

Running head: controlling coaching and mental toughness

**Controlling Coaching and Athlete Thriving in Elite Adolescent Netballers: The
Buffering Effect of Athletes' Mental Toughness**

Daniel F. Gucciardi¹, Andreas Stamatis², and Nikos Ntoumanis³

¹*School of Physiotherapy and Exercise Science, Curtin University*

²*Department of Sport and Wellness, SUNY Plattsburgh*

³*School of Psychology and Speech Pathology, Curtin University*

Author Notes

*Address correspondence to Daniel Gucciardi, School of Physiotherapy and Exercise Science, Curtin University, GPO Box U1987, Western Australia, 6845. Phone: +61 8 9266 3653. Email: daniel.f.gucciardi@gmail.com. Daniel Gucciardi is supported by a Curtin Research Fellowship.

Manuscript accepted for publication in *Journal of Science and Medicine in Sport*

(February 7th 2017)

1 **Abstract**

2 **Objectives:** The purposes of this study were to examine the association between controlling
3 coach behaviours and athlete experiences of thriving, and test the buffering effect of mental
4 toughness on this relation.

5 **Design:** A cross-sectional survey.

6 **Methods:** In total, 232 female netballers aged 11 to 17 years (14.97 ± 1.52) with between 1
7 and 15 years of experience in their sport (7.50 ± 2.28) completed measures of controlling
8 coach interpersonal style, mental toughness and thriving.

9 **Results:** Latent moderated structural models indicated that (i) controlling coach behaviours
10 were inversely related with experiences of vitality and learning; (ii) mental toughness was
11 positively associated with psychological experiences of both dimensions of thriving; and (iii)
12 mental toughness moderated the effect of coach's controlling interpersonal style on learning
13 but not vitality experiences, such that the effect was weaker for individuals who report higher
14 levels of mental toughness.

15 **Conclusions:** This study extends past work and theory to show that mental toughness may
16 enable athletes to counteract the potentially deleterious effect of controlling coach
17 interpersonal styles.

18
19
20 **Keywords:** interpersonal style of communication; latent interactions; mentally tough;
21 motivational climate; positive functioning; vitality; self-determination theory

22

Introduction

23

24

25

26

27

28

29

30

31

32

33

In April 2013, the college sports world was shocked, confused and concerned by videos that aired on ESPN's "Outside the Lines". Mike Rice, Rutgers's head coach of the men's basketball team, appeared to be adopting excessive personal control, repeated intimidation and abuse towards players (verbally and physically) during practice. Rutgers took corrective action against this extreme case of controlling coaching behaviour and fired Rice as head coach. The attention subsequently turned to the victims, the players. However, some student-athletes reported to have been less affected negatively by Rice's controlling behaviour. In competitive and stressful sporting environments (e.g., college, professional, Olympic), are there individual resources that play an important role in buffering the negative effects of contextual stressors, such as controlling coaching interpersonal styles? In this study, we examine the role of mental toughness as one such potential buffer.

34

35

36

37

38

39

40

41

42

43

Despite the proliferation of definitions and conceptualisations over the past decade, a common theme amongst what seems like a fragmented and noncumulative literature is the centrality of mental toughness for reducing the potentially deleterious effects of contextual stressors for the enactment and maintenance of goal-directed pursuits[1]. This core theoretical tenet is captured in recent definitions in which mental toughness is conceptualised as "a personal capacity to produce consistently high levels of subjective (e.g., goal progress) or objective performance (e.g., sales, race time, GPA), despite everyday challenges and stressors as well as significant adversities" (p.28)[2]. As such, mental toughness is considered pertinent for major assaults (e.g., ACL injury) as well as acute (e.g., equipment malfunction) or chronic (e.g., controlling coach) stressors that can impede human functioning¹. Consistent with

¹ Resilience is often used interchangeably with mental toughness despite their conceptual differences, yet there are two key differences between these concepts². First, resilience can apply to a broad array of systems (e.g., individuals, communities, economies), whereas mental toughness is confined to individuals. Second, resilience encompasses a range of protective factors including individual, social, and community resources. Mental toughness can be considered a resilience (personal) resource but does not capture the breadth and depth of protective factors of resilience.

