 2$ measure (3, N = 228) = 1.434, p=0.698), indicating that Quit Victoria advertisements did not strengthen young smokers' motivation to quit (Gravely, Cummings, et al. 2021a).
- Of eleven hypotheses, nine (H1-H6 and H8-10) are found to be supportive.

5.3.1 General Remarks

In general, young smokers aged 22 to 25 (42.1%; 96) are the crucial target group that the public health should pay the most attention to, followed by 18 to 21 (33.3%; 69) and 26 to 30 (27.6%; 63) for both male and female smokers (see Table 4.6). There are important areas for future research, particularly for the three nominal user categories of heavy smokers (more than a pack a day, 28.1%; 64), moderate smokers (less than a pack a day, 43.4%; 99) and casual smokers (1-2 cigarettes per week, 7.9%; 18) that are in relation to their ongoing semoking behaviour. What this study found in relation to the general category of young smoker and the hypothesised considerations were reported. Key findings include the reported lack of efficacy of current Quit programmes, the loss of effect by images being used and so also the diminshed effect of associated messaging on young smokers, and the perceived impact of more stringent behavioural controls. The findings imply that more anti-smoking initiatives are needed to assist young smokers to quit smoking by implementation of smoke-free policies, increase in tobacco taxation, and the use of plain packaging on cigarette packets are important influences to combat the young adults' smoking consumer behaviour.

For anti-smoking marketing practitioners, this study suggests a comprehensive prevention strategy that better targets the diverse drivers of smoking among young adults. This differentiated strategy includes parental and peer components when designing anti-smoking initiatives to help parents learn strategies to connect with their child, set rules and educate about the consequences of smoking and enable the monitoring (without appearing controlling) of their adolescent children. Positive peer influence and role models should be used as reinforcement for a tobacco-free life and for creating a culture of non-tobacco use. This is because young adults are prone to imitate their peer and role model in order to maintain their self-identity or self-image, which this study has identified as the strongest influencing variable in our study. In line to the recommendation from WHO Framework Convention of Tobacco Control (FCTC) Article 11, this study also suggests the need to rotate or alternate health warnings and to introduce creative pictorial images that combine text warning with

yet to be determined pictorial content better suitable as a preventive strategy (role models and environmental factors).

5.3.2 Contributions of the Study

5.3.2.1 Theoretical

First, although many studies on anti-smoking initiatives have emerged in the past few years, most of these studies focus on awareness and intention to quit smoking (Abdullah et al. 2006; Jostein et al. 2008; Li et al. 2012; Lim et al. 2014; Nandini et al. 2018; Odukoya et al. 2014; Olusegun et al. 2020).

This study adds new insights to consumer behaviour in relation to the efficacy of anti-smoking initiatives in Australia

Key theoretical takeaways include the lack of effect of pictorial health and text warnings to young smokers, the benefits of plain packaging, the significance of cigarette price increments and the effectiveness of smoke-free policies. All these initiatives help deter continuance of smoking behaviour by young adults

Second, this study is consistent with the general findings in literature where the results of the study reaffirm that addiction is a key factor that contributes to continuous smoking behaviour in young people (Noar et al. 2016).

Besides, scare tactics, fear campaigns and anti-smoking advertisements to shock young adults into quitting seems to do little to encourage them to quit. (de Meyrick 2010; Elias, Hendlin & Ling 2018). The first factor implies that abstinence (from nicotine) is an important step to stopping ongoing smoking behaviour. Nevertheless, psychological addiction, such as sensory cues (e.g. smell of smoke, heat and sight), might also be a factor. It seems that current anti-smoking initiatives pay little attention on both physiological and psychological addictions and appear to have adopted an ‘one-size-fit-all’ approach (in term of the use of health terrifying images and warnings) to discourage ongoing smoking behaviour which has diminished efficacy over time and extended exposure. As well, this study supports social-cultural dimensions as being impactful (Elias, Hendlin & Ling 2018; Lupton 1995b; Roditis, Lee & Halpern-Felsher 2016).

5.3.2.2 Practical

The findings apply to the anti-smoking marketing practitioners on their effort to discourage young adult smokers continue to smoke. The study findings support the cigrette price increment. The increment of tobacco taxes that passed on to smokers in

the form of higher cigarette prices could provide disincentive to young adults who smoke or may be considering smoking.

