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

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Abstract

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

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

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

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

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

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

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50 of Maladaptive Situational Attributions?

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

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

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

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

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

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

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

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

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

123 Dispositional attributions (also known as attributional style or explanatory style) are
124 individuals' tendencies to explain events in a certain way (Shapcott & Carron, 2010) and, like
125 situational attributions, they are also associated with important sport outcomes (Carron et al.,
126 2014; Shapcott & Carron, 2010). Traditionally, situational and dispositional attributions have
127 been underpinned by different theories; however, contemporary attribution research in sport has
128 been underpinned by Rees et al.'s (2005) theory of attributions in sport. Conceptualising
129 situational and dispositional attributions using the same theory provides an opportunity to
130 understand how situational and dispositional attributions might interact within dimensions.

131 Carron and colleagues observed associations between dispositional attributions and team
132 processes such as team cohesion (Shapcott & Carron, 2010) and team success (Carron et al.,
133 2014). That is, team athletes who formed adaptive dispositional attributions generally reported
134 higher levels of cohesion and were more successful. Moreover, relationships between
135 dispositional self-referent attributions and important sport outcomes observed at the individual
136 level (Martin-Krumm, Sarrazin, Peterson, & Famose, 2003) are also believed to exist at the team
137 level (Allen et al., 2012). Therefore, further investigation into the correlates of team-referent
138 dispositional attributions in sport is warranted.

139 Situational and dispositional attributions are related but distinct concepts (Solomon,
140 1978). Although some researchers have examined these concepts within the same study (e.g., Le

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

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

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

194 **Measures**

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

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

209 **Dispositional team-referent attributions.** The Team Attributional Style Questionnaire

210 (TASQ) was used to measure dispositional attributions (Shapcott & Carron, 2010). The TASQ is
211 a self-report questionnaire that asks individuals to provide reasons for six negative hypothetical
212 situations their team could experience. Upon providing reasons, the questionnaire measures the
213 extent to which participants believe the reason is controllable (i.e., “Is the cause something that is
214 controllable by your team or is it not in your team’s control?”), stable (i.e., “In the future, when
215 your team performs below expectations, will this cause be an influencing factor again?”), global
216 (i.e., “Is the cause something that just influences this situation or does it also influence other
217 situations experienced by your team?”), and universal (i.e., “Is the cause of your team’s poor
218 performance unique to your team or do you believe the cause is a problem for all teams?”). As
219 all situations are negative, higher scores of controllability and universality are adaptive and lower
220 scores of controllability and universality are maladaptive. Likewise, lower scores of stability and
221 globality are adaptive and higher scores of stability and globality are maladaptive. All items were
222 assessed on a 7-point Likert scale with scale anchors adjusted to fit each dimension (e.g., *Not in*
223 *our team’s control – In our team’s control*). In the current study, Cronbach’s alpha for the
224 controllability subscale was very low ($\alpha = .46$). Consequently, results for analyses including this
225 subscale were not interpreted and hypotheses were tested across the stability, globality, and
226 universality dimensions. The Cronbach’s alpha reliabilities for these subscales ($\alpha = .67$, $\alpha = .69$,
227 $\alpha = .74$, respectively) were close to the often cited benchmark value of .70 for acceptable internal
228 reliability coefficients (Table 1; c.f. Nunnally & Bernstein, 1994), and are similar to values
229 observed in previous attribution research (Coffee et al., 2015; Shapcott & Carron, 2010).

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

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

242 **Design and Data Reduction**

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

256 (2009) and Coffee et al. (2015), these six participants were removed from the analysis. This left a
257 final sample 92 individuals (8 teams) who perceived their team victory as a success and 61
258 individuals (9 teams) who perceived their team defeat as a failure. The average team size was 9
259 players with a range of 32 (3 to 35 players).

