

Research Paper

Synergy in Sports Teams: Uncovering Gender Differences in Psychological Safety, Ego Resilience and Collective Efficacy

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ABSTRACT

The main aim of the present study was to find out the relationship between psychological safety, ego resilience, collective efficacy, and synergy in sports teams, with a focus on gender differences across these four study variables. For this purpose, data was collected from a sample of 427 athletes (209 girls and 218 boys) from 40 sports teams in Punjab, India ranging between the ages of 17-22 years. Stratified purposive sampling technique was used. Gender was taken as the independent variable and psychological safety, ego resilience, collective efficacy, and synergy were taken as the dependent variables. Correlation, regression and MANOVA was used to analyze the data obtained from the sports teams. The results of the study revealed significant positive correlations between all four variables. Our findings also revealed that the variables of psychological safety, ego resilience, and collective efficacy were strong predictors of synergy. Additionally, significant gender differences were found for all the four variables, with girls' sports teams scoring lower than the boys' sport teams.

Keywords: *Psychological safety, Ego resilience, Collective efficacy, Synergy, Sports teams, Gender differences*

In today's world, sports have become an important part of our lives, crossing all geographical boundaries and attracting sports fans from all over the world. International events like the Olympics and World Cups of various games like cricket, football, hockey, etc., to name a few, attract huge crowds to the arenas where they are held, whilst numerous fans watch their favourite athletes play on their television screens at home, holding their breath for them to win. For athletes, performing in such high-stake competitions requires an exceptional level of physical and mental strength. However, a recent trend in the sports industry shows that when high-pressure situations arise, even the best athletes can fail, thus, bringing attention to the fine line between success and failure in the world of sports. Sports analysts have often pointed out that high pressure situations like those experienced during crucial and important matches greatly impact the performance of athletes either by improving their performance effectively or by impairing it. Even when sports teams are expected to win, they sometimes undergo a phenomenon known as "choking", where they are unable to perform despite their best efforts during important competitions. Choking has been explained by researchers as a state that involves suboptimal

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Synergy in Sports Teams: Uncovering Gender Differences in Psychological Safety, Ego Resilience and Collective Efficacy

performance on the athlete's part, despite the presence of motivation and skill, brought about by perceived pressure (Beilock & Gray, 2007). Beilock (2008) explained that psychological pressure is particularly harmful for those who have the most potential to succeed, as it blocks their working memory, upon which these people usually depend for excellent performance.

Team synergy, referring to the collective ability of team members to work together as an effective unit, is essential for attaining optimal team performance. Afshar, et al. (2020) stated that synergy could be developed through shared goals, good communication and matching skills amongst team members. When members of a team work to align their strengths and make up for one another's weaknesses, the overall productivity of the team improves (Hertel, 2011). Synergetic teams often exhibit high levels of cohesion, trust among team members, clarity of roles within the team and commitment to a shared goal (Youssef et al., 2023). Such teams also tend to practice open communication and psychological safety and greatly focus on integration of skills (Hertel, 2011). Researches on gender difference in synergy have pointed out that synergetic performance in teams is largely determined by the team make-up and the competitive setting, with women performing best when they are a part of the women's only team, while men tend to put in more effort when they are members of a mixed-gender group (Ivanova-Stenzel & Kübler, 2005). Another study by Fenoll & Zaccagni (2022) revealed that female dominated teams are more likely to underperform when influence by external factors than mixed gender or male-dominated ones. Team synergy, though an important aspect to achieve optimal team performance, is often seen to decline in situations of high pressure, leading to failures in the performance of teams. The constructs of psychological safety, ego resilience, and collective efficacy are believed to play an important role in maintaining team synergy and allowing teams to bounce back from such breakdowns in team performance.