Second, the findings indicate that anti-smoking messages could be widened to emphasise impact on the environment alongside health impacts of smoking. A more integrated response is also suggested by formalising links between Quitline and health/ counselling services via a formal referral system, as opposed to generic marketing publicity (Wilson, Thomson & Edwards 2008).

Third, the findings show that plain packaging is an important intervention tool to young smokers. Our study supports the current anti-smoking industry practices on the use of plain packaging in smoking cessation. To prevail, the anti-smoking industry experts should show that plain packaging directly advances the important public interest of promoting the nation's health.

5.4 Study Limitations and Recommendations

Some study limitations are noted. These limitations generate opportunities for future research. For instance, affections and feelings are useful future areas of study. These factors may indirectly influence intentions and actions, independent to other predictors in the Theory of Planned Behaviour. Also, the demographic composition for this research was only based on participants in metropolitan Victoria, Australia (Abdullah & Husten 2004). Thus, it is difficult to generalise findings to a national young smoker population as the young smokers in other regions and countries may hold different attitudes and be influenced by different factors.

5.5 Future Research Directions

Future research may wish to investigate other mediator such as affections and feelings that may impact the findings. It is plausible to assume that affections and feelings play a crucial role in increasing young adults to experience with cigarette smoking in some ethnics, as a result, young adults are susceptible to cigarettes, normalise the use of tobacco products and literally experiment it (Egbe et al. 2014). Also, it might be interesting to examine demographic disparities between those who smoke and those who do not. In term of research design, a randomised controlled design must be used in future studies. Finally, future research is needed to investigate whether similar findings are evident for measures such as social norms, peer selection and nicotine replacement therapy variables that are not used in this study.

5.6 Closing Remarks

This study explores the consumer behaviour of young adult smokers, to understand why they continue to smoke and to discover factors that support continuance of smoking behaviour. The focus was on young adult smokers between the ages of 18 to 30. In closing, the organising perceived behavioral control in relation to young adult smokers is via the establishment of smoke-free policy, tax increment, pictorial health images and text warnings on cigarette packets. These are influential factors on young adults' smoking behaviour and the identified actions help deter continuance. Conversely, inferential statistics shows a substantial number of participants are resistant to anti-smoking advertisements on cigarette packs, and plain packaging has little impact on smoking habits. Moreover, this study suggests young adult smokers pay no attention to Quit Victoria advertising or at best these advertisements do not establish a strong urgency to quit smoking.

Conversely, particularly for discouraging uptake and for casual smokers, the existence of and enforcement of smoke-free zones was reported as effective to altering young adults' smoking behaviour . The study respondents universally urged stricter smoke-free policies to be implemented in various settings in Victoria, as well as increased cigarette prices to denormalise smoking and position smoking as a socially unacceptable behaviour. These and other stricter policies aside, this study suggests the current anti-smoking initiatives appear only to focus on smokers' health and lack of comprehensiveness. Understandably, policy makers use the harmful impact of cigarettes to dissuade ongoing smoking behaviour. But the messaging could be widened so that anti-smoking messages emphasise the deleterious of environment alongside health impacts of smoking. As well, a more integrated response is needed such as formalising links between Quitline and health/ counselling services via a formal referral system, as opposed to generic marketing publicity. Rather than generic marketing promotion of anti-smoking, what is needed for young smokers is how to develop or change to a new self-image that are free from habitual and addition of smoking. Young smokers represent a cohort of opportunity to cease from smoking before they become resilient and heavy smokers.