260 **Procedure**

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

272 **Data Analysis**

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

279 performed in R version 3.5.1 (R Core Team, 2019). Specifically, the lme4 package was used to
280 fit multilevel linear models with a normal distribution (Bates, Machler, Bolker, & Walker, 2015).
281 While previous attribution studies have examined if attribution dimensions interact (Allen et al.,
282 2009; Coffee et al., 2015; Coffee & Rees, 2008a), separate models were used to explore if each
283 situational attribution dimension interacted with the corresponding dispositional attribution
284 dimension. Across both team victory and team defeat conditions, the main effect of the
285 situational attribution dimension was entered at Step 1 (e.g., situational stability). Then, the main
286 effect of the corresponding dispositional attribution dimension was entered at Step 2 (e.g.,
287 dispositional stability). Finally, the interaction term between the situational and dispositional
288 attribution dimension was entered at Step 3 (e.g., situational stability x dispositional stability).

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

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

309 **Results**

310 **Preliminary Analyses**

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

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

323 attributions to be more stable, global, and universal compared to after team defeat.¹ Further, an
324 independent samples *t*-test revealed that collective efficacy was significantly higher after team
325 victory, $M = 8.09$, $SD = 1.05$, compared to after team defeat, $M = 7.32$, $SD = 1.16$, $t_{152} = 4.24$, $p <$
326 $.001$. This provides further support for analysing the conditions of team victory and team defeat
327 separately as it minimises the potential effect of previous team performance on perceptions of
328 collective efficacy (Bandura, 1977; Stajkovic et al., 2009). In sum, these results provide support
329 for the need to analyse data separately for team victory and team defeat conditions.

330 **Multilevel Analysis**

331 **Team victory.** Results of the multilevel analyses for situational and dispositional
332 attribution dimensions on collective efficacy are presented in Table 3. After team victory, the
333 variance in collective efficacy between teams (as demonstrated by the intra-class correlation;
334 ICC) was .09. Julian (2001) recommends using multilevel models to account for nested data
335 when the ICC is greater than .05, thus supporting the use of multilevel models. Collective
336 efficacy was not significantly associated with any situational attribution dimensions or
337 dispositional attribution dimensions. Most central to the study was the analysis of interaction
338 terms between situational and dispositional attribution dimensions. Inclusion of the interaction
339 term significantly improved the stability model $\Delta\chi^2(1) = 5.42$, $p = .020$, $\Delta R^2 = .06$. However,
340 inclusion of the interaction terms did not significantly improve the globality $\Delta\chi^2(1) = 2.72$, $p =$
341 $.108$, $\Delta R^2 = .03$, or universality $\Delta\chi^2(1) = 1.12$, $p = .29$, $\Delta R^2 = .01$ models.

342 Simple slopes analyses were conducted for all models. Robinson et al. (2013) suggested
343 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.

344 solely on the interaction term. This analysis tests whether the slope of a regression is
345 significantly different from zero. In other words, the simple slopes analysis was used to examine
346 whether the relationship between situational attributions and collective efficacy was significantly
347 different from zero when dispositional attributions were either adaptive or maladaptive (i.e., at 1
348 standard deviation above the mean or 1 standard deviation below the mean). Within the stability
349 model, the simple slopes analysis revealed a significant positive association between situational
350 stability and collective efficacy when individuals reported maladaptive dispositional stability, b
351 $= .55, p = .004$. When individuals reported adaptive dispositional stability, there was no
352 significant relationship between situational stability and collective efficacy, $b = -.12, p = .532$
353 (Figure 1a). For globality, the simple slopes analysis revealed a significant positive relationship
354 between situational globality and collective efficacy when athletes reported maladaptive
355 dispositional globality, $b = .52, p = .025$. There was no relationship between situational globality
356 and collective efficacy when athletes reported adaptive dispositional globality, $b = .05, p = .836$
357 (Figure 1b). The simple slopes analysis revealed no significant regression slopes within the
358 universality model.

