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*Beyond stereotypes: The role of exposure in reshaping Children's biases towards women as coaches in sports*

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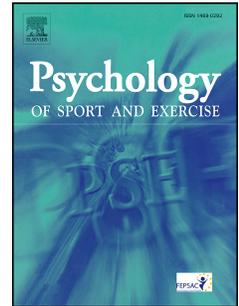
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Beyond Stereotypes: The Role of Exposure in Reshaping Children's Biases Towards Women  
as Coaches in Sports

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## Abstract

The underrepresentation of women in sports coaching, linked to discrimination and bias may, according to contact theory, be mitigated by increasing the visibility of women coaches, especially among children. Our study examined whether young athletes exposed to women coaches affected their explicit and implicit biases compared to unexposed peers. Seventy-five children aged between 4-17 years were evaluated using two explicit attitude measures and an Implicit Association Task. Results indicated that participants with women coach experience were more explicitly satisfied with woman coaches, preferred them more as potential coaches, and associated men with sports less than those without such exposure. Whilst exposure and implicit bias significantly predicted explicit satisfaction, exposure did not moderate the bias relationship. This suggests that exposure to women coaches reduces negative attitudes in young athletes but does not significantly affect the underlying influence of implicit biases, indicating a need for more comprehensive strategies to address gender inequalities in sports coaching.

**Keywords:** Women Coaches, Attitudes, Implicit Bias, Exposure, Youth Sport

## Beyond Stereotypes: The Role of Exposure in Reshaping Children's Biases Towards Women as Coaches in Sports

The landscape of sports coaching is marked by a conspicuous gender disparity. In the realm of men playing sport, a mere three percent of coaching positions are occupied by women\*, while this figure increases to 40% for women playing sport (Walker & Bopp, 2010). This underrepresentation becomes more pronounced within traditional male-dominated sports. Existing research sheds light on the multitude of factors contributing to this gendered division in sports coaching. These factors range from overt gender-based discrimination to more subtle, yet equally impactful, organisational barriers (Murray et al., 2020; Norman & Rankin-Wright, 2016). This pervasive underrepresentation not only reflects deep-seated societal biases but also raises questions about the potential loss of diverse leadership styles and perspectives in sports coaching. Understanding and addressing these disparities is crucial, for equality in sports and for the enrichment of the coaching profession. Importantly, contact theory suggests that increasing athletes' opportunities to meaningfully interact with women in coaching roles could serve as means of dismantling biases and discrimination that pervade the sports coaching realm (Pettigrew & Tropp, 2006). Without meaningful interactions with women coaches, the cycle of prejudice and discrimination is likely to persist, further entrenching gender disparities in the coaching field. The challenges faced by women in sports coaching has been largely attributed to deeply rooted stereotypes and biases that undermine their competence and authority (Norman & Rankin-Wright, 2016). Interviews with women coaches reported not only a scarcity of appropriate coaching opportunities for women but also a lack of incentives, recognition, and educational support essential for their professional growth (Greenhill et al., 2009; Norman, 2008). The entrenched stereotype that associates coaching with masculinity has resulted in overt

*\*Notes.* This paper primarily uses the term “women” to reflect the societal construct of gender, emphasising the roles, behaviours, and societal expectations associated with this identity. However, when discussing findings from original studies that specifically use terms related to biological sex (e.g., “female”), we retain their terminology to accurately convey the scope and focus of their research.

scepticism about women coaches' technical knowledge and decision-making abilities (Norman & Rankin-Wright, 2016). Schull and Kihl (2019) further emphasised how these biases manifest in tangible disadvantages, including limited opportunities, inequitable compensation, and diminished acknowledgment of coaching achievements. These challenges are prevalent across various levels of sports, from local community clubs (Murray et al., 2020) to elite professional teams (Allen & Shaw, 2009).

Many sporting organisations fall short in providing a healthy work-life balance, posing additional challenges for women coaches. The rigors of coaching, with its demands for travel and irregular schedules, often clash with family responsibilities and personal commitments, making it difficult for women to maintain equilibrium (Kenttä et al., 2020). This lack of support has manifested into high attrition rates amongst women coaches and decreased psychological wellbeing (Didymus et al., 2020). These challenges are compounded by organisational barriers, which hinder women's career advancement and progression within the sports sector (Clarkson et al., 2019). Research highlights that coaching positions are often filled through informal recruitment channels, relying heavily on social capital, personal networks, and acquaintances. This mode of recruitment tends to favour men, who are more commonly perceived as competent coaches, thereby exacerbating gender imbalances (Sisjord et al., 2020). Interviews with women coaches revealed a pervasive perception of limited career mobility, a sentiment reinforced by stark gender disparity statistics (Hancock & Hums, 2016). A recent meta-analysis corroborates these findings, indicating that women coaches typically have shorter tenures and lower job satisfaction compared to their men counterparts (Cunningham et al., 2019). The underrepresentation of women in coaching roles creates a self-perpetuating cycle: the scarcity of female role models in coaching positions perpetuates the perception of coaching as a male-dominated role (LaVoi et al., 2019). Consequently, aspiring women coaches face challenges in finding mentors and role models, further

hindering the diversification of coaching ranks and reinforcing the gendered stereotype of coaching as a profession predominately for men (Clarkson et al., 2019; Norman & Rankin-Wright, 2016).

