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3 Committed Relationships and Enhanced Threat Levels: Perceptions of Coach Behavior, the

4 Coach-Athlete Relationship, Primary Appraisals, and Coping among Athletes

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Abstract

20 How a coach is perceived to behave by the athlete may have far reaching implications in
21 terms of performance and well-being. The purpose of this study was to assess a *priori* model
22 that included perceptions of coach behavior, coach-athlete relationship, primary appraisals of
23 threat and challenge, and coping. Two-hundred and seventy-four athletes completed relevant
24 measures that assessed each construct. Our results revealed that perceptions of coach
25 behavior were associated with aspects of the coach-athlete relationship and threat appraisals.
26 In particular, closeness was positively associated with challenge appraisals and negatively
27 with threat appraisals. However, commitment was positively associated with threat,
28 indicating that there might be some negative implications of having a highly committed
29 coach-athlete relationship. Further, commitment was also positively associated with
30 disengagement-oriented coping, which has previously been linked to poor performance and
31 negative goal-attainment. Applied practitioners could monitor athlete's perceptions of the
32 coach-athlete relationship, particularly commitment levels, and provide training in appraising
33 stress and coping to those who also score highly on threat and disengagement-oriented
34 coping, but low on task-oriented coping.

35 *Key words:* Challenge; Coaching; Stress Management; Threat

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37

Introduction

38 Participating in competitive sport has been associated with athletes reporting a variety
39 of stressors such as errors, performance, and concerns about the outcome of a competition
40 [1]. A recent meta-synthesis of the stress and sport literature [2] included a taxonomic
41 classification of stressors encountered by athletes, which revealed that coach's behavior and
42 interactions along with a coach's personality were salient stressors for athletes. Indeed,
43 scholars have also found that a coach's behavior influences how an athlete perceives his or
44 her relationship with that coach, and that this relationship is associated with an athlete's
45 happiness [3]. Given that an athlete's perception of his or her relationship is associated with
46 happiness and that coaches are a source of stress [2], it is plausible to assume that perceptions
47 of the coach-athlete relationship would also be related to how an athlete evaluates stress and
48 coping, given that appraisal determines the emotional responses such as happiness and coping
49 [4]. However, little is known about how the coach-athlete relationship may influence
50 appraisals of stress, and whether the coach-athlete relationship is related to coping. This is
51 surprising given that research has documented a relationship between coach behavior and
52 coping [5-6]. In this study we tested a *priori* model that included coach behavior, the coach-
53 athlete relationship, primary appraisals of threat and challenge, and coping among a sample
54 of athletes.

55 Coach Behavior

56 How a coach behaves can influence whether a player is likely to commit aggressive
57 behaviors [7], a player's thoughts [8], and the level of anxiety an athlete experiences [9]. It is
58 therefore important that coaches behave in a way that athletes perceive as being positive or
59 supportive. Høigaard [10] identified positive coach behaviors among a sample of elite
60 Norwegian footballers and found that providing positive feedback (e.g., behaviors that
61 recognize and reward good performances), training and instruction (e.g., coach behaviors that

62 enable an athlete to improve), and democratic behaviors (e.g., allowing team members to
63 make decisions) were deemed supportive behaviors.

64 Other research has identified supportive and unsupportive coaching behaviors. Using
65 Côté et al.'s Coaching Behavior Scale for Sport (CBS) [11], Nicolas [5] deemed supportive
66 coaching behaviors as having emotional/relational and structural/instrumental components.
67 Conversely, unsupportive coaching was deemed to occur when coaches shouted,
68 manipulated, threatened, or upset athletes, which is likely to be perceived as the coach
69 exerting unwanted pressure [11]. Coach behavior has been found to influence how athletes
70 evaluate their relationship with the coach [3]. Indeed, Lafrenière [3] found a positive
71 relationship between autonomy supportive coach behaviors and the athlete's relationship
72 quality with the coach. These scholars also found a negative relationship between controlling
73 coach behaviors and the athlete's relationship with the coach. Although Lafrenière [3] made
74 an important contribution to the literature regarding how coach behaviors may influence the
75 athlete's perception of the quality of their relationship with the coach, it could be argued that
76 the way in which coach behavior was assessed could be more thorough. For example, only
77 two forms of coach behavior were assessed (i.e., autonomy supportive behaviors and
78 controlling behaviors), which were measured by only three and six items respectively. The
79 CBS [11] provides a more detailed assessment of coaching behavior.

80 **The Coach-Athlete Relationship**

81 Jowett and Cockerill [12] suggested that the coach-athlete relationship refers to all
82 situations in which a coach's and athlete's thoughts, feelings, and behaviors are inter-related.
83 The affiliation between the coach and the athlete is dynamic [12], meaning that both the
84 coach and the athlete can influence the coach-athlete relationship. There are several
85 conceptualizations of the coach-athlete relationship [13-15], with Jowett's model [13] being
86 the most widely used and the guiding framework for this current study. Jowett [13]

87 conceptualized the coach-athlete relationship as the 3+1 Cs, which comprises of closeness
88 (e.g., the extent to which value, support, and care for each other), commitment (e.g., the
89 coach and athlete's intent to maintain the relationship), complementarity (e.g., how the
90 behaviors of the coach and athlete correspond to each other), and co-orientation (e.g., the
91 coach and athlete establishing common views regarding the athlete's progression).

