Adaptive Thinking: Can Adaptive Dispositional Attributions Protect Against the Harmful Effects of Maladaptive Situational Attributions?

Ross M. Murray[1]

Pete Coffee[1]

Robert C. Eklund[2]

[1]University of Stirling,

[2]Florida State University,

Corresponding author:
Ross M. Murray, PhD,
University of Stirling,
FK9 4LA
T: 19059021400
E: rmm6@stir.ac.uk

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Abstract

Objectives: The study was designed to examine if dispositional team-referent attributions moderate relationships between situational team-referent attributions and collective efficacy.

Design: In this cross-sectional design investigation, team athletes completed measures of dispositional team-referent attributions, situational team-referent attributions, and collective efficacy. Team outcome (i.e., win-loss status) was recorded.

Method: Athletes (N = 163) on sport teams (K = 17) completed a measure of dispositional team-referent attributions (i.e., attributional style). They also completed a measure of situational team-referent attributions in reference to their most recent team competition and a measure of collective efficacy in reference to their next upcoming team competition.

Results: Following team victory, simple slopes analysis revealed a moderating effect such that adaptive dispositional team-referent attributions appeared to protect against the effects of maladaptive situational team-referent attributions on collective efficacy. This trend was demonstrated across stability and globality attribution dimensions. Following team defeat, no significant interaction effects were observed.

Conclusions: The results suggest that developing adaptive dispositional attributions after success may protect athletes from experiencing deleterious effects of maladaptive situational attributions. Future research is needed to confirm these results and understand how these results can be applied to attributional retraining interventions in sport.

Keywords: Team-referent, moderation, stability, globality, collective efficacy

Adaptive Thinking: Can Adaptive Dispositional Attributions Protect Against the Harmful Effects of Maladaptive Situational Attributions?

Athletes' perceptions of causes for team performance are termed *team-referent attributions* (Allen, Coffee, & Greenlees, 2012). There are two main approaches to the study of team-referent attributions: a situational perspective (Coffee, Greenlees, & Allen, 2015) and a dispositional perspective (Shapcott & Carron, 2010). The situational perspective focuses upon athletes' causal explanations for their team's performance, while the dispositional perspective focuses upon how athletes typically explain the cause of team events. In accordance with the situational perspective, individuals' attributions for performance are often dependent on an event itself, and the valence of these attributions are believed to influence future sport outcomes. There are, however, dispositional characteristics that might moderate these effects. That is, unique team characteristics or dispositions such as personalities, relationships, and shared experiences may moderate the effect that those explanations have on future sport outcomes (Allen et al., 2012; Rees, Ingledew, & Hardy, 2005). The purpose of the current study was to test whether unique team characteristics (i.e., dispositional team-referent attributions) moderate the relationship between situational team-referent attributions and collective efficacy in sport.

Historically, both situational and dispositional self-referent and team-referent attributions have been studied using a dimensional structure (McAuley, Duncan, & Russell, 1992; Peterson et al., 1982; Russell, 1982). Through the development of theory and accumulation of empirical evidence, controllability has emerged as a primary dimension within the study of attributions in sport (Coffee & Rees, 2008b; Rees et al., 2005). In a team setting, controllability refers to the extent to which athletes believe the reason they use to explain a team performance can be regulated by the team. In addition to controllability, Rees and colleagues also theorised about the

generalisability dimensions of attributions. These include the dimensions of stability (the extent to which a cause is perceived as stable or variable over time), globality (the extent to which a cause is perceived to affect a wide or narrow range of situations), and universality (the extent to which a cause is perceived as common to all teams or unique to a team) (c.f. Rees et al., 2005). This dimensional structure has been consistently employed in the study of both situational and dispositional attributions (Coffee et al., 2015; Shapcott & Carron, 2010).

In general, there has been a tendency for positive sport outcomes to be preceded with attributions implicating controllable causes, while negative sport outcomes tend to be preceded with attributions implicating uncontrollable causes (Allen, Jones, & Sheffield, 2009; Carron, Shapcott, & Martin, 2014). That is, if an athlete explains her team's poor performance as due to a poor team strategy, something that she believes can be controlled, she is likely to believe the team's strategy can be amended for future performances, thus leading to more positive outcomes such as greater confidence in her team. If, however, she explains the cause of her team's poor performance as a lack of ability, something that cannot be controlled, she is likely to believe her team will not be able to make changes that will overcome the poor performance, thus leading to more negative outcomes such as reduced confidence in her team. Controllable attributions, therefore, are typically considered to be adaptive whereas uncontrollable attributions are typically considered to be maladaptive.

The adaptive and maladaptive valence of the generalisability— stability, globality, and universality—dimensions, however, is dependent on whether the outcome is positive (e.g., team victory) or negative (e.g., team defeat). For example, after a team victory, athletes would be considered to have adaptive attributions if they believe that the cause of their team victory is something that is consistent across time (i.e., high stability), and/or consistent across situations

(i.e., high globality), and/or unique to the team (i.e., low universality); while low stability, low globality, and high universality after their team victory would be indicative of a maladaptive attribution. Conversely, after team defeat, athletes would be considered to have maladaptive attributions if they believe the cause of their team defeat is something that is consistent across time (i.e., high stability), and/or consistent across situations (i.e., high globality), and/or is unique to the team (i.e., low universality); while low stability, low globality, and high universality after team defeat would be indicative of an adaptive attribution.