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

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Discussion

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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

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

393 These interactions are consistent with the results of previous research (Egloff & Hock,
394 2001) as they indicate that perceptions of dispositional team traits can moderate the relationship
395 between two situational variables. Further, the results build on previous research as they offer
396 evidence that attributions may not just interact across dimensions (e.g., interaction of situational
397 controllability and situational stability attributions; Coffee et al., 2015), but that there may also
398 be interactions within dimensions (e.g., interaction of situational stability and dispositional
399 stability). These intra-dimensional interactions help to explain the effect that dispositional
400 characteristics have on individuals. That is, studies have demonstrated that the relationships
401 between certain variables (e.g., anxiety-cognitive performance: Egloff & Hock, 2001; stress-
402 distress: Korotkov, 2008; exercise intention and behaviour: Rhodes, Courneya, & Jones, 2005),
403 vary dependent on dispositions. The underlying finding among these studies appears to be that
404 dispositions affect how individuals respond to situational stimuli. Within the current study, this
405 might be because individuals were less concerned with their situational attribution when their
406 dispositional attributions were typically adaptive. In other words, compared to athletes who
407 generally had a more negative outlook when explaining team outcomes (i.e., maladaptive
408 dispositional attributions), athletes who generally had a more positive outlook when explaining
409 team outcomes (i.e., adaptive dispositional attributions) may not have been as concerned when
410 their attribution for a single outcome (i.e., their situational attribution) was maladaptive. Of
411 course, the study was correlational in nature, and as such, researchers might test this causal
412 reasoning in future studies.

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

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

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

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

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

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

460 There are several limitations to these results that can be addressed in subsequent research.

461 First, the dynamic nature of the attribution process was not measured and analysed. That is, the

462 cross-sectional nature of the study only provided a snapshot into the interactive effects of

463 situational and dispositional attributions and did not test the reciprocal nature of these variables.

464 For example, it may be that consecutive adaptive situational attributions in turn lead to adaptive

465 dispositional attributions. Indeed, researchers have observed that changing how athletes explain a

466 performance (i.e., attributional retraining) can have lasting effects on how those athletes explain

467 future performances (Rascle et al., 2015). Rascle and colleagues however, did not explicitly

468 measure whether attributional retraining changed dispositional attributions. As such, longitudinal

469 research might explore whether consistently adopting more adaptive (or maladaptive) situational

470 attributions can lead individuals to adopt adaptive (or maladaptive) dispositional attributions.

471 Second, the generalisability of the findings is limited to attributions. The current study

472 demonstrated that dispositional team-referent attributions might protect against the negative

473 effects of situational team-referent attributions at the dimensional level. Further research is

474 needed to understand whether these results extend beyond the dimensional level of attributions to

475 other sport psychology constructs. For example, low levels of collective efficacy have been

476 associated with poor performance outcomes (Stajkovic et al., 2009). It might be, however, that

477 an adaptive attributional style protects athletes against these negative effects. Thus, while the

478 generalisability of these results is unknown, researchers might explore situations in which the

479 protective effects of an adaptive attributional style might apply in sport psychology.

480 Another limitation of the current study is that data were collected at varying temporal

481 proximity between matches (between one and six days after a team competition). While Coffee

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

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

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

506 **Conclusion**

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

512

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- 647

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

	Alpha	Team Victory			Team Defeat		
		<i>M</i>	<i>SD</i>	ICC	<i>M</i>	<i>SD</i>	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

650

651 *Note.* S. = Situational, D. = Dispositional. CE – Collective efficacy. *M* = Mean, *SD* = Standard

652 Deviation, Alpha = Cronbach's alpha, ICC = Intra-class correlation coefficient

653

654 Table 2. Bivariate correlations between situational attributions, dispositional attributions, and
 655 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	

656
 657 *Note.* Bottom diagonal = Team victory, Top diagonal = Team defeat. S. = Situational, D. =
 658 Dispositional, CE = Collective Efficacy. ** $p < .01$, * $p < .05$.