92 The importance of the coach-athlete relationship should not be underestimated, given
93 that successful coach-athlete relationships can result in superior coaching [16], coach and
94 athlete well-being [17], and better self-concept [18]. Understanding more about the
95 antecedents of the coach-athlete relationship and constructs that the coach-athlete might
96 influence is important for the development of coaching practices. One psychological
97 construct associated with coach-athlete relationship is happiness [3]. Happiness is an emotion
98 that reflects a person's positive state of their overall psychological well-being [4]. Indeed,
99 Lazarus [4] stated emotions are generated by appraisals. As such, although Lafrenière and
100 colleagues [3] did not measure appraisal, their findings indicate that appraisals are related to
101 the coach-athlete relationship, give that emotions occur as a consequence of appraisals.

102 **Appraisal**

103 In order for an athlete to make a judgment about the situation he or she is in with
104 regards to his or her personal goals, a process known as primary appraisal takes place [4]. If
105 the athlete evaluates that the situation has endangered personal goals or has the potential of
106 doing so, it is deemed as stressful. Stressful situations are referred to as harmful (e.g., damage
107 that has already occurred such as sustaining an injury), threatening (e.g., damage occurring in
108 the future), challenging (e.g., the possibility of a future gain such as the chance to master a
109 stressful situation), or beneficial (e.g., when a positive gain has occurred in a stressful
110 situation).

111 Of relevance to the current study, is the recent literature on challenge and threat states,

112 which are similar to how Lazarus [4] conceptualized these primary appraisals. Indeed, a study
113 by Moore and colleagues [19] found that those who experienced challenge states exhibited
114 superior performance, felt less anxious, and engaged in less conscious processing, in addition
115 to having a longer quiet eye duration. These results were echoed by Turner and colleagues
116 [20] who found that the cricketers who exhibited challenge states performed better than those
117 who reported threat states. In addition to appraisals of challenge or threat states influencing
118 performance and anxiety, they have also been theoretically [4] and empirically associated
119 with coping [21].

120 **Coping**

121 According to Lazarus and Folkman [22], coping refers to all conscious cognitive and
122 behavioral efforts to manage external or internal demands that a person appraises as taxing
123 his or her resources. Although coping can be classified into many different dimensions, the
124 taxonomy proposed by Gaudreau and Blondin [23] is widely used in the sport literature.
125 Gaudreau and Blondin [23] classified within three higher-order dimensions: task-oriented,
126 distraction-oriented, and disengagement-oriented coping. The purpose of task-oriented
127 strategies is to change or master a stressful situation, whereas distraction-oriented coping
128 direct the athlete's attention onto an unrelated aspect of the sporting task. Finally,
129 disengagement-oriented coping strategies involve athletes stopping achieving their goals.

130 **Summary and Hypotheses**

131 Our hypotheses are presented in Figure 1, with a unbroken line representing a positive
132 relationship and a broken line inferring a negative relationship. We predicted that there would
133 be positive paths between supportive coaching behavior and closeness, commitment, and
134 complementarity, but negative paths between unsupportive coaching behaviors and these
135 three coach-athlete relationship constructs. This is because Lafrenière [3] reported a positive
136 relationship between autonomy coaching behaviors and athlete perceptions of the coach-

137 athlete relationship, but a negative path between controlling coach behaviors and the coach-
138 athlete relationship constructs. We also predicted positive paths between supportive coach
139 behavior and challenge, and unsupportive coaching behaviors and threat, but negative paths
140 between supportive coaching behaviors and threat and unsupportive coaching behaviors and
141 challenge. This hypothesis is based on Lafrenière et al.'s [3] finding that controlling
142 behaviors were negatively associated with happiness, but autonomous coaching behaviors
143 were positively associated, although these findings were insignificant. However, given that
144 challenge appraisals are associated with pleasant emotions and threat appraisals with
145 unpleasant emotions [24], the athletes who experienced happiness in the Lafrenière [3] study
146 are more likely to have experienced a challenge rather than a threat appraisal.

147 Similarly, we predicted positive paths between closeness, commitment, and
148 complementarity with challenge appraisals, but negative paths between these three constructs
149 and threat appraisals based on the notion that these constructs were positively related to the
150 pleasant emotion happiness. This could infer that the situation is more likely to have been
151 appraised as a challenge rather than a threat [24]. We also predicted that there would be
152 positive paths from closeness, commitment, and complementarity to task-oriented coping, but
153 negative paths from these three constructs to distraction- and disengagement-oriented coping.
154 This is because both high scores in closeness, commitment, and complementarity are thought
155 to be associated with athletic excellence [25], as is task-oriented coping [26]. Finally, it was
156 hypothesized that there would be a positive path from challenge appraisals to task-oriented
157 coping and from threat appraisals to distraction- and disengagement-oriented coping. We also
158 predicted negative paths from threat to task-oriented coping and from challenge to both
159 distraction- and disengagement-oriented coping, based on the findings of Nicholls [21].