Rees and colleagues extend attribution theory beyond the main effects of attribution dimensions on sport outcomes by theorising interactive effects between attribution dimensions. For example, the impact of perceptions of controllability depend on whether individuals perceive the cause as stable/unstable. While there has been some support for these between dimensional interactions (e.g., Coffee, Rees, & Haslam, 2009), the current study was designed to explore within dimensional interactions. That is, the current study was designed to explore, for example, the interaction between perceptions of stability after a team competition (situational attributions) and dispositional levels of stability (dispositional attributions).

Situational attributions—causal explanations for a single event or performance—are typically associated with important sport outcomes (Rees et al., 2005; Weiner, 1985). For example, collective efficacy, a positive predictor of team performance (Stajkovic, Lee, & Nyberg, 2009), has been observed as an antecedent to situational team-referent attributions (Allen et al., 2009; Coffee et al., 2015; Dithurbide, Sullivan, & Chow, 2009). Those who have more adaptive attributions when explaining a team performance will generally have higher levels of collective efficacy. These positive effects of situational attributions underpin the practice of attributional retraining (Parker et al., 2018). Attributional retraining involves encouraging

individuals to adopt attributions that are adaptive (i.e., adaptive thinking), in turn leading to more positive future outcomes such as higher levels of collective efficacy. Therefore, situational attributions appear to be associated with important sport outcomes; however, dispositional attributions are believed to play a key role within these relationships (Martinko, Harvey, & Dasborough, 2011; Rascle et al., 2015).

Dispositional attributions (also known as attributional style or explanatory style) are individuals' tendencies to explain events in a certain way (Shapcott & Carron, 2010) and, like situational attributions, they are also associated with important sport outcomes (Carron et al., 2014; Shapcott & Carron, 2010). Traditionally, situational and dispositional attributions have been underpinned by different theories; however, contemporary attribution research in sport has been underpinned by Rees et al.'s (2005) theory of attributions in sport. Conceptualising situational and dispositional attributions using the same theory provides an opportunity to understand how situational and dispositional attributions might interact within dimensions.

Carron and colleagues observed associations between dispositional attributions and team processes such as team cohesion (Shapcott & Carron, 2010) and team success (Carron et al., 2014). That is, team athletes who formed adaptive dispositional attributions generally reported higher levels of cohesion and were more successful. Moreover, relationships between dispositional self-referent attributions and important sport outcomes observed at the individual level (Martin-Krumm, Sarrazin, Peterson, & Famose, 2003) are also believed to exist at the team level (Allen et al., 2012). Therefore, further investigation into the correlates of team-referent dispositional attributions in sport is warranted.

Situational and dispositional attributions are related but distinct concepts (Solomon, 1978). Although some researchers have examined these concepts within the same study (e.g., Le

Foll, Rascle, & Higgins, 2006), interactive effects of situational and dispositional attributions have yet to be explored. It is possible that dispositional attributions may moderate relationships between situational attributions and collective efficacy. Researchers have observed interactions between the same situational and dispositional constructs. For example, within anxiety research, interactions between situational responses and dispositional tendencies have been observed through state and trait anxiety (Egloff & Hock, 2001). That is, the effect of situational anxiety on cognitive outcomes appears dependent on how anxious an individual typically is (dispositional anxiety). Egloff and Hock observed that participants who reported low trait (dispositional) anxiety were partially protected against the negative effects of high situational anxiety upon cognitive performance. These interactions between situational and dispositional emotions might parallel interactions between situational and dispositional attributions in a team environment. In other words, adaptive dispositional attributions might protect against the negative effects of maladaptive situational attributions. Indeed, researchers have theorised that factors associated with the team environment (including athletes' dispositional team-referent attributions) might moderate the relationship between situational attributions and sport outcomes (Allen et al., 2012; Rees et al., 2005; Shapcott et al., 2010); however, this proposition has yet to be empirically examined.

Collective efficacy—the belief in a team's capabilities to perform to a high standard (Bandura, 1997)—has been observed as an important outcome of situational attributions (Allen et al., 2009; Coffee et al., 2015). The association between dispositional team-referent attributions and collective efficacy has not been explored in sport. At the individual level, however, it has been observed that athletes who adopt adaptive dispositional self-referent attributions tend to report higher levels of self-efficacy (Parkes & Mallett, 2011). Although yet to be tested,

attribution researchers have predicted that the relationships between self-referent attributions and sport outcomes also exist at the team level (Allen et al., 2012). It seems likely, therefore, that dispositional team-referent attributions are associated with collective efficacy. This means that both situational and dispositional attributions are likely to affect perceptions of collective efficacy.

The current study was designed to test the main and interactive effects of situational and dispositional team-referent attributions on collective efficacy in sport. We looked at the interaction of situational and dispositional attributions at the dimensional level of attributions. That is, four separate hierarchical analyses were conducted; one for each attribution dimension. The first hypothesis was that adaptive situational attributions would be associated with higher levels of collective efficacy (Hypothesis 1). The second hypothesis was that adaptive dispositional attributions would be associated with higher levels of collective efficacy (Hypothesis 2). The final hypothesis was that an interaction effect between situational and dispositional attributions would be observed (Hypothesis 3). It was predicted that (a) the effects of situational attributions on subsequent perceptions of collective efficacy would only be observed in the presence of maladaptive dispositional attributions, and (b) in the presence of adaptive dispositional attributions, the valence (adaptive or maladaptive) of situational attributions would be of no consequence for subsequent perceptions of collective efficacy.

