

**The stability of mental toughness across situations: taking a social-cognitive approach**

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4 The Stability of Mental Toughness Across Situations: Taking a Social-Cognitive  
5 Approach

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### **Abstract**

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The present study adopted a social-cognitive perspective to explore the stability of mental toughness. Specifically, the purpose of this study was two-fold: (a) to explore possible fluctuations in mental toughness across situations; and (b) to identify the cognitions, affect, and behaviors associated with perceived mental toughness and mental weakness. Participants were tennis players (n=12) based full time in an elite performance academy and were aged between 14 and 20 years ( $M_{age} = 16.5$ ;  $SD = 2.66$ ). Players were interviewed and transcribed interviews were analyzed using a thematic analysis (Braun & Clarke, 2006). Three researchers searched for themes across the interview data and reached consensus on the coding of raw data and subsequent categorization of data into themes. Players identified a variety of competition (e.g., opponents, pressure) and training (e.g., consistency, intensity) related situations requiring mental toughness. Findings indicated that players could be mentally tough in some situations but mentally weak in other situations suggesting that mental toughness can fluctuate. In addition, players identified different cognitions, affect, and behaviors when they perceived mental toughness and mental weakness. Regarding coping strategies, findings confirm the important role of confidence in mental toughness and should remain central to interventions designed to build mental toughness. To conclude, it is anticipated that findings generated can be used as a platform to develop context-rich mental toughness training interventions.

**Key Words: Mental toughness, mental weakness, stability, coping**

46 **The Stability of Mental Toughness Across Situations: Taking a Social-Cognitive**  
47 **Approach**

48 Coaches and others involved in developing talent have come to realize that to  
49 be successful (especially at the highest levels of competition) one needs both physical  
50 and mental skills. The importance of mental skills is highlighted in an article over 25  
51 years ago (Gould, Hodge, Petersen, & Petlichkoff, 1987), which found that 82% of  
52 coaches rated mental toughness the most important psychological attribute in  
53 determining wrestling success. However, only 9% felt that they were successful in  
54 developing mental toughness in their athletes. The key role of mental toughness has  
55 been seen in the applied work of Loehr (1995) who attempted to train athletes to  
56 become more mentally tough. Loehr's applied work and the empirical finding noted  
57 earlier and others like it, eventually led to the empirical study of the construct of  
58 mental toughness (Jones, Hanton, & Connaughton, 2002). In this initial seminal  
59 research, Jones et al. interviewed 10 elite athletes in either a focus group or semi-  
60 structured interviews looking for attributes that were associated with mental  
61 toughness. Of the 12 attributes reported as being associated with mental toughness,  
62 the notion of coping appeared to be central to the conceptualization of mental  
63 toughness, and as such included, "coping better than your opponents when faced with  
64 demands that sport places on performers" (cf. Jones et al., 2002, p. 209). In a follow  
65 up study with super-elite athletes (e.g., Olympic medalists), Jones and colleagues  
66 (2007) reported 30 attributes and generated a framework that provided a temporal  
67 foundation of how these mental toughness attributes could be utilized (i.e., attitude,  
68 training, competition, post-competition).

69 Subsequent to these seminal studies on mental toughness, numerous studies  
70 have been conducted investigating the definition of mental toughness (e.g., Coulter,

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71 Mallett, & Gucciardi, 2010; Gucciardi, Gordon, & Dimmick (2008; 2009a; Thelwell,  
72 Weston, & Greelees, 2005), development of mental toughness across time (e.g., Bull,  
73 Shamrock, James, & Brooks, 2005; Connaughton, Hanton, Jones, & Wadey 2008;  
74 Connaughton, Thelwell, & Hanton, 2011), building mental toughness (Butt,  
75 Weinberg, & Culp, 2010; Gucciardi & Mallet, 2010; Weinberg & Butt, 2011;  
76 Weinberg, Butt, & Culp, 2011), and theoretical explanations for mental toughness  
77 (Gucciardi, Gordon, & Dimmock, 2008; Harmison, 2011). In addition, this research  
78 exploring mental toughness has been conducted with a range of samples including  
79 super-elite, elite, collegiate, and youth. Collectively, this range of participants  
80 indicates that mental toughness is required across many achieving sport performers,  
81 not just elite athletes. From a conceptual perspective, one area that continues to be  
82 debated is whether mental toughness is more of a personality disposition (trait-like)  
83 and thus consistent across situations, or more variable across situations and thus more  
84 state-like. While some researchers have viewed mental toughness as an important  
85 dimension of personality and a necessary trait or quality for successful performance,  
86 other researchers (Bull et al., 2005; Thelwell et al., 2005) and the experience of  
87 practitioners (e.g., Goldberg, 1998; Loehr, 1995) have suggested that mental  
88 toughness can be taught and learned, and thus change across situations. Along these  
89 lines, advances in knowledge have been made with exploring sport specific situations  
90 requiring mental toughness. As one example, Gucciardi and colleagues (2008)  
91 explored under what conditions mental toughness attributes are necessary (i.e.,  
92 situations requiring mental toughness), and also identified key behaviors used.  
93 Findings identified that both positively and negatively perceived situations required  
94 mental toughness. To capture these further developments in mental toughness,

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95 Gucciardi et al. (2009a) provided a new definition of mental toughness that has since  
96 been refined by Coulter and colleagues (2010; p.715):

97       Mental toughness is the presence of some or the entire collection of  
98       experientially developed and inherent values, attitudes, emotions, cognitions,  
99       and behaviors that influence the way in which an individual approaches,  
100       responds to, and appraises both negatively and positively construed pressures,  
101       challenges, and adversities to consistently achieve his or her goals.

102 Complementing this definition, Coulter and colleagues conducted an investigation  
103 with athletes, coaches and parents in Australian soccer to explore mental toughness  
104 situations, cognitions and behaviors. Findings suggested that mentally tough athletes  
105 are able to deal with performance difficulties as well as thrive within challenging  
106 competitive situations. More recently, Slack, Butt, Maynard, and Olusoga (2014)  
107 examined mental toughness attributes in English Premier League football officials  
108 and considered the specific mental toughness cognitions and behaviors deployed in  
109 situations demanding mental toughness. Collectively, research findings to date  
110 highlight some overlapping situations requiring mental toughness as well as some of  
111 the key cognitions (e.g., tactical awareness) and behaviors (e.g., strong body  
112 language) associated with being mentally tough. While information on mentally tough  
113 cognitions and behaviors has generated some strategies for building mental toughness  
114 and designing interventions (e.g., Slack, Maynard, Butt, & Olusoga, 2015), research  
115 has yet to consider whether cognitions and behaviors are different when athletes are  
116 not mentally tough. Indeed, questions remain as to whether an athlete's mental  
117 toughness is changeable (i.e., fluctuates) depending on situations, and thus, further  
118 research has been encouraged to consider aspects of both mental toughness as well as  
119 mental weakness (Harmison, 2011).