160 **Method**

161 **Participants**

162 Two-hundred and seventy-four athletes (male $n = 200$, female $n = 73$, unspecified $n =$
163 1), aged between 16 and 45 years of age ($M_{\text{age}} = 21.59$, $SD = 4.45$) participated in the study.
164 Participants were from team ($n = 250$) and individual sports ($n = 24$), including both contact
165 sports ($n = 216$) and non-contact sports ($n = 58$). Our sample consisted of 188 Caucasian, 31
166 African-Caribbean, 30 Asian, and 25 athletes from other ethnic origins. The athletes in our
167 sample competed at international ($n = 81$), national ($n = 54$), county ($n = 38$), club ($n = 36$),
168 and beginner ($n = 60$) levels. Five athletes did not specify their skill level.

169 Measures

170 **Coach Behavior.** The 47-item CBS [11] was deployed to assess the athletes'
171 perceptions of seven of their coach's behaviors. Thirty-nine of the questions were classified
172 as supportive coaching behaviors, compared to eight of the questions that were classified as
173 unsupportive behaviors [5]. Participants responded to the stem "How frequently do you
174 experience the following coach behaviors?" A question classified as from the supportive
175 coaching behaviors was "The coach(es) most responsible for my physical training and
176 conditioning provides me with structured training sessions" and "the coach(es) most
177 responsible for my mental preparation provides advice on how to perform under pressure."
178 Examples of unsupportive coaching behaviors were "my head coach yells at me when angry"
179 and "my head coach shows favoritism to others." Questions were answered on a 7-point
180 Likert-type scale, which ranged from 1 = *never* to 7 = *always*.

181 **Coach-Athlete Relationship.** The 11-item Coach Athlete Relationship Questionnaire
182 (CART-Q) [27] was used to assess the athletes' perceptions of closeness, commitment, and
183 complementarity with their coach. Participants responded to the stem "This questionnaire
184 aims to measure the quality and content of the coach-athlete relationship. Please read
185 carefully the statements below and circle the answer that indicates whether you agree or
186 disagree." An example of question assessing closeness was "I trust my coach," whereas "I am

187 committed to coach” was from the commitment scale, and “When I am coached by my coach,
188 I adopt a friendly stance” represents a question from the complimentary scale. Participants
189 responded to these questions on a 7-point Likert-type scale, which ranged from 1 = *strongly*
190 *disagree* to 7 = *strongly agree*.

191 **Primary Appraisals.** Items from The Stress Appraisal Measure (SAM) [28] that
192 measured challenge and threat were used in this study. As such, participants completed four
193 items for both challenge and threat appraisals. Participants were instructed to “please respond
194 according to how you view this situation right now.” An example of a question relating to
195 challenge appraisals was “Is this going to have a positive impact on me?” Conversely, an
196 example of a question measuring threat was “Will the outcome of this situation be negative?”
197 The responses on the SAM range from 1 = *not at all* to 5 = *extremely*. It measures two
198 primary appraisals (threat and challenge) and centrality (motivational relevance in the present
199 study) and three secondary appraisals (perceptions of controllable by-self, controllable by-
200 others, uncontrollable). It should be noted that in the present study, only the two primary
201 appraisals and motivational relevance were included in the analyses, with the secondary
202 appraisals being omitted due to an insufficient sample size. Peacock and Wong [28] reported
203 internal consistencies ranging from .65 to .90. It should be noted that the Cronbach alpha
204 score of .65 was for threat, which was reported in one of three studies. In the other two
205 studies within that paper, the Cronbach alphas for threat were .75 and .73.

206 **Coping.** We used the Coping Inventory for Competitive Sport (CICS) [29] to assess
207 how the athletes were coping before their competition. The CICS has been successfully used
208 to examine pre-competitive coping and assesses 10 coping subscales categorized within task-,
209 distraction-, and disengagement-oriented coping [30]. Participants reported how their coping
210 “corresponds to what you are doing now,” with questions answered on a 5-point scale, which
211 ranged from 1 = *not at all* to 5 = *very strongly*. Although Gaudreau and Blondin [29] did not

212 report the Cronbach alpha coefficients for the higher-order dimensions, the individual coping
213 strategies ranged from .67 to .87.

214 **Procedure**

215 Letters were distributed to coaches and participants, which explained the purpose of
216 the study and the requirements for those interested in participating, after ethical approval was
217 obtained from a University Ethics Committee. Participants were asked to complete an assent
218 form if they wished to participate in the study. Each participant received a questionnaire pack
219 and the questionnaires were completed in the clubhouse of sports clubs in the presence of a
220 trained research assistant, and within three hours of a competition starting. As such, each
221 participant completed the questionnaires in the following order: CBS [11], CART-Q [27],
222 challenge and threat items of the SAM [28], and the CICS [29].