44 theoretical perspectives of stress[3], research has shown that mental toughness is positively
45 associated with important indicators of human functioning (e.g., performance) because
46 individuals high in mental toughness are less distressed and better able to cope with
47 contextual demands[2]. An alternative yet largely untested perspective is that when
48 individuals perceive a situation as stressful, the deleterious effects of stress may be less for
49 individuals with high levels of mental toughness (i.e., buffering hypothesis). Researchers
50 have examined the salience of mental toughness for functioning within a specific context
51 (e.g., sport, workplace) solely in relation to life stress[4]. As such, there is a need for research
52 that tests the buffering effects of mental toughness when the stressor and indicator of
53 functioning are captured within the same context, sport, in the case of this paper.

54 In testing the buffering effect of mental toughness, we draw from recent work[5,6]
55 where self-determination theory (SDT)[7] was employed as a guiding theoretical framework.
56 Within the context of SDT, optimal human functioning can be fostered through the
57 satisfaction of the psychological needs of autonomy (i.e., feelings of volition and self-
58 endorsement), competence (i.e., feeling skilled and capable), and relatedness (i.e., feeling
59 social valued and connected with others)[8]. Of central importance are social environments in
60 which key agents in positions of authority (e.g., coaches) support or undermine these
61 psychological needs through their interactions with others. Much work has focused on coach
62 behaviours and interpersonal styles that satisfy these three needs (e.g., choice within
63 boundaries, encouraging athlete input, provision of guidance and constructive feedback)
64 because they predict a range of indices related to optimal functioning[9]. In recent years,
65 however, researchers have devoted greater attention to understanding the motivational
66 strategies and behaviours of social agents that may lead to needs frustration[10]. Referred to
67 as a controlling motivational style, social agents can thwart the three psychological needs
68 through the controlling use of rewards (i.e., extrinsic rewards and praise), conditional regard

69 (i.e., withhold attention and support), intimidation (i.e., power assertive strategies to
70 humiliate), and excessive personal control (i.e., intrusive monitoring and excessive or strict
71 boundaries)[11]. Coach controlling motivational styles have been linked with a range of
72 maladaptive outcomes including increased burnout[12] and stress[13]. These findings
73 underscore the potentially stressful nature of controlling motivational styles within sporting
74 contexts. However, to date, little work has focused on how the undermining effects of
75 controlling environments can be buffered. Initial research suggests that mental toughness may
76 serve to mitigate the maladaptive effects of controlling motivational styles[6], yet this
77 hypothesis remains untested.

78 The concept of thriving is an important indicator of positive functioning that provides
79 a conceptual thread between SDT and mental toughness[14]. Conceptualised as the opposite
80 of languishing (e.g., stagnant, low positive affect), thriving is defined as a psychological state
81 “marked both by a sense of learning (greater understanding and knowledge) and a sense of
82 vitality (aliveness)” (p.537)[15]. Representing an internal gauge of cognitive and affective
83 markers regarding how well one is doing [16], thriving fosters adaptive resource allocation,
84 engagement with and commitment to tasks, proactivity, and performance[15,16]. With its
85 centrality for goal-directed behaviour, mental toughness is a personal resource that should
86 enable people to experience progress and growth[14]⁴. Longitudinal research with tertiary
87 students supports the adaptive nature of mental toughness with regard to academic and social
88 goal progress[2]. Similarly, meta-analytic data indicates that individuals are more likely to
89 thrive when embedded in social contexts in which individuals feel volitional, capable and
90 connected to others[17]. In contrast, when the three psychological needs are actively thwarted
91 via controlling motivational contexts, individuals should be less likely to experience thriving.
92 Research with male athletes[18] and a mixed-sex sample[19] revealed low and non-
93 significant correlations between controlling coaching and vitality, whereas research with