Method

Participants

Athletes (n_{male} = 62, n_{female} = 101) from 17 competitive university sport teams in the United Kingdom participated in the study (M_{age} = 20.51 years, SD = 2.16). In the United Kingdom university sport teams compete in organized leagues against other university teams.

Athletes on these teams have, on average 6.28 years of experience in their sport and range from new to the sport to 21 years of experience. Of the 17 teams, four were exclusively male and 13 were exclusively female. Athletes were recruited from interactive sport teams including: American football (37 individuals; 1 team), field hockey (23 individuals, 2 teams), ultimate Frisbee (11 individuals, 2 teams), polo (8 individuals, 2 teams), netball (25 individuals, 4 teams), lacrosse (20 individuals, 2 teams), basketball (20 individuals, 2 teams), and soccer (19 individuals, 2 teams).

Measures

Before completing questionnaires, participants reported demographic information, the result of their most recent team competition, and whether they perceived their most recent team performance as a success or failure. Participants reported their perceptions of success or failure on a binary response option (success, failure).

Situational team-referent attributions. The Team-Referent Attribution Measure in Sport (TRAMS) was used to measure situational attributions. When completing the TRAMS, athletes report what they believe to be the main reason for their most recent team performance (Coffee et al., 2015). Participants then read 15 items asking the extent to which they believed this reason was: controllable (e.g., “your team could control in the future”), stable (e.g., “remains stable across time”), global (e.g., “relates to a number of different situations your team encounters”), and universal (e.g., “is a common cause of performance for other teams”). All items were assessed on a 5-point Likert scale ranging from 1 (*Not at all*) to 5 (*Completely*). Cronbach’s alpha for controllability ($\alpha = .76$), stability ($\alpha = .82$), globality ($\alpha = .67$), and universality ($\alpha = .81$) were near or above the .70 benchmark (c.f. Nunnally & Bernstein, 1994).

Dispositional team-referent attributions. The Team Attributional Style Questionnaire

(TASQ) was used to measure dispositional attributions (Shapcott & Carron, 2010). The TASQ is a self-report questionnaire that asks individuals to provide reasons for six negative hypothetical situations their team could experience. Upon providing reasons, the questionnaire measures the extent to which participants believe the reason is controllable (i.e., "Is the cause something that is controllable by your team or is it not in your team's control?"), stable (i.e., "In the future, when your team performs below expectations, will this cause be an influencing factor again?"), global (i.e., "Is the cause something that just influences this situation or does it also influence other situations experienced by your team?"), and universal (i.e., "Is the cause of your team's poor performance unique to your team or do you believe the cause is a problem for all teams?"). As all situations are negative, higher scores of controllability and universality are adaptive and lower scores of controllability and universality are maladaptive. Likewise, lower scores of stability and globality are adaptive and higher scores of stability and globality are maladaptive. All items were assessed on a 7-point Likert scale with scale anchors adjusted to fit each dimension (e.g., *Not in our team's control – In our team's control*). In the current study, Cronbach's alpha for the controllability subscale was very low ($\alpha = .46$). Consequently, results for analyses including this subscale were not interpreted and hypotheses were tested across the stability, globality, and universality dimensions. The Cronbach's alpha reliabilities for these subscales ($\alpha = .67$, $\alpha = .69$, $\alpha = .74$, respectively) were close to the often cited benchmark value of .70 for acceptable internal reliability coefficients (Table 1; c.f. Nunnally & Bernstein, 1994), and are similar to values observed in previous attribution research (Coffee et al., 2015; Shapcott & Carron, 2010).

Collective efficacy. The Collective Efficacy Questionnaire in Sport (CEQS) is a 20-item, self-report measure that assesses athletes' confidence in five areas pertinent to collective efficacy before an upcoming performance: ability (e.g., "play more skilfully than the opponent"), effort

(e.g., “demonstrate a strong work ethic”), persistence (e.g., “persist when obstacles are present”), preparation (e.g., “devise a successful strategy”), and unity (e.g., “keep a positive attitude”) (Short, Sullivan, & Feltz, 2005). Each dimension is measured using four items on a 10-point Likert scale from 1 (*Not at all confident*) to 10 (*Completely confident*). Theoretically there were no anticipated differences between collective efficacy dimensions as a consequence of attributions. As such, all five subscales were combined to provide one global index of collective efficacy. This approach limited the number of models required in the analyses, meaning examining collective efficacy as a global construct was theoretically informed and statistically parsimonious.

Design and Data Reduction

The relationships between attributions and outcomes are often dependent on previous task outcome (Weiner, 1985). Therefore, after data collection, analyses were separated into teams that won (i.e., team victory) and teams that lost (i.e., team defeat) (e.g., Allen et al., 2009; Coffee et al., 2015). Snijders and Bosker (2012) suggest that 10 groups is appropriate to run multilevel models. Similar study designs examining interaction effects involving attributions and collective efficacy have achieved sufficient power with 8 to 10 groups and 60-100 individuals (Coffee et al., 2015). This was supported by sample size calculations for multilevel models using the smpsize_lmm function in the sjstats package (Ludecke, 2019). Setting the power at .8, to determine an effect size of .25 with 10 teams a sample size of 91 individuals was recommended. As such, a sample of 8 to 10 teams with roughly 8 individuals per team was desired. Of the 163 participants, four participants dropped out before completing the questionnaire battery. This left a total of 92 participants across eight winning teams and 67 participants across nine losing teams; however, six participants perceived their team defeat as a success. Consistent with Allen et al.