223 **Data Analysis**

224 Preliminary data analysis screened for outliers, normality, and omega. Omega was
225 preferred as an assessment of internal consistency because it has fewer assumptions than
226 alpha, problems associated with inflation of internal consistency are less likely, points
227 estimates and confidence intervals can be calculated [31]. Bivariate correlations were used to
228 examine relationships between all variables, using the effect size (r) to make a judgment on
229 their meaning as recommended by [32]. Zhu [32] suggested using a criteria of 0-0.19 = no
230 correlation, 0.2-0.39 = low correlation, 0.4-0.59 = moderate correlation, 0.6-0.79 =
231 moderately high correlation, and ≥ 0.8 = high correlation.

232 To test how well the hypothesized model (Figure 1) fit our data, were performed a
233 path analysis in Mplus 7 [33]. A range of indicators of model fit were used to supplement χ^2 .
234 Hu and Bentler's recommendations of CFI close to .95, TLI close to .95, SRMR close to .08,
235 and RMSEA close to .05 were used as guidelines for good model fit, while acknowledging
236 the recommendations by Marsh and colleagues [34], who encouraged researchers to avoid

237 interpreting these as golden rules. To assess mediation, we used 5,000 bootstrapped samples,
238 which does not hold assumptions regarding sampling distribution [35] and provides standard
239 errors and confidence intervals.

240 **Results**

241 Data was initially screened for missing data (< 1%) outliers and univariate normality,
242 which presented no issues with skewness (< 2) or kurtosis (< 7) across all variables. Table 1
243 presents the means, standard deviations, minimum and maximum scores, and omega point
244 estimates and confidence intervals. Omega estimates and confidence intervals were
245 calculated using the MBESS package [36] in R [37] with 1,000 bootstrap samples. Omega
246 point estimates and intervals supported the internal consistency of all subscales with the
247 exception of the stressfulness subscale of the stress appraisal measure. Consequently, results
248 pertaining to this scale were treated with caution.

249 Pearson bivariate correlations were performed to test relationships among coach
250 behavior, coach-athlete relationship, stress appraisal, and coping strategies. Pearson
251 correlations were used in favor of the latent factor correlations from structural equation
252 modeling because the amount of latent variables examined at this stage would have required a
253 sample size far larger than was available. Bivariate correlations are presented in Table 2. All
254 aspects of coach behavior correlated positively with the 3Cs of the coach-athlete relationship
255 with the exception of negative personal rapport, which correlated negatively with all aspects
256 of the coach-athlete relationship. The positive correlations were largely moderate in size ($r_s =$
257 $.29$ to $.69$, $p < .01$), while negative correlations were typically low ($r_s = -.19$ to $-.29$, $p < .01$).
258 All positive coach behaviors exhibited a low positive correlation with task-oriented coping
259 ($r_s = .17$ to $.25$, $p < .01$), negative personal rapport was positively related to distraction-
260 oriented coping ($r = .23$, $p < .01$) and disengagement-oriented coping ($r = .28$, $p < .01$). The
261 most significant relationships between coach behavior and stress appraisal were the positive

262 correlations of all positive coach behaviors with the exception of goal setting and a challenge
263 appraisal ($r_s = .16$ to $.32$, $p < .01$). There were also positive correlations between all positive
264 coach behaviors and control-others appraisal ($r_s = .18$ to $.40$, $p < .01$). Negative personal
265 rapport correlated positively with threat ($r = .33$, $p < .01$), uncontrollable ($r = .24$, $p < .01$),
266 and stressfulness ($r = .20$, $p < .01$), and negatively with control-self ($r = -.29$, $p < .01$) and
267 control-others ($r = -.23$, $p < .01$).

268 The coach-athlete relationship was significantly associated with stress appraisal.
269 Specifically, closeness and complementarity were correlated moderately positively with
270 challenge ($r = .42$ and $.55$, $p < .01$), control-self ($r = .45$ and $.53$, $p < .01$), and control-others
271 ($r = .44$ and $.54$, $p < .01$). Closeness and complementarity were negatively associated with
272 threat ($r = -.24$ and $-.35$, $p < .01$) and uncontrollable ($r = -.26$ and $-.44$, $p < .01$).
273 Complementarity presented the strongest relationship of the coach-athlete relationship
274 variables with coping. Specifically, it was related to task-oriented coping ($r = .38$, $p < .01$).
275 Relationships between stress appraisal and coping were low to moderate. The strongest
276 correlations were between task-oriented coping with challenge ($r = .47$, $p < .01$), control-self
277 ($r = .44$, $p < .01$), and control-others ($r = .38$, $p < .01$), distraction-oriented coping with threat
278 ($r = .41$, $p < .01$) and stressfulness ($r = .38$, $p < .01$), and disengagement-oriented coping with
279 threat ($r = .41$, $p < .01$) and stressfulness ($r = .38$, $p < .01$).