Beyond the organisational barriers, women coaches frequently encounter discrimination and marginalisation within the sports domain. This can manifest in various forms, such as having their expertise and authority questioned, being subjected to gender-based microaggressions, or receiving less support and acknowledgement compared to their male counterparts (Norman & Rankin-Wright, 2016). Such discrimination often extends to unequal treatment in terms of access to resources and facilities. Women coaches reported being allocated inferior training grounds, equipment, or finding their game schedules relegated to less favourable times (LaVoi et al., 2019). Moreover, they often face sexist remarks or belittlement during interactions with colleagues, athletes, and even parents, which not only undermines their professional standing but also contributes to a hostile and unwelcoming work environment (Kenttä et al., 2020).

Women coaches face multifaceted barriers that reflect the gendered stereotypes and biases prevalent in sports. One pervasive challenge is the criticism related to motherhood, where women coaches' competence is often questioned due to perceived distractions from familial responsibilities (Kamphoff, 2010). This issue is compounded by experiences of harassment from male referees, contributing to a misogynistic work environment, as shared by women basketball and volleyball coaches in focus groups (Barnes & Adams, 2021). Additionally, a concerning trend has emerged where female college athletes expressed a preference for male coaches based on the belief that men possess superior sports knowledge and leadership qualities (Schull & Kihl, 2019; Kalin & Waldron, 2015). Interestingly, this preference exists among athletes with no prior experience with women coaches, suggesting that these biases are influenced more by societal stereotypes than personal experience.

However, interviews with a sample of six women athletes showed divided preferences, indicating that not all athletes hold these biases (Rima et al., 2019). Contrastingly, Magnusen & Rhea (2009) found that male athletes were generally less comfortable with women coaches than their female counterparts were, highlighting a gendered logic that attributed authoritative leadership and disciplinary capacity predominantly to men. These findings underscore the gendered perceptions that women coaches must navigate and point to the deep-rooted nature of gender inequality in sports coaching.

The experiences of discrimination and marginalization reported by women coaches highlight not only the barriers to their inclusion and progress in coaching roles but also underscore the broader systemic issues of gender inequality in sports. These experiences, perpetuated by others within the sports environment, can be analysed through lens of explicit and implicit biases. Explicit bias refers to the conscious preferences or prejudices individuals within the sports community might hold, such as overt preferences for male coaches over female coaches (Dovidio et al., 2002). In contrast, implicit biases entail the unconscious associations or attitudes that people may harbour (Gawronski et al., 2003), which might lead to a pervasive, yet often unrecognised, belief that men are inherently more suited for coaching roles than women. Such biases, whether explicit or implicit, contribute to the systematic challenges women coaches face, including deficits in support and instances of harassment (Clarkson et al., 2019; LaVoi et al., 2019). However, it is important to note that implicit attitudes do not always translate into overtly biased behaviour (Perugini, 2005), indicating a complex relationship between underlying biases and their manifestation within the sporting context.

Assessing explicit biases can be relatively straightforward, often employing self-report measures where individuals openly express their attitudes. These measures allow participants to consciously articulate their views on various topics, including those relevant to

sports (Gerber et al., 2019; Sabiston et al., 2020). For instance, research indicates that explicit attitudes such as self-reported enjoyment in sports act as a protective factor, reducing the likelihood of youth dropping out of sports participation (Gardner et al., 2017). Similarly, a coach's explicit belief in their own abilities has been shown to predict increased positive feedback, commitment to training, and motivation, which are essential for a successful coaching experience (Kim et al., 2020). Furthermore, an athlete's positive explicit perception of their coach has been associated with enhanced performance, satisfaction, wellbeing, and trust in the coach (Lee et al., 2023). These findings underscore the significance of understanding and addressing explicit attitudes in the realm of sports, as they can profoundly influence both the experiences and outcomes of athletes and coaches.

Exploring implicit biases presents a complex challenge, as they encompass learned associations that individuals might not be aware they hold (Gawronski et al., 2003). One widely utilised tool in this realm is the Implicit Association Test (IAT, Gawronski et al., 2003). A measure designed to assess the strength of automatic associations between concepts (e.g., ethnicity, gender) and evaluations (e.g., good vs. bad, or pleasant vs. unpleasant). The application of the IAT in the domain of sports has yielded insightful findings. It has revealed implicit associations in adolescents linking gambling more closely with sports than with other activities (Li et al., 2018). It has shown that athletes have negative implicit associations toward substance use (Brand et al., 2014). Additionally, through the IAT, gendered associations in sports have been exposed, with activities including weightlifting and soccer linked more strongly with men, while dance and cheerleading are more closely associated with women (Plaza et al., 2017). Despite these advancements, there remains a notable gap in research on implicit attitudes within the sports context, particularly concerning coaches. To date, no study has investigated implicit biases towards women as coaches.

To effectively address implicit and explicit biases towards women as coaches, a multifaceted approach is necessary, given the deeply rooted nature of gender inequality in sports. Burton and Leberman (2017) advocated for a variety of strategies aimed at fostering change, including the establishment of supportive networks within sports clubs that actively encourage women to pursue leadership positions. Additionally, they highlight the significance of leadership development programs specifically tailored for women, which not only enhance skills and knowledge but also bolster confidence and visibility in these roles. Among these strategies, increasing the visibility of women in coaching roles stands out as particularly impactful, especially for influencing younger athletes. Research has demonstrated that exposure to women playing sport can enhance familiarity, liking, and reduce prejudice towards female athletes (Dietz, 2023; Schealder & Wagstaff, 2018). Furthermore, girls and women athletes who have been coached by a woman head coach are four times more likely to pursue coaching positions themselves compared to those who have not had such exposure (Wasend & LaVoi, 2019). This effect aligns with contact theory, which posits that exposure to a group reduces prejudice against them (Pettigrew & Tropp, 2006). Further supporting this, studies have shown that direct interaction with women coaches improves attitudes towards them in coaching (McDowell & Cunningham, 2008). Whilst research specifically examining the impact of exposure on implicit and explicit biases towards women as coaches is limited, the principles of contact theory have been well validated. Meta-analyses have revealed that contact with the opposite gender significantly reduces gender role stereotypes (Koch et al., 2015).

