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How Do Mentally Tough Athletes Overcome Self-Directed Anger, Shame, and Criticism?

A Self-Forgiveness Mediation Analysis

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1 **Abstract**

2 We examined associations between mental toughness, self-directed, negatively toned
3 emotions and cognitions, and self-forgiveness. With reference to their participation in
4 competitive tennis, a sample of 343 competitive tennis players ($M_{age} = 17.56, SD = 2.37$)
5 completed questionnaires measuring their mental toughness, self-forgiveness, and tendency to
6 experience shame, anger, and criticism towards themselves. Mental toughness associated
7 negatively with self-oriented shame, anger, and criticism, and positively with self-forgiveness.
8 The effect of mental toughness on both shame and anger towards the self was fully mediated by
9 self-forgiveness, whereas self-forgiveness partially mediated the effect for self-criticism. The
10 findings support the role of self-forgiveness, over mental toughness, in reducing or eliminating
11 self-condemning, resentful, and devaluing responses that athletes direct towards themselves.

12

13

14 **Keywords:** mental toughness; tennis; anger; self-criticism; shame; self-forgiveness

1 **How Do Mentally Tough Athletes Overcome Self-Directed Anger, Shame, and Criticism? A**
2 **Self-Forgiveness Mediation Analysis**

3 Athletes experience a range of emotions that have the potential to promote or undermine
4 performance, originating both *within* (i.e., before, during, and after competition) and *outside* the
5 immediate sport environment (McCarthy, 2011). Many incidents and experiences are
6 unavoidable features of participating in sport, and it is how athletes appraise, respond to, and
7 regulate their emotions that determines successful outcomes. Scholars have found that the
8 emotion-performance relationship depends on the interplay between person and situation (Doron
9 & Martinent, 2016). Emotions can facilitate performance in some situations, whereas in others,
10 emotions can result in performance setbacks. Responses are mediated by strategies athletes use
11 to manage their emotions, thoughts, and actions, such as emotional regulation techniques and
12 coping mechanisms (Wagstaff, 2014), which are often likened to mental toughness (Gucciardi,
13 Hanton, Gordon, Mallett, & Temby, 2015).

14 ***What is Mental Toughness?***

15 Research on mental toughness in sport has often been criticized for lacking appropriate
16 theoretical grounding, the disorganized, vast array of attributes that have been associated with it,
17 and the use of ideological terminology (e.g., unshakeable self-belief) to describe the construct
18 (Andersen, 2011; Caddick & Ryall, 2012). In recent years, however, substantial advancements
19 have been made to the science of mental toughness, and there is evidence that scholars'
20 perspectives are aligning more than they have in the past. For example, researchers generally
21 agree that mental toughness refers to a psychological resource that enables athletes to pursue and
22 attain optimal levels of performance (Cook, Crust, Littlewood, Nesti, & Allen-Collinson, 2014;
23 Gucciardi, 2017). However, researchers remain divided on the dimensions that comprise mental

1 toughness, with some scholars asserting it is best conceptualized and measured as a
2 unidimensional, rather than a multidimensional, construct (Gucciardi, Hanton, et al., 2015).
3 Despite conceptual discrepancies, the more frequently delineated indicators of mental toughness
4 include variants of optimism (e.g., hope, positivity), resilience (e.g., persistence, adaptability to
5 stress), self-control/regulation (e.g., cognitions, emotions), and self-efficacy (e.g., self-
6 confidence, self-belief; Connaughton, Hanton, & Jones, 2010; Cook et al., 2014; Gucciardi,
7 Hanton, et al., 2015; Papageorgiou, Wong, & Clough, 2017).

