



## Original research

## Controlling coaching and athlete thriving in elite adolescent netballers: The buffering effect of athletes' mental toughness

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## ARTICLE INFO

## Article history:

Received 4 September 2016

Received in revised form 19 January 2017

Accepted 6 February 2017

Available online 21 March 2017

## Keywords:

Interpersonal style of communication

Latent interactions

Mentally tough

Motivational climate

Vitality

Self-determination theory

## ABSTRACT

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

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

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

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

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

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## 1. Introduction

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' 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. Interestingly, 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.

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.<sup>1</sup> 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).<sup>2</sup> 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 functioning.<sup>e</sup> Consistent with

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<sup>d</sup> Daniel Gucciardi is supported by a Curtin Research Fellowship.

<sup>e</sup> Resilience is often used interchangeably with mental toughness despite their conceptual differences, yet there are two key differences between these concepts. First, resilience can apply to a broad array of systems (e.g., individuals, communities, economies), whereas mental toughness is confined to individuals. Second, resilience

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

In testing the buffering effect of mental toughness, we draw from recent work<sup>5,6</sup> where self-determination theory (SDT)<sup>7</sup> was employed as a guiding theoretical framework. Within the context of SDT, optimal human functioning can be fostered through the satisfaction of the psychological needs of autonomy (i.e., feelings of volition and self-endorsement), competence (i.e., feeling skilled and capable), and relatedness (i.e., feeling social valued and connected with others).<sup>8</sup> Of central importance are social environments in which key agents in positions of authority (e.g., coaches) support or undermine these psychological needs through their interactions with others. Much work has focused on coach behaviours and interpersonal styles that satisfy these three needs (e.g., choice within boundaries, encouraging athlete input, provision of guidance and constructive feedback) because they predict a range of indices related to optimal functioning.<sup>9</sup> In recent years, however, researchers have devoted greater attention to understanding the motivational strategies and behaviours of social agents that may lead to needs frustration.<sup>10</sup> Referred to as a controlling motivational style, social agents can thwart the three psychological needs through the controlling use of rewards (i.e., extrinsic rewards and praise), conditional regard (i.e., withhold attention and support), intimidation (i.e., power assertive strategies to humiliate), and excessive personal control (i.e., intrusive monitoring and excessive or strict boundaries).<sup>11</sup> Coach controlling motivational styles have been linked with a range of maladaptive outcomes including increased burnout<sup>12</sup> and stress.<sup>13</sup> These findings underscore the potentially stressful nature of controlling motivational styles within sporting contexts. However, to date, little work has focused on how the undermining effects of controlling environments can be buffered. Initial research suggests that mental toughness may serve to mitigate the maladaptive effects of controlling motivational styles,<sup>6</sup> yet this hypothesis remains untested.

The concept of thriving is an important indicator of positive functioning that provides a conceptual thread between SDT and mental toughness.<sup>14</sup> Conceptualised as the opposite of languishing (e.g., stagnant, low positive affect), thriving is defined as a psychological state “marked both by a sense of learning (greater understanding and knowledge) and a sense of vitality (aliveness)” (p. 537).<sup>15</sup> Representing an internal gauge of cognitive and affective markers regarding how well one is doing,<sup>16</sup> thriving fosters adaptive resource allocation, engagement with and commitment to tasks, proactivity, and performance.<sup>15,16</sup> With its centrality for goal-directed behaviour, mental toughness is a personal resource that should enable people to experience progress and growth.<sup>14</sup> Longitudinal research with tertiary students supports the adaptive nature of mental toughness with regard to academic and social goal progress.<sup>2</sup> Similarly, meta-analytic data indicates that

individuals are more likely to thrive when embedded in social contexts in which individuals feel volitional, capable and connected to others.<sup>17</sup> In contrast, when the three psychological needs are actively thwarted via controlling motivational contexts, individuals should be less likely to experience thriving. Research with male athletes<sup>18</sup> and a mixed-sex sample<sup>19</sup> revealed low and non-significant correlations between controlling coaching and vitality, whereas research with female athletes supported a salient inverse association.<sup>20</sup> Given these equivocal findings, additional research is required to test this theoretical expectation, and extend this past work to include both cognitive (learning) and affective (vitality) dimensions of thriving.

The purposes of this study were to examine the association between controlling coach behaviours and thriving, and test the buffering effect of mental toughness on this relation. In so doing, we proposed three hypotheses. First, mental toughness will be positively associated with psychological experiences of thriving. Second, controlling coach behaviours will be inversely related with psychological experiences of thriving. Third, athletes' mental toughness will moderate the inverse association between their coach's controlling interpersonal style and psychological experiences of thriving, such that this effect will be weaker for individuals who report higher levels of mental toughness. We tested these hypotheses on a relatively homogenous sample of elite adolescent netballers, who represent an understudied sport within the sport psychology literature.