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120           To further understand mental toughness in this area, it has been advocated that  
121 the application of social-cognitive models in sport has the potential for advancing,  
122 theoretical, empirical, and practical knowledge of constructs such as mental toughness  
123 (Harmison, 2011; Smith, 2007). Specifically, Smith suggested that a comprehensive  
124 social-cognitive model of personality (e.g., Mischel & Shoda, 1995) can serve as a  
125 valuable framework to better understand mental skills in sport such as mental  
126 toughness. Regarding the background and understanding of social-cognition and  
127 personality, for many years the prevailing view among psychologists regarding  
128 personality was that behavior was consistent across situations and that personality, not  
129 the situational constraints, was the major determinant and predictor of behavior.  
130 However, a major shift occurred when Mischel (1968) conducted a thorough review  
131 of the empirical literature and found more inconsistency than consistency across  
132 situations. This review and controversial findings helped start the person by situation  
133 debate that was central to the study of personality for years to come. Emanating from  
134 this debate came Mischel's (1973) social-cognitive personality theory where he  
135 argued that the goal of personality psychology should focus on the interaction of  
136 people and their environments, instead of trying to answer the unsolvable question of  
137 whether the person or environment is more important in predicting an individual's  
138 future behavior. This initial conceptualization eventually led to the development of  
139 the Cognitive-Affective Processing System (CAPS: Mischel & Shoda, 1995).  
140 Basically, this model attempts to capture the complex interaction between individuals'  
141 whose behavior is relatively stable and the different situations in which they are  
142 placed where there tends to be variability in behavior. In essence, the CAPS approach  
143 identifies a set of individual variables, referred to as cognitive-affective processing  
144 units, and elaborates on how these individual variables interact with the person's

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145 environment to produce the desired behaviors (for a more neurological and  
146 information-processing interpretation of the CAPS approach see Read & Miller,  
147 1998).

### 148 **Mental Toughness and CAPS**

149         In applying the CAPS model to understand mental toughness one has to  
150 understand that mental toughness is comprised of a dynamic personality system,  
151 which includes certain cognitive-affective components of personality and how  
152 these interact with environmental constraints. In essence, it is athletes' affects and  
153 cognitions that comprise their mental toughness personality and how these are  
154 interconnected to generate athletes' mentally tough behaviors. In pursuing this line  
155 of inquiry, Harmison (2011) demonstrated how our knowledge of mental  
156 toughness could be further enhanced through the application of the CAPS model.  
157 Specifically, profiles were generated that captured an athlete's perceptions of  
158 particular situations (e.g., threat vs. challenge) together with the range of  
159 subsequent cognitions, affect, behaviors, and coping responses. These profiles  
160 were constructed to illustrate perceived mental toughness and mental weakness,  
161 and thus, indicates that the same athlete can perceive situations differently and that  
162 mental toughness can shift accordingly (i.e., an athlete might not always be  
163 mentally tough and can sometimes be mentally weak). Although the CAPS model  
164 discusses five different components, the present study will focus on the ABCs  
165 (affect, behavior and cognitions) of mental toughness. Focusing on these three  
166 units is also in keeping with the most recent definition of mental toughness (cf.  
167 Coulter et al., 2010). The ABCs of human functioning was advocated by Vealey  
168 and Chase (2008), who saw them as interactive and reciprocally determined, to  
169 emphasize their continuous interactional reciprocity. This interactional approach is



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170 consistent with the CAPS approach and will be used as the framework to guide the  
171 present study. Some of the mentally tough cognitions, affects, and behaviors that  
172 have been ascribed to athletes (by athletes themselves as well as their coaches) is  
173 briefly discussed below.

174         **Cognitions.** This component focuses on the different thoughts that athletes  
175 have in different competitive situations and have an important influence on their  
176 behaviors. These thoughts can be internal to the athlete and thus are not be heard  
177 by anyone else or these thoughts (or self-talk) can be heard by others. In either  
178 case, behaviors and performance often follow athletes' cognitions. Some of the  
179 cognitions that have been attributed to mentally tough athletes are having a belief  
180 in one's self, focusing on the task at hand, focusing on performance rather than  
181 outcome, positive self-talk, robust confidence, and positive expectations (e.g.,  
182 Coulter et al., 2010).

183         **Affects.** This component focuses on the feelings and emotions the athletes  
184 experience in response to different competitive situations. Failure to handle  
185 emotions effectively on the playing field can lead to undesirable consequences and  
186 poor performance. These affects can be both psychological (e.g., doubt, worry) and  
187 physiological (e.g., increased muscle tension, galvanic skin response) in nature.  
188 Coaches and athletes as well as sport psychologists have frequently noted that  
189 emotion is central to sports performance (Hanin, 2000). In essence, emotional  
190 intensity (or lack of it) has often been cited as being critical to performance  
191 outcomes. More specifically, coping effectively with emotions (especially anxiety)  
192 has been said to be one of the defining aspects of being mentally tough (Coulter et  
193 al., 2010; Jones et al., 2002). The reverse also appears true, in that when athletes

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194 who consistently falter under pressure are considered mentally weak or in the  
195 vernacular, a “choker.”

196 **Behaviors.** Although not studied as extensively as cognitions and affects, it  
197 appears that mentally tough athletes exhibit certain types of behaviors. For  
198 example, with input from coaches, Hardy, Bell, and Beattie (2013), identified a  
199 number of specific behaviors typical of mentally tough athletes. In particular, a  
200 variety of adverse situations were identified in which athletes were able to show  
201 consistent/high-level performance. In addition, other behaviors noted in different  
202 studies included persisting in the face of failure, performing well/playing despite  
203 injury, and displaying consistently high levels of energy.