---- End of thesis ----

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Appendix A

Sources of Various Constructs in the Conceptual Framework

Hypotheses	Description	Relationships	Sources
H1	Construction of positive self-identity will be positively related to the continuance of smoking in young adults.	- Construction of self-identity influenced continuance of smoking. - Individual plays different roles in the society. - New self-identity can predict intention and future behaviour of smokers.	(Denscombe 2001) (Stets & Burke 2000) (Åstrøm & Rise 2001)
H2	Peer pressure has a positive relationship with the continuance of smoking in young adults.	- Young adults value the importance of peers' opinions, acceptance, comfort and advice. - Young adults tend to adapt and mimic their peer's smoking behaviour. - To prove their maturity through smoking. - The quality of peer relationships decides smoking initiation and continuation.	(Pentz et al. 2015) (Harakeh & Vollebergh 2012) (Wayne & Connolly 2002) (Johnson & Hoffmann 2000; Marvin et al. 1983)

H3	Disadvantaged social-economic condition has a positive relationship with the continuance of smoking in young adults.	- Key mechanism such as education, income and occupations would directly influent health behaviour such as cigarette smoking. - The relationship between socioeconomics hardship and health behaviour is positive. - The long-term smoking effects are mediated by educational pathway. - Smoking acts as a medium to cope with stressors of personal circumstances and surrounding environment.	(Wewers et al. 2007) (Jefferis et al. 2004b) (Guillaumier, Bonevski & Paul 2015)
H4	Emotional stress has a positive relationship with the continuance of smoking in young adults.	- Peer pressure determines stressful life events for young adult. - Young adults use cigarettes to improve negative mood.	(Saunders 1998) (Lerman, C et al. 1998)
H5	The habit of smoking has a positive relationship with the continuance of smoking in young adults.	- The overreliance on smoking habit could be observed on individuals who are diagnosed with addiction. - Smoking habit is characterised by lack of awareness, repetitive and difficult to control. - Habitual smoking is found to be more notable at higher levels of	(Sjoerds et al. 2013) (Verplanken & Melkevik 2008) (Vollstädt-Klein et al. 2010)

		addiction extremity.	
H6	Addiction has a positive relationship with the continuance of smoking in young adults.	- Smoking is addictive. - Addiction is a socially learned behaviour and not a physiological reaction.	(Davies 2013) (Eiser, Morgan and Gammage 1987)
H7	Pictorial health images and text warnings on cigarette packets have a positive effect with the continuance of smoking in young adults.	- Graphical or pictorial images were more effective and influential compared to all types of text-based warnings. - Health related images were less effective than text warning messages. - Anti-smoking advertisement (e.g., the combination of text and graphical images) fail to influence young adults.	(Germain, Wakefield & Durkin 2010) (Michaelidou, Dibb and Ali 2008) (Ashok and Michael 2014)
H8	Plain packaging on cigarette packets has a positive relationship with the continuance of smoking in young adults.	- Plain packaging is deemed to be less attractive, less fashionable and less likely to extend smokers' social status. - Plain packaging de-normalised positive perception about cigarette. - Adaptive response strategies, coping responses were used to	(Gendall et al. 2011; Germain, Wakefield & Durkin 2010) (Bargh, Chen & Burrows 1996; Zemack-Rugar, Bettman & Fitzsimons

		moderate smoking cessation.	2007) (Milne, Sheeran & Orbell 2000; Orbell & Verplanken 2015)
H9	Smoke-free policies have a positive effect with the continuance of smoking in young adults.	- Smoke-free policies are the fundamental step in reducing smoking prevalence and related health risks. - Smoke-free policies are difficult to implement and enforce restrictions in outdoor environments. - Perceived second hand smoke in outdoor exposure is subjected to outdoor conditions. - Young smokers tend to smoke more at outdoor despite the smoke-free bans such as bars, nightclubs and casinos.	(Moodie, Daube & Carnell 2009) (Kaufman et al. 2010) (Hyland et al. 2008) (Jiang & Ling 2013)
H10	A tax increment has a positive relationship with the continuance of smoking in young adults.	- Higher cigarette prices reduce smoking behaviour. - Effectiveness of cigarette taxation depends on the price elasticity of tobacco. - Higher prices in tobacco would moderate the associations	(Chaloupka 2010) (Gallet and List 2003) (Reid 2009)

		between low SES and tobacco price elasticity. - Use of minimisation strategies to accommodate the rising price of cigarettes.	
H11	Quitline telephone supports have a positive relationship with the continuance of smoking in young adults.	- Telephone supports have high impact in public health, especially to young smokers. - Cognitive, emotional and behavioural are three important elements in smoking cessation.	(Stead et al., 2013) (Dijkstra et al., 1996)

Appendix B

Questionnaire

Section 1

Please select the most suitable statement that applies to you.