Psychological safety, or the perception that one can share opinions and take relational risks without fear of rejection or humiliation, is critical to teamwork as it facilitates trust, decision-making, and role clarity (Edmondson, 1996; Edmondson & Mortenson, 2021). High psychological safety teams typically tend to exhibit respect towards all team members, accept mistakes and promote active engagement, and collaborate well, exhibit resilience, and promote athlete happiness (Edmondson, 1999; Fransen, et al., 2020). Highly stressful situations, however, result in fear of being judged, impacting teamwork among team members, therefore, threatening the psychological safety of the team. Studies on gender differences in psychological safety present a mixed picture. Although Heijden (2021) found no general differences in psychological safety behaviors between men and women, women exhibited more voice, learning, and familiarity behaviors, while men exhibited more silence and defensive silence behaviors. Additionally, Cao, et al. (2023) found that women reported feeling psychologically safer when they worked with women, while the perceptions of men's psychological safety were consistent in any team setting. Another piece of research showed that men's psychological safety tends to be linked to organizational justice and inclusion, while women's psychological safety tends to be related to organizational diversity and sexism (Pinhoe & Colstone, 2022). Lastly, a study by Yang et al. (2023) also points to differences in psychological safety networks where men had more strong correlations among trust, relaxation, and excitement, while such correlations were weaker in female samples.

Ego resilience is another of the strong determinants of synergetic performance in teams. People high in ego resilience tend to show positive, flexible, and goal-oriented behaviour,

Synergy in Sports Teams: Uncovering Gender Differences in Psychological Safety, Ego Resilience and Collective Efficacy

even under extreme conditions (Cooper, 2021). Such emotional stability and flexibility provide a psychologically safe environment, in which team members can feel secure in taking risks and maintaining each other (Blatt, et al., 2009; West, et al., 2009). Ego resilience assists sports people in managing stress and staying calm, which is vital in obtaining synergy (Fletcher & Sarkar, 2012). Low ego resilience, however, results in distraction, anxiety, and emotional instability, which often disrupts team cohesion and performance (Galli & Vealey, 2008). Research has shown that there is not much difference in terms of ego resilience between men and women (Ary & Carkit, 2020), however, some fascinating differences have been observed like, No, et al., (2020) discovered that as men get older and mature, they become more resilient. Also, the coping styles were found to be different for each gender group with women relying more on emotion-focused coping, while, men preferred more problem-focused coping, especially in competitive settings, which ultimately made up for their ability to show higher resilience (Folkman & Lazarus, 1980). Research has also shown subtle gender differences for the construct of self-esteem (a concept closely related to ego resilience), with men scoring slightly higher than women (Kling, et al., 1999).

Collective efficacy, a shared belief in the team's ability to successfully achieve its goals, is strongly associated to enhancement in resilience and unity in teams and the development of team cohesion, which contributes greatly to team success (Bandura, 1997; Ramzaninezhad, et al., 2009; Dithurbide, et al., 2009). Research, particularly in the field of sports psychology, has shown that teams with high collective efficacy often set challenging goals, put in more effort and persist for longer duration when facing difficult situations (Greenlees, et al., 1999; Silver & Bufanio, 1996; Lichacz & Partington, 1996). Although, collective efficacy plays an important role in saving team from collapsing when under pressure (Shearer, 2015), it can decline in highly stressful conditions, negatively effecting the team's overall confidence and ability to coordinate. Though not many studies on gender differences in collective efficacy have been conducted, it can be assumed that gender differences in self-efficacy, which is an important element of the construct of collective efficacy, may influence gender results for collective efficacy on a team level (Bandura, 1997). Researches investigating gender differences on self-efficacy have, thus, shown that men in general exhibited greater self-efficacy, feelings of social support and greater meaning in life in comparison to females (Wang & Lin, 2007; Mittal, 2021).

This combination of variables has not been studied together in the earlier researches, and particularly those in the field of sports psychology. The concept of synergy is also new to this field and has mostly been researched extensively in the field of organizational psychology. Hence, this study aims to investigate the relationship between psychological safety, ego resilience, collective efficacy and synergy. Additionally, a scarcity of research exists on gender differences in psychological safety, ego-resilience, collective efficacy, and synergy within single-gender sports teams, creating a knowledge gap that this study aims to address.

Objectives

- To examine the relationship between psychological safety, ego resilience, collective efficacy and synergy in sports teams.
- To identify the predictive power of psychological safety, ego resilience and collective efficacy on synergy in sports teams.

Synergy in Sports Teams: Uncovering Gender Differences in Psychological Safety, Ego Resilience and Collective Efficacy

- To investigate gender differences in psychological safety, ego resilience, collective efficacy and synergy among sports teams.

Hypotheses

- **H₁:** Sports teams low on psychological safety, ego resilience and collective efficacy will be low on synergy.
- **H₂:** Lower levels of psychological safety, ego resilience and collective efficacy will negatively predict synergy.
- **H₃:** Girls' sports teams will score lower on psychological safety, ego resilience, collective efficacy and synergy than boys' sports teams.