204 In summary, according to the CAPS and ABC approaches to behavior, mental  
205 toughness depends on how individuals perceive situations, which will determine their  
206 cognitions, affects, and behaviors. While some research has documented a wide range  
207 of situations requiring mental toughness and associated cognitions and behaviors,  
208 little knowledge is available on whether athletes are mentally tough all of the time.  
209 The present study therefore adopted a social-cognitive perspective to explore the  
210 stability of mental toughness. Specifically, the purpose of this study was two-fold: (a)  
211 to explore possible fluctuations in mental toughness across situations; and (b) to  
212 identify the cognitions, affect, and behaviors associated with perceived mental  
213 toughness and mental weakness.

### 214 **Method**

215 This study was designed to understand mental toughness through participant’s  
216 own lived experiences and was therefore theoretically underpinned by key principles  
217 of a phenomenological approach (i.e., the study of subjective experiences in relation  
218 to the phenomenon being explored) (Langdridge, 2007). Accordingly, this study

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219 adopted a qualitative design and individual interviews were considered the most  
220 appropriate method of data collection.

### 221 **Participants and Sampling**

222         The participants were 12 high-end developing tennis players (i.e., State or  
223 National ranking) based full time in an elite performance academy in the USA.  
224 Players were aged between 14 and 20 years ( $M_{age} = 16.5$ ;  $SD = 2.66$ ). Participants  
225 were purposefully selected to participate in the study (Patton, 2002). Specifically,  
226 players were required to have been participating in competitive tennis (i.e., ranking  
227 system) for at least 3 years and continuing to progress within or towards the National  
228 ranking system. A development-level sample was identified because previous  
229 research on mental toughness has predominantly focused on elite athletes at the  
230 pinnacle of their careers and often involved a retrospective recall design. To date,  
231 relatively little mental toughness information is available on developmental athletes  
232 competing in their sport, despite existing literature indicating that athletes develop  
233 mental toughness across all stages of their careers and consider the construct to be one  
234 of the most important psychological attributes to possess (e.g., Butt et al., 2010;  
235 Connaughton et al., 2008).

### 236 **Procedures**

237         Following institutional ethics approval, the Lead Sport Psychology Consultant  
238 (SPC) at the tennis Academy was contacted to discuss the study and obtain  
239 information on the Academy's procedures for gaining permission to conduct the  
240 research. Following permission from the Academy Director the research team worked  
241 with the Lead SPC who facilitated the process to obtain parental consent and then to  
242 arrange meetings with the players and opportunities to discuss the study in detail and  
243 obtain volunteers to participate. Pilot interviews were conducted and then discussed

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244 by members of the research team. It was particularly important that questions were  
245 phrased in an understandable manner because of the younger ages of some of the  
246 players. As one example, questions asking players how they perceived a particular  
247 situation was followed up with a rephrased version such as “what were your initial  
248 views and thoughts about being in this situation?” to help understanding. The guide  
249 also included probe questions that elicited open discussion (Patton, 2002). After each  
250 pilot, the interview protocol was refined accordingly, and this feedback also served to  
251 facilitate the preparations of the interviewer. Player interviews were conducted  
252 following written consent and were conducted face to face and at the player's daily  
253 coaching venue which was considered the most appropriate and comfortable  
254 environment. At the time of data collection, all participants were currently competing,  
255 and striving towards achieving higher-rankings.

### 256 **Interview Guide**

257 A semi-structured interview guide comprising open ended questions was  
258 developed and was broadly informed by social-cognitive models in sport (e.g., the  
259 Cognitive-Affective Processing System model (CAPS; Mischel & Shoda, 1995).  
260 Specifically, the interview guide was designed to include some consistent categories  
261 to be explored but also prompted open discussion and encouraged conversation that  
262 was not restricted by the interview guide. At the start of the interviews, players were  
263 asked to describe their understanding of mental toughness (i.e., what it is, what  
264 players they thought were mentally tough and why). Following this initial discussion  
265 the interviewer reiterated and added further information to facilitate understanding,  
266 which was in line with the definition of mental toughness generated by Coulter and  
267 colleagues (2010), albeit a user-friendly version while still capturing the key aspects  
268 of it.

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269           The interview guide addressed the following main content areas: (a) players’  
270 tennis background and playing experiences (e.g., can you tell me about your tennis  
271 experiences since coming to the Academy?); (b) players’ views on mental toughness  
272 and their mental toughness situations in tennis (e.g., could you tell me about situations  
273 in tennis where you show mental toughness?); (c) players’ experiences of being  
274 mentally tough in tennis (e.g., could you explain how you perceived this situation?  
275 can you describe the thoughts you were having?); (d) players’ experiences of not  
276 being mentally tough in tennis (tell me about situations in tennis when you didn’t feel  
277 you were showing mental toughness, could you explain how not being mentally tough  
278 shows up in your tennis game?); and (e) strategies used to help players be mentally  
279 tough (e.g., can you tell me about any strategies you use to help you to be mentally  
280 tough and when you use these strategies). Interviews ranged from 40 to 70 minutes in  
281 length and were audio recorded and then transcribed.

### 282 **Data Analysis**

283           Interview transcripts were analyzed using a thematic analysis and followed  
284 principles advocated by Braun and Clarke (2006). Thematic analysis was selected  
285 because of its flexible nature which can include deductive and inductive aspects of  
286 data analysis (Tracy, 2010). At the outset, an initial sweep of the data was conducted  
287 to identify the main categories consistent with the social-cognitive models in sport  
288 (i.e., cognitions, affect, behaviors). Following this process, an inductive analysis  
289 continued which involved identifying individual meaning units (i.e., raw data themes  
290 characterizing players’ mental toughness situations and experiences), which were then  
291 assessed for similarities and grouped accordingly. This process led to the  
292 development of lower-order themes and eventually higher-order themes. In addition,  
293 with regard to players’ mental toughness situations and experiences, raw data themes

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294 (i.e., quotes from transcripts) were extracted to capture mental toughness and mental  
295 weakness responses. During the theme development and grouping stages of analysis it  
296 was important for the research team to discuss the meaning of the raw data units to  
297 establish understanding of the content rather than descriptive labeling alone (Tracy,  
298 2010). To ensure trustworthiness of data analysis and the subsequent conclusions  
299 drawn, the methods of analyst triangulation and member checking (Patton, 2002)  
300 were selected. Specifically to triangulate the data, the researchers met over a 4-week  
301 period to discuss the data and reach agreement on the final themes. Finally,  
302 participant member checks (Lincoln & Guba, 2000) were conducted whereby  
303 participants viewed their transcripts and were asked to write in any additional  
304 information to ensure data credibility. Participants made no further changes to  
305 transcripts.