1= strongly disagree, 2 = mildly disagree,

3 = neither agree or disagree, 4 = mildly agree, 5 = strongly agree

Statement	**Strongly disagree**	**Mildly disagree**	**Neither agree or disagree**	**Mildly agree**	**Strongly agree**
1. I am aware of anti-smoking initiatives in Australia.	1	2	3	4	5
2. I am not influenced by the anti-smoking advertisements around me.	1	2	3	4	5
3. My smoking habit is central to my identity.	1	2	3	4	5
4. I am somewhat addicted to cigarette smoking.	1	2	3	4	5
5. There is little the average smoker can do to stop their smoking habit.	1	2	3	4	5
6. I buy cigarettes without much thinking of the	1	2	3	4	5

consequences.					
7. I feel that smoking enhances the image my friends have of me.	1	2	3	4	5
8. My friends influence my decision to continue smoking.	1	2	3	4	5
9. Smoking helps me forget about the day's problems.	1	2	3	4	5
10. Smoking helps keep me stress free.	1	2	3	4	5
11. I have switched to cheaper cigarette brands to accommodate the rising price of tobacco.	1	2	3	4	5
12. I borrow cigarettes from my friends or relatives when I cannot afford to buy cigarettes.	1	2	3	4	5
13. A plain cigarette package does not influence my habit of smoking.	1	2	3	4	5
14. The health advertisements on plain packaging are a reliable source of information.	1	2	3	4	5
15. Most health images shown on the cigarette package are not believable.	1	2	3	4	5
16. Health warnings on	1	2	3	4	5

cigarette packages provide sufficient information of possible health dangers.					
17. The main reason the government increases cigarette prices is to earn more tax revenue.	1	2	3	4	5
18. The government should exercise more stern smoke-free policies to stop smokers from smoking.	1	2	3	4	5
19. Smoke-free policies have reduced my motivation to smoke.	1	2	3	4	5
20. I do not pay much attention to Quit Victoria advertisements.	1	2	3	4	5
21. Quit Victoria advertisements strengthen my motivation to quit smoking.	1	2	3	4	5

Section 2

Demographic Information

22.Please tell us your age group.

18-21 ( )

22-25 ( )

26-30 ( )

23. Gender

Male ( )

Female ( )

24. Are you an Australian citizen or permanent resident? Please tick.

Yes ( )

No ( )

25. Please tell us your country of origin.

From England ( )

From New Zealand ( )

From Italy ( )

From China ( )

From India ( )

From Asia ( )

From Europe ( )

From South America ( )

From Africa ( )

Other ( )

_____

26. Please tell us your occupation

Office worker ( )

Hospitality ( )

Factory or Industrial ( )

Labourer ( )

Retired ( )

Unemployed ( )

Other ( )

27. Can you estimate your smoking status (based on a pack of 20 cigarettes)?

Smoke more than a pack a day	( )
Smoke less than a pack a day	( )
Smoke 1-2 cigarettes in a week	( )
Smoked at least 5 packs in life, no longer smoking	( )

28. I have intention to quit smoking.

Yes	( )
No	( )

Section 3

29. What reason(s) might you have for supporting or / opposing the anti-smoking initiatives?

30. How effective do you think anti-smoking initiatives are in discouraging smokers from continuing to smoke?

31. What in your opinion would work to discourage you from continuing to smoke?

Thank you and have a nice day!

Appendix C

Questionnaire Sources

Questionnaire items	**Main sources from academic literature**
1. I am aware of anti-smoking initiatives in Australia.	Wang and Mowen (1997)
2. I am not influenced by the anti-smoking advertisements around me.	Sivadas and Machleit (1994)
3. My smoking habit is central to my identity.	Stone, Barnes, and Montgomery (1995)
4. I am somewhat addicted to cigarette smoking.	Stone, Barnes, and Montgomery (1995)
5. There is little the average smoker can do to stop their smoking habit.	Rook and Fisher (1995)
6. I buy cigarettes without much thinking of the consequences.	Valence, d'Astous, and Fortier (1988)
7. I feel that smoking enhances the image my friends have of me.	Park and Lessig (1977)
8. My friends influence my decision to continue smoking.	Park and Lessig (1977)
9. Smoking helps me forget about the day's problems.	Unger and Kernan (1983)