119 the multidimensional Controlling Coach Behaviours Scale[11], athletes reported their level of
120 dis/agreement with 15 items considered reflective of four specific dimensions of coaches'
121 controlling interpersonal style: controlling use of rewards (e.g., "My coach only
122 rewards/praises me to make me train harder"), negative conditional regard (e.g., "My coach
123 pays me less attention if I have displeased him/her"), intimidation (e.g., "My coach threatens
124 to punish me to keep me in line during training"), and excessive personal control (e.g., "My
125 coach tries to control what I do during my free time"). Responses were recorded using a 7-
126 point scale (1 = strongly disagree to 7 = strongly agree). Consistent with recent
127 research[13,21], we modelled coach interpersonal control as a higher-order construct for the
128 primary analyses. Using the unidimensional Mental Toughness Inventory[2], athletes rated
129 the extent to which 8 items were reflective of how they typically thought, felt and behaved as
130 a netballer (e.g., "I strive for continued success" and "I am able to regulate my focus when
131 performing tasks"). Responses were recorded using a 7-point scale (1 = false, 100% of the
132 time to 7 = true, 100% of the time). Using an adaptation of the multidimensional Thriving at
133 Work Scale[22], athletes reported the degree to which they experienced dimensions of
134 vitality (5 items, e.g., "At netball, I feel alive and vital") and learning (5 items, e.g., "At
135 netball, I find myself learning often") within the context of their netball pursuits. Responses
136 were recorded using a 7-point scale (1 = strongly disagree to 7 = strongly agree). For each
137 scale, a total score was created by averaging participants' responses across those items
138 relevant to each construct.

139 The research questions were tested using latent moderated structural (LMS) models,
140 which is considered superior to the traditional composite score approach because it produces
141 minimally biased estimates of moderation effects that are corrected for measurement
142 error[23]. We implemented a sequential 3-step analytical process where we tested the
143 adequacy of: (i) the measurement model of the latent constructs (Model 0), (ii) the structural

144 model excluding latent interactions (Model 1), and (iii) the structural model including latent
145 interactions (Model 2)[24]. A visual display of Model 2 is provided in Figure 1. For Models 0
146 and 1, model-data fit was assessed using multiple indices and typical interpretation
147 guidelines, namely the χ^2 goodness-of-fit index, comparative fit index (CFI), Tucker-Lewis
148 index (TLI), and root mean square error of approximation (RMSEA), with evidence of
149 adequate fit indicated by CFI/TLI \geq .90 and RMSEA \leq .08[25]. As there is no saturated
150 reference model, conventional model-data fit statistics cannot be applied to LMS models[26].
151 In the absence of such model fit indices, the log-likelihood ratio test (D) can be used to
152 compare the relative fit of Models 1 and 2[23,24]. A composite reliability coefficient (ω)[27]
153 was calculated to estimate the level of internal reliability for each latent factor. We performed
154 all analyses within *Mplus* 7.4[28] using a robust maximum likelihood estimator (MLR) and
155 full information maximum likelihood (FIML) to ensure that all available data was used to
156 estimate model parameters. All *Mplus* output files and associated syntaxes are available in
157 the supplementary material.

158 Results

159 Descriptive statistics and bivariate correlations for all study variables are provided in
160 Table 1; full details at each stage of the analysis are provided in the supplementary material.
161 Models 0 and 1 represented an adequate fit with the data, $\chi^2(485) = 771.37, p < .001, CFI =$
162 $.921, TLI = .915, RMSEA = .050$ (90% CI = .044 to .057). In terms of composite reliability
163 estimates, mental toughness ($\omega = .85$), coach controlling interpersonal style ($\omega = .95$),
164 learning ($\omega = .84$), and vitality ($\omega = .79$) were deemed satisfactory. Using a χ^2 distribution,
165 the log-likelihood ratio test, $D(2) = 7.06, p < .05$, indicated that Model 1 resulted in a
166 significant loss in fit relative to Model 2. For the learning dimension of thriving, mental
167 toughness ($B = .49, 95\% CI = .32, .65$), coach controlling interpersonal style ($B = -.33, 95\%$
168 $CI = -.50, -.16$), and their interaction ($B = .28, 95\% CI = .01, .54$) were salient determinants.

169 As depicted in Figure 2 and established via simple slope analysis, the inverse effect of
170 controlling coaching on experiences of learning was stronger when mental toughness was
171 lower ($B = -.54$, 95% CI = $-.88, -.20$) but not when higher ($B = -.12$, 95% CI = $-.28, .04$).
172 With regard to the vitality component of thriving, the effects of mental toughness ($B = .64$,
173 95% CI = $.44, .85$) and coach controlling interpersonal style ($B = -.24$, 95% CI = $-.40, -.09$)
174 were significant, but not their interaction ($B = .15$, 95% CI = $-.10, .40$). The inverse
175 association between mental toughness and coach controlling interpersonal style was small
176 and statistically non-significant ($B = -.11$, 95% CI = $-.22, .01$). The inclusion of the latent
177 interaction term accounted for additional 5% and 2% of the explained variance in learning
178 (Model 1 = 41%, Model 2 = 46%) and vitality (Model 1 = 49%, Model 2 = 51%).