(2009) and Coffee et al. (2015), these six participants were removed from the analysis. This left a final sample 92 individuals (8 teams) who perceived their team victory as a success and 61 individuals (9 teams) who perceived their team defeat as a failure. The average team size was 9 players with a range of 32 (3 to 35 players).

Procedure

Ethical approval for the study was granted by a university ethics committee prior to data collection. Head coaches of sport teams were first contacted via email to inquire about their willingness to have their athletes participate in the study during a team training session between their weekly competitions. The first author then attended a team training session to inform athletes of the purpose of the study and invited them to participate in the research. Athletes who agreed to participate were then handed the paper and pencil questionnaire and asked not to talk to their teammates while completing it. Data were collected only from teams that had won or lost their previous match. Questionnaires were completed within the presence of the first author to ensure any queries could be answered. Participants completed the situational team-referent attribution questionnaire in relation to their team's most recent competition and the collective efficacy questionnaire in relation to their team's foremost upcoming team competition.

Data Analysis

Multilevel analyses were employed to analyse these data because variables had an inherent team structure. That is, attributions and efficacy were reported in reference to participants' teams. Therefore, multi-level analyses were used to control for the nested nature of the data. Within team variance and between team variance were estimated before examining the effect of the predictor variables (situational attributions, dispositional attributions, and the interaction terms) on the dependent variable (collective efficacy). Statistical analyses were

performed in R version 3.5.1 (R Core Team, 2019). Specifically, the lme4 package was used to fit multilevel linear models with a normal distribution (Bates, Machler, Bolker, & Walker, 2015). While previous attribution studies have examined if attribution dimensions interact (Allen et al., 2009; Coffee et al., 2015; Coffee & Rees, 2008a), separate models were used to explore if each situational attribution dimension interacted with the corresponding dispositional attribution dimension. Across both team victory and team defeat conditions, the main effect of the situational attribution dimension was entered at Step 1 (e.g., situational stability). Then, the main effect of the corresponding dispositional attribution dimension was entered at Step 2 (e.g., dispositional stability). Finally, the interaction term between the situational and dispositional attribution dimension was entered at Step 3 (e.g., situational stability x dispositional stability).

Changes in the log likelihood at each step and the regression coefficients (and standard errors) were used to ascertain significance. Changes in the R^2 statistic was also used as a model diagnostic tool (Edwards, Muller, Wolfinger, Qaqish, & Schabenberger, 2008). To examine the relationship between situational attributions and collective efficacy at specific levels of dispositional attributions, a simple slopes analysis was conducted for each dimension (Robinson, Tomek, & Schumacker, 2013). That is, in addition to changes in log likelihood and R^2 statistic, simple slopes were examined at 1 standard deviation below the mean and 1 standard deviation above the mean for all interaction terms. Simple slopes analysis is a direct test of moderation that does not increase the risk of Type 1 error (Robinson et al., 2013). That is, whilst an interaction term in a hierarchical regression analysis tests whether the product of two independent variables accounts for a significant amount of variation in the dependent variable, simple slopes analysis specifically tests whether there is a relationship between an independent variable and a dependent variable at specific levels of a second independent variable (i.e., a moderator

variable). In the context of the current study, simple slopes analysis provided a test to see whether relationships between situational attributions and collective efficacy were different when dispositional attributions were adaptive (+ or - 1 SD) or maladaptive (+ or - 1 SD). Therefore, by examining the interaction term in hierarchical regression analyses, together with exploring simple slopes analyses, a more comprehensive understanding of moderation is achieved. This analytical procedure has been adopted in recent sport psychology research (Hannan, Moffitt, Neumann, & Thomas, 2015).

Results

Preliminary Analyses

All individual level means and standard deviations are provided in Table 1. The proportion of missing values was 2% or less for all variables. Values were determined to be missing completely at random, $\chi^2(734) = 744.42$, $p = .387$ (Little, 1988). When individuals missed an item within a questionnaire, imputation from the scale mean pertinent to the individual was used to replace the missing value (Osborne, 2012). As expected, situational and dispositional attributions were related and yet distinct concepts as bivariate correlations between corresponding situational and dispositional dimensions ranged from -.04 to .45 (sharing up to only 20% common variance; Table 2).

MANOVA revealed a significant difference in situational attribution scores after team victory and team defeat, $F_{4,149} = 4.20$, $p = .003$. Follow up discriminant function analysis revealed stability (standardised structure coefficient (SC) = .56), globality (SC = .30), and universality (SC = .53) were all salient variables. After team victory, athletes perceived their

attributions to be more stable, global, and universal compared to after team defeat.[1] Further, an independent samples *t*-test revealed that collective efficacy was significantly higher after team victory, $M = 8.09$, $SD = 1.05$, compared to after team defeat, $M = 7.32$, $SD = 1.16$, $t_{152} = 4.24$, $p < .001$. This provides further support for analysing the conditions of team victory and team defeat separately as it minimises the potential effect of previous team performance on perceptions of collective efficacy (Bandura, 1977; Stajkovic et al., 2009). In sum, these results provide support for the need to analyse data separately for team victory and team defeat conditions.