10. Smoking helps keep me stress free.	Unger and Kernan (1983)
11. I have switched to cheaper cigarette brands to accommodate the rising price of tobacco.	Guillaumier et al (2015)
12. I borrow cigarettes from my friends or relatives when I cannot afford to buy cigarettes.	Guillaumier et al (2015)
13. A plain cigarette package does not influence my habit of smoking.	Lundstrom and Lamont (1976)
14. The health advertisements on plain packaging are a reliable source of information.	Barksdale and Darden (1972)
15. Most health images shown on the cigarette package are not believable.	Barksdale and Darden (1972)
16. Health warnings on cigarette packages provide sufficient information of possible health dangers.	Lundstrom and Lamont (1976)
17. The main reason the government increases cigarette prices is to earn more tax revenue.	Klein (1982)
18. The government should exercise more stern smoke-free policies to stop smokers from smoking.	Klein (1982)
19. Smoke-free policies have reduced my motivation to smoke.	Barksdale and Darden (1972)
20. I do not pay much attention to Quit Victoria advertisements.	Barksdale and Darden (1972)
21. Quit Victoria advertisements strengthen my motivation to quit smoking.	Mehrabian and Russell (1974)

28. I have intention to quit smoking.	Mehrabian and Russell (1974)
29. What reason(s) might you have for supporting or / opposing the anti-smoking initiatives?	Obermiller and Spangenberg (1998)
30. How effective do you think anti-smoking initiatives are in discouraging smokers from continuing to smoke?	Berg et al (2016)
31. What in your opinion would work to discourage you from continuing to smoke?	Berg et al (2016)

Appendix D

Ethics Clearance

Re: Quest Ethics Notification - Application Process Finalised - Application Approved

From: quest.noreply@vu.edu.au <quest.noreply@vu.edu.au>
Sent: Wednesday, February 5, 2020 9:53:29 AM
To: leannek.white@vu.edu.au <leannek.white@vu.edu.au>
Cc: Chee How Liau <chee.liau@live.vu.edu.au>; Keith.Thomas@vu.edu.au <Keith.Thomas@vu.edu.au>
Subject: Quest Ethics Notification - Application Process Finalised - Application Approved

Dear DR LEANNE WHITE,

Your ethics application has been formally reviewed and finalised.

» Application ID: HRE19-183
» Chief Investigator: DR LEANNE WHITE
» Other Investigators: MR Chee (Alvin) Liau, DR KEITH THOMAS
» Application Title: Anti-Smoking Initiatives in Australia: Examining the Continuance of Smoking Behaviour in Young Adults
» Form Version: 13-07

The application has been accepted and deemed to meet the requirements of the National Health and Medical Research Council (NHMRC) 'National Statement on Ethical Conduct in Human Research (2007)' by the Victoria University Human Research Ethics Committee. Approval has been granted for two (2) years from the approval date; 05/02/2020.

Continued approval of this research project by the Victoria University Human Research Ethics Committee (VUHREC) is conditional upon the provision of a report within 12 months of the above approval date or upon the completion of the project (if earlier). A report proforma may be downloaded from the Office for Research website at: http://research.vu.edu.au/hrec.php.

Please note that the Human Research Ethics Committee must be informed of the following: any changes to the approved research protocol, project timelines, any serious events or adverse and/or unforeseen events that may affect continued ethical acceptability of the project. In these unlikely events, researchers must immediately cease all data collection until the Committee has approved the changes. Researchers are also reminded of the need to notify the approving HREC of changes to personnel in research projects via a request for a

Appendix E

Codebook for Data Files

Section	Variable description	SPSS variable name	Coding instructions	Type	Measurement
Questionnaire	Q1_Awareness_antismokinginitiatives	Q1	1= Strongly disagree,	String	Ordinal
			2 = Mildly disagree	String	Ordinal
			3 = Neither agree or disagree	String	Ordinal
			4 = Mildly agree	String	Ordinal
			5 = Strongly agree	String	Ordinal
	Q2_Influential_anti-smoking advertisements	Q2	Same as in Q1	String	Ordinal
	Q3_Smoking_self-identity	Q3	Same as in Q1	String	Ordinal
	Q4_Smoking_addictive	Q4	Same as in Q1	String	Ordinal
	Q5_Smoking_habitual	Q5	Same as in Q1	String	Ordinal
	Q6_Cigarette_habitual buying	Q6	Same as in Q1	String	Ordinal