METHODOLOGY

Sample

The sample of the present study consisted of a total of 427 athletes (209 girls and 218 boys) belonging to 40 sports teams (20 girls' team and 20 boys' teams) of Punjab, India, participating in 4 different sports, namely, basketball, volleyball, hockey and football. The age range of the participants was between 17-22 years. Stratified purposive sampling technique was used to select participants in the study.

Variables

In this study, gender was taken as the independent variable, while, psychological safety, ego resilience, collective efficacy and synergy were taken as the dependent variables.

Research Design

A non-experimental, quantitative research design, employing the correlational, comparative and between-subject approaches was used in the study.

Tools Used

- **The Team Psychological Safety Scale (TPSS; Edmondson, 1999):** The TPSS is a self-report scale measuring the extent of a team members' feeling of comfort in sharing their thoughts, ideas, opinions and concerns without fear of rejection within their team. The scale consists of seven items, out of which three items are reverse-scored items. It is a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The scale has a high internal consistency ($\alpha = 0.89$) and shows good construct validity through factor analysis (Eigenvalue = 4.52, 64.4% variance explained) as well as convergent validity when correlated with team learning behavior ($r = 0.63$, $p < 0.01$) and team performance ($r = 0.56$, $p < 0.01$) (Edmondson, 1999).
- **The Ego Resilience Scale (ERS; Block & Kremen, 1996):** The ERS comprises of 14 statements that measure an individual's ability to adapt, cope with and bounce back from stressful and challenging circumstances. The subject has to rate each item on a four-point Likert scale (1 = does not apply at all; 2 = applies slightly; 3 = applies somewhat; 4 = applies very strongly). There are no negatively worded items and higher scores are indicative of high levels of ego resilience. The scale has a good internal consistency ($\alpha = 0.83$) and exhibited construct validity (Eigenvalue = 6.21, 44.1% variance explained) through factor analysis and convergent validity with ego control ($r = 0.63$, $p < 0.001$), emotional stability ($r = 0.59$, $p < 0.01$), and life satisfaction ($r = 0.51$, $p < 0.05$) (Block & Kremen, 1996).

Synergy in Sports Teams: Uncovering Gender Differences in Psychological Safety, Ego Resilience and Collective Efficacy

- **Collective Efficacy Questionnaire for Sports (CEQS; Short, Sullivan, & Feltz, 2005):** The CEQS is a self – assessment questionnaire comprising of 20 statements that measure an individual’s level of confidence on the capability of his/her team to perform well during challenging and competitive situations. The questionnaire assesses the efficacy scores of team members on five subscales – Ability, Effort, Persistence, Preparation and Unity, with each subscale being measured by four items. It is 10-point Likert scale with items ranging from 0 (Not at All Confident) to 10 (Extremely Confident). There are no reverse-scored items in this questionnaire. The CEQS has excellent internal consistency ($\alpha = 0.96$). It also has a good construct validity, supported through confirmatory factor analysis ($\chi^2/df = 2.51$, CFI = 0.97, RMSEA = 0.05) and convergent validity after correlating it with measures of team performance ($r = 0.75$, $p < 0.001$), team cohesion ($r = 0.72$, $p < 0.01$), and athlete satisfaction ($r = 0.67$, $p < 0.01$) (Short, et al., 2005).
- **Team Effectiveness Audit Tool [Synergy Domain] (TEAT(s); Bateman, Wilson & Bingham, 2001):** The Team Effectiveness Audit Tool by Bateman, Wilson & Bingham (2001) is a self-report tool comprising of 80 statements assessing the effectiveness of a team on nine dimensions. The TEAT (Synergy domain) is one of the dimensions of this tool that measures the ability of the team members to work together effectively to achieve a common and shared goal. This domain comprises of 10 statements and can be used as a stand-alone scale. The TEAT(s) is a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The synergy domain of the TEAT has a good internal consistence ($\alpha = 0.88$). The scale also showed construct validity through exploratory factor analysis (Eigenvalue = 4.52, 56.3% variance explained) and convergent validity with measures of team performance ($r = 0.65$, $p < 0.01$), team communication ($r = 0.62$, $p < 0.01$), and team member satisfaction ($r = 0.59$, $p < 0.05$) (Bateman, et al., 2001).