## 2. Methods

In total, 232 female netballers aged 11–17 years (14.97 ± 1.52) took part in this study. Netballers had between 1 and 15 years of experience in the sport (7.50 ± 2.28) participating in between 1 and 10 h of netball activities that were supervised by their coach (5.08 h ± 2.53). Athletes who were involved in elite developmental squads throughout Australia and their parents were informed about the study via email. Athletes who expressed an interest were provided with a research package including an information sheet, consent form, multi-section survey, and a reply-paid envelope. Consenting athletes returned completed surveys directly to Netball Australia. We obtained approval from the relevant university ethics committee before participant recruitment.

We selected instruments for this study where the validity of test scores obtained with those questionnaires is reported in the manuscripts which first presented these tools. Using the multidimensional Controlling Coach Behaviours Scale,<sup>11</sup> athletes reported their level of dis/agreement with 15 items considered reflective of four specific dimensions of coaches' controlling interpersonal style: controlling use of rewards (e.g., “My coach only rewards/praises me to make me train harder”), negative conditional regard (e.g., “My coach pays me less attention if I have displeased him/her”), intimidation (e.g., “My coach threatens to punish me to keep me in line during training”), and excessive personal control (e.g., “My coach tries to control what I do during my free time”). Responses were recorded using a 7-point scale (1 = strongly disagree to 7 = strongly agree). Consistent with recent research,<sup>13,21</sup> we modelled coach interpersonal control as a higher-order construct for the primary analyses. Using the unidimensional Mental Toughness Inventory,<sup>2</sup> athletes rated the extent to which 8 items were reflective of how they typically thought, felt and behaved as a netballer (e.g., “I strive for continued success” and “I am able to regulate my focus when performing tasks”). Responses were recorded using a 7-point scale (1 = false, 100% of the time to 7 = true, 100% of the time). Using an adaptation of the multidimensional Thriving at Work Scale,<sup>22</sup> athletes reported the degree to which they experienced dimensions of vitality (5 items, e.g., “At netball, I feel alive and vital”) and learning

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.

(5 items, e.g., “At netball, I find myself learning often”) within the context of their netball pursuits. Responses were recorded using a 7-point scale (1 = strongly disagree to 7 = strongly agree). For each scale, a total score was created by averaging participants’ responses across those items relevant to each construct.

The research questions were tested using latent moderated structural (LMS) models, which is considered superior to the traditional composite score approach because it produces minimally biased estimates of moderation effects that are corrected for measurement error.<sup>23</sup> We implemented a sequential 3-step analytical process where we tested the adequacy of: (i) the measurement model of the latent constructs (Model 0), (ii) the structural model excluding latent interactions (Model 1), and (iii) the structural model including latent interactions (Model 2).<sup>24</sup> A visual display of Model 2 is provided in Fig. 1. For Models 0 and 1, model-data fit was assessed using multiple indices and typical interpretation guidelines, namely the  $\chi^2$  goodness-of-fit index, comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA), with evidence of adequate fit indicated by CFI/TLI  $\geq .90$  and RMSEA  $\leq .08$ .<sup>25</sup> As there is no saturated reference model, conventional model-data fit statistics cannot be applied to LMS models.<sup>26</sup> In the absence of such model fit indices, the log-likelihood ratio test ( $D$ ) can be used to compare the relative fit of Models 1 and 2.<sup>23,24</sup> A composite reliability coefficient ( $\omega$ )<sup>27</sup> was calculated to estimate the level of internal reliability for each latent factor. We performed all analyses within Mplus 7.4<sup>28</sup> using a robust maximum likelihood estimator (MLR) and full information maximum likelihood (FIML) to ensure that all available data was used to estimate model parameters. All Mplus output files and associated syntaxes are available in the Supplementary material.

### 3. Results

Descriptive statistics and bivariate correlations for all study variables are provided in Table 1; full details at each stage of the analysis are provided in the Supplementary material. Models 0 and 1 represented an adequate fit with the data,  $\chi^2(485) = 771.37$ ,  $p < .001$ , CFI = .921, TLI = .915, RMSEA = .050 (90% CI = .044–.057). In terms of composite reliability estimates, mental toughness ( $\omega = .85$ ), coach controlling interpersonal style ( $\omega = .95$ ), learning ( $\omega = .84$ ), and vitality ( $\omega = .79$ ) were deemed satisfactory. Using a  $\chi^2$  distribution, the log-likelihood ratio test,  $D(2) = 7.06$ ,  $p < .05$ , indicated that Model 1 resulted in a significant loss in fit relative to Model 2. For the learning dimension of thriving, mental toughness ( $B = .49$ , 95% CI = .32, .65), coach controlling interpersonal style ( $B = -.33$ , 95% CI = -.50, -.16), and their interaction ( $B = .28$ , 95% CI = .01, .54) were salient determinants. As depicted in Fig. 2 and established via simple slope analysis, the inverse effect of controlling coaching on experiences of learning was stronger when mental toughness was lower ( $B = -.54$ , 95% CI = -.88, -.20) but not when higher ( $B = -.12$ , 95% CI = -.28, .04). With regard to the vitality component of thriving, the effects of mental toughness ( $B = .64$ , 95% CI = .44, .85) and coach controlling interpersonal style ( $B = -.24$ , 95% CI = -.40, -.09) were significant, but not their interaction ( $B = .15$ , 95% CI = -.10, .40). The inverse association between mental toughness and coach controlling interpersonal style was small and statistically non-significant ( $B = -.11$ , 95% CI = -.22, .01). The inclusion of the latent interaction term accounted for additional 5% and 2% of the explained variance in learning (Model 1 = 41%, Model 2 = 46%) and vitality (Model 1 = 49%, Model 2 = 51%).