280 To guard against departure from multivariate normality, the robust maximum
281 likelihood estimator (MLR) was used in all model testing. The path model found in Figure 1
282 represented a reasonable fit to the data but with a significant χ^2 , low TLI, and high error
283 (RMSEA): $\chi^2(8) = 23.79$, $p = .003$, CFI = .967, TLI = .816, SRMR = .039, RMSEA = .095
284 [90% CI = .053-.141]. Examination of the path estimates identified several non-significant
285 paths ($p > .05$). Consequently, these paths were removed from the model. The resultant

286 model presented improved model fit: $\chi^2(17) = 29.14, p = .033, CFI = .974, TLI = .933,$
287 $SRMR = .052, RMSEA = .057 [90\% CI = .016-.092]$. This model is presented in Figure 2.

288 To examine mediation, 5,000 bootstrap replications were conducted and indirect and
289 direct effects analyzed. This method presents 95% confidence intervals for each estimate. The
290 absence of a zero in the confidence intervals indicates a significant effect. The results of the
291 mediation analysis between the coach-athlete relationship variables and coping are presented
292 in Table 3. Stress appraisal did not mediate the relationship between any coach-athlete
293 relationship variable and coping strategies. Further analysis of indirect effects was conducted
294 to determine if the coach-athlete relationship mediated the relationship between coach
295 behavior and coping. The relationship between positive coach behaviors and task-oriented
296 coping was positively mediated by closeness ($\gamma = .12 [95\% CI = .00, .35]$). The effect from
297 negative coach behavior on disengagement-oriented coping was mediated by
298 complementarity ($\gamma = .26 [95\% CI = .15, .38]$). We then examined the indirect effects
299 between coach behavior and coping, mediated by stress appraisal. The indirect effect on
300 disengagement-oriented coping mediated by threat appraisal from positive coaching behavior
301 ($\gamma = .08 [95\% CI = .01, .15]$) and negative coaching behavior ($\gamma = .19 [95\% CI = .09, .30]$)
302 were significant. Finally, the mediating effects of the coach-athlete relationship on the
303 relationship between coach behavior and stress appraisal were assessed. Results indicated no
304 significant indirect effects.

305 Discussion

306 The aim of this paper was to assess the relationships between perceived coach
307 behavior, athlete's perceptions of closeness, commitment, and complementarity, along with
308 primary appraisals and coping. Overall, some of the hypothesized paths were supported,
309 indicating that some of these constructs are related, but there were also some significant
310 findings that were not expected. These included the relationship between commitment and

311 threat appraisals, along with commitment and coping (e.g., task- and disengagement-oriented
312 coping).

313 There were positive paths from supportive coaching behaviors to closeness,
314 commitment, and complementarity. This compliments the work of Lafrenière and colleagues
315 [3]. Only one of the negative paths that we predicted from unsupportive coaching behaviors
316 to the three coach-athlete relationship scales was significant, which was the path to
317 complementarity. This finding is only in partial agreement with Lafrenière [3] who found a
318 negative relationship between controlling forms of coach behaviors and athlete perceptions of
319 the coach-athlete relationship. The insignificant paths between unsupportive perceptions of
320 coach behavior with both closeness and commitment would infer that athletes still feel a bond
321 with their coach and plan to continue working with the coach despite feeling the coach is
322 unsupportive. In certain circumstances, especially team sports, athletes have little or no say
323 on who their coach is and could only end the coach-athlete relationship by swapping teams.
324 As such, the athletes might have felt committed to their coach, because they had little choice
325 regarding working with a new coach. It should be noted that the vast majority of the athletes
326 in the present sample were from team sports, so it could be interesting to compare the effects
327 of unsupportive coach behaviors among team versus individual sport athletes.

328 Although the paths from neither supportive nor unsupportive coach behaviors to
329 challenge appraisals were significant, the paths were significant to threat appraisals, and in
330 the expected direction. This finding illustrates the impact that unsupportive coaching
331 behavior can have on athlete's perception of a situation. Coaches should consider the impact
332 of their behavior and the detrimental consequences of such unsupportive behavior. Threat is
333 associated with undesirable consequences such as increased anxiety [19] and decreased
334 performance [20]. The finding that there was a significant path between unsupportive
335 coaching behaviors and threat could imply that coaches can generate perceptions of threat

336 among their athletes, although given that this is a cross-sectional study, research is required to
337 verify this. We also found a negative path between supportive coaching behaviors and
338 perceptions of threat, implying that there is a negative association between these constructs.
339 Although it appears that coach behavior might not generate challenge appraisals among
340 athletes, it could be that it reduces that occurrence of threat appraisals.

341 Other than closeness, the hypothesized paths between the coach-athlete relationship
342 and appraisals were not supported. These findings, however, illustrate the importance of the
343 athlete's perception of closeness to coach, because it was positively associated with
344 challenge, but negatively with threat. However, commitment and complementarity were not
345 associated with challenge, and commitment was negatively associated with threat. That is,
346 when the athlete was committed to working with his or her coach, threat levels were higher.
347 This finding illustrates that there might be negative consequences of being in a highly
348 committed coach-athlete relationship, which has previously not been considered before.
349 When athletes are in a highly committed relationship with their coach, they might be more
350 concerned about letting their coach down and therefore experience higher levels of threat.
351 Although not focusing on the coach-athlete relationship, Nicholls [38] reported that young
352 golfers experienced threat in regards to letting their parents down by not performing well.
353 Furthermore, there was also a positive path from commitment to disengagement-oriented
354 coping and a negative path to task-oriented coping which were unexpected. Task-oriented
355 coping has been positively associated with goal attainment [39], superior performance [26,
356 40], and higher coping effectiveness [41], whereas disengagement-oriented coping is
357 negatively associated with such constructs. These findings also illustrate the possible negative
358 associations of a highly committed coach-athlete relationship. Additional research is
359 warranted to explore the possible negative implications of having a highly committed coach-
360 athlete relationship on threat appraisals and coping, so that causality can be established.