Procedure

The present study aimed to investigate gender differences in psychological safety, ego resilience, collective efficacy and synergy among various sports teams. For this purpose, a total of 40 sports teams (20 boys’ teams and 20 girls’ teams) of Punjab, India from four different sports (basketball, volleyball, hockey and football) were selected by assessing their performance graph over the past six months or their performance in the last match. Then, the players of these sports teams were divided into two groups based on gender, resulting in a sample of 427 athletes (2019 girls and 218 boys), with ages ranging from 17 to 22 years. After taking informed consent from the participants, they were administered the Team Psychological Safety Scale (TPSS; Edmondson, 1999), the Ego Resilience Scale (ERS; Block & Kremen, 1996), the Collective Efficacy Questionnaire for Sport (CEQS; Short, Sullivan, & Feltz, 2005) and the Team Effectiveness Audit Tool [Synergy domain] (Bateman, Wilson & Bingham, 2001). Later on, scores were calculated as per the guidelines of the questionnaires and the statistical analysis was conducted using the SPSS software to analyse the quantitative results.

Statistical Analysis

Raw scores were analysed using the SPSS software. Descriptive statistics, correlation and regression were used to assess the relationship between in psychological safety, ego resilience, collective efficacy and synergy. MANOVA was used to analyse the gender differences in psychological safety, ego resilience, collective efficacy and synergy among sports teams.

Synergy in Sports Teams: Uncovering Gender Differences in Psychological Safety, Ego Resilience and Collective Efficacy

RESULTS

Table 1: Correlation matrix of the study variables

Variable	1	2	3	4
Psychological Safety	-	-	-	-
Ego Resilience	.663**	-	-	-
Collective Efficacy	.761**	.835**	-	-
Synergy	.730**	.811**	.900**	-

Note. N = 427.

*p<0.05, **p<0.01

The relationship between the four study variables - psychological safety, ego resilience, collective efficacy and synergy is presented in Table 1. The results of the correlation table indicate significant positive relationships among all four study variables. As seen in the table, psychological safety displayed significant positive correlations with ego resilience ($r = 0.663$, $p < 0.01$), collective efficacy ($r = 0.761$, $p < 0.01$) and synergy ($r = 0.730$, $p < 0.01$). Ego resilience was also found to be strongly positively correlated with collective efficacy ($r = 0.835$, $p < 0.01$) as well as with synergy ($r = 0.811$, $p < 0.01$). The highest positive correlation was observed between collective efficacy and synergy ($r = 0.900$, $p < 0.01$). These findings, thus, indicate a significant co-occurrence between the lower scores of psychological safety, ego resilience, collective efficacy and synergy in sports teams.

Table 2: Regression analysis predicting synergy

IV	DV	B	Std. Error	Beta	t	Adjusted R2	Sig.
Psychological Safety		.172	.057	.094	3.004**		.003
Ego Resilience	Synergy	.192	.038	.186	5.035**	.825	.000
Collective Efficacy		.255	.016	.674	15.796**		.000

Note. N = 427.

df = 423; *p<0.05, **p<0.01

The results of predictive effects of psychological safety, ego resilience and collective efficacy on synergy in sports teams are displayed in Table 2. Psychological safety was found to be a significant predictor of synergy ($B = 0.172$, $t = 3.004$, $p < 0.01$). Ego resilience also significantly predicted synergy ($B = 0.192$, $t = 5.035$, $p < 0.01$). Collective efficacy, on the other hand, came up as the strongest predictor of synergy ($B = 0.255$, $t = 15.796$, $p < 0.01$). As indicated by the Adjusted R^2 value (0.825) in the table, 82.5% of the variation in synergy in sports teams can be explained by the variables of psychological safety, ego resilience and collective efficacy, showing that these variables are effective in predicting synergy in sports teams.

Synergy in Sports Teams: Uncovering Gender Differences in Psychological Safety, Ego Resilience and Collective Efficacy

Table 3: MANOVA Results for Gender Differences in Study Variables

Dependent Variable	Girls' Teams		Boys' Teams		F	Sig.	Pillai's Trace		
	M	SD	M	SD			Value	F	Sig.
Psychological Safety	18.06	3.85	21.19	6.34	37.553**	.000			
Ego Resilience	28.29	8.01	33.03	10.66	26.743**	.000	.110	13.071**	.000
Collective Efficacy	112.12	21.83	127.71	28.39	40.208**	.000			
Synergy	22.95	9.35	27.35	10.24	21.488**	.000			

Note. N = 427 (Girls = 209, Boys = 218).