Multilevel Analysis

Team victory. Results of the multilevel analyses for situational and dispositional attribution dimensions on collective efficacy are presented in Table 3. After team victory, the variance in collective efficacy between teams (as demonstrated by the intra-class correlation; ICC) was .09. Julian (2001) recommends using multilevel models to account for nested data when the ICC is greater than .05, thus supporting the use of multilevel models. Collective efficacy was not significantly associated with any situational attribution dimensions or dispositional attribution dimensions. Most central to the study was the analysis of interaction terms between situational and dispositional attribution dimensions. Inclusion of the interaction term significantly improved the stability model $\Delta\chi^2(1) = 5.42$, $p = .020$, $\Delta R^2 = .06$, However, inclusion of the interaction terms did not significantly improve the globality $\Delta\chi^2(1) = 2.72$, $p = .108$, $\Delta R^2 = .03$, or universality $\Delta\chi^2(1) = 1.12$, $p = .29$, $\Delta R^2 = .01$ models.

Simple slopes analyses were conducted for all models. Robinson et al. (2013) suggested that researchers examining moderating effects should examine simple slopes instead of relying

[1] A second MANOVA revealed that dispositional attributions did not significantly differ after team victory or defeat ($F_{3,149} = 1.36$, $p = .26$). This was expected as dispositional attributions are distinct from specific performance outcomes.

solely on the interaction term. This analysis tests whether the slope of a regression is significantly different from zero. In other words, the simple slopes analysis was used to examine whether the relationship between situational attributions and collective efficacy was significantly different from zero when dispositional attributions were either adaptive or maladaptive (i.e., at 1 standard deviation above the mean or 1 standard deviation below the mean). Within the stability model, the simple slopes analysis revealed a significant positive association between situational stability and collective efficacy when individuals reported maladaptive dispositional stability, $b = .55$, $p = .004$. When individuals reported adaptive dispositional stability, there was no significant relationship between situational stability and collective efficacy, $b = -.12$, $p = .532$ (Figure 1a). For globality, the simple slopes analysis revealed a significant positive relationship between situational globality and collective efficacy when athletes reported maladaptive dispositional globality, $b = .52$, $p = .025$. There was no relationship between situational globality and collective efficacy when athletes reported adaptive dispositional globality, $b = .05$, $p = .836$ (Figure 1b). The simple slopes analysis revealed no significant regression slopes within the universality model.

Team defeat. After team defeat, the variance in collective efficacy between teams (the ICC) was .25 providing support for continued use of multilevel models to account for the nested nature of the data (Julian, 2001). Situational globality was positively associated with collective efficacy, $\Delta\chi^2(1) = 4.67$, $p = .031$, $\Delta R^2 = .09$. There were no significant associations between situational stability and collective efficacy, and between situational universality and collective efficacy. Further, there were no significant effects for dispositional attribution dimensions and interaction terms on collective efficacy. Simple slopes analysis did not reveal any significant relationships when dispositional attributions were adaptive or maladaptive.

Discussion

The present study was designed to examine if dispositional team-referent attributions moderated the effects of situational team-referent attributions on collective efficacy. It was hypothesised that adaptive situational attributions (Hypothesis 1) and adaptive dispositional attributions (Hypothesis 2) would be associated with higher levels collective efficacy. Further, it was predicted that a) the effects of situational attributions on subsequent perceptions of collective efficacy would only be observed in the presence of maladaptive dispositional attributions, and (b) in the presence of adaptive dispositional attributions, the valence (adaptive or maladaptive) of situational attributions would be of no consequence for subsequent perceptions of collective efficacy (Hypothesis 3). Hypotheses 1 and 2 were not supported. There was, however, some evidence to support Hypothesis 3 as, within the stability and globality dimensions, a moderating effect of dispositional attributions on the situational attribution-collective efficacy relationship was observed after team victory, but not after team defeat. The relationship between situational attributions and collective efficacy varied at different levels of adaptive and maladaptive dispositional attributions.

Specifically, within the globality and stability dimensions after a team victory, adaptive dispositional attributions appeared to protect athletes from the deleterious effects of maladaptive situational attributions but, at the same time, restricted athletes from experiencing heightened collective efficacy, a consequence typically associated with adaptive situational attributions (Allen et al., 2009; Coffee et al., 2015). Under the condition of maladaptive dispositional attributions, traditional relationships between situational attributions and collective efficacy were observed. That is, in the presence of maladaptive dispositional attributions, maladaptive situational attributions were associated with lower levels of collective efficacy and adaptive

situational attributions were associated with higher levels of collective efficacy. In sum, the interactions demonstrated that it was only when athletes reported maladaptive dispositional attributions that situational attributions were associated with subsequent collective efficacy.