361 Only some of our hypothesized paths between appraisal and coping were supported.
362 The path between challenge and task-oriented coping was positive and the path between
363 challenge and disengagement-oriented coping was negative. Further, the path between threat
364 and disengagement-oriented coping was positive, which are all in agreement with Nicholls
365 [21], who also found only some of the hypothesized paths were significant. The notion that
366 challenge is associated with adaptive forms of coping, such as task-oriented coping, but is
367 less associated with athletes using more distraction- or disengagement-oriented coping, was
368 partially supported. Similarly, although threat appraisals are associated with athletes using
369 more disengagement-oriented coping, it is not associated with athletes using less task-
370 oriented coping strategies. In the present study we did not assess secondary appraisals, which
371 represent the evaluation of the coping options available to a person. These might have
372 correlated more strongly with coping than primary appraisals did.

373 **Limitations**

374 This study explored perceptions of coach behavior and the association of such
375 perceptions with the coach-athlete relationship and primary appraisals. However, it is
376 possible that the athlete's perceptions of such coach behaviors may be biased, so future
377 research could assess actual coach behaviors in relation to perceptions of the coach-athlete
378 relationship and appraisals. Only two of the four primary appraisals were measured in this
379 study, although at the present time, there is not a questionnaire available to specifically assess
380 harm/loss and benefit appraisals.

381 **Recommendations**

382 The findings from this study illustrate that perceptions of coach behavior are
383 associated with how an athlete perceives his or her relationship with the coach and the
384 appraisal of situations. It is therefore paramount that coaches consider their behavior and
385 maximize their level of supportive behavior, whilst minimizing unsupportive coaching

386 behaviors. This may appear an obvious recommendation, but our data suggests that coaches
387 were being perceived to behave in an unsupportive manner, which suggests that this type of
388 behavior is evident among coaches. Although it may seem appealing to want to maximize all
389 aspects of the coach-athlete relationship, this is one of the first studies to suggest that there
390 might be some undesirable consequences of such an approach, particularly in relation to
391 commitment. Although it is important that both the coach and the athlete are committed to the
392 relationship, coaches could speak to their athletes and provide re-assurances about factors
393 that might cause threat (e.g., the outcome of competitions) in committed coach-athlete
394 relationships.

395 **Conclusions**

396 We found support for a number of paths assessed in this study, indicating that coach
397 behaviors are associated with the coach-athlete relationship and appraisals. Further, aspects
398 of an athlete's perception of the coach-athlete relationship are related to appraisals and
399 coping. Although supportive coaching behaviors were not positively associated with
400 challenge appraisals, they were negatively associated with threat, and unsupportive coaching
401 behaviors were positively associated with threat appraisals. As such, coaches might be able to
402 reduce threat levels among their athletes by monitoring their behavior and eliminating
403 unsupportive coaching behaviors. Finally, this is one of the first studies to suggest that a
404 strong coach-athlete relationship might have some undesirable consequences, given that
405 commitment was positively associated with threat.