179 Discussion

180 Drawing from motivational theory[7,8], we examined controlling coach interpersonal
181 styles as a contextually salient stressor within sporting contexts[13,14] that may impede the
182 degree to which athletes experience thriving, and the buffering effects of mental toughness.
183 Consistent with expectations, we found that (i) controlling coach behaviours were inversely
184 related with experiences of vitality and learning; (ii) mental toughness was positively
185 associated with psychological experiences of both dimensions of thriving; and (iii) mental
186 toughness moderated the effect of coach's controlling interpersonal style on learning but not
187 vitality experiences.

188 Our findings align with past work that has underscored the maladaptive nature of
189 controlling coach interpersonal styles[10]. Controlling coach behaviours have been associated
190 with increased burnout via athlete perfectionism and motivational regulations[18], and
191 psychological needs satisfaction and frustration[19]. In a three-wave, season long
192 investigation of adolescent soccer players, controlling coach interpersonal style was
193 associated with reductions in psychological need satisfaction and engagement[21]. Coach

194 controlling style has been shown to be inversely associated with mental toughness via
195 psychological need frustration[6]. Our results add to this work to support a direct association
196 with thriving, such that athletes who experienced higher levels of controlling coach
197 behaviours reported fewer experiences of learning (cognitive) and vitality (affective). The
198 reasons why coaches might adopt controlling interpersonal styles are diverse and can be
199 broadly classified as pressures from above (e.g., organisational accountability and
200 responsibility for performance outcomes of athletes and teams), below (e.g., athletes who are
201 disengaged, disruptive, poorly motivated) and within (e.g., dispositional tendency towards
202 controlling behaviours)[29].

203 Aligned with recent work[2,4,30], our findings provided additional support for the
204 adaptive nature of mental toughness for positive functioning. We found moderate-to-large
205 associations between mental toughness and psychological experiences of learning and
206 vitality. These findings confirm past work that has demonstrated longitudinally the salience
207 of mental toughness for thriving among university students over the course of a 12-week
208 teaching semester[2]. Collectively, our results and those of previous work provide
209 accumulating evidence for the expectation that mental toughness provides an important
210 foundation upon which to experience a sense of feeling energised and making progress
211 towards valued goals in achievement contexts[14].

212 The primary contribution of this study is that controlling coach interpersonal styles
213 may not influence all athletes equally. Specifically, we focused on mental toughness as an
214 individual difference variable that may alter the strength of the association between
215 controlling coach behaviours and important or valued outcomes. Past work has supported the
216 protective effects of mental toughness on life stress. In American college footballers, mental
217 toughness moderated the effect of positive life stress (but not negative life stress) on the
218 number of days missed due to injury, such that footballers with lower levels of mental

219 toughness missed more days to injury when stress was high[4]. This work provided an
220 important first look at the role of mental toughness on *cross-contextual effects* from life stress
221 to an outcome variable specific to sporting contexts (i.e., injury). Extending this past work,
222 we examined the salience of mental toughness when both the stressor and outcome are
223 housed within the contextual boundaries of sport. Consistent with our expectation, the inverse
224 association between controlling coach interpersonal style and experiences of thriving was
225 stronger for athletes lower in mental toughness. However, mental toughness buffered the
226 effect for the learning dimension of thriving only, that is, experiencing a sense of
227 improvement and progress towards important and valued goals[15,16,22]. This finding
228 corroborates the conceptualisation of mental toughness as a personal resource that reflects
229 one's psychological capacity to behave successfully in goal-directed ways[2]. The centrality
230 of mental toughness for self-actualisation (i.e., fulfilment of potential)[14] offers insight into
231 this differential effect in that it provides direction towards self-referenced objectives, aligns
232 behaviour with these goals, and fosters flexibility when faced with stressful or challenging
233 contexts[2,14,30]. As such, mental toughness is a psychological resource that is more
234 relevant for progress and development (the 'doing' part of thriving) than it is for positive
235 emotions associated with those processes (the 'being' part of thriving).

236 As is the case with all research, this study is not without limitation. First, the cross-
237 sectional design does not permit inferences regarding temporal or causal associations; future
238 research could adopt longitudinal or experimental approaches to provide stronger insight into
239 the dynamic aspects of the relations among controlling interpersonal styles, mental toughness
240 and thriving in sport. Second, our focus on adolescent female netballers limits the extent to
241 which these findings may be considered representative of broader athlete populations; future
242 research is required to ascertain the extent to which these findings can be replicated in other
243 sporting contexts, and extended via an understanding of the moderating effect of sex.