Hypothesis df = 1, Error df = 423; *p<0.05, **p<0.01

Gender differences among the four dependent variables, namely, psychological safety, ego resilience, collective efficacy and synergy have been shown in Table 3. The MANOVA results revealed that there was a significant main effect of gender on the combined dependent variables (Pillai's Trace = 0.110, F = 13.071, p < 0.01). Univariate analysis revealed significant gender differences in sports teams on each of the dependent variables with boys sports teams scoring higher than the girls sports teams on the variables of psychological safety [Boys (M = 21.19, SD = 6.34); Girls (M = 18.06, SD = 3.85); F = 37.553, p < .01], ego resilience [Boys (M = 33.03, SD = 10.66); Girls (M = 28.29, SD = 8.01); F = 26.743, p < .01], collective efficacy [Boys (M = 127.71, SD = 28.39); Girls (M = 112.12, SD = 21.83); F = 40.208, p < .01] and synergy [Boys (M = 27.35, SD = 10.24); Girls (M = 22.95, SD = 9.35); F = 21.488, p < .01].

DISCUSSION

The present study was designed to assess the interaction of the variables of psychological safety, ego resilience, collective efficacy, and synergy in sports teams, while seeking to determine the predictive power of psychological safety, ego resilience, and collective efficacy on synergy. Furthermore, the study also aimed to explore how these variables differ across genders in team sports settings. The findings of the study revealed remarkable insights on numerous factors that influence team working in sports settings.

Research shows that the variables of psychological safety, ego resilience and collective efficacy are closely associated to each other as well as to the concept of synergy. Studies by Edmondson (1996,1999) emphasized that when members of a team feel psychologically safe in the team environment, they are more likely to work together effectively, make better decisions and trust one another, which are important to attain synergy in team performance. Studies on ego resilience have highlighted that people with higher ego resilience are more likely to stay calm under stressful situations, allowing them to stay focussed and avoid team collapses while maintaining flexibility and emotional stability, which, ultimately, help improve the team's synergy (Block & Kremen, 1996; Cooper, 2021; Fletcher & Sarkar, 2012). Researches on collective efficacy have shown that teams that score higher on collective efficacy are more likely to stay united when faced by challenges, display strong team cohesion and deliver effective team performance which, eventually, enhance synergy in the team (Ramzaninezhad, et al., 2009; Keshtan, et al., 2010; Greenlees, Graydon, & Maynard, 1999). Past researches have also revealed interconnections between the constructs of psychological safety, ego resilience and collective efficacy highlighting that these continuously reinforce and influence each other in a reciprocal relationship. Kim, Lee &

Synergy in Sports Teams: Uncovering Gender Differences in Psychological Safety, Ego Resilience and Collective Efficacy

Connerton (2020) discovered that psychological safety is most effective in enhancing a team's performance only when it is paired with strong efficacy beliefs in the team's capabilities. In another study, Barsade (2002) stated that efficacy beliefs among group members along with their perceived task performance and ability to cooperate are enhanced by positive emotional contagion, which is a factor strongly associated to the construct of ego resilience. The results of the present study are in line with the previous researches, leading us to conclude that sports teams scoring low on the constructs of psychological safety, ego resilience and collective efficacy will be low on synergy (H_1). Hence, this hypothesis is supported.