406

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Table 1

Descriptive Statistics, Univariate Normality Estimates, Internal Consistency

Variable	M	SD	Min	Max	Skew	Kurt	Omega [95% CI]
<i>Coach Behavior</i>							
Physical Training	5.08	1.34	1.00	7.00	-.79	.15	.90 [.88, .92]
Technical Skills	5.39	1.19	1.50	7.00	-.67	-.04	.94 [.92, .95]
Mental Preparation	4.54	1.51	1.00	7.00	-.40	-.51	.95 [.93, .96]
Goal Setting	4.22	1.59	1.00	7.00	-.26	-.65	.96 [.95, .97]
Competition Strategies	5.31	1.19	1.43	7.00	-.77	.27	.92 [.90, .94]
Personal Rapport	5.01	1.36	1.33	7.00	-.54	-.32	.89 [.87, .92]
Negative Personal Rapport	2.42	1.28	1.00	7.00	1.58	2.42	.89 [.85, .92]
<i>Coach-Athlete Relationship</i>							
Closeness	5.74	1.23	1.00	7.00	-1.29	1.41	.92 [.90, .94]
Commitment	5.14	1.29	1.00	7.00	-.96	.66	.84 [.81, .88]
Complementarity	5.37	1.23	1.00	7.00	-.82	.57	.76 [.69, .81]
<i>Stress Appraisal</i>							
Threat	2.26	.81	1.00	4.25	.24	-1.01	.60 [.52, .65]
Challenge	3.48	.86	1.50	5.00	-.18	-.74	.78 [.72, .81]
Centrality	2.95	.83	1.00	5.00	-.18	.04	.68 [.57, .73]
Control – Self	3.86	.79	1.50	5.00	-.42	-.39	.78 [.73, .83]
Control – Others	3.41	.94	1.00	5.00	-.06	-.73	.79 [.72, .83]
Uncontrollable	2.18	1.04	1.00	4.75	.59	-.75	.84 [.80, .87]
Stressfulness	2.59	.63	1.00	4.25	.04	-.11	.23 [not pos]
<i>Coping Strategies</i>							
<i>Task-Oriented Coping</i>							
Mental Imagery	3.57	.77	1.50	5.00	-.30	-.46	.65 [.57, .71]
Effort Expenditure	3.97	.86	1.00	5.00	-1.08	1.38	.70 [.61, .77]
Thought Control	3.45	.80	1.00	5.00	-.37	.17	.62 [.54, .70]
Seeking Support	2.89	.84	1.00	5.00	.22	-.46	.71 [.65, .76]
Relaxation	3.13	.87	1.00	5.00	.04	-.48	.77 [.71, .82]
Logical Analysis	3.33	1.00	1.00	5.00	-.86	.21	.80 [.74, .84]
<i>Distraction-Oriented Coping</i>							
Distancing	2.59	.90	1.00	4.75	.49	-.23	.74 [.68, .80]
Mental Distraction	2.35	.93	1.00	5.00	.58	-.03	.80 [.75, .85]
<i>Disengagement-Oriented Coping</i>							
Venting Unpleasant Emotions	2.70	.89	1.00	5.00	.17	-.60	.76 [.70, .80]
Resignation/Disengagement	1.74	.87	1.00	4.00	1.10	.06	.82 [.78, .86]

Note. Coach behavior and stress appraisal are measured on 7-point scales; stress appraisal and coping strategies are measured on 5-point scales. Omega confidence intervals could not be calculated for the stressfulness subscale, as the matrix was not-positive-definite.

Table 2

Bivariate Correlations for Coach Behavior, Coach-Athlete Relationship, Stress Appraisal, and Coping

	<i>Coach-Athlete Relationship</i>			Task	<i>Coping</i>			<i>Stress Appraisal</i>					
	Close	Comm	Compl		Distract	Diseng	Threat	Chall	Central	ContSelf	ContOth	Uncont	Stress
<i>Coach Behavior</i>													
Physical Training	.50**	.52**	.39**	.17**	.05	-.06	.03	.27**	.27**	.19**	.35**	.02	.13*
Technical Skills	.64**	.64**	.55**	.20**	-.12	-.20**	-.03	.29**	.10	.28**	.40**	-.09	.07
Mental Prep	.49**	.55**	.40**	.19**	-.04	-.07	.01	.16**	.09	.16**	.29**	.00	.03
Goal Setting	.45**	.56**	.29**	.17**	.11	.03	.12*	.06	.23**	.06	.18**	.20**	.17**
Comp Strategies	.59**	.62**	.49**	.20**	-.12	-.17**	-.05	.30**	.11	.27**	.38**	-.08	.04
Personal Rapport	.67**	.69**	.59**	.25**	-.12	-.17**	-.15*	.32**	.08	.36**	.38**	-.21**	.06
Negative Rapport	-.29**	-.19**	-.25**	-.00	.23**	.28**	.33**	-.19	.09	-.29**	-.23**	.24**	.20**
<i>Stress Appraisal</i>													
	<i>Coach-Athlete Relationship</i>			<i>Coping</i>									
Threat	-.24**	-.01	-.35**	-.12*	.41**	.41**	Task	.28**	.19**	.38**			
Challenge	.42**	.22**	.55**	.47**	-.04	-.22**	Distraction	-.08	-.05	-.04			
Centrality	.10	.18**	.04	.27**	.25**	.10	Disengagement	-.20**	-.12	-.20**			
Control – Self	.45**	.26**	.53**	.44**	-.12	-.30**							
Control – Others	.44**	.28**	.54**	.38**	-.03	-.18**							
Uncontrollable	-.26**	.05	-.44**	-.23**	.29**	.38**							
Stressfulness	-.01	.10	-.07	.18**	.38**	.28**							

*Statistically significant at $p < .05$; ** $p < .01$.