	Q7_Smoking_self-image	Q7	Same as in Q1	String	Ordinal
	Q8_Smoking_peer pressure	Q8	Same as in Q1	String	Ordinal
	Q9_Smoking_forget problems	Q9	Same as in Q1	String	Ordinal
	Q10_Smoking_stress free	Q10	Same as in Q1	String	Ordinal
	Q11_Disadvantaged social economics brand switching	Q11	Same as in Q1	String	Ordinal
	Q12_Disadvantaged social economics_ borrow cigarettes	Q12	Same as in Q1	String	Ordinal
	Q13_Plain packaging_ not influential	Q13	Same as in Q1	String	Ordinal
	Q14_Health advertisements reliable	Q14	Same as in Q1	String	Ordinal
	Q15_Health images unbelievable	Q15	Same as in Q1	String	Ordinal
	Q16_Health warnings informative	Q16	Same as in Q1	String	Ordinal
	Q17_Price increment tax revenue	Q17	Same as in Q1	String	Ordinal
	Q18_Smoke free policies	Q18	Same as in Q1	String	Ordinal
	Q19_Smoker free_ reduced smoking	Q19	Same as in Q1	String	Ordinal
	Q20_Quit Victoria attention getting	Q20	Same as in Q1	String	Ordinal

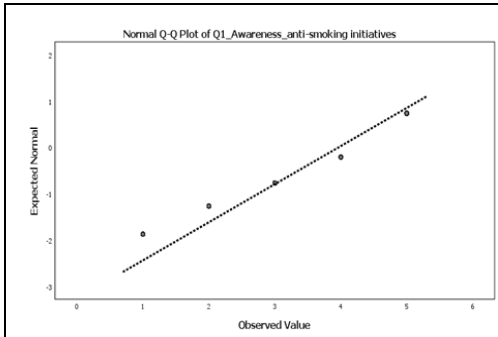
	Q21_Quit Victoria_ quit motivation	Q21	Same as in Q1	String	Ordinal
Demographic	Age	Q22	1=18-21	String	Ordinal
			2=22-25	String	Ordinal
			3=26-30	String	Ordinal
	Gender	Q23	1=Male	String	Ordinal
			2=Female	String	Ordinal
	Australian PR	Q24	0=No	String	Ordinal
			1= Yes	String	Ordinal
	Country of Origin	Q25	1=Africa	String	Nominal
			2=Asia	String	Nominal
			3=China	String	Nominal
			4=England	String	Nominal
			5=Europe	String	Nominal
			6=India	String	Nominal

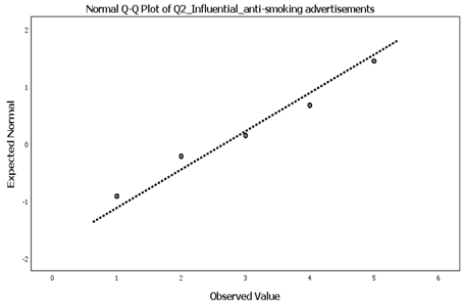
			7=Italy	String	Nominal
			8=New Zealand	String	Nominal
			9=South America	String	Nominal
			10=Other	String	Nominal
	Occupation	Q26	1=Factory or Industrial	String	Nominal
			2=Hospitality	String	Nominal
			3=Labourer	String	Nominal
			4=Office worker	String	Nominal
			5=Retired	String	Nominal
			6=Unemployed	String	Nominal
			7=Other	String	Nominal
	Smoking Status	Q27	1=1-2 cigarettes a week	String	Ordinal