306

### **Results**

307       The purposes of the present study were to explore possible fluctuations in  
308 mental toughness across situations, and to identify the cognitions, affect, and  
309 behaviors associated with perceived mental toughness and mental weakness. High-  
310 end performance tennis players were interviewed about their perceptions of mental  
311 toughness and specifically situations they frequently face that require them to be  
312 mentally tough. From an initial sweep of the data, it was clear that all players  
313 perceived mental toughness to be important for performance and this view was  
314 characterized by phrases such as “I need mental toughness to keep on fighting”, “I  
315 definitely get to more balls when I’m mentally tough” and “mental toughness is  
316 important to win, it’s a sign I fully believe in myself”. In reiterating the importance of  
317 belief, another player discussed “if you are mentally tough and you believe you are  
318 mentally tough then you go into a match thinking you have a good chance to win, and

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319 that helps me in my performance.” Similarly, another player explained that mental  
320 toughness has a positive influence on performance because it helps produce  
321 consistency, as they stated:

322         If mental toughness is going up and down then that doesn’t help performance,  
323         you need to stay mentally tough cause if it’s up and down then consistency  
324         will be up and down, in tennis you have to be pretty consistent... you can’t be  
325         good one week and not the next.

### 326 **Situations Eliciting Mental Toughness or Weakness**

327         During the interviews, when players discussed various situations that they  
328         perceived as requiring mental toughness it was clear that players could be mentally  
329         tough in some situations but mentally weak during other situations, and thus,  
330         indicating that mental toughness can fluctuate. The majority of situations identified  
331         were specific to the competition environment (23 raw data themes) although players  
332         also discussed some situations that occurred in training (13 raw data themes). The  
333         higher-and-lower order themes are presented in Figure 1. This next section provides  
334         examples of how mental toughness can change in varying situations (i.e., from game  
335         to game and sometimes during the same game). When referring to fluctuations in  
336         mental toughness, one player described his mental toughness to be a “roller coaster”,  
337         It can be a roller coaster, because it’s literally up and down. I’ll have one game  
338         where I’m focused and then I’m playing one point at a time ...you can see it  
339         [mental toughness] in my eyes. But then the next game, I’ve sailed four shots  
340         in a row to the fence ... When I get mentally weak it doesn’t even cross my  
341         mind to hopefully try and bring it back.

342         Similarly, another player talked about a critical moment in tennis in the form of losing  
343         a lead and attributed this event to not being mentally tough enough to “close out the

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344 game” and “getting too excited about winning.” In knowing the importance of being  
345 mentally tough in critical moments, this same player further explained, “I keep  
346 working on it [mental toughness]. Mental toughness gives me that belief that I can  
347 finish it out ... and sometimes I have stayed focused and calm, taking each point one  
348 at a time.”

349         When discussing specific game situations, some players described how their  
350 mental toughness could change during the same match. One player explained that  
351 while he can start a match mentally tough he can often become mentally weak during  
352 it, “It was so important to start mentally tough, getting everything back, I won the first  
353 set like that, but then I stopped playing ... I started thinking why he’s playing so good  
354 now. I couldn’t get it back.” In contrast, another player described feeling mentally  
355 weak early on in the game but was able to gain mental toughness when she needed it  
356 most, as this player discussed,

357         I wasn’t feeling it at the start ... I was playing semi finals and I lost the first  
358 set and I was down 4-1 in the second, I had to fight ... I got confident from  
359 one point, got over it, I kept going ... I came back and I won the match in the  
360 third set.

361 Similarly, another player discussed,

362         I was playing a third set tie-breaker, I know I have to win that point. To win  
363 that match I had to be mentally tough ... stay positive when I got behind ... I  
364 was behind and like everything was against me, the opponent was playing  
365 well, I had bad luck, the weather ... but I had to dig deep, found my way back  
366 into the match, to win it.

367 Interestingly, analysis of the transcripts showed that it was players’ perceptions of  
368 their opponents (e.g., ranking) and pressure (e.g., concerns over the outcome) that



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369 often generated mental toughness or mental weakness during competition. In  
370 providing an example of these perceptions, one player was able to be mentally tough  
371 during a match against an opponent of similar or close ranking, and explained, “I was  
372 mentally tough because it was close and I was playing someone about equal to me  
373 ...it can come down to who’s going to step up, who’s gonna have the mental edge that  
374 day.” Similarly, when discussing opponents and the pressure associated with “getting  
375 results”, some players attributed their mental weakness to playing an opponent they  
376 were “expected to beat”, as one player stated, “if I lose to someone who’s worse than  
377 me, people will start talking ... the outside pressure can get to me and make me  
378 mentally weak if I am playing against someone I should beat.” Similarly, another  
379 player reiterated,

380         It’s when there is pressure, from others, those watching ... I never want to lose  
381         to someone I know I should beat, it’s like I don’t know how to win, or like  
382         what to do to win ... it’s a mental thing. It’s easier to be mentally tough when  
383         they’re much better than me, I have nothing to lose, just fight and can take one  
384         point at a time.

385         Players also discussed their mental toughness and weakness during training  
386         situations. Specifically, these situations focused on consistency (e.g., consistency to  
387         perform, no let up) and intensity (e.g., intense practice always, no off-season) (see  
388         Figure 1). In the theme of consistency one player discussed the need to be mentally  
389         tough “to maintain consistency every week” with regards to performance standards,  
390         as he stated,

391         What you do in practice is what you’ll eventually do in matches and  
392         tournaments so I work on it [mental toughness] in practice ... if you’re

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393           mentally tough you'll be ready ... but if you are up and down, your  
394           consistency will be up and down.

395 Not all players were able to be mentally tough all of the time in training situations and  
396 maintaining intensity sometimes generated mental weakness responses, as one player  
397 explained,

398           Sometimes I just feel out of it, not going for every ball and I'm kind of  
399           looking around and then I know I don't look like I'm mentally ready to be  
400           there ... there is no off season, practice is a big part of competition and  
401           tournaments.

402 Another player discussed training and intensity as requiring mental toughness in the  
403 following way, "there is pressure, mostly coming from myself, in practice, you have  
404 to be focused the whole time and I can be like, have a variety of moods in practice ...  
405 I'm not always mentally tough."