244 Conclusions

245 This study corroborates previous findings regarding the maladaptive nature of
246 controlling interpersonal styles within achievement contexts, and provides one of the first
247 tests of how controlling environments can be buffered. In so doing, we extend past work and
248 theory to show that mental toughness may enable athletes to counteract the potentially
249 deleterious effect of controlling interpersonal styles. Additional research is required to
250 confirm our findings and extend understanding of the dynamic nature of the relations
251 between these personal and contextual factors.

252 Practical Implications

- 253 • The deleterious effects of controlling coach interpersonal styles on important or valued
254 outcomes such as thriving is less for those individuals with higher levels of mental toughness.
- 255 • Understanding why coaches employ controlling interpersonal behaviours is an important
256 first step to reducing the frequency with which such strategies are relied upon to motivate
257 athletes.
- 258 • There is a need to identify how athletes can sustain mental toughness when faced with
259 controlling interpersonal environments

Acknowledgements

The lead author is supported by a Curtin Research Fellowship.

References

1. Gucciardi DF, Hanton S. Mental toughness: Critical reflections and future considerations, Chapter 43, in *Routledge International Handbook of Sport Psychology*, New York, Routledge, 2016.
2. Gucciardi DF, Hanton S, Gordon S, et al. The concept of mental toughness: tests of dimensionality, nomological network, and traitness. *J Pers* 2015; 83(1):26-44.
3. Lazarus RS, Folkman S. *Stress appraisal and coping*, New York, Springer, 1984.
4. Petrie TA, Deiters J, Harmison RJ. Mental toughness, social support, and athletic identity: moderators of the life stress-injury relationship in collegiate football players. *Sport Exerc Perform Psychol* 2014; 3(1):13-27.
5. Mahoney JW, Ntoumanis N, Gucciardi DF, et al. Implementing an autonomy-supportive intervention to develop mental toughness in adolescent rowers. *J Appl Sport Psychol* 2016;28(2):199-215.
6. Mahoney JW, Gucciardi DF, Ntoumanis N, et al. Mental toughness in sport: motivational antecedents and associations with performance and psychological health. *J Sport Exerc Psych* 2014;36(3):281-292.
7. Deci EL, Ryan RM. *Intrinsic motivation and self-determination in human behaviour*, New York, Plenum Press, 1985.
8. Deci EL, Ryan RM. The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychol Inq* 2000;11(4):227-268.
9. Ntoumanis N. A self-determination theory perspective on motivation in sport and physical education: current trends and possible future research directions, Chapter 3, in *Advances in motivation in sport and exercise: Volume 3*, Illinois, Human Kinetics, 2012.
10. Bartholomew KJ, Ntoumanis N, Thøgersen-Ntoumani C. A review of controlling motivational strategies from a self-determination theory perspective: Implications for sports coaches. *Int Rev Sport Exercise Psychol* 2009;2(2): 215-233.
11. Bartholomew KJ, Ntoumanis N, Thøgersen-Ntoumani C. The controlling interpersonal style in a coaching context: development and initial validation of a psychometric scale. *J Sport Exerc Psych* 2010;32(2):193-216.
12. Barcza-Renner K, Eklund RC, Morin A, et al. Controlling coaching behaviours and athlete burnout: investigating the mediating roles of perfectionism and motivation. *J Sport Exerc Psych* 2016;38(1):30-44.
13. Taylor IM, Turner JE, Gleeson M, et al. Negative psychological experiences and saliva secretory immunoglobulin A in field hockey players. *J Appl Sport Psychol* 2015;27(1):67-78.
14. Mahoney J, Ntoumanis N, Mallett C, et al. The motivational antecedents of the development of mental toughness: a self-determination theory perspective. *Int Rev Sport Exercise Psychol* 2014;7(1):184-197.
15. Spreitzer G, Sutcliffe K, Dutton, J, et al. A socially embedded model of thriving at work. *Organ Sci* 2005;16(5):537-549.
16. Spreitzer GM, Porath, C. Self-determination as nutriment for thriving: building an integrative model of human growth at work, Chapter 15, in *The Oxford handbook of work engagement, motivation, and self-determination theory*, New York, Oxford, 2014.
17. Ng JYY, Ntoumanis N, Thøgersen-Ntoumani C, et al. Self-determination theory applied to health contexts: a meta-analysis. *Perspect Psychol Sci* 2012;7(4):325-340.