8 The state-trait continuum of mental toughness is another area in which developments
9 have been made. Mental toughness has been conceptualized as a narrow trait (Papageorgiou et
10 al., 2017), implying a high degree of stability over time and across situations. Yet, researchers
11 have found evidence of situational fluctuations in mental toughness (Weinberg, Butt, Mellano, &
12 Harmison, 2017), advocating a state-like conceptualization of the construct. To account for the
13 complexity associated with the apparent inter-individual (i.e., differences between persons) and
14 intra-individual (i.e., differences within persons) variability of mental toughness (Gucciardi,
15 Hanton, et al., 2015), scholars have proposed a person-by-environment interactionist approach to
16 mental toughness (see Harmison, 2011). From this perspective, mental toughness may be
17 expressed in a relatively stable, trait-like manner across similar types of situations, yet may
18 exhibit variations across dissimilar situations. A number of studies have reported on the
19 developmental trajectory of mental toughness, many of which have underscored a long-term
20 growth process (Connaughton et al., 2010). Research also supports the effectiveness of targeted
21 interventions in fostering mental toughness (Bell, Hardy, & Beattie, 2013). Taken together, these
22 studies point to the natural or effortful means through which mental toughness may be (at least
23 partly) developed.

1 *Mental Toughness, Cognition, and Emotion*

2 Mental toughness is integral to the manner in which athletes perceive, understand, and regulate
3 emotions (Cowden, 2017a; Crust & Azadi, 2010), though scholarly work on emotion in this area
4 has often been inductive and relied on anecdotal accounts of the emotional experiences and
5 responses expected of mentally tough athletes (e.g., Jones, Hanton, & Connaughton, 2002).
6 When affective states have been measured directly, results have been mixed (e.g., Mahoney,
7 Gucciardi, Ntoumanis, & Mallett, 2014), perhaps owing to the broad measurement approaches
8 that have been used. Relatively little is known about the types of discrete, negative emotions that
9 mentally tougher athletes experience, particularly in regard to setbacks or losses they feel
10 responsible for (e.g., choking). Further research in this area might inform how athletes use,
11 overcome, or avoid negative emotions to maintain or improve performance.

12 Anger is a negatively toned response to adverse internal and external stimuli and events
13 (Maxwell, Visek, & Moores, 2009). Research on self-criticism and negative self-talk in sport,
14 which often trigger anger (Latinjak, Hatzigeorgiadis, & Zourbanos, 2017), point to how mental
15 toughness and anger might relate to one another. Specifically, mentally tough athletes engage in
16 less negative thinking and use self-talk adaptively (Crust & Azadi, 2010), suggesting that these
17 kinds of performers might use psychological skills to avoid or limit the anger they direct towards
18 themselves. Mental toughness is also associated with challenge (rather than threat) appraisal
19 processes in response to adversity, self-perceived control over stressors and outcomes, and
20 viewing adversity as an opportunity to demonstrate competence (Jones, Hanton, & Connaughton,
21 2007; Levy, Nicholls, & Polman, 2012). This might explain why mentally tough athletes are able
22 to employ more adaptive coping strategies and generally cope more effectively with internal and
23 external demands (Cowden, 2016; Nicholls, Polman, Levy, & Backhouse, 2008). Even when

1 self-directed anger is experienced, mentally tough athletes are more likely to use appropriate
2 coping strategies to mitigate maladaptive consequences.

3 *Hypothesis 1:* Mental toughness will be negatively associated with anger.

4 Whether in reference to the self (e.g., goals) or others (e.g., rankings), competitive sport
5 contains an inevitable evaluative component. Self-evaluations of underperformances,
6 disappointments, and defeats are often accompanied by shame (Sagar & Stoeber, 2009), an
7 egocentric affective experience characterized by negative self-evaluation (e.g., self-perceived
8 inadequacy) in response to unsuccessfully meeting performance expectations (Elison &
9 Partridge, 2009; Tangney, Stuewig, & Mashek, 2007). Competitive performances tend to be
10 debilitated by athletes' mid-performance concerns over experiencing shame (Sagar, Lavalley, &
11 Spray, 2009), although less is known about athletes' actual post-performance shame experiences.
12 Gucciardi, Jackson, Hanton, and Reid (2015) found fear of failure negatively predicted mental
13 toughness. The fear of failure often stems from concerns about engaging in activities that may
14 lead to shame. Therefore, mentally tougher athletes' ability to accept and deal with failures, 'let
15 go', or 'move on' from their emotion-inducing experiences and approach their disappointments
16 as avenues through which to grow (Jones et al., 2007) might enable them to limit or mitigate
17 their shame experiences.