### 406 **Cognitions, Affect, and Behaviors**

407           Following analysis of the data it was possible to further understand mental  
408 toughness and mental weakness through players' perceived associated cognitions,  
409 affect, and behaviors. Specifically, players reported different cognitive, affective, and  
410 behavioral responses when they perceived themselves to be mentally tough and when  
411 they perceived themselves to be mentally weak (see Figure 1 for the data display of  
412 higher-and-lower order themes).

### 413 **Cognitions**

414           In this theme a variety of facilitative cognitions associated with mental  
415 toughness were discussed. It was clear that these thoughts were positive in nature,  
416 were task focused, and also related to one's own performance rather than on  
417 opponents or the outcome of the game. These cognitions were characterized by

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418 phrases such as, “thoughts about playing well”, “focusing on each point”, and  
419 “playing for me not focusing on the outcome”. In contrast, when players considered  
420 themselves to be mentally weak, defeatist thoughts relating to the outcome of the  
421 match (e.g., worries about losing, outcome thinking on points) were dominant and  
422 interpreted as having a debilitating influence on performance. One player explained,  
423       Pressure [for the outcome] can make me mentally weak, I’m thinking, if I lose  
424       this match people are going to say ‘how did she lose to her’, lose a couple of  
425       points in a row and it can crush my mind, what if I lose?  
426 When perceiving mental toughness, thoughts were high in belief and players  
427 emphasized positive expectations, as one player explained, “When I’m mentally  
428 tough I believe in myself and I think I can win.” Similarly, another player stated,  
429 “believing in yourself is so comfortable, trusting everything ... being mentally tough  
430 you know how to handle those thoughts, how to talk to yourself.” In contrast, mental  
431 weakness was characterized by thoughts of self-doubt and a lack of confidence: One  
432 player explained, “when you are not feeling mentally tough and you start to think I  
433 am not hitting the ball great, that effects how much I believe in myself.” Similarly,  
434 another player mentioned, “I get critical of myself and I begin to question my shots.”  
435 Players also discussed distraction related thoughts such as thinking too much about  
436 certain shots or allowing factors that they could not control distract or interfere with  
437 thoughts when trying to focus on the task at hand.

### 438 **Affect**

439       In this theme of affect a variety of positive feelings associated with being  
440 mentally tough were discussed, such as, enjoyment (e.g., love the game), positive  
441 energy (e.g., energized, stay with it physically), and feeling relaxed. Interestingly,  
442 discussions with players indicated that feeling mentally tough did not prevent them

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443 from feeling nervous in tennis competition but it enabled them to use these nerves in a  
444 positive way, as one player mentioned,

445 I'm able to take it as a good thing, I can tell myself it's normal, everyone gets  
446 nervous but when you're mentally tough being nervous is good because you  
447 want to win ... if you're not nervous that means you don't really care about  
448 your performance.

449 In addition, the impact that feeling positive energy had on tennis performance was  
450 explained in the following way, "The feeling ... when you're mentally tough,  
451 everything is ... is just working ... it's like the least amount of power or effort you get  
452 for most amount of power ... it feels positive and pretty natural."

453 In contrast, mental weakness in response to some tennis situations engendered  
454 negative affect for players and were described as feelings of lethargy (e.g., low  
455 aggression, lack of energy), feelings of frustration and/ or anger (i.e., psychological  
456 responses) and physiological responses such as body tension and increased heart rate.

457 One player explained her feelings of lethargy in the following way, "its just like I  
458 don't want to be there, I don't wanna do this, I feel I'm tired ... sometimes you let  
459 those feelings get the best of you." In explaining how feelings of frustration could  
460 debilitate performance, one player discussed, "It's not being mentally tough, I get  
461 frustrated and I just bang my racket down, getting mad at myself when I start losing  
462 points." Negative physiological responses were also deemed debilitating as one player  
463 stated,

464 When I'm not mentally tough I can get tension in my arms ... when I'm  
465 nervous when I'm playing I don't play the way I'm supposed to like I always  
466 do. I'm normally an aggressive player and I don't play that way, I don't know  
467 how to win that way ... when I am not mentally tough.

468 **Behaviors**

469           Players discussed a range of effective behaviors associated with mental  
470 toughness but also ineffective behaviors associated with mental weakness (see Figure  
471 1). Two ways that mental toughness was demonstrated was through behaviors such as  
472 moving faster on court (i.e., higher effort) and strong body language (i.e., confidence).  
473 Specifically, when players were displaying high effort they described it as “being  
474 intense”, and “on my toes ready to move fast”. One player discussed how he plays  
475 with high intensity in this way, “you’re never kind of going down, always keeping up  
476 my intensity, staying with it all the way whether you win or lose a point.” In addition,  
477 players displayed confidence by “standing tall”, “holding my racket up”, and “having  
478 a consistent game-face”. Some players also discussed how their confidence can show  
479 up in their shot selection, as one player stated, “you can see it, you play your game ...  
480 I believe I can make this shot and I go for it.”

481           In contrast, when players considered themselves to be mentally weak they  
482 discussed displaying behaviors that were perceived to have a negative influence on  
483 tennis performance. For example, decreased effort was discussed and described as  
484 “not running hard enough and so giving up on points” and “wasting effort by not  
485 getting into the right place”, as one player explained:

486           It’s when you are struggling, you need it [mental toughness] the most but you  
487 have to work that much harder to get to the ball, probably not really working  
488 that hard but you feel like you are because your body isn’t in the right place at  
489 the right time ... you just give up trying to get some [balls] back, stop running.

490           Similarly, a theme categorized as decline in skill level also emerged associated with  
491 mental weakness behaviors such as “missing easy balls/points”, “not hitting the ball  
492 cleanly”, and “touch being off.” One player explained, “yeah, I couldn’t win a point

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493 anymore, it was horrible and I missed every shot, easy shots." Players were also  
494 aware of how their behavior influenced dictating play on the court as they discussed  
495 the pace of play and how this differed when being mentally tough or mentally weak.  
496 For example, one player discussed being forced into fast play when she was mentally  
497 weak, "I lost my game plan. Everything was going way too fast and I never took time  
498 to walk back to the fence to slow it down then that game is done, I needed to have  
499 taken my time."