### 4. Discussion

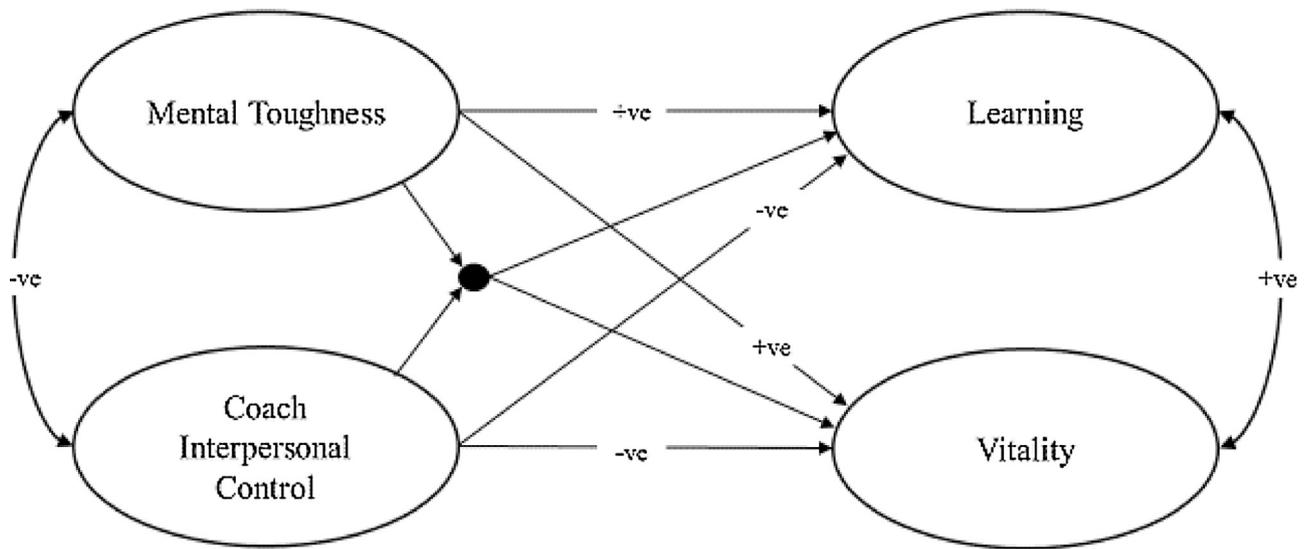
Drawing from motivational theory,<sup>7,8</sup> we examined controlling coach interpersonal styles as a contextually salient stressor

within sporting contexts<sup>13,14</sup> that may impede the degree to which athletes experience thriving, and the buffering effects of mental toughness. Consistent with expectations, we found that (i) controlling coach behaviours were inversely related with experiences of vitality and learning; (ii) mental toughness was positively associated with psychological experiences of both dimensions of thriving; and (iii) mental toughness moderated the effect of coach’s controlling interpersonal style on learning but not vitality experiences.

Our findings align with past work that has underscored the maladaptive nature of controlling coach interpersonal styles.<sup>10</sup> Controlling coach behaviours have been associated with increased burnout via athlete perfectionism and motivational regulations,<sup>18</sup> and psychological needs satisfaction and frustration.<sup>19</sup> In a three-wave, season long investigation of adolescent soccer players, controlling coach interpersonal style was associated with reductions in psychological need satisfaction and engagement.<sup>21</sup> Coach controlling style has been shown to be inversely associated with mental toughness via psychological need frustration.<sup>6</sup> Our results add to this work to support a direct association with thriving, such that athletes who experienced higher levels of controlling coach behaviours reported fewer experiences of learning (cognitive) and vitality (affective). The reasons why coaches might adopt controlling interpersonal styles are diverse and can be broadly classified as pressures from above (e.g., organisational accountability and responsibility for performance outcomes of athletes and teams), below (e.g., athletes who are disengaged, disruptive, poorly motivated) and within (e.g., dispositional tendency towards controlling behaviours).<sup>29</sup>