18 *Hypothesis 2:* Mental toughness will be negatively associated with shame.

19 In sport, maladaptive thoughts are of special relevance given the role they play in
20 generating and perpetuating negatively valenced emotions (including shame and anger) and
21 undermining sport performance (McCarthy, 2011). One such pattern of thinking is self-criticism,
22 described as degrading self-evaluative thought processes that result from substandard
23 performance (Blatt, 2004). Generally, people who evaluate life events and appraise their

1 capabilities more positively, as well those who respond to setbacks with positive self-talk, are
2 less likely to be critical of themselves (Brinthaupt, Hein, & Kramer, 2009). Because high
3 dispositional optimism (and less pessimism) and using self-talk propitiously have been key
4 features of mentally tougher athletes (Crust & Azadi, 2010), we predicted mental toughness
5 would associate negatively with self-critical thought processes.

6 *Hypothesis 3: Mental toughness will be negatively associated with self-criticism.*

7 ***Mental Toughness and Self-Forgiveness***

8 Reduced feelings of anger, shame, and self-condemnation are fundamental to self-forgiveness
9 (Gilbert & Woodyatt, 2017). Conceptualized and applied primarily outside of sport, we
10 conceptualize *self-forgiveness* as a process in which a person (a) responds to perceived
11 shortcomings by reorienting toward positive values (e.g., accepting personal responsibility) and
12 (b) restores self-esteem by replacing self-resentment and self-punitive responses with kindness,
13 acceptance, and love (Griffin, Worthington, Davis, Hook, & Maguen, 2018). Engaging in the
14 first without the second yields self-punishment. Engaging in the second without the first yields
15 self-exoneration. Genuine self-forgiveness entails both¹ (Griffin et al., 2015). Self-forgiveness is
16 engendered most commonly following interpersonal wrongdoing and intrapersonal perceived
17 inadequacies or failures. There are also distinctions between trait (i.e., the tendency to forgive
18 oneself across situations and over time) and state (i.e., a situationally-specific self-forgiving
19 response) conceptualizations of self-forgiveness (see Worthington, Witvliet, Pietrini, & Miller,

¹Positive value reorientation is the principal distinction between self-forgiveness and related constructs (e.g., self-compassion) that emphasize restoration of esteem (e.g., accepting oneself, responding to the self with kindness) without necessarily requiring a person to engage in positive value reorientation (Griffin et al., 2015, 2018).

1 2007). In this study, we focus explicitly on dispositional self-forgiveness to ascertain athletes'
2 general response tendencies to performance shortcomings within competitive sport.

3 Few direct links have been drawn between forgiveness (self and other) and mental
4 toughness in the general and sport-specific psychology literature, though both have been
5 theorized as adaptive coping processes (Griffin et al., 2015), promoters of psychological well-
6 being (Davis et al., 2015; Jin & Wang, 2018), and inhibitors of depressive, stress, and anxiety
7 symptoms (Gerber et al., 2013; Riek & Mania, 2012). In support of this view, Cowden, Clough,
8 and Oppong Asante (2017) found mental toughness associated positively with interpersonal
9 forgivingness among a sample of college students, which the authors acknowledge is limited by
10 the omission of factors (e.g., coping) that could potentially inform how the constructs relate to
11 one another and to key outcome variables (e.g., performance). Although Cowden et al.'s results
12 pertained to the forgiveness of others, we predicted that a positive relationship between self-
13 forgiveness and mental toughness would be found.

14 *Hypothesis 4:* Mental toughness will be positively associated with self-forgiveness.