500 In addition to changes regarding skill level and dictating the pace of play,  
501 some players were aware that they adopted a particular game strategy when they were  
502 mentally weak. Specifically players identified purposely playing not to lose by a large  
503 margin rather than trying to turn the game around, as one player explained, "It's kind  
504 of giving it away, playing not to lose, let the opponent lead the point and just let them  
505 [opponent] control everything. Get the ball back and hope your opponent misses."  
506 In contrast, when players were mentally tough they discussed being assertive on court  
507 and were able to dictate the pace of play, as one player explained,

508 When I'm mentally tough I'll take my time on every ball, focus on every  
509 point. I won't let myself be rushed because you lose games quickly. When I  
510 am tough I don't think ahead, I play every point, ...I'm in control.

511 Similarly, players described "playing every point" as an important aspect of  
512 displaying mental toughness and this was characterized by phrases such as "not  
513 giving up on points", "fighting for every point", and "play despite pressure". One  
514 player explained, "when the going gets tough, if I'm mentally tough I can keep  
515 sticking to the task even if things are not going my way. When I'm mentally tough I  
516 can find a way to battle through."

517 **Coping Strategies**

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518           As reported earlier, players were aware that their mental toughness could  
519 fluctuate in response to a variety of situations (e.g., competition, training). During the  
520 interviews players identified coping strategies that they used to protect or regain  
521 mental toughness. It was anticipated that players would share a variety of coping  
522 strategies because all players at the Academy received some sport psychology support  
523 although this support was not specifically targeted at developing mental toughness.  
524 The higher-order theme of coping comprised of five lower-order themes: Task focus  
525 (e.g., focus on the controllables, focus on process), avoid distraction (e.g., walk away  
526 to the towel, turn away from opponent), use of tactics (e.g., attack more, stick to the  
527 game plan), maintaining confidence (e.g., acting confident, positive self-talk), and  
528 relaxation (e.g., deep breathing, visualization of relaxing scenes). In the theme of task  
529 focus players discussed various strategies to help them focus on their own  
530 performance and playing each point rather than thinking about the outcome. One  
531 player highlighted the importance of “focusing on the controllable aspects of  
532 performance and using refocus routines”. Players also discussed strategies related to  
533 avoiding distraction. Specifically, this theme captured players’ views about not  
534 wanting to let an opponent cause distraction, as one player stated:

535           Going to the back of the court, looking at strings, so I’m turning away from  
536 my opponent so I can focus my mind, I can forget my opponent is there and  
537 then its time to focus on what you need to do.

538 Strategies to maintain confidence was also discussed by players and was frequently  
539 explained as having a positive relationship with mental toughness. For example, one  
540 player discussed “having more confidence enhanced my mental toughness and when  
541 I’m feeling tough I exude more confidence”. Similarly, another player discussed using  
542 her positive body language and attitude as a way to regain mental toughness, “body

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543 language without a shadow of doubt is by far the most important ... your mental  
544 frame for mental toughness ... just not showing your opponent that you're down or  
545 up."

546 In the theme categorized as use of tactics, players engaged in strategies such  
547 as "slowing play down", "sticking to their game plan" and "being aware of their  
548 strengths and then playing to their strengths". One player stated,

549 I know what my strengths are in my game, one thing I do is identify the thing  
550 that's working, like if I felt my footwork was good, then I try to increase effort  
551 in that up by five per cent. I try to play to my strengths.

552 Finally, players also engaged in relaxation strategies to regain control such as deep  
553 breathing and visualizing relaxing scenes, as one player explained, "I feel it in my  
554 chest, so I'm taking deep breaths to release it [tension] ... when you are mentally  
555 tough, the nerves are still there but it's easier to use or rid them ... breathing and  
556 routines provide that".

### 557 **Discussion**

558 The purposes of the present study were to explore possible fluctuations in mental  
559 toughness across situations, and to identify the cognitions, affect, and behaviors  
560 associated with perceived mental toughness and mental weakness. One area of mental  
561 toughness that continues to be debated is whether an athlete's mental toughness is  
562 changeable (i.e., fluctuates) depending on situations. As such, further research has  
563 been encouraged to consider aspects of both mental toughness as well as mental  
564 weakness (Harmison, 2011). In line with these thoughts of inquiry, it has been  
565 emphasized by some researchers that appropriate theories should be adopted to further  
566 understand mental toughness relative to the stability of mental toughness (e.g., Crust,  
567 2008; Harmison, 2011). This study offers a novel perspective to view mental



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568 toughness by adopting a social-cognitive framework, and therefore, considers the  
569 interaction of athletes and their changeable environments.

570         In the present study, players identified a range of situations pertaining to  
571 competition (e.g., opponents, critical moments) and training (intensity, consistency)  
572 that they perceived as requiring mental toughness. Previous research has begun to  
573 provide some consistency in findings when considering the temporal nature of mental  
574 toughness (e.g., Bull et al., 2005; Slack et al., 2014). Specifically, it has been reported  
575 that high-end performers require mental toughness across a range of situations over  
576 sustained periods of time (i.e., week in and week out for whole seasons) and also  
577 across entire match-days themselves. In support of these findings, players in the  
578 present study emphasised the need to be mentally tough for competition and also in  
579 training for prolonged periods of time (i.e., season-long). Indeed, the themes of  
580 intensity and consistency captures players' perceptions that "there is no off-season"  
581 and mental toughness is required to sustain consistency in performance over time.

582         Despite some support for the state-nature of mental toughness, it has been  
583 argued by some that mental toughness is not a stable construct and influenced by  
584 genetic factors, calling into question, therefore, whether mental toughness can be  
585 developed over time (e.g., Horsburgh, Schermer, Veselka, & Vernon, 2009). Unique  
586 to the findings of the present study, it was clear that players could be mentally tough  
587 in some situations but mentally weak during other situations, and thus, offering  
588 empirical support for mental toughness being more of a state-like construct (i.e., that  
589 mental toughness can shift depending on the situation). In particular, players  
590 discussed fluctuations in mental toughness occurring in different matches and also in  
591 response to situations occurring in the same match, and attributed these fluctuations to  
592 critical game moments (e.g., tie-breaker points) and situations needing composure