Building on the principles of contact theory, Midgley et al. (2021) highlighted the importance of female athletes having access to role models who not only share their gender but also their athletic pursuits. Their study revealed that male and female athletes gain inspiration from high-profile figures within their own sports, although female athletes

EXPLICIT AND IMPLICIT BIASES TOWARDS WOMEN AS COACHES 7

nominated fewer same-gender athletes as role models, despite the preference for role models who are both of the same gender and involved in the same sport. It was theorised that such role models serve three key purposes: they exemplify achievable success, embody a potential future self, and actively dismantle pervasive negative gender stereotypes (Midgley et al., 2021). Therefore, fostering opportunities for young athletes to experience women in coaching roles may gradually shift perceptions, dispelling the notion that coaching competence is gender-dependent and thereby helping to dismantle entrenched stereotypes and unconscious associations.

### *The Present Study*

Given the persistent challenges and discrimination faced by women coaches in sports, identifying transformative strategies and positive influences on the perceptions of children and adolescents towards women in coaching roles is crucial. This focus on the younger demographic is strategic as early exposure to counter-stereotypical role models has been shown to be crucial in dismantling biases (Olsson & Martiny, 2018). The influence of social interaction on bias formation is well documented, and children who often engage in sports from as young as six years old (Merkel, 2013) begin to develop schemas, or preconceived ideas, about various aspects of the world, including sports-related concepts (Martin & Cook, 2021). It is anticipated that exposure to women coaches could exert a beneficial influence reshaping schemas of what sport coaches “look like”, challenging the deeply ingrained society stereotype that positions sports coaches as predominately men. Such proactive measures are not only essential for highlighting the multifaceted nature of the obstacles women encounter, but also for contributing to the broader effort to address gender inequities in sports leadership. Furthermore, the potential role of exposure to women coaches in mitigating explicit and implicit biases remains an under-researched area, with existing studies predominantly relying on qualitative methods (e.g., Hancock & Hums, 2016; Kamphoff,

2010; Rima et al., 2019). These qualitative methods have yielded valuable in-depth contextual understandings of the dynamics at play regarding biases towards women in sports leadership. However, the emphasis on qualitative research also highlights a gap in the literature. There is a need for more quantitative studies or mixed-methods research that can complement these findings by providing broader generalisability and statistical validation of the observed phenomena. The integration of both qualitative and quantitative approaches would offer a more holistic and robust evidence base (Wasti et al., 2022), answering different but complementary questions about the impact of gender representation in sports coaching.

Therefore, our study aimed to examine if young athletes exposed to women coaches exhibited differences in explicit and implicit biases compared to those without such exposure. Additionally, we sought to determine whether the relationship between these athletes' implicit biases and explicit attitudes is influenced by their exposure to women in coaching roles. It was hypothesised that young athletes who been exposed to women coaches would demonstrate more favourable explicit attitudes and fewer implicit biases against women in coaching roles, compared to those without such exposure. It was further hypothesised that exposure to women as coaches would weaken the relationship between implicit and explicit bias towards women as coaches.

## Method

### Participants

A sample of 75 children and adolescents who play/ed sport aged between 4-17 years ( $M=12.01$ ;  $SD=3.35$ ), were conveniently recruited from various sporting clubs across Victoria, Australia. This sample included 55 boys ( $M=12.15$ ;  $SD=3.27$ ) and 20 girls ( $M=11.65$ ;  $SD=3.62$ ). More than half of participants had played Australian Rules Football

and had experience with a woman coach. Further detailed demographic data for participants can be found in Table 1.

**Table 1**

*Participant Demographic Information (N = 75)*

Variable	<i>n</i>	%
<b><i>Gender</i></b>		
Boy	55	73.3
Girl	20	26.7
<b><i>Sport*</i></b>		
Athletics	14	18.7
Basketball	34	45.3
Cricket	12	16
Australian Rules Football	40	53.3
Netball	8	10.7
Rugby Union	3	4
Soccer	16	21.3
Swimming	22	29.3
Other	16	21.3
<b><i>Experience with a Woman Coach</i></b>		
No Experience		
Boys	23	30.7
Girls	3	4
Yes Experience		
Boys	17	22.7
Girls	32	42.7

*Notes.* \*Participants listed all sports they play/ed, so percentages do not total 100%.

## **Procedure**

Prior to commencing our study, ethical approval was obtained from the [university names removed for reviewing] High-Risk Human Research Ethics Committee. Preceding

full-scale recruitment for our study, pilot testing of the materials was conducted with a small group of parents and their children to ensure clarity and accessibility of the tasks. This preliminary step allowed us to refine the measures based on participant feedback ensuring functionality and comprehensibility for participants during the actual study (Boateng et al., 2018). Recruitment efforts involved distributing study advertisements through emails to a broad range of children's sporting clubs in Victoria, Australia, and sharing them on community social media pages. Guardians who viewed the advertisement could express their interest in participating by clicking on an embedded Inquisit link. Upon accessing this link, they were presented with a detailed overview of the study, its objectives, and the implications of participation. Prior to participation, guardians were required to provide informed consent for themselves and on behalf of their child. After informed consent was given, guardians proceeded to complete the demographic questionnaire. Subsequently, with guardians' consent and children's assent to participate, child and adolescent participants were guided to complete the Coach Satisfaction Questionnaire, Sports Coach Face Selection Task and finally the Sport Leader Implicit Association Task (SL-IAT). As an incentive for participation, participants were provided an opportunity to enter two separate prize draws: one for a chance to win one of five \$100 gift cards, and another for a \$500 gift card to be donated to a sporting club of their choice.