On further assessment of the predictive influence of psychological safety, ego resilience, and collective efficacy, the results of the present study revealed that these variables significantly predict synergy in sports teams, confirming that low scores on psychological safety, ego resilience, and collective efficacy will negatively predict synergy (H_2). The findings of the study also showed that the construct of collective efficacy impacted synergy in sports teams most strongly, suggesting that a team's shared belief in its ability to achieve success plays a significant role in fostering and improving synergy. These findings are consistent with the existing literature. For instance, a study by Afshar, et al. (2020) revealed that factors like good communication, shared goals and understanding and alignment of individual strengths and weaknesses of various team members are common to all the three constructs of psychological safety, ego resilience and collective efficacy and are known to facilitate synergy. Similarly, Youssef, et al. (2023) established that synergy was high in teams where members covered for each other's weaknesses but weakened in teams where there was poor cooperation and less psychological safety. Various studies on ego resilience showed that ego resilience was a strong determining factor of synergy as it made individuals more flexible and focussed in team settings, while, team members of teams low on ego resilience often showed greater anxiety and emotional instability, which affected the cohesiveness of the team (Blatt et al., 2009; Galli & Vealey, 2008). Studies conducted by Dithurbide, et al. (2009) and Hodges & Carron (1992) confirmed that teams high on collective efficacy are highly motivated and persistent in achieving their goals and, hence, exhibit great levels of synergy in their performance.

In terms of gender difference across the constructs of psychological safety, ego resilience, collective efficacy and synergy, the findings of the present study revealed significant gender differences across all four study variables, with girls' sports teams scoring lower on psychological safety, ego resilience, collective efficacy and synergy than boys' sports teams (H_3), thus, confirming this hypothesis. These findings align with previous researches on gender differences in these variables. In her research, Heijdens (2021) revealed that women are more likely to contribute to the team setting and voice their opinions when they feel safe and supported, but in the absence of a supportive environment, they might experience lower levels of psychological safety. Yang, et al. (2023), in their research, found that men's sense of psychological safety was closely associated with their feelings of trust, relaxation and excitement, whereas, women were found not to show these patterns in their relationships, indicating that men, thus, inherently perceived their teams to be a safer space. No, et al. (2020) founded that while men scored low on ego resilience earlier in life, they showed faster development in resiliency as they grew older. Folkman and Lazarus (1980) provided a reasoning for this stating that higher resilience in men could possibly result from their tendency to commonly use problem-focused coping mechanisms, particularly in competitive situations. Similarly, for collective efficacy, Mittal (2021) reported that male college

Synergy in Sports Teams: Uncovering Gender Differences in Psychological Safety, Ego Resilience and Collective Efficacy

students produced higher scores on self-efficacy in comparison to their female counterparts, suggesting that the same might be true for the construct of collective efficacy also as self-efficacy is a strong predictor of collective efficacy (Wang & Lin, 2007; Bandura, 1997). Researches on the construct of synergy further revealed that the male tendency to work harder in competitive settings and the tendency of female-dominated teams to underperform when influenced by external or structural conditions could contribute to the observed differences in synergy between the two genders (Fenoll & Zaccagni, 2022; Ivanova-Stenzel & Kübler, 2005).

CONCLUSION

The study provides strong evidence for the association between psychological safety, ego resilience, collective efficacy and synergy within sports teams, while, confirming that psychological safety, ego resilience, and collective resilience as identifiable predictors of synergy in sports teams. The study further reveals significant gender differences in these variables with boys' sports teams showing higher scores on all four variables (psychological safety, collective efficacy, ego resilience, and synergy) in comparison to girls' sports teams. These findings lead us to conclude that there is a need to design appropriate interventions that can effectively help improve team dynamics for both male as well as female athletes. Sports teams can achieve synergetic performance in competitive matches if provide with an environment that fosters psychological safety, resilience, and collective confidence.

Implication and Future Scope

This study can help coaches, sports psychologists, and the team managers realise the importance of psychological safety, ego resilience and collective efficacy which can help team players perform optimally during crucial matches. It can also help to identify and address various factors that affect performance in different gender groups, allowing sports psychologists to look for and provide focused interventions that can improve team dynamics and performance.

These observed differences between men and women make it necessary to further explore additional variables (other than those included in the constructs of psychological safety, ego resilience and collective efficacy) that can influence collective synergy in performance of sports teams for, both, boys and girls. Research can also be done exploring the causes for these gender gaps by analysing differences in various aspects of sports teams (e.g., team culture, leadership, training opportunities, etc.). In addition, longitudinal studies can also be conducted as these can show how the different variables interact over time to affect team performance in various competitive environments.

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Synergy in Sports Teams: Uncovering Gender Differences in Psychological Safety, Ego Resilience and Collective Efficacy

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Synergy in Sports Teams: Uncovering Gender Differences in Psychological Safety, Ego Resilience and Collective Efficacy

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Conflict of Interest

The author(s) declared no conflict of interest.

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