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593 (e.g., recovering from an error). Being able to identify specific situations where  
594 players could potentially be mentally weak during competition can be helpful to  
595 practitioners when designing sport-specific mental toughness training programs.  
596 Along these lines, it was also an important finding to understand players' perceptions  
597 of these mentally tough and weak situations. Specifically, players' changing  
598 perceptions of their opponents (e.g., ranking, momentum) and pressure (e.g., concerns  
599 over the outcome) most often generated fluctuations in perceived mental toughness.  
600 Dealing with pressure has long been considered an important attribute of mental  
601 toughness and has become an essential ingredient of mental toughness training  
602 interventions (cf. Slack, Maynard, Butt, & Olusoga, 2015). Regarding perceptions of  
603 pressure, much research exploring competitive anxiety responses has supported the  
604 notion that experiencing anxiety symptoms do not always have a negative influence  
605 on performance and can be interpreted in a facilitative way (cf. Jones & Swain, 1995).  
606 Players in the present study reported that being mentally tough did not take away their  
607 nerves (i.e., feeling nerves) but enabled them to perceive and use them in a positive  
608 way, and thus, offer further support for facilitative anxiety. Collectively, findings of  
609 the present study further highlight the need to equip athletes with the skills to  
610 reinterpret their perceptions of pressure and one way that this can be achieved is to  
611 gradually expose players to pressure situations in training (Gould & Maynard, 2011).  
612 Indeed, it has become a consistent finding in mental toughness research that exposing  
613 performers to harsh experiences (i.e., creating pressure) will be beneficial to  
614 increasing their mental toughness (e.g., Bell et al., 2013; Weinberg et al., 2011).

615         A second purpose of this study was to identify the cognitions, affect, and  
616 behaviors used by the tennis players when perceiving mental toughness and mental  
617 weakness. Researchers have recently advocated the application of social-cognitive

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618 models for studying mental toughness (e.g., Harmison, 2011; Smith, 2007). In  
619 particular, Harmison demonstrated the use of Mischel and Shoda's (1995) Cognitive-  
620 Affective Processing System (CAPS) as a framework to further our understanding of  
621 athletes' mental toughness relative to various situations they encounter. The  
622 idiographic profiles generated demonstrated that two athletes (i.e., football players)  
623 could perceive situations (i.e., perceptions of an upcoming match) differently, and  
624 experience a range of cognitions, affect, behaviors, and coping responses, which  
625 could interact to determine mental toughness or mental weakness. To date, research  
626 has focused on the constituents of mental toughness and while there is some  
627 knowledge on the mental toughness cognitions and behaviors utilized by elite  
628 performers (e.g., Gucciardi et al., 2009a; Slack et al., 2014), it has been suggested that  
629 characterizing the opposite cognitions and behaviors (i.e., when not mentally tough) is  
630 also necessary.

631         In addressing both mental toughness and weakness, the present study extends  
632 current knowledge of mental toughness conceptually and from an applied perspective.  
633 In particular, findings indicated that players perceived to experience facilitative  
634 cognitions (e.g., control over thoughts, task focus, self-belief), positive affect (e.g.,  
635 energized, relaxed) and facilitative behaviors (e.g., displaying confidence, assertive  
636 play) associated with mental toughness, and these were discussed relative to "playing  
637 well" and "producing winning performances." In contrast, players perceived to  
638 experience debilitating cognitions (e.g., outcome thoughts, self-doubt), negative affect  
639 (e.g., lethargy), and behaviors (e.g., decreased effort, negative body language)  
640 associated with mental weakness. It is important for sport psychology consultants and  
641 coaches to have an understanding of these cognitions, affect, and behaviors to be able  
642 to help athletes develop awareness of their mental toughness (and mental weakness).

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643 Further, while the aim of the present study was not to investigate mental toughness  
644 and its influence on performance, the findings do begin to offer some preliminary  
645 knowledge on the role of mental toughness and performance via an understanding of  
646 players' cognitions, affect, and behaviors. However, the underlying mechanisms of  
647 mental toughness (i.e., how mental toughness influences performance) still needs to  
648 be fully investigated.

649         When viewing players' mentally tough cognitions and coping strategies used  
650 to maintain or regain mental toughness, findings of this study indicate that having a  
651 strong self-belief is important for mental toughness. Specifically, belief, positive  
652 thinking, and focusing on one's own performance were all reported as cognitions  
653 associated with being mentally tough while self-doubt was associated with mental  
654 weakness. In addition, maintaining confidence (i.e., strengths-focus, positive self-talk,  
655 acting confident) was identified as a coping strategy to sustain mental toughness or  
656 regain it during fluctuations. Similarly, previous research has reported high self-belief  
657 to be the most consistent attribute of mental toughness (e.g., Gucciardi et al., 2008;  
658 Jones et al., 2002; 2007). Collectively, findings confirm the important role of  
659 confidence when developing mental toughness.

### 660 **Limitations**

661         One limitation to consider in the present study is the domain specific (i.e.,  
662 Academy tennis players) nature of the sample used. That is, because findings might  
663 not transfer to other sports, triangulating these results across other individual and team  
664 sports would provide further understanding of the stability of mental toughness (i.e.,  
665 different situations) and the cognitions, affect and behaviors it elicits. Nonetheless,  
666 previous research has often favored adopting a sport-specific approach to studying  
667 mental toughness because it can offer context-rich knowledge gains theoretically, and

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668 also for practitioners looking to build mental toughness and create an optimal  
669 environment to do so. As one example of sport-specific research, Gucciardi and  
670 colleagues (2008; 2009b; 2009c) conducted a line of research exploring mental  
671 toughness specific to Australian Football. Specifically, an initial study was conducted  
672 to obtain an understanding of what constitutes mental toughness in Australian football  
673 players, which was later followed up with the designing and testing of quantitative  
674 and qualitative mental toughness training interventions.

675         Regarding the sample used, another limitation to note is the level of the  
676 players included. In this study, although the players were considered to be  
677 participating at a high level (i.e., state and national ranking in full time training at a  
678 tennis Academy), they were still in the development phases of their athletic careers.  
679 As such, it is likely that they were still developing their mental attributes, including  
680 mental toughness. Along these lines, it is also important to note that no objective  
681 measures of mental toughness were obtained prior to conducting interviews. Thus,  
682 while the findings show that a player's mental toughness can fluctuate across  
683 competition and training situations, they did not show exactly how mentally tough  
684 each player was with an objective score from a questionnaire.