## **Materials**

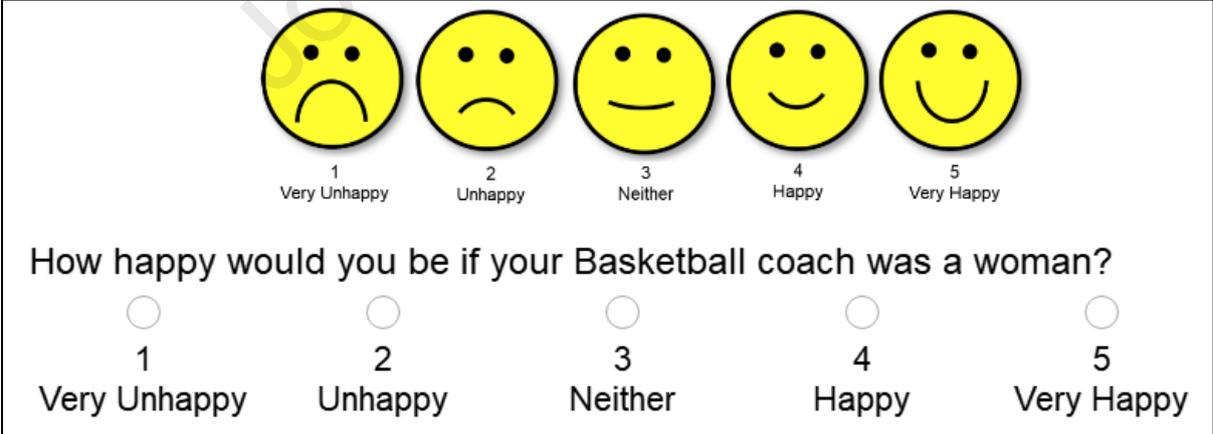
Materials were administered electronically through Inquisit Version 6 (Millisecond Software, 2022). Initially, the guardians of the young athletes completed the demographic questionnaire, followed by the child and adolescent participants who completed the remaining tasks.

**Demographics Questionnaire.** A demographic questionnaire was administered to collect information on the young athletes' age, gender, and sports history. For each sport played, guardians reported the number of men and women who had coached their child.

**Coach Satisfaction Questionnaire.** For each sport the child or adolescent participated in, they were asked to rate their satisfaction with the prospect of having a woman coach on a 1 to 5 Likert scale, ranging from “very unhappy” to “very happy” (see Figure 1). The satisfaction ratings obtained for each sport were then averaged to compute an overall satisfaction score. This score serves as one of the two measures assessing the explicit attitudes of young athletes towards women in coaching roles. Research on single-item questionnaires indicates that they can often be as valid and reliable as their multi-item counterparts and have been used in other sport-related domains (e.g., body weight satisfaction; Allen et al., 2022).

**Figure 1**

*Coach Satisfaction Questionnaire*





1                      2                      3                      4                      5  
 Very Unhappy      Unhappy              Neither              Happy              Very Happy

How happy would you be if your Basketball coach was a woman?

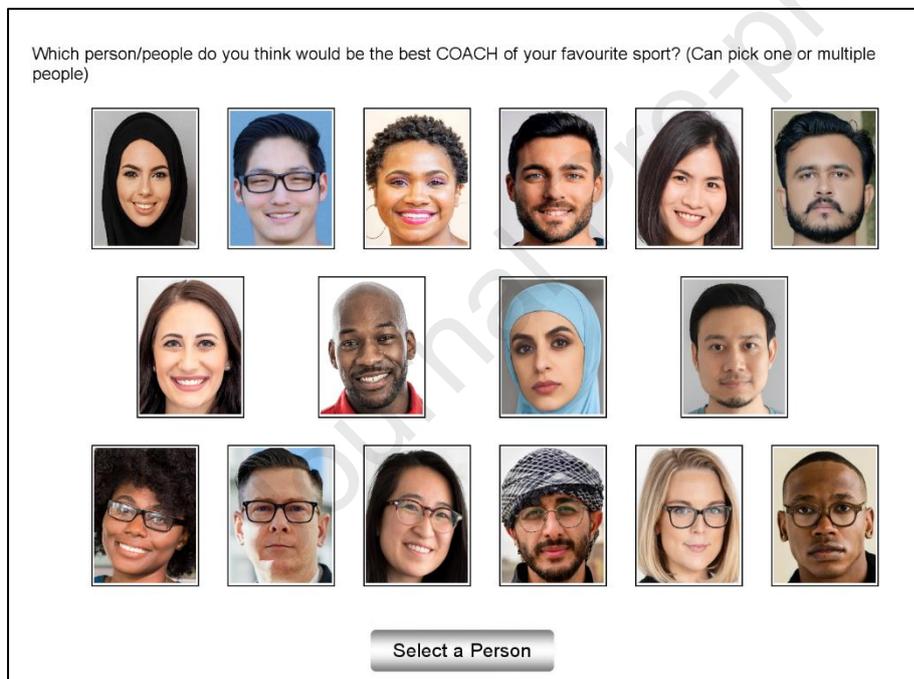
                                                                                         
 1                      2                      3                      4                      5  
 Very Unhappy      Unhappy              Neither              Happy              Very Happy

**Sports Coach Face Selection Task.** The Sports Coach Face Selection Task was devised as a novel single-item measure to assess explicit bias towards sports leaders. This task presented participants with 16 diverse faces (see Figure 2), sourced from stock image

websites after purchasing a license for their use. Participants were asked to choose the faces they believed would best suit the role of a coach in their favourite sport. Based on their selections, participants were categorised into two groups: those who selected at least one woman's face and those who selected none. Similar face selection tasks have been successfully employed in research exploring perceptions of attractiveness (Riggio et al., 1991).