18. Balaguer I, Gonzalez L, Fabra P, et al. Coaches' interpersonal style, basic psychological needs and the well- and ill-being of young soccer players: a longitudinal analysis. *J Sports Sciences* 2012; 30(15):1619-1629.
19. Felton L, Jowett S. "What do coaches do" and "how do they relate": their effects on athletes' psychological needs and functioning. *Scand j Med Sci Sports* 2013;23:e130-e139.
20. Bartholomew KJ, Ntoumanis N, Ryan R, et al. Self-determination theory and diminished functioning: the role of interpersonal control and psychological need thwarting. *Pers Soc Psychol B* 2011;37(1):1459-1473.
21. Curran T, Hill AP, Ntoumanis N, et al. A three-wave longitudinal test of self-determination theory's mediation model of engagement and disaffection in youth sport. *J Sport Exerc Psychol* 2016;38(1):15-29.
22. Porath C, Spreitzer G, Gibson C., & Garnett, F. G. (2012). Thriving at work: toward its measurement, construct validation, and theoretical refinement. *J Organ Beh* 2012;33(2):250-275.
23. Klein AG, Moosbrugger H. Maximum likelihood estimation of latent interaction effects with the LMS method. *Psychometrika* 2000;65(4):457– 474.
24. Maslowsky J, Jager J, Hemken. Estimating and interpreting latent variable interactions: a tutorial for applying the latent moderated structural equations method. *Int J Behav Dev* 2015;39(1):87-96.
25. Marsh HW, Hau KT, Grayson, D. Goodness of fit evaluation in structural equation modeling, Chapter 10, in *Psychometrics. A Festschrift for Roderick P. McDonald*, New Jersey, Erlbaum, 2005.
26. Jöreskog KG, Yang F. Nonlinear structural equation models: the Kenny–Judd model with interaction effects, Chapter 3, *Advanced Structural Equation Modeling*, New Jersey, Erlbaum, 1996.
27. McDonald RP. The theoretical foundations of principal factor analysis, canonical factor analysis and alpha factor analysis. *Brit J Mat Stat Psy* 1970;23(1):1-21.
28. Muthén, L. K., & Muthén, B. *Mplus users guide* (7th ed.). Los Angeles CA, Muthén & Muthén, 2012.
29. Stebbings J, Taylor I, Spray C., et al. Antecedents of perceived coach interpersonal behaviors: the coaching environment and coach psychological well- and ill-being. *J Sport Exerc Psychol* 2012;34(4):481-502.
30. Arthur CA, Fitzwater J, Hardy L, et al. Development and validation of a military training mental toughness inventory. *Mil Psychol* 2015;27(4): 232-241.