### 685 **Future Research and Applied Implications**

686         Future research might consider longitudinal studies whereby the temporal  
687 nature of mental toughness can be further investigated (e.g., season long). Further,  
688 while there are some examples of empirical mental toughness training interventions in  
689 the literature (e.g., Gucciardi, Gordon, & Dimmock, 2009b; Slack et al., 2015), it  
690 remains an important avenue of research to develop such interventions and test their  
691 effectiveness over longer periods of time. In particular, gaining an understanding of  
692 sport-specific situations and how player's perceive these situations, together with

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693 associated cognitions, affect, and behaviors, provides a starting point for which to  
694 develop a mental toughness training intervention that can be tailored to the unique  
695 needs of developing tennis players. In addition, having identified specific behaviors  
696 perceived to be associated with mental toughness (and mental weakness), sport  
697 psychology consultants and coaches can begin to observe these behaviors in training  
698 and competition to help players become more aware of their mental toughness. Along  
699 these lines, findings of this study highlight that athletes' perceptions of pressure-  
700 related situations can influence the stability of mental toughness (i.e., mental  
701 toughness or mental weakness). Recently, research has begun to highlight the  
702 potential benefits of pressure training in sporting environments (e.g., Driskell,  
703 Sclafani, & Driskell, 2014) and also specific to developing mental toughness (e.g.,  
704 Bell, Hardy, & Beattie, 2013). Gaining an understanding of match situations which  
705 can potentially evoke mental weakness can be integrated into players' training  
706 environments to help prepare them better for performing in competition and critical  
707 moments. Finally, findings of this study confirm the important role of confidence in  
708 mental toughness and should remain central to interventions designed to build mental  
709 toughness.

### 710 **Conclusions**

711 Findings of the present study offer some support for the state-nature of mental  
712 toughness indicating that depending on the situation, and athletes' perceptions of the  
713 situation, mental toughness can fluctuate, and can sometimes be perceived as mental  
714 weakness. It is important to continue to identify sport-specific situations and how  
715 athletes perceive these situations so that appropriate interventions can be  
716 implemented. Obtaining an understanding of players' cognitions, affect, and  
717 behaviors associated with mental toughness and mental weakness has provided an

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718 insight into how fluctuations in mental toughness might influence tennis players'  
719 performance. The identified cognitions, affect, and behaviors (for both mental  
720 toughness and weakness) can also serve as a platform for which to develop mental  
721 toughness training interventions tailored to high-end, developing tennis players.

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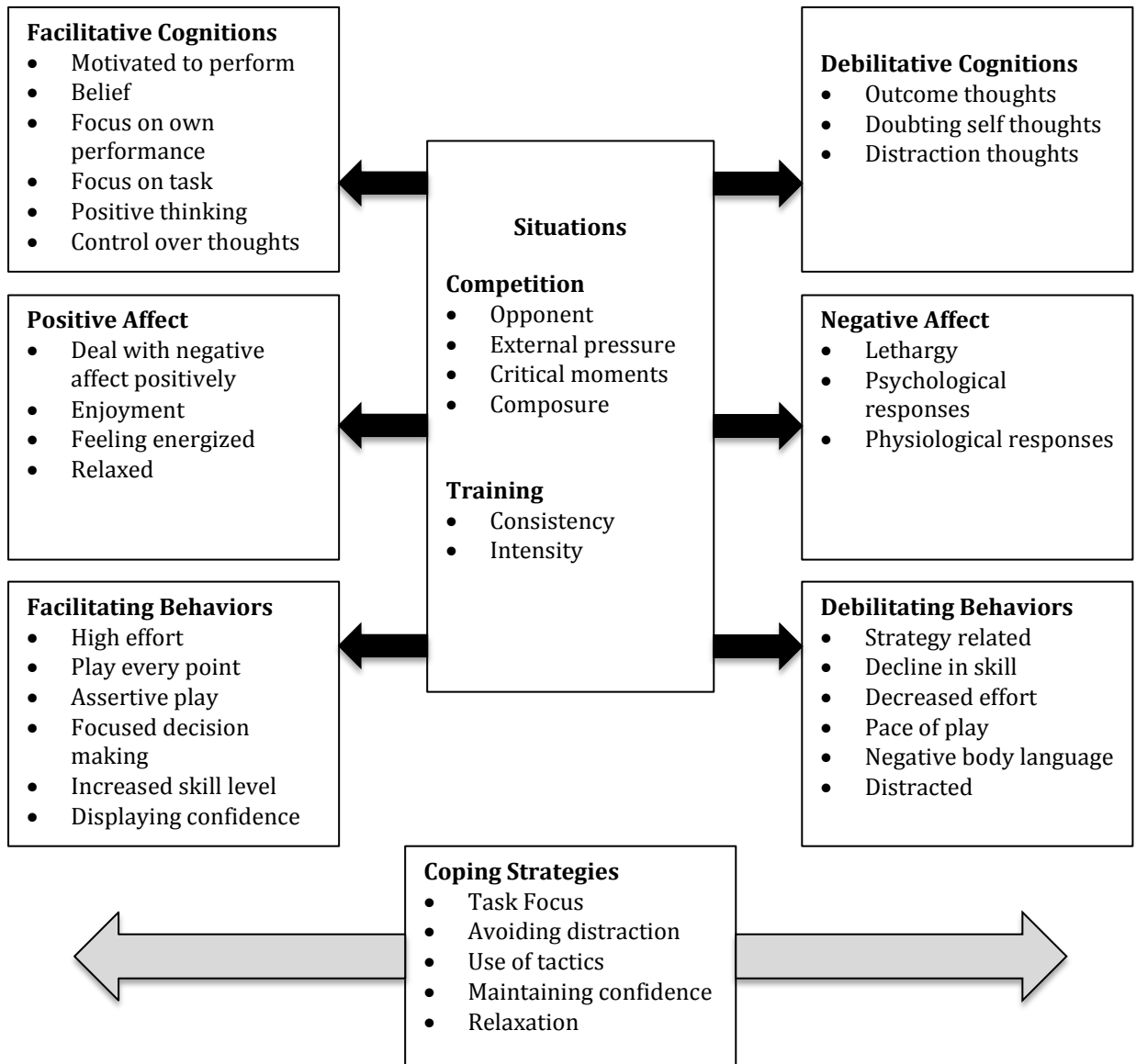
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STABILITY OF MENTAL TOUGHNESS

832 **Mental Toughness**

**Mental Weakness**



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838 *Figure one: Higher and lower order themes representing mental toughness and*  
 839 *mental weakness and different game-related situations.*

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