**Figure 2**

*Sports Coach Face Selection Task*

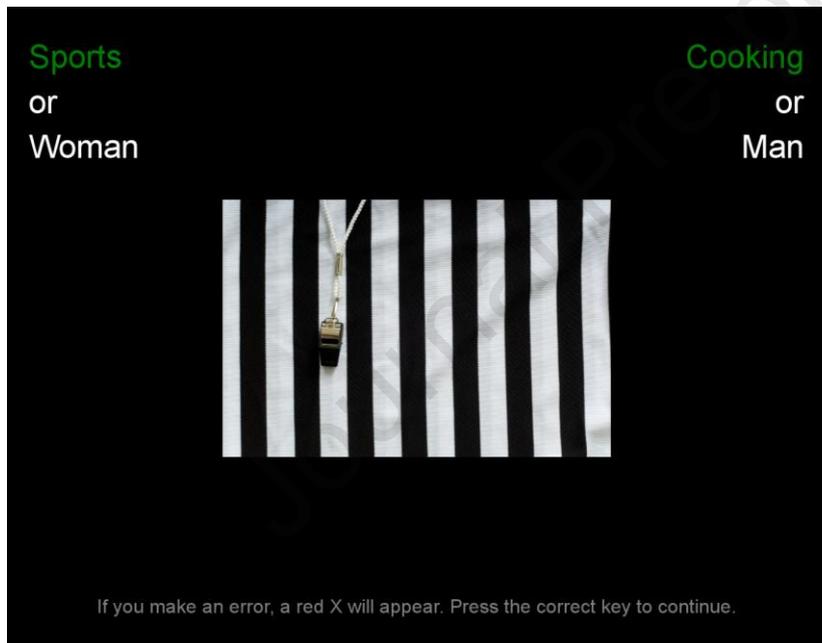
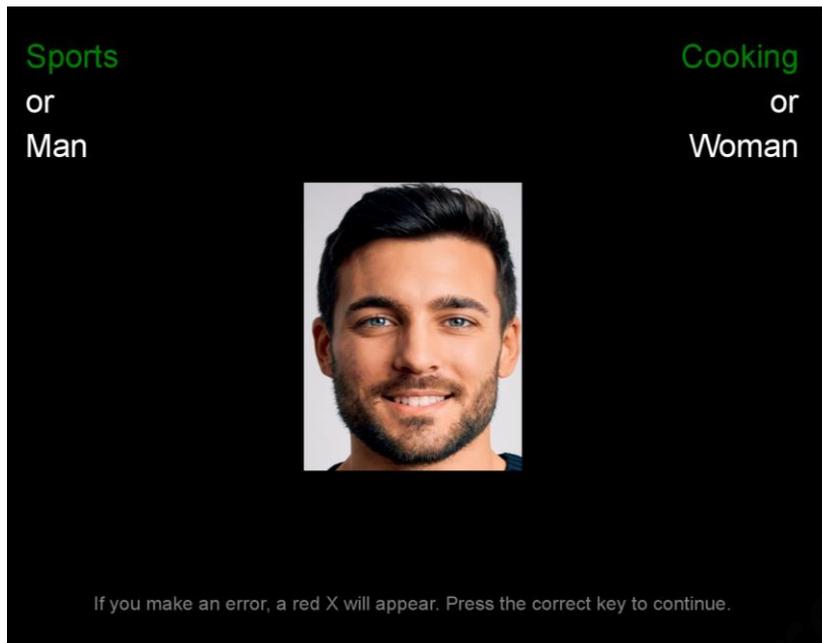


*Sport Leader Implicit Association Task (SL-IAT)*. The current study employed a novel SL-IAT to investigate implicit biases. The IAT measures the strength of implicit, automatic associations between pairs of opposing concepts (Nosek et al., 2014). This involves comparing the strength of hypothesis-consistent associations—those that align with expected biases, akin to pairing “night” with “dark” or “day” with “light”—against hypothesis-inconsistent associations, which are contrary to expected biases, similar to linking “night”

with “light” or “day” with “dark”. For the SL-IAT the hypothesis-consistent association would be pairing “sports” with “man”, and “cooking” with “woman”, while the hypothesis-inconsistent association would be linking “sports” with “woman”, and “cooking” with “man”. In each trial, participants were presented with an image depicting either a man or woman’s face, sports leader paraphernalia (e.g., whistles, red card, coaches board etc.), or cooking equipment (see Figure 3). Cooking was chosen as a thematic counterpart to sports due to its historical genderization in society, serving as an effective contrast to explore gender biases (Rodrigues et al., 2020). Like sports, cooking is an activity with strong traditional gender associations, but both are increasingly recognised as transcending gender boundaries. This pairing in the SL-IAT aimed to uncover implicit biases by challenging participants to associate these gender-neutral activities with men and women, thereby providing insights into the depth of societal stereotypes that categorise sports and cooking along gender lines. Child and adolescent participants then categorised the image using the “O” key for corresponding labels (e.g., man, cooking) shown on the screen’s top-right or the “W” key for labels (e.g., woman, sport) on the top-left. Adhering to the standard IAT format outlined by Greenwald et al. (1998), our sport focused IAT comprised seven blocks.