15 ***Explaining Outcomes: The Mediating Role of Self-Forgiveness***

16 A key issue in the current mental toughness literature is whether the plethora of outcomes
17 associated with mental toughness are attributable to the construct itself or are best accounted for
18 by other psychological mechanisms. Progressive steps towards clarification have recently been
19 made, with a number of studies that have employed statistical mediation modeling reporting
20 significant indirect effects of mental toughness in relation to life satisfaction in university
21 students, dimensions of flow in adult athletes, and coping effectiveness among adolescent
22 sportsmen (Cowden, 2016; Jackman, Crust, & Swann, 2017; Jin & Wang, 2018). These findings
23 underscore the explanatory role of mental toughness in the attainment of positive psychological

1 outcomes. However, research has found that the expository power of mental toughness changes
2 when outcomes are negative. In Mutz, Clough, & Papageorgiou's (2017) study, the negative
3 association between mental toughness and depression was mediated by habitual use of
4 expressive suppression as an emotion regulation strategy. In another study involving cyclists,
5 Jones and Parker (2017) reported mindfulness as a partial mediator of the relationship between
6 mental toughness and catastrophizing about pain. These studies are especially noteworthy, given
7 the manner in which mentally tough persons are thought to approach and respond to difficulties,
8 adversity, and failures (Gucciardi, Hanton, et al., 2015).

9 Another factor that might explain the mechanisms through which mental toughness
10 mitigates unfavorable responses is self-forgiveness. Self-forgiveness has consistently been linked
11 to lowering a range of negative (e.g., anger) emotions (Davis et al., 2015). Mental toughness is
12 often characterized by the ability to maintain control and exhibit consistency, which embody the
13 absence of changes in an unflappable emotionless response to events (Jackman et al., 2017).
14 Self-forgiveness, however, presumes that a person has become emotionally self-condemning—at
15 least for a brief period—and then mitigates any unforgiveness towards the self (Hall & Fincham,
16 2005). These mechanisms are not entirely opposed to each other. If an athlete is mentally tough,
17 it might not be that they do not experience self-condemnation but that they deal with it quickly
18 and decisively by rapid forgiveness of the self.

19 Self-forgiveness might also explain why mentally tougher athletes are stronger at
20 rebounding following competitive disappointments and failures they are likely to feel responsible
21 for. It is improbable that mentally tougher athletes are always able to avoid disadvantageous
22 feelings and the thoughts that trigger them. Instead, we suggest that it is more likely that
23 mentally tough athletes are more adept at (a) correcting performance failures that led to the self-

1 condemnation and (b) subduing the negativity of emotion through self-regulatory (e.g.,
2 emotional control) processes (Crust, 2009; Mutz et al., 2017). Thus, mentally tough athletes
3 might be superior at regulating self-destructive thoughts and emotions, a key feature of the self-
4 forgiveness process that has been highly beneficial to the mental well-being of non-athletes
5 (Griffin et al., 2015). It is possible that for athletes, parallel outcomes to those seen among non-
6 athletes are manifested in the stability or enhancement of their performances, which is often a
7 hallmark of mental toughness (Cowden, 2017b). Therefore, if mentally tougher athletes are less
8 likely to experience inimical emotions and cognitions, self-forgiveness is proposed as the
9 facilitator of this process. We tested this using the following hypothesis:

10 *Hypothesis 5:* The relationships between mental toughness and emotions such as anger,
11 shame, and self-criticism will be mediated by self-forgiveness.