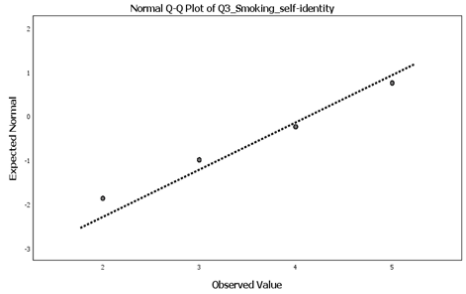
			2=At least 5 packs in life, no longer smoking	String	Ordinal
			3=Less than a pack a day	String	Ordinal
			4=Less than a pack a day1-2 cigarettes a week	String	Ordinal
			5=More than a pack a day	String	Ordinal
	I have intention to quit smoking	Q28	0=No	String	Ordinal
			1=Yes	String	Nominal

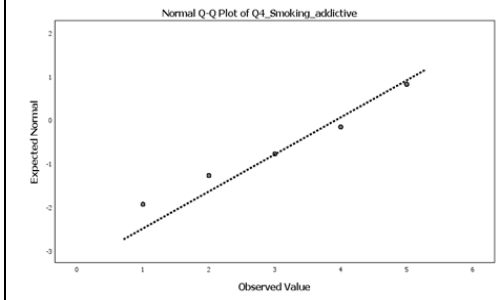
Appendix F

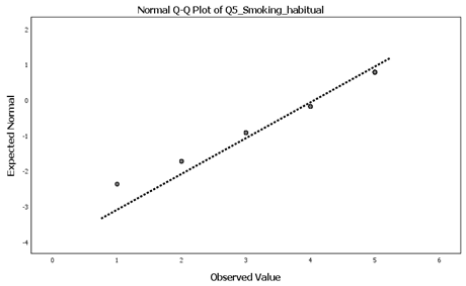
Normality Q-Q Plots of Variables

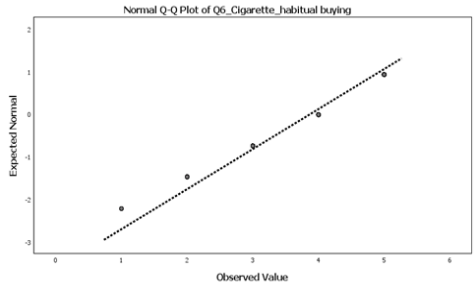


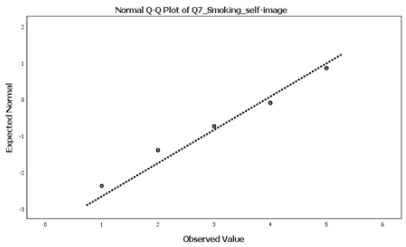








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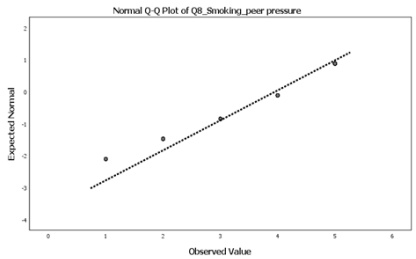
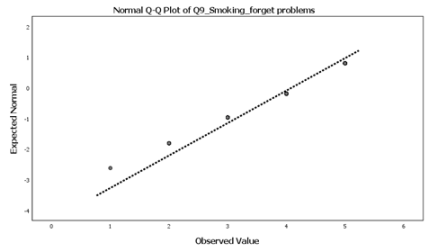
Observed Value