### **Figure 3**

*SL-IAT image example*



In Block 1 participants categorised 20 images into as “sports” or “cooking”. If participants were assigned to the hypothesis-consistent condition first they would press “O” for cooking and “W” for sports images, otherwise key bindings were reversed. In Block 2 participants sorted through 20 images, pressing “O” when they saw a woman’s face and “W” for man’s face. The subsequent Blocks 3 and 4, comprised 20 and 40 trials respectively, and presented participants with images of a man’s or woman’s face, sports gear, or cooking equipment. Block 5 served as a repetition of Block 1 but with reversed associations. If

participants had initially linked “O” with cooking images (and by extension, women), they were now asked to press “W” for those and “O” for sports images (and by extension men). Blocks 6 and 7 mirrored Blocks 3 and 4, with 20 and 40 trials respectively, presenting the same images. Blocks 3, 4, 6, and 7 were experimental blocks utilised for SL-IAT scoring.

Participants began the task with either hypothesis-consistent or inconsistent pairings (Blocks 3 and 4), and these pairings alternated as the task progressed (Blocks 6 and 7). To ensure the validity and quality of the results, only the reaction times from correct responses, which fell between 300ms and 5000ms, were considered for the SL-IAT evaluation (Gawronski et al., 2020). The key metric derived from this data, known as the D-score, gauged the strength of participants’ associations: it compared hypothesis-consistent to hypothesis-inconsistent associations. This score is calculated by subtracting the average reaction times of consistent trials from those of inconsistent ones and then dividing the result by the standard deviation of all reaction times (Nosek et al., 2014). Importantly, because the D-score is a relative measure, comparing within-participant performance, it is not adversely affected by the natural variability in reaction times that may occur due to age differences among participants (Cvencek et al., 2011). A D-score leaning positive implies a stronger association between men and sports, whereas a negative score reveals a tendency to associate women with sports.

### **Statistical Design**

The current study employed a quantitative research design, focused on the analysis of data collected through standardised instruments. This approach is grounded in a positivist epistemology, which posits that knowledge can be reliably generated through observation and measurement of a phenomena. Under this paradigm, it is assumed that social realities, such as

biases towards women in sports coaching roles, can be objectively measured, analysed, and understood.

Data was imputed, cleaned, and analysed using IBM® SPSS® Statistics (Version 27). Before conducting the primary analyses, preliminary data checks were conducted. We examined the average woman coach satisfaction ratings and SL-IAT D-scores for outliers and normality. For both continuous variables, Z-score values were within the range of -3 to 3. Further, the ratios of skewness and kurtosis to their standard errors were also contained within this range. These findings suggest there were no outliers, and data for the variables of interest were normally distributed (Field, 2018).

To assess the effect of exposure to women coaches on explicit attitudes towards them, a two-tailed independent samples t-test was conducted comparing the average satisfaction ratings of child and adolescent participants who had experienced a woman coach against those who had not. Based on an a priori G-power analysis, set with an alpha of .05, power at .8, and expecting a medium effect size (Cohen's  $d = 0.5-.6$ ), a sample size ranging from 72 to 102 participants was recommended for meaningful comparisons. A chi-square test of independence was also conducted to compare these exposure groups on their selections in the Sports Coach Face Selection Task, specifically evaluating whether they chose a woman as their ideal coach.

To examine the effect of exposure to women coaches on implicit bias towards them, a two-tailed independent samples t-test was conducted comparing the SL-IAT D-scores between children who had experienced women coaches and those who had not. It should be noted that no participants recorded more than 10% of their trials with response times outside the 300ms to 5000ms range. However, seven participants did not complete the SL-IAT and could not be included in analyses involving implicit bias.

Lastly, a moderated regression analysis requiring the use of Hayes Process Macro Tool (version 4.1) extension for SPSS® was conducted. This analysis investigating whether exposure to a woman coach, using the total number of woman coaches experienced as a moderator, influenced the relationship between implicit bias (i.e., SL-IAT D-score) and explicit attitudes (i.e., average woman coach satisfaction rating). Bootstrapping was set at 5000 samples with 95% confidence intervals when estimating effects of each coefficient, as per the recommendations of experts (Field, 2018). All assumptions of moderated regression were tested and met. Collinearity statistics indicated no multicollinearity; VIF values for each of the predictor variables were below 10 and tolerance statistics were above .2 (Field, 2018). A histogram and normal probability plot of standardised residuals supported normality and linearity of residuals. Lastly max Mahalanobis distance detected no multivariate outliers.

## Results

The assumption of homogeneity of variance was met for both independent samples t-test (Levene's statistic  $p > .05$ ). The results from the first independent samples t-test revealed a significant effect  $t(73) = -3.714, p < .001, d = .185$ . Participants who had been coached by a woman, as shown in Table 2, expressed significantly higher average satisfaction ratings at the prospect of having another woman as a coach, compared to those who had never been coached by a woman. However, the second independent samples t-test examining the effect of exposure to women coaches on implicit bias towards them found no significant difference between the exposure groups  $t(66) = .723, p = .473$ . Both demonstrated equally strong associations for men with sports and women with cooking, as indicated by the SL-IAT (see Table 2).

### Table 2

*Mean and Standard Deviation of Satisfaction Rating and SL-IAT*

Variable	No Exposure to Women Coach			Experience with Women as Coaches		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
	Average Woman Coach Satisfaction Rating	26	3.38	.91	49	4.18
SL-IAT D-Score	23	.53	.40	45	.47	.31

*Notes.* *M*=Mean; *SD*=Standard Deviation; SL-IAT=Sport Implicit Association Task

A chi-square test of independence assessed the impact of exposure on the Sports Coach Face Selection Task. Observed and expected frequencies on exposure (see Table 3) revealed that participants with prior experience of women coaches were significantly more likely to select a female face as an ideal coach compared to those without such exposure,  $\chi^2(1, n=75) = 4.032, p = .045, \phi = .232$ .