12 **Method**

13 *Participants*

14 Participants included 343 tennis players (male = 236, female = 107) ranging from 15 to
15 25 years of age ($M_{\text{age}} = 17.56$, $SD = 2.37$). Athletes were competing in one of three age
16 categories at the time of their participation in the study: Under 16 ($n = 130$), Under 18 ($n = 103$),
17 or Open (i.e., > 18 years of age; $n = 110$). Participants represented the primary racial groups in
18 South Africa, including those who self-identified as Asian ($n = 2$), Black ($n = 65$), Indian ($n =$
19 112), and White ($n = 164$). Based on research that has found similarities in the collectivist,
20 interdependent worldviews that tend to characterize non-white South Africans (e.g., Norris et al.,
21 2008), participants in the Asian, Black, and Indian race groups were combined into a non-white
22 group. Most of the participants reported winning ($n = 270$) the singles match they competed in
23 prior to participating in the study.

1 **Materials**

2 **Anger**

3 Six items from the Competitive Aggressiveness and Anger Scale (CAAS; Maxwell & Moores,
4 2007) were adapted to measure participants' self-anger proneness following competitive tennis
5 losses (e.g., "I get mad when I lose tennis matches"). Participants rated the items using a five-
6 point Likert response format from 1 (*Almost never*) to 5 (*Almost always*), which were aggregated
7 for a total anger score. Selected items that referenced irritations towards third parties (e.g.,
8 opponents) were adjusted so that each item was directed toward the self. Maxwell and Moores'
9 (2007) original validation study found a reasonable level of fit between the two-factor model and
10 the data. The anger subscale has converged with other measures of anger, trait anger, and anger
11 rumination (Maxwell & Moores, 2007; Sofia & Cruz, 2017). Sport type differences in anger
12 support the discriminative power of the anger scale (Maxwell et al., 2009; Sofia & Cruz, 2017).
13 Cronbach's α s between .72 to .81 have been reported for the anger subscale, and one-month
14 temporal stability has been high ($r = .86$; Maxwell & Moores, 2007; Maxwell et al., 2009; Sofia
15 & Cruz, 2017). In this study, internal consistency reliability was $\omega = .85$.

16 **Shame**

17 We used a modified version of The Fear of Experiencing Shame and Embarrassment subscale
18 from Conroy, Willow, and Metzler's (2002) revised Performance Failure Appraisal Inventory
19 (PFAI-R). The scale contains seven items each measured using a five-point response format
20 anchored at -2 (*Do not believe at all*) and +2 (*Believe 100% of the time*). Items were modified to
21 measure participants' tendency to experience shame about underperforming or competing
22 unsuccessfully in tennis (e.g., "When I am not successful in tennis matches, I am less valuable
23 than when I succeed") and summed for a total score. Evidence of the PFAI-R's content validity

1 has been found in several studies (see Conroy, 2001; Conroy et al., 2002). Positive associations
2 between the subscale, anxiety, self-blame, introjected motivation, and avoidance achievement
3 goals, support the convergent construct validity of the scale scores (Conroy, 2001; Conroy et al.,
4 2002). The scale has also been found to discriminate between self-ratings of overachievement
5 and underachievement (Conroy, 2001). Cronbach's alphas ranging from .80 to .90 have been
6 reported for the subscale in several studies and across diverse sample types (Conroy, 2001;
7 Conroy & Elliot, 2004; Conroy, Metzler, & Hofer, 2003; Conroy et al., 2002), and three-week
8 temporal stability values of $r = .76$ to $.89$ have been reported (Conroy et al., 2003). Omega was
9 estimated at $.82$ in the current sample.

10 *Self-criticism*

11 Three items from the self-criticism subscale on the Attitude Towards Self Scale (ATS; Carver,
12 1998) and five self-criticism items from the Depressive Experiences Questionnaire (DEQ; Blatt,
13 D'Affliti, & Quinlan, 1976) were modified for use as an index of self-criticism in tennis. The
14 eight items (e.g., "When I don't do as well as I hoped to in tennis matches, I often get upset with
15 myself") were added for a self-criticism scale score, each of which were rated on a seven-point
16 response format from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Blatt et al. (1976) reported
17 content validity support for the instrument through factor analyses, which has also been
18 demonstrated among adolescents (Blatt, Schaffer, Bers, & Quinlan, 1992). Positive associations
19 with concerns over mistakes (Dunkley, Zuroff, & Blankstein, 2006) and negative associations
20 with self-efficacy (Iancu, Bodner, & Ben-Zion, 2015) provide evidence of the construct validity
21 of the self-criticism subscale. Cronbach's alpha point estimates have been between $.72$ and $.94$ in
22 a number of studies (Iancu et al., 2015; Kopala-Sibley, Zuroff, Hankin, & Abela, 2015). In this
23 study, the omega point estimate for the self-criticism scale was $.87$.