Normal Q-Q Plot of Q8_Smoking_peer pressure
Expected Normal
Observed Value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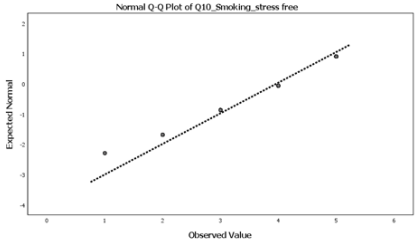
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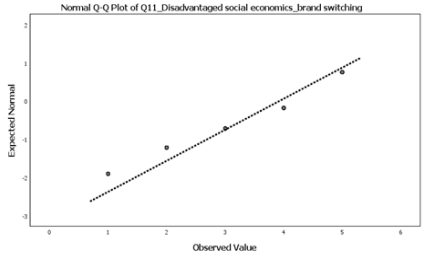
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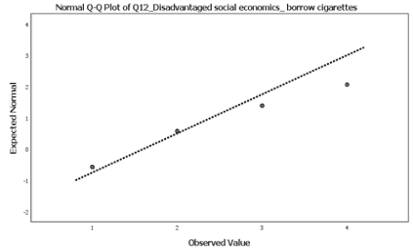
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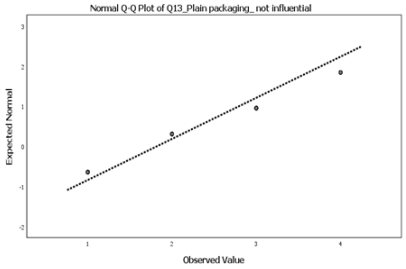
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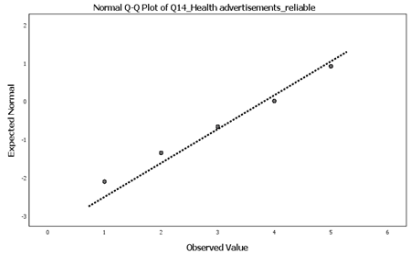
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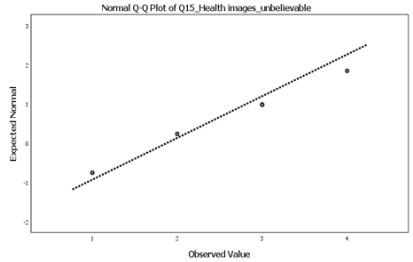
Observed Value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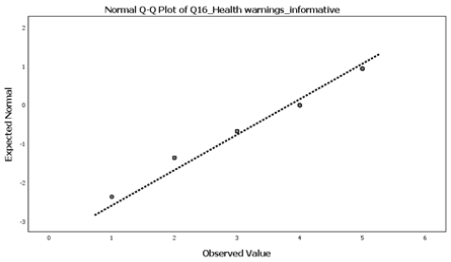
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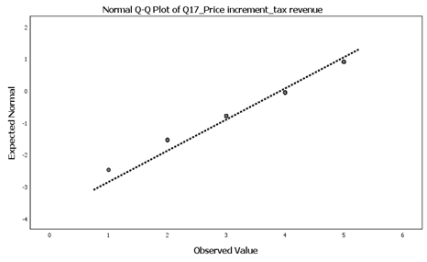
Observed Value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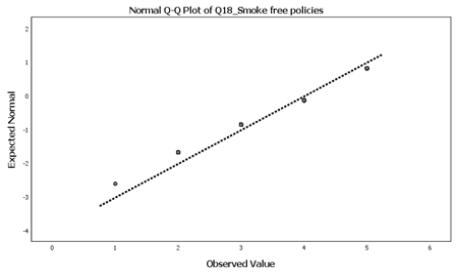
Observed Value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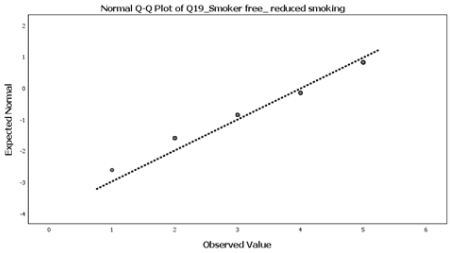
Observed Value


Normal Q-Q Plot of Q19_Smoker free_ reduced smoking
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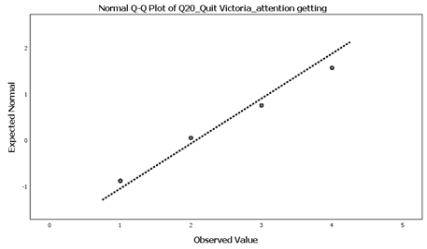
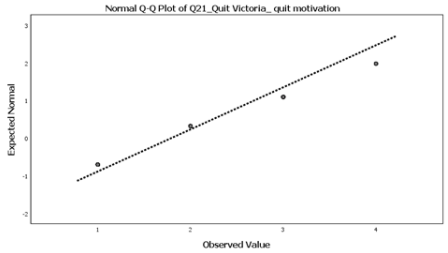

Normal Q-Q Plot of Q20_Quit Victoria_attention getting
Expected Normal
Observed Value


Normal Q-Q Plot of Q21_Quit Victoria_ quit motivation
Expected Normal
Observed Value