**Table 3**

*Observed and Expected Frequencies of Exposure across Sports Coach Selection Task*

		No Exposure to Women Coach	Experience with Women Coach
Sports Coach Face Selection Task	Female Face Selected	7(11.1)	25(20.9)
	Female Face Not Selected	19(14.9)	24(28.1)

*Notes.* Expected frequencies are presented within parentheses.

The age and gender composition of participants related to their performance on the Sports Coach Face Selection Task and their exposure to women coaches, is presented in Table 4. Participants were categorised into four groups: (1) those who selected a female face and had exposure to women coaches; (2) those who selected a female face but had no exposure to women coaches; (3) those who did not select a female face but had exposure to women coaches; and (4) those who did not select a female face and had no exposure to women coaches. An independent sample ANOVA revealed no significant age differences

among these groups  $F(3,71)=1.469, p=.230$ . However, a Fisher's Exact test examining gender disparities within these categories indicated a significant difference  $\chi^2(n=75) = 8.649, p=.029$ . Girls were more likely to select a female face in the task, irrespective of their exposure to women coaches. Caution is warranted in interpreting these results due to the sample's underpowered nature, particularly the low proportion of girls relative to boys.

**Table 4**

*Demographic Information Across Sports Coach Face Selection Task Groups (N = 75)*

Sports Coach Face Selection Task Groups	Gender		Age
	Boy	Girl	<i>M(SD)</i>
Female Selected/No Exposure	5	2	14(3.56)
Female Not Selected/No Exposure	18	1	12.63(2.93)
Female Selected/Exposure	14	11	11.56(3.79)
Female Not Selected/Exposure	18	6	12.01(3.35)

*Notes.* *M*=Mean; *SD*=Standard Deviation.

The moderated regression analysis explored whether exposure to women coaches in sports impacted the relationship between implicit bias and explicit attitudes. The analysis yielded significant results,  $F(3,64)=6.377, p<.001$ , with the coefficient values detailed in Table 5. The SL-IAT was found to negatively predict satisfaction scores. This implies that participants who held weaker implicit associations of men with sport and women with cooking were more likely to express higher satisfaction with the notion of being coached by a woman. Furthermore, the total number of women coaches encountered by participants significantly predicted their explicit attitudes. Participants who had more experiences with women as coaches reported higher satisfaction ratings. However, it is important to note that the interaction was not significant. This indicates that the total number of women coaches experienced did not moderate the relationship between implicit bias and explicit attitudes.

**Table 5**

*Results of the Moderated Regression Analyses*

	$R^2$	$N$	$b$	SE B	$t$	$p$	LCI	UCI
Model	.26	68						
SL-IAT D-Score			-.724	.300	-2.41	<b>.019</b>	-1.32	-.125
Total number of Women Coaches			.112	.029	3.85	<b>&lt;.001</b>	.054	.170
Interaction			.046	.086	.539	.592	-.125	.218

Notes:  $b$ =beta values; SE B=standard errors; LCI=lower confidence interval; UCI=upper confidence interval.

### Discussion

Our study contributes to the understanding of gender biases in sports by revealing how exposure to women coaches can positively influence young athletes' explicit attitudes towards women in coaching roles. Notably, in partial support of our first hypothesis, the findings highlight a critical distinction between explicit and implicit biases, with exposure leading to more favourable explicit attitudes but not significantly affecting implicit biases. However, our second hypothesis was not supported; while a lower level of implicit bias associating men with sports correlated with higher satisfaction with women coaches, this relationship remained unchanged regardless of the athletes' exposure to women coaches. This nuanced outcome underscores the complexity of bias modification and suggests that while visible role models can alter conscious beliefs and preferences, deeper, unconscious biases may require more extensive interventions to shift.

The observation that young athletes exposed to women as coaches exhibited lower explicit bias compared to those without such exposure resonates with the principles of contact theory. According to Pettigrew and Tropp (2006), contact theory posits that direct experience with a group can reduce prejudice towards its members. Whilst specific research focusing on contact theory in the context of women coaches is limited, broader studies consistently demonstrate that intergroup contact can effectively diminish sexist (Koch et al., 2015; Olsson

& Martiny, 2018) and racist attitudes (Van Assche et al., 2023). In the realm of sports coaching, this exposure likely plays a crucial role in challenging and debunking the myth of women's inferiority in coaching roles. It advances the understanding that the effectiveness of a coach is not governed by gender.

The importance of the coach-athlete relationship is well-established, with numerous reports highlighting that a competent and supportive coach is vital for an athlete's motivation and performance (Foulds et al., 2019). In a comprehensive study of adolescent soccer players, Vella and colleagues (2013) discovered that transformational leadership behaviours (i.e., individual consideration), along with the quality of the coach-athlete relationship, characterised by mutual trust, respect, open communication, and understanding and empathy, positively influenced the social and skill development of young athletes. Their finding underscores the potential of women in coaching roles to foster impactful relationships with young athletes. Such relationships not only contribute to the athletes' development, but given the findings of the current study, can also play a crucial role in dismantling existing prejudices and stereotypes. This, in turn, increases the acceptance of women as coaches. However, it's important to note that mere exposure is not a panacea. The quality of this exposure is critical since negative experiences can entrench existing stereotypes and prejudices (Pettigrew & Tropp, 2006). This is not to suggest that women coaches inherently lack competence compared to their male counterparts; in fact, there is no research evidence to date suggesting any such disparity in competence. Rather, our findings indicated that the more exposure children and adolescents have to women coaches, the higher their satisfaction ratings tended to be. Diverse and positive experiences with multiple women coaches can outweigh potential negative encounters, thereby increasing the likelihood of dismantling biases against women in coaching roles. Through increased exposure, young athletes would be more inclined to view women as capable coaches, not attributing positive experiences to

the exceptionality of individual women but recognising the competence inherent in the broader group of women coaches.