1 *Self-forgiveness*

2 Six modified items from the Heartland Forgiveness Scale (HFS; Thompson et al., 2005)
3 provided an index of participants' tendency to forgive themselves for performance errors and
4 undesirable thoughts and actions when partaking in tennis competition (e.g., "I hold grudges
5 against myself for mistakes I've made during tennis matches"). Participants respond to each item
6 using a seven-point response scale from 1 (*Almost always false of me*) to 7 (*Almost always true*
7 *of me*). Scale scores are created by summing the six items, three of which are reverse scored.
8 Thompson et al.'s (2005) series of factor analyses provided evidence in support of the content
9 validity of the HFS. The self-forgiveness subscale has correlated positively with satisfaction with
10 life, cognitive flexibility, hope, life satisfaction, and positive affect, and negatively with
11 rumination and negative affect (Bugay, Demir, & Delevi, 2012; Thompson et al., 2005). Several
12 studies have supported the temporal stability and internal consistency of the scale scores (Bugay
13 et al., 2012; Thompson et al., 2005). Internal consistency reliability for the subscale scores in this
14 study was $\omega = .83$.

15 *Mental toughness*

16 Gucciardi, Hanton, et al.'s (2015) eight-item Mental Toughness Index was used to obtain a
17 unidimensional measure of participants' mental toughness. The items were contextualized
18 specifically to competitive tennis (e.g., "I strive for continued success in tennis") and rated using
19 a seven-point response scale from 1 (*False, 100% of the time*) to 7 (*True, 100% of the time*). An
20 index of mental toughness is created by adding the eight items. In validating the instrument,
21 Gucciardi, Hanton et al. (2015) reported superior fit for the model over other unidimensional
22 (e.g., 21 items) and multidimensional (e.g., seven factors) models in athletes and non-athletes
23 (e.g., working professionals). Several studies (e.g., Gucciardi, Hanton, et al., 2015; Hannan,

1 Moffitt, Neumann, & Thomas, 2015) have found support for the construct validity of the
2 inventory based on the direction of relationships with stress, burnout (negative), behavioral
3 intentions, and performance (positive). Estimates of internal consistency (e.g., alpha, omega)
4 have been above .80 in several studies and sample types (Gucciardi, Hanton, et al., 2015; Hannan
5 et al., 2015). The omega point estimate for the MTI in this study was .90.

6 *Procedure*

7 The Humanities and Social Sciences Research Ethics Committee at the University of
8 [INSTITUTION NAME OMITTED FOR MASKED REVIEW] granted ethical approval to
9 conduct the study. To increase the opportunity to access competitive tennis players, the directors
10 of three national tournaments that were projected to have the largest player turnouts were
11 contacted in order to obtain permission to attend and approach prospective participants. Athletes
12 was approached shortly after the completion of their most recent singles match to determine
13 whether they would be willing to partake in the study prior to competing in any follow-up
14 matches. For legal minors (i.e., < 18 years of age) that initially agreed, parental consent was first
15 obtained and followed-up with the attainment of each child's assent. All adult participants also
16 provided informed consent prior to their participation. A team of experienced research assistants
17 administered the questionnaire items in a standardized format to each participant. At each site,
18 the administration of the surveys occurred in the same locations, which were private, quiet, and
19 comfortable. On average, survey administration lasted approximately 45 minutes.