These interactions are consistent with the results of previous research (Egloff & Hock, 2001) as they indicate that perceptions of dispositional team traits can moderate the relationship between two situational variables. Further, the results build on previous research as they offer evidence that attributions may not just interact across dimensions (e.g., interaction of situational controllability and situational stability attributions; Coffee et al., 2015), but that there may also be interactions within dimensions (e.g., interaction of situational stability and dispositional stability). These intra-dimensional interactions help to explain the effect that dispositional characteristics have on individuals. That is, studies have demonstrated that the relationships between certain variables (e.g., anxiety-cognitive performance: Egloff & Hock, 2001; stress-distress: Korotkov, 2008; exercise intention and behaviour: Rhodes, Courneya, & Jones, 2005), vary dependent on dispositions. The underlying finding among these studies appears to be that dispositions affect how individuals respond to situational stimuli. Within the current study, this might be because individuals were less concerned with their situational attribution when their dispositional attributions were typically adaptive. In other words, compared to athletes who generally had a more negative outlook when explaining team outcomes (i.e., maladaptive dispositional attributions), athletes who generally had a more positive outlook when explaining team outcomes (i.e., adaptive dispositional attributions) may not have been as concerned when their attribution for a single outcome (i.e., their situational attribution) was maladaptive. Of course, the study was correlational in nature, and as such, researchers might test this causal reasoning in future studies.

Surprisingly, there was no interaction observed after team defeat. It may be that after a team defeat, team relationships become more important than dispositional attributions. Evidence supporting this was observed by (Murray, Coffee, Arthur, & Eklund, 2019) as social identity moderated the effects of attributions on collective efficacy after team defeat but not after team victory. Therefore, it is possible that the impact of attributions is more dependent on team relationships after a loss and more dependent on team dispositions after a win.

There was no support for hypotheses 1 and 2, and the relationship between globality and collective efficacy was opposite to what we expected. While surprising, these null and contradictory findings might be indicative of the complexity surrounding attributions in a performance domain. Over the past two decades, sport psychology researchers have begun to focus on variables that might influence or change the effects of attributions. For example, social identity has recently been observed to influence the ways in which attributions act upon efficacy and performance (Murray et al., 2019; Rascle et al., 2019; Rees et al., 2013). Therefore, the results of the current study add to accumulating evidence indicating that researchers and practitioners should continue to consider factors that might influence the effects that attributions have on athletes and sport teams.

A key component of the current study is that team-referent, rather than self-referent, attributions were assessed. Evidence that team dispositions can moderate relationships in a team environment builds on previous research indicating that individual dispositions can moderate the relationships at the individual level (Egloff & Hock, 2001; Korotkov, 2008; Rhodes et al., 2005). This finding is consistent with previous results that indicate group memberships can influence the way individuals perceive certain outcomes (Cruwys, South, Greenaway, & Haslam, 2015). That is, team membership can moderate the way individuals perceive events.

The results of the current study might have important implications on attributional retraining strategies. Typically, researchers studying attributional retraining have manipulated athletes' situational attributions by shifting their perceptions of attribution dimensions, for example, controllability (Orbach, Singer, & Price, 1999; Rascle, Le Foll, & Higgins, 2008). An issue with this strategy, however, is that athletes might believe the reason for their performance is something that is completely uncontrollable (e.g., we lost the match because the referee made a bad call). In light of the current results, it may, instead, be better to manipulate athletes' dispositional attributions by shifting the way they generally explain performances. Encouraging athletes to adopt adaptive dispositional attributions would likely prevent the low levels of collective efficacy associated with maladaptive situational attributions. While this might have the undesirable consequence of mitigating the positive effects adaptive situational attributions, attributional retraining strategies typically target those who form maladaptive situational attributions (Parker, Perry, Chipperfield, Hamm, & Pekrun, 2017). Researchers should continue to build on these results by investigating the situational-dispositional interaction within the context of attributional retraining.

Specifically, manipulating situational and dispositional attributions are not discrete processes. For example, within an academic achievement domain, attributional retraining strategies that reinforce the use of adaptive attributions throughout the year were effective in improving achievement related outcomes (Parker et al., 2017). Although these strategies target situational attributions, continuous exposure to attributional retraining can generalise across time and situations (Rascle et al., 2015). Thus, over time, it may be that attributional retraining strategies are effective in manipulating athletes' dispositional attributions. However, situational attributions are still a product of environmental stimuli and thus, there will likely be occasions in

which situational attributions will be maladaptive, regardless of attributional retraining strategies.

There are several limitations to these results that can be addressed in subsequent research. First, the dynamic nature of the attribution process was not measured and analysed. That is, the cross-sectional nature of the study only provided a snapshot into the interactive effects of situational and dispositional attributions and did not test the reciprocal nature of these variables. For example, it may be that consecutive adaptive situational attributions in turn lead to adaptive dispositional attributions. Indeed, researchers have observed that changing how athletes explain a performance (i.e., attributional retraining) can have lasting effects on how those athletes explain future performances (Rascle et al., 2015). Rascle and colleagues however, did not explicitly measure whether attributional retraining changed dispositional attributions. As such, longitudinal research might explore whether consistently adopting more adaptive (or maladaptive) situational attributions can lead individuals to adopt adaptive (or maladaptive) dispositional attributions.

Second, the generalisability of the findings is limited to attributions. The current study demonstrated that dispositional team-referent attributions might protect against the negative effects of situational team-referent attributions at the dimensional level. Further research is needed to understand whether these results extend beyond the dimensional level of attributions to other sport psychology constructs. For example, low levels of collective efficacy have been associated with poor performance outcomes (Stajkovic et al., 2009). It might be, however, that an adaptive attributional style protects athletes against these negative effects. Thus, while the generalisability of these results is unknown, researchers might explore situations in which the protective effects of an adaptive attributional style might apply in sport psychology.

