

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

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1 RUNNING HEAD: STABILITY OF MENTAL TOUGHNESS

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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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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 it’s 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.

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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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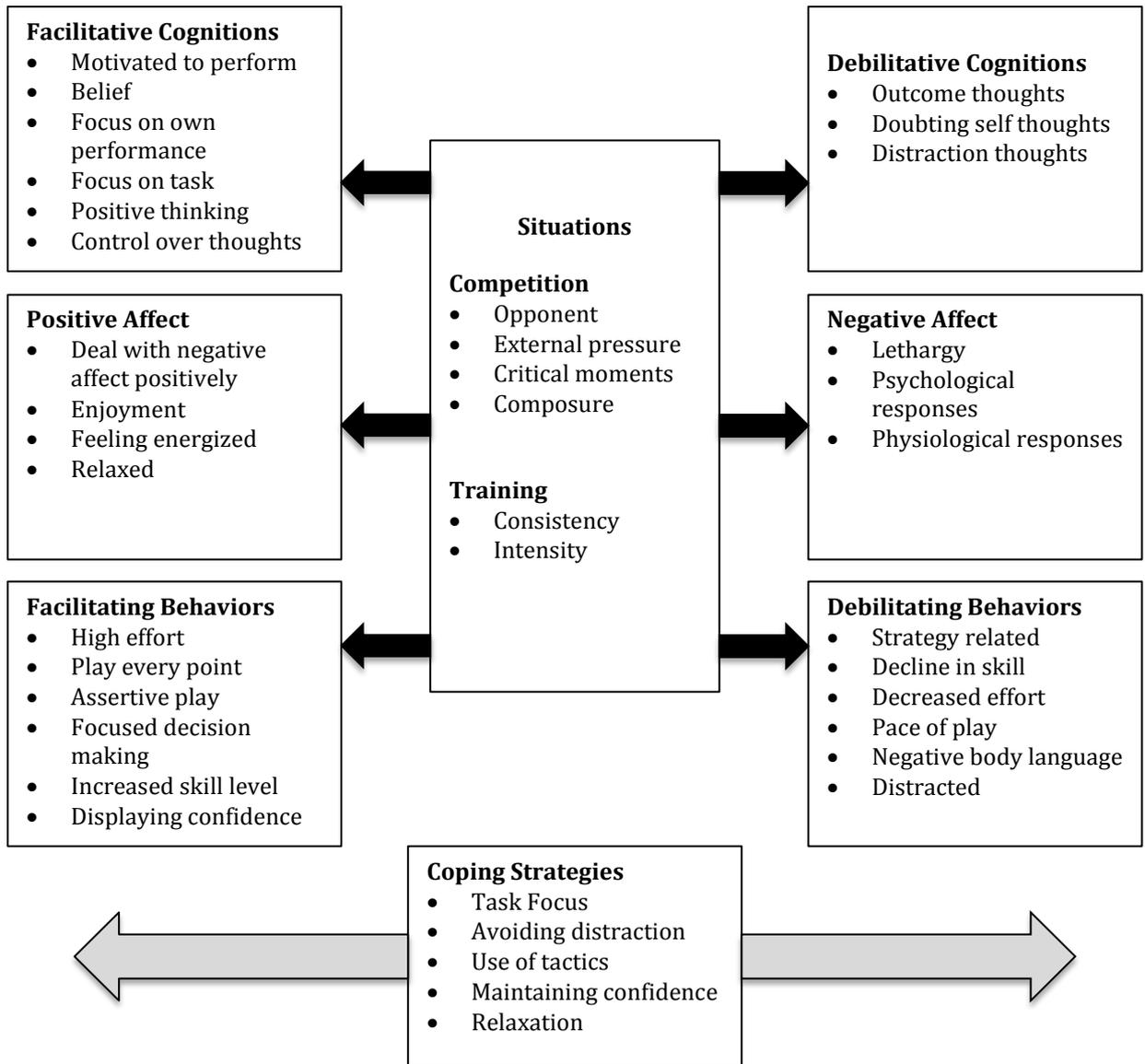
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832 **Mental Toughness**

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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