20 *Data Analyses*

21 Statistical computations were performed using selected packages in R (R Core Team, 2017). The
22 data were first screened for missing values and imputed using an iterative random forest
23 approach (10,000 trees), which has been found to successfully handle mixed data types and

1 makes liberal assumptions about data distributions (Stekhoven & Bühlmann, 2012). The dataset
2 contained 39 (.28%) missing values, which were subsequently replaced (normalized root mean
3 squared error = .64, proportion of falsely classified = .26). An evaluation of the standardized
4 scores for each variable did not reveal any univariate outliers ($z < |3.29|$, $p < .001$), although
5 Mahalanobis distance, $\chi^2(5) = 20.52$, $p < .001$, detected 10 multivariate outliers that were
6 removed before proceeding with further analyses (Tabachnick & Fidell, 2013). Internal
7 consistency was estimated using omega, which makes fewer measurement assumptions and tends
8 to produce unbiased point estimates compared to other techniques such as alpha (Dunn, Baguley,
9 & Brunsdon, 2014). Pearson correlations (along with 95% confidence intervals) were used to
10 explore associations among the study variables. Effect sizes were classified using Cohen's
11 (1992) effect size benchmarks for Pearson's correlation (r).

12 Mediation analysis was conducted through multivariate path model specification using a
13 robust maximum likelihood estimator (MLR). For the mediation path analysis model (hereafter
14 referred to as the specified model), mental toughness was entered as the predictor and self-
15 forgiveness as the mediator. Considering anger, shame, and self-criticism are common
16 concurrent experiences (Gilbert & Proctor, 2006; Kramer & Pascual-Leone, 2016; Wright,
17 Gudjonsson, & Young, 2008), all three variables were simultaneously included as endogenous
18 variables. Participants had completed the survey items after their most recent singles match,
19 which prompted the inclusion of prior match outcome (lost = 0, won = 1) as a covariate in the
20 specified model. As the specified model was initially fully saturated, we restricted mental
21 toughness from covarying with prior match outcome to reduce the number of free parameters by

1 one and allow for model fit index estimation² (Hoyle, 2012). The model fit indices used to
2 determine model fit included the Chi-square model test statistic, root mean square error of
3 approximation (RMSEA), comparative fit index (CFI), and standardized root mean square
4 residual (SRMR). Criteria of $\geq .90$ for CFI and $\leq .10$ for SRMR and RMSEA (Hopwood &
5 Donnellan, 2010; Weston & Gore, 2006) were used to evaluate the adequacy of model fit.

6 Previous research has reported demographic differences in mental toughness (e.g.,
7 Cowden & Meyer-Weitz, 2016; Nicholls, Polman, Levy, & Backhouse, 2009). There is also
8 evidence indicating associations between mental toughness and related variables (e.g.,
9 performance) may be moderated by demographic characteristics (e.g., Newland, Newton, Finch,
10 Harbke, & Podlog, 2013). Thus, it was considered important to preliminarily screen for
11 moderating effects of demographic variables in this study; the specified model was preliminarily
12 tested for relational invariance³. In separate analyses for participation age group (i.e., Under 16,
13 Under 18, and Open), sex (i.e., male and female), and race (i.e., white and non-white), we
14 constrained the path coefficients to be equal to examine whether the associations between the

²An independent samples *t*-test was run before restricting the covariance between mental toughness and prior match outcome. The result did not reveal a difference in mental toughness based on whether athletes had won or lost their previous singles match, $t(331) = .15, p = .877, d = .02$.