The discovery of no significant difference in implicit bias between children and adolescents who had been exposed to women coaches and those who had not, is somewhat concerning. Both groups demonstrated a tendency to subconsciously associate men with sports and women with cooking. This issue is further compounded by the notable correlation found between implicit and explicit biases. Specifically, individuals who harboured stronger implicit associations of men with sports showed a lower likelihood of being satisfied with a woman as a coach. These results underscore a critical insight: mere exposure to women in coaching positions is not adequate to dismantle deep-rooted implicit biases against women in these roles. Researchers have theorised that implicit biases are more influenced by the immediate environment and prevailing social norms than deep-seated personal beliefs (Payne et al., 2017). Therefore, while exposure might influence conscious attitudes, it does not automatically extend to subconscious biases, indicating the need for more comprehensive approaches to challenge and change these ingrained perceptions. Potentially, extended exposure over years is needed to shift the dominant implicit biases.

It is important to recognise that implicit biases, as measured through the IAT, are not definitive indicators of consciously held negative attitudes. A recent review of extensive research over the decades has shown that implicit biases related to ethnicity does not equate to racist beliefs, only accounting for a small portion of the variance explained (Schimmack, 2021). Similarly, Oliveira Laux et al. (2015) showed that implicit sexist bias was not predictive of either benevolent or hostile behaviour towards women, although explicit bias was a significant predictor. These implicit biases are often mental shortcuts formed through societal conditioning and repeated exposure to certain stereotypes, rather than reflections of an individual's deliberate attitudes (Gawronski et al., 2003; Payne et al., 2017). Crucially,

people can consciously counter these automatic associations (Schimmack, 2021). Our study highlights this capacity: although young athletes who had been exposed to women coaches exhibited similar levels of implicit bias to those who had not, they demonstrated a significantly greater explicit satisfaction with the concept of a woman coach. This discrepancy suggests that while implicit biases may persist, direct and positive experiences can effectively influence explicit attitudes, enabling individuals to challenge and override ingrained stereotypes.

The findings from our study should be considered within the context of its limitations. A primary constraint, due to limited sample size, was the inability to differentiate the effect of exposure to women as coaches on children and adolescent athletes' explicit and implicit attitudes, both in terms of the specific sports they played and the differences between girls' and boys' attitudes. Prior research indicates that biases against women coaches are more pronounced in sports traditionally dominated by men (Murray et al., 2020; Norman & Rankin-Wright, 2016), suggesting that the sport type may influence the impact of exposure on biases. Similarly, during the Sports Coach Face Selection Task, while participants were asked to choose faces they believed would best suit the role of a coach for their favourite sport, they did not specify which sport each participant considered their favourite. This omission precludes a nuanced analysis of how preferences for coaching may vary across different sports, although the generalised bias favouring male coaches, identified in our findings, suggests a broader societal stereotype. Ultimately, a larger sample would enable a more nuanced exploration of how athletes' gender with sports effects these attitudes.

Our study did not record the duration and age at which young athletes were exposed to women as coaches. The length of time an athlete has been coached by women could variably influence their perceptions and biases. However, in a cross-sectional study, asking participants to reflect on many years of sporting history poses a challenge in accurately

recalling the true duration of exposure to coaching. Future studies should not only explore the optimal timing and required duration of exposure needed to positively influence biases towards women as coaches among young athletes but also consider the intersectionality of gender and racial biases in coaching preferences (Cunningham et al., 2021). Investigating how these biases interact could provide a more comprehensive understanding of the barriers to diversity in sports coaching. Additionally, it is recommended that future research also factors in competition level, and the athletes' and coaches' competencies as these variables have been shown to impact stress and performance in sport (Carrasco Páez & Martínez-Díaz, 2021; Fransen et al., 2018), which could significantly impact how exposure influences biases.

### **Conclusion**

Our study demonstrated that exposure to women as coaches has a significant impact on reducing explicit biases. The findings revealed that child and adolescent athletes who had experienced women as coaches demonstrated more positive explicit attitudes, underscoring the importance of diverse role models in sports. However, this positive shift in explicit biases was not mirrored in implicit biases. Both exposed and unexposed groups showed similar implicit biases, more readily associating men with sports than women, indicating that mere exposure may not be sufficient to alter deep-seated, implicit stereotypes. These results highlight the complexity of tackling biases in sports and underscore the necessity of multifaceted approaches. Increasing exposure to women coaches, particularly at an early age, is an important step in promoting gender equality in sports. However, this needs to be complemented with broader educational and societal efforts to challenge and change enduring stereotypes.

### **Declarations & Statements**

**Authors' Contributions:** SS participated in the conceptualisation of the study, data analysis, original drafting, and final editing. KD was involved in conceptualisation of the study, data collection, and manuscript review and editing. CH contributed to conceptualisation of the study, and manuscript review and editing.

**Data Accessibility:** The datasets generated and analysed during the current study can be made available from the corresponding author on reasonable request.

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## Highlights

- Investigated the impact of exposure to women as coaches on explicit and implicit biases in children and adolescent athletes.
- Revealed that while exposure to women coaches increased explicit satisfaction, it does not significantly affect implicit biases associating men with sports.
- Highlighted that negative explicit attitude towards women coaches was associated with increased implicit biases associating men with sports.
- Suggested that early exposure to female coaches can help reduce gender-sport stereotypes in young athletes. However, exposure alone is insufficient.

**Declaration of interests**

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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