Another limitation of the current study is that data were collected at varying temporal proximity between matches (between one and six days after a team competition). While Coffee

and Rees (2009) observed that the strength of the attribution-efficacy relationship changes depending on whether attributions are immediate (i.e., immediately after competition) or reflective (three days after competition), there has been no research examining whether attributions change over the course of a week. As such, future research might build on these studies by examining whether the attribution-efficacy relationship changes between one and six days after a competition.

Finally, an important caveat to the findings is that interactions were observed within only two of the models. This could be due to the lower reliability observed within the TASQ subscales. Thus, before team attributional style in sport is investigated further, a revised measure might be necessary. The controllability subscale was observed to be unreliable, and the stability, globality, and universality subscales exhibited levels of reliability at the lower end of the acceptable range. Researchers using the TASQ have also observed lower levels of reliability within the controllability subscale (Carron et al., 2014; Shapcott & Carron, 2010). Shapcott and Carron (2010) argue that the low reliability of controllability subscale might be a consequence of controllability perceptions being more reliant on the identified cause than on individual dispositions. In comparison, the generalizability dimensions are more reliant on personal beliefs surrounding pervasiveness. Therefore, perceptions of control are more likely to vary between situations as they are more dependent on details pertinent to the situation compared to perceptions of stability, globality, and universality. Therefore, while studies indicate that there may be an association between levels of dispositional controllability and sport outcomes (Carron et al., 2014; Shapcott & Carron, 2010), without a more reliable measure no conclusions about the antecedents and consequences of dispositional controllability can be firmly drawn. Therefore, researchers should look to further develop and improve the reliability of the TASQ to accurately

examine if dispositional controllability is associated with these important sport outcomes.

Conclusion

Initial evidence that dispositional team-referent attributions can moderate the relationship between situational team-referent attributions and collective efficacy was observed. It appears that adaptive dispositional attributions might protect against negative outcomes associated with maladaptive situational attributions. As such, these results offer insight into understanding the mechanisms involved in the attribution-efficacy relationship.

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Table 1. Means, standard deviations, alpha reliability coefficients, and intra-class correlation coefficients.

		Team Victory			Team Defeat		
	Alpha	*M*	*SD*	ICC	*M*	*SD*	ICC
S. Controllability	.72	4.13	0.57	.16	3.94	0.93	.02
S. Stability	.81	3.39	0.87	.07	2.98	1.00	.05
S. Globality	.66	4.04	0.63	.00	3.71	0.66	.07
S. Universality	.80	4.03	0.77	.05	3.66	0.75	.02
D. Controllability	.46	5.63	0.86	.01	5.64	0.87	.03
D. Stability	.67	4.88	0.87	.00	4.98	0.74	.07
D. Globality	.69	5.03	0.93	.00	5.02	0.86	.10
D. Universality	.74	5.61	0.92	.01	5.38	0.88	.05
CE	.94	8.09	1.06	.10	7.32	1.17	.23

Note. S. = Situational, D. = Dispositional. CE – Collective efficacy. *M* = Mean, *SD* = Standard Deviation, Alpha = Cronbach's alpha, ICC = Intra-class correlation coefficient

Table 2. Bivariate correlations between situational attributions, dispositional attributions, and collective efficacy.

	1	2	3	4	5	6	7	8
1. S. Controllability		.03	.34**	.46**	.07	.05	.22	.08
2. S. Stability	-.03		.43**	.25	.22	.12	.07	.13
3. S. Globality	.30**	.13		.35**	.15	.26*	.23	.11
4. S. Universality	.32**	-.19	.65**		.16	-.05	.45**	.22
5. D. Stability	-.08	-.04	.22	.17		.50**	.28*	.01
6. D. Globality	.01	-.02	.24*	.25*	.45**		.21	.09
7. D. Universality	.02	-.02	.35**	.40**	.33**	.57**		.34**
8. CE	.18	.22	.15	.04	.02	.11	.21	

Note. Bottom diagonal = Team victory, Top diagonal = Team defeat. S. = Situational, D. = Dispositional, CE = Collective Efficacy. $^{**}p < .01$, $^{*}p < .05$.

659 Table 3. Multilevel regression models reporting the contribution of situational and dispositional
660 attribution dimensions and the interaction terms on collective efficacy.

Team Victory					Team Defeat				
Model	-2(χ^2)	$\Delta\chi^2$	*b*(SE)	ΔR^2	Model	-2(χ^2)	$\Delta\chi^2$	*b*(SE)	ΔR^2
Controllability					Controllability				
Constant	266.08		7.98 (.17)		Constant	185.64		7.29 (.23)	
Situational	264.24	1.84	0.28 (.20)	.02	Situational	183.84	1.80	0.20 (.15)	.03
Stability					Stability				
Constant	266.08		7.98 (.16)		Constant	185.64		7.29 (.23)	
Situational	263.60	2.48	0.20 (.13)	.03	Situational	183.49	2.15	0.21 (.14)	.04
Dispositional	263.60	<.01	0.01 (.12)	.00	Dispositional	183.28	0.21	-0.09 (.20)	.00
Interaction	258.18	5.42*	0.39 (.17)*	.06	Interaction	182.93	0.35	0.14 (.25)	.01
Globality					Globality				
Constant	266.08		7.98 (.16)		Constant	185.64		7.29 (.23)	
Situational	263.70	2.38	0.27 (.17)	.03	Situational	180.97	4.67*	0.46 (.21)*	.09
Dispositional	263.02	0.68	0.10 (.12)	.01	Dispositional	180.59	0.38	-0.10 (.17)	.00
Interaction	260.30	2.72†	0.26 (.16)†	.03	Interaction	180.25	0.33	-0.17 (.31)	.00
Universality					Universality				
Constant	266.08		7.98 (.16)		Constant	185.64		7.29 (.23)	
Situational	265.88	0.20	0.07 (.15)	.00	Situational	184.25	1.38	0.22 (.19)	.03
Dispositional	264.00	1.88	0.18 (.13)	.02	Dispositional	181.51	2.75†	0.29 (.18)	.05
Interaction	262.86	1.14	0.13 (.12)	.02	Interaction	181.14	0.36	-0.16 (.27)	.00