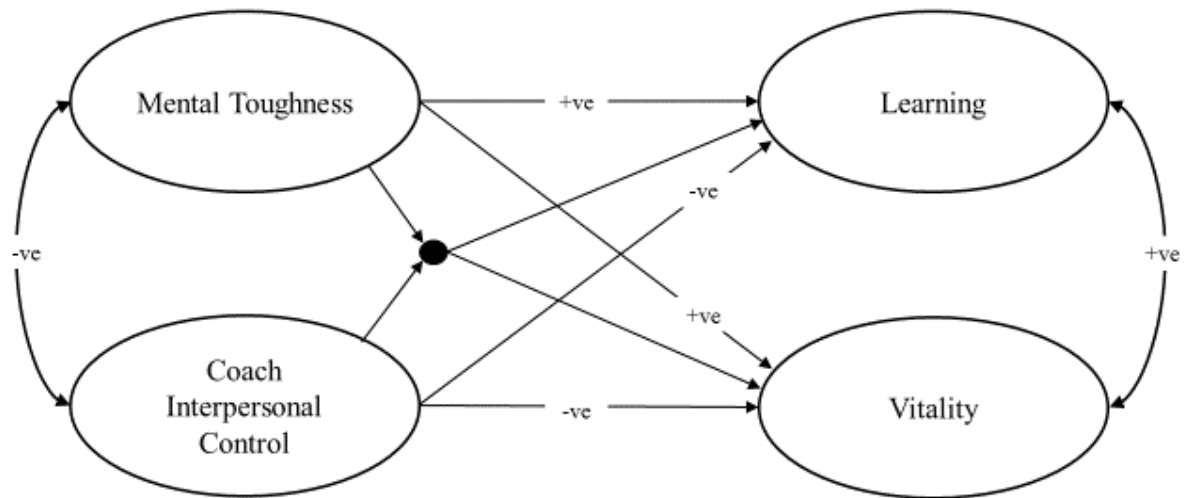


Figure 1. Diagrammatic representation of Model 2 including latent interaction between mental toughness and coach controlling interpersonal style (represented by a filled circle as per *Mplus* notation). Note: item indicators and residual variances are excluded for visual clarity; +ve = positive association expected; -ve = negative association expected.

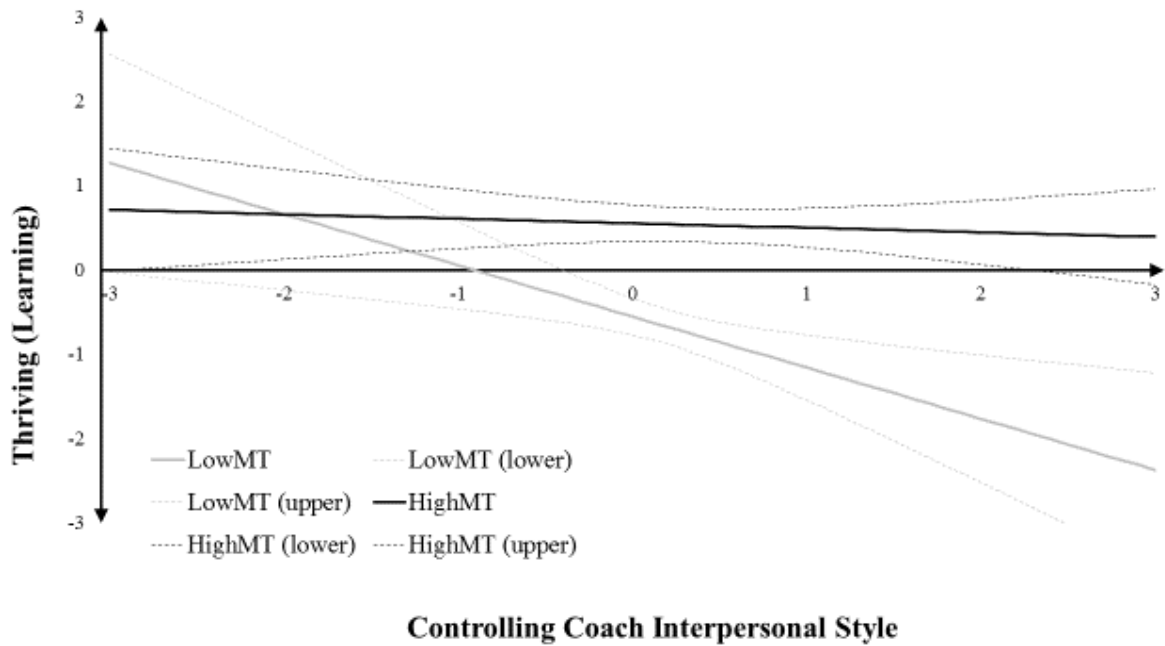


Figure 2. Latent interaction of mental toughness on the relation between controlling coach interpersonal style and learning dimension of thriving. Note: 95% confidence intervals around the slope are captured by “lower” [e.g., LowMT (lower)] and “higher” [e.g., LowMT (higher)] dotted lines. MT = mental toughness; LowMT = -1 standard deviation of the zero mean of mental toughness; HighMT = +1 standard deviation of the zero mean of mental toughness.

Table 1. *Descriptive statistics and bivariate correlations for study variables* (Note: * $p < .05$, ** $p < .001$).

	1	2	3	4	Minimum	Maximum	M	SD	Skewness	Kurtosis
1 Mental toughness	-				2.25	7	5.62	.67	-.84	2.39
2 Controlling coach	-.14*	-			1	6.47	2.16	1.21	1.34	1.31
3 Learning	.44**	-.41**	-		2.60	7	6.10	.81	-1.18	1.67
4 Vitality	.51**	-.33**	.69**	-	2.80	7	5.83	.83	-.73	.44