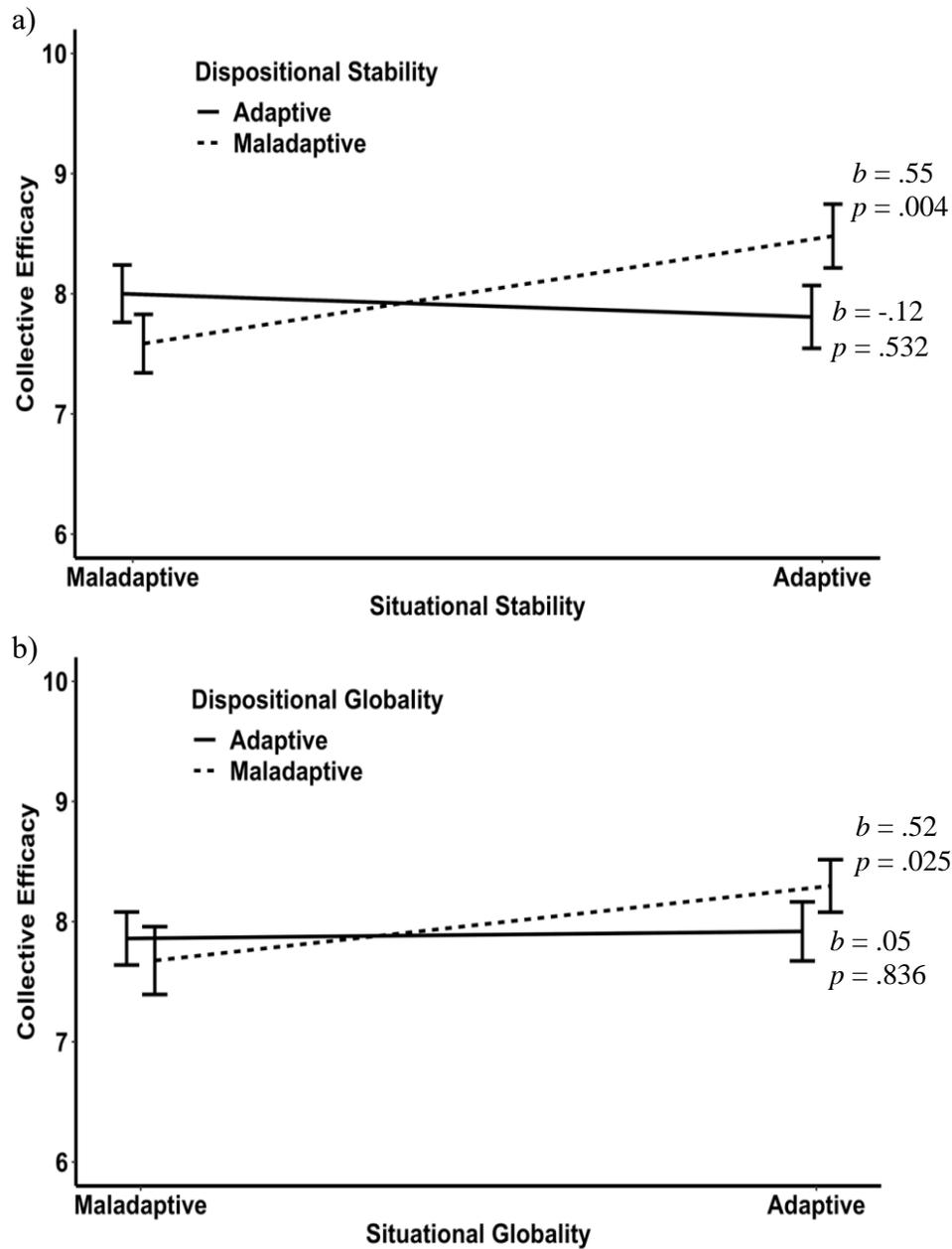
659 Table 3. Multilevel regression models reporting the contribution of situational and dispositional
 660 attribution dimensions and the interaction terms on collective efficacy.

Model	Team Victory				Model	Team Defeat			
	-2(χ^2)	$\Delta\chi^2$	b(SE)	ΔR^2		-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



665 Figure 1. Interaction between a) situational stability and dispositional stability on collective
 666 efficacy after team victory and b) situational globality and dispositional globality on collective
 667 efficacy after team victory. Situational stability was plotted at 1 SD = .81 (Adaptive) and -1 SD =
 668 -.81 (Maladaptive). Dispositional stability was plotted at 1 SD = .86 (Maladaptive) and -1 SD = -
 669 .86 (Adaptive). Situational globality was plotted at 1 SD = .60 (Adaptive) and -1 SD = -.60
 670 (Maladaptive). Dispositional globality was plotted at 1 SD = .91 (Maladaptive) and -1 SD = -.91
 671 (Adaptive).
 672