661 *Note*. D. = Dispositional, S. = Situational, Interaction = Interaction term for preceding variables.
662 *p < .05, †p < .10. Dispositional controllability was not assessed due to low levels of internal
663 reliability.

664

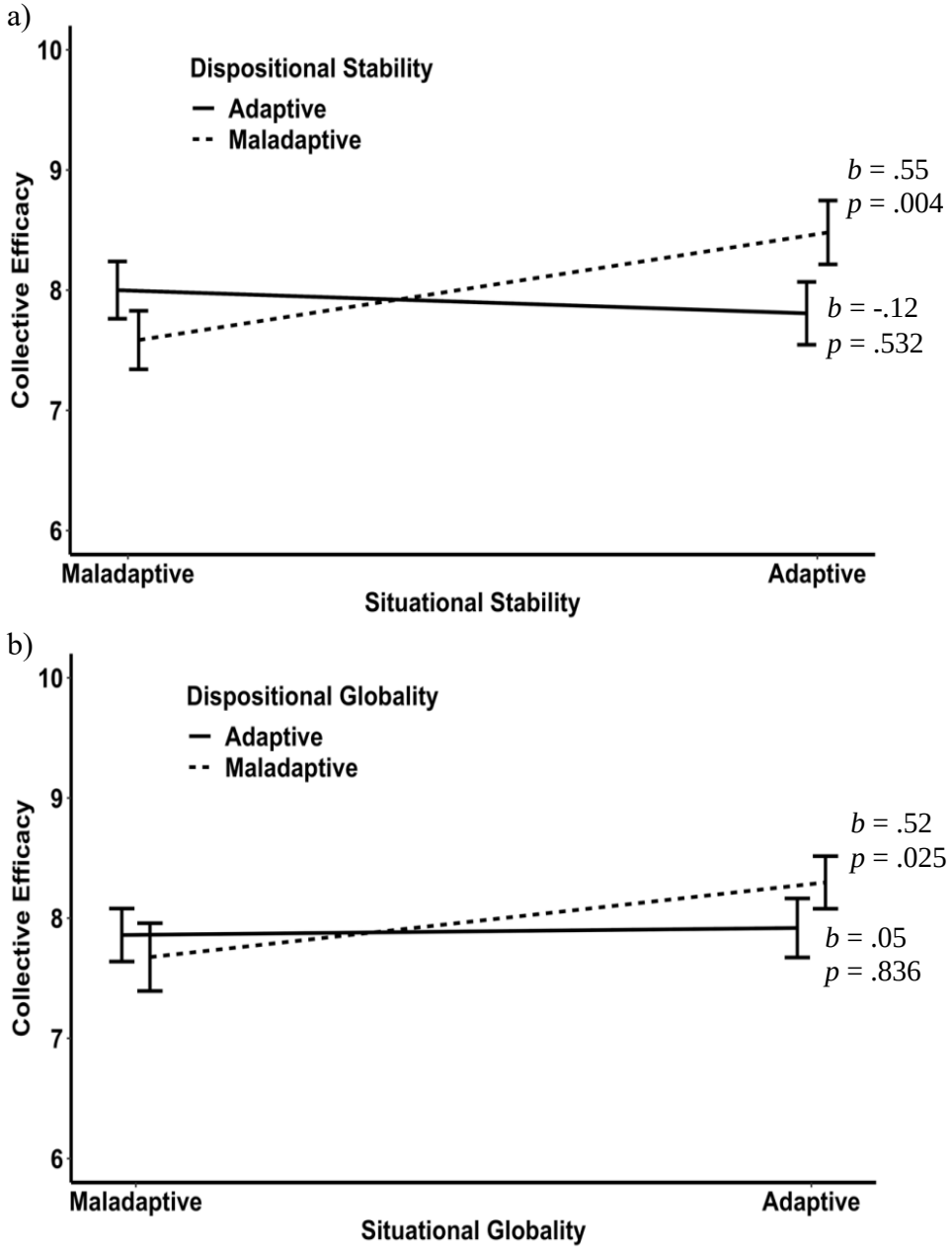

Figure 1. Interaction between a) situational stability and dispositional stability on collective efficacy after team victory and b) situational globality and dispositional globality on collective efficacy after team victory. Situational stability was plotted at 1 SD = .81 (Adaptive) and -1 SD = -.81 (Maladaptive). Dispositional stability was plotted at 1 SD = .86 (Maladaptive) and -1 SD = -.86 (Adaptive). Situational globality was plotted at 1 SD = .60 (Adaptive) and -1 SD = -.60 (Maladaptive). Dispositional globality was plotted at 1 SD = .91 (Maladaptive) and -1 SD = -.91 (Adaptive).