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

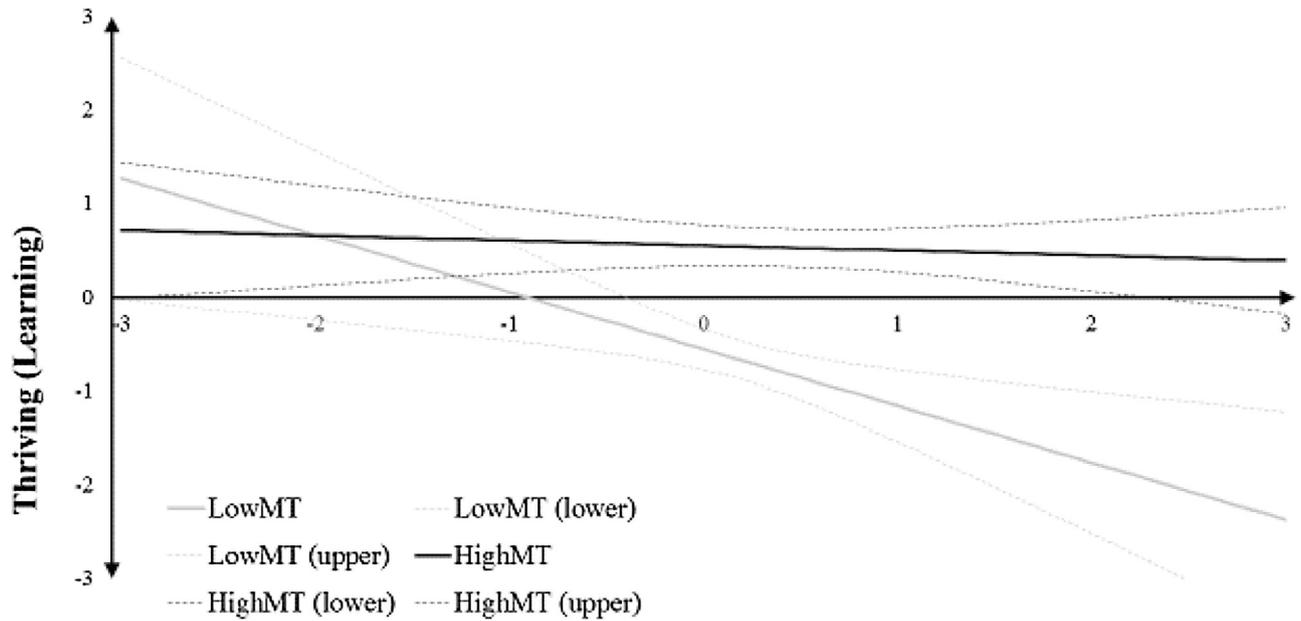
The primary contribution of this study is that controlling coach interpersonal styles may not influence all athletes equally. Specifically, we focused on mental toughness as an individual difference variable that may alter the strength of the association between controlling coach behaviours and important or valued outcomes. Past work has supported the protective effects of mental toughness on life stress. In American college footballers, mental toughness moderated the effect of positive life stress (but not negative life stress) on the number of days missed due to injury, such that footballers with lower levels of mental toughness missed more days to injury when stress was high.<sup>4</sup> This work provided an important first look at the role of mental toughness on *cross-contextual effects* from life stress to an outcome variable specific to sporting contexts (i.e., injury). Extending this past work, we examined the salience of mental toughness when both the stressor and outcome are housed within the contextual boundaries of sport. Consistent with our expectation, the inverse association between controlling coach interpersonal style and experiences of thriving was stronger for athletes lower in mental toughness. However, mental toughness buffered the effect for the learning dimension of thriving only, that is, experiencing a sense of improvement and progress towards important and valued goals.<sup>15,16,22</sup> This finding corroborates the conceptualisation of mental toughness as a personal resource that reflects one’s psychological capacity to behave successfully in goal-directed ways.<sup>2</sup> The centrality of men-



**Fig. 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.

**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



### Controlling Coach Interpersonal Style

**Fig. 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.

tal toughness for self-actualisation (i.e., fulfilment of potential)<sup>14</sup> offers insight into this differential effect in that it provides direction towards self-referenced objectives, aligns behaviour with these

goals, and fosters flexibility when faced with stressful or challenging contexts.<sup>2,14,30</sup> As such, mental toughness is a psychological resource that is more relevant for progress and development (the

'doing' part of thriving) than it is for positive emotions associated with those processes (the 'being' part of thriving).

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

## 5. Conclusions

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

## Practical implications

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

## Acknowledgement

The lead author is supported by a Curtin Research Fellowship.

## Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.jsams.2017.02.007>.

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