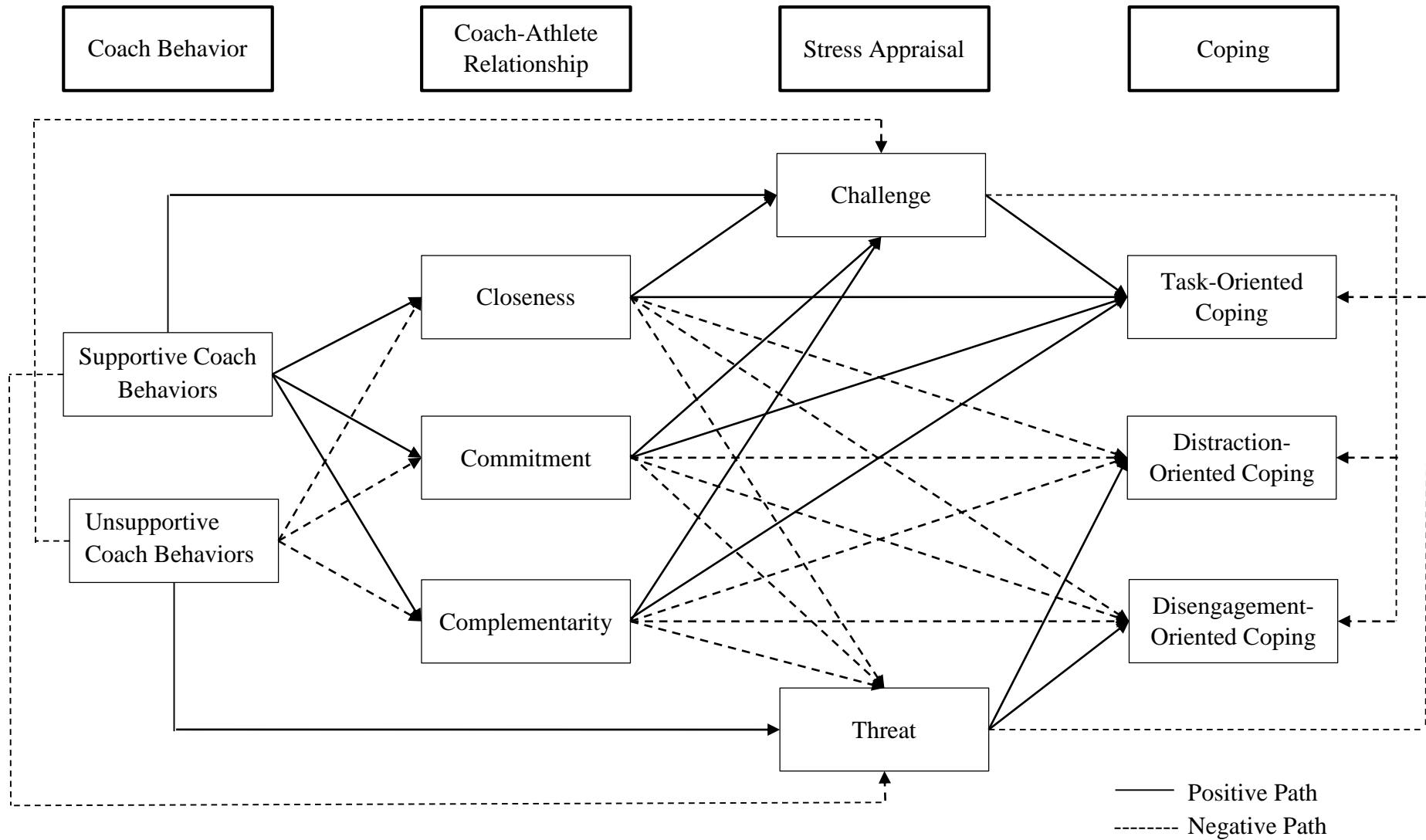
Table 3

Direct, Indirect, and Total Effects of Coach-Athlete Relationship Variables on Coping in the Original Path Model

	Direct	Via Challenge	Via Threat	Total Effect
Closeness → Task-oriented coping	.42 [.11, .72]	.05 [-.04, .13]	-.02 [-.11, .06]	.44 [.10, .79]
Commitment → Task-oriented coping	-.32 [-.53, -.10]	-.01 [-.07, .06]	.01 [-.04, .07]	-.31 [-.55, -.07]
Complementarity → Task-oriented coping	-.06 [-.37, .26]	.04 [-.07, .14]	-.01 [-.07, .04]	-.03 [-.35, .28]
Closeness → Distraction-oriented coping	.20 [-.23, .63]	.02 [-.05, .08]	-.05 [-.16, .07]	.17 [-.23, .56]
Commitment → Distraction-oriented coping	-.22 [-.52, -.08]	-.00 [-.03, .03]	.03 [-.05, .11]	-.19 [-.48, .10]
Complementarity → Distraction-oriented coping	-.28 [-.56, -.01]	.01 [-.06, .08]	-.03 [-.10, .04]	-.29 [-.55, -.04]
Closeness → Disengagement-oriented coping	.14 [-.11, .38]	-.03 [-.08, .03]	-.11 [-.23, .02]	.01 [-.22, .23]
Commitment → Disengagement-oriented coping	.24 [.01, .47]	.00 [-.03, .04]	.07 [-.03, .17]	.31 [.10, .52]
Complementarity → Disengagement-oriented coping	-.50 [-.69, -.32]	-.02 [-.08, .04]	-.06 [-.18, .05]	-.59 [-.75, -.42]

Figure 1

Hypothesized Path Model for Coach Behavior, Coach-Athlete Relationship, Stress Appraisal, and Coping



1 Figure 2

2 *Revised Path Model Showing Only Significant ($p < .05$) Paths*

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4