³A series of preliminary bivariate analyses were also performed to explore differences in the study variables based on age group, sex, and race. There were no differences found between the Under 16, Under 18, and Open age groups with regards to anger, $F(2, 330) = .27, p = .766, \eta^2 = .00$, shame, $F(2, 330) = .87, p = .418, \eta^2 = .01$, self-criticism, $F(2, 330) = .97, p = .379, \eta^2 = .01$, self-forgiveness, $F(2, 330) = .41, p = .667, \eta^2 = .00$, or mental toughness, $F(2, 330) = .39, p = .677, \eta^2 = .00$. Males and females reported similar levels of anger, $t(331) = 1.61, p = .108, d = .19$, shame, $t(331) = -.77, p = .443, d = -.09$, self-criticism, $t(331) = .12, p = .908, d = .01$, self-forgiveness, $t(331) = -1.16, p = .247, d = -.14$, and mental toughness, $t(331) = -1.11, p = .266, d = -.13$. Comparisons based on white and non-white race groupings did not reveal any differences in anger, $t(331) = .01, p = .993, d = .00$, shame, $t(331) = .01, p = .996, d = .00$, self-criticism, $t(331) = .23, p = .818, d = .03$, self-forgiveness, $t(331) = -.45, p = .656, d = -.05$, or mental toughness, $t(331) = .05, p = .963, d = .01$.

1 variables in the specified model are similar across the groups under comparison (Guenole, &
2 Brown, 2014). For each grouping, the specified model was compared to the constrained model
3 using the scaled Chi-square difference test (Bryant & Satorra, 2012). Each of the scaled Chi-
4 square difference test results supported the relational invariance of the specified model based on
5 age group, sex, and race⁴. Thus, we proceeded with evaluating the specified model by combining
6 the participants into a single sample.

7 Standardized and unstandardized path coefficients, total effects, and indirect effects were
8 obtained using the observed data. The 95% confidence intervals for the standardized and
9 unstandardized indirect effects were estimated using bias-corrected (BC) bootstrapping (10,000
10 replications). The statistical significance of the indirect effects was determined based on the 95%
11 bootstrap confidence intervals for the unstandardized estimates (Preacher, Rucker, & Hayes,
12 2007). We used Zhao, Lynch, and Chen's (2010) guidelines to determine and classify mediation
13 effects. All inferential statistical analyses were performed using a Type I error rate of .05.

14 **Results**

15 Descriptive statistics, omega point estimates, and Pearson correlations are reported in Table 1.
16 Mental toughness and self-forgiveness were negatively associated with anger, shame, and self-

⁴The scaled Chi-square difference test, $\Delta\chi^2(22) = 29.18, p = .140$, indicated that the estimated model [$\chi^2(3) = 7.66, p = .054, CFI = .988, RMSEA = .118, p = .126$ [90% $CI = .000, .240$], $SRMR = .030$] did not differ significantly from the constrained model [$\chi^2(25) = 35.84, p = .074, CFI = .971, RMSEA = .063, p = .299$ [90% $CI = .000, .104$], $SRMR = .072$] for age group. The scaled Chi-square difference test, $\Delta\chi^2(11) = 5.60, p = .898$, indicated that the estimated model [$\chi^2(2) = 1.06, p = .589, CFI = 1.000, RMSEA = .000, p = .671$ [90% $CI = .000, .137$], $SRMR = .012$] did not differ significantly from the constrained model [$\chi^2(13) = 6.65, p = .919, CFI = 1.000, RMSEA = .000, p = .990$ [90% $CI = .000, .018$], $SRMR = .048$] for sex. The scaled Chi-square difference test, $\Delta\chi^2(11) = 11.68, p = .388$, indicated that the estimated model [$\chi^2(2) = 2.46, p = .293, CFI = .999, RMSEA = .037, p = .418$ [90% $CI = .000, .172$], $SRMR = .019$] did not differ significantly from the constrained model [$\chi^2(13) = 14.07, p = .369, CFI = .997, RMSEA = .022, p = .729$ [90% $CI = .000, .079$], $SRMR = .062$] for race.

1 criticism, with the effect sizes generally larger for self-forgiveness ($r = -.31$ to $-.47$) than for
2 mental toughness ($r = -.19$ to $-.35$). The relationship between mental toughness and self-
3 forgiveness was positive and large in effect size ($r = .51$). Anger, shame, and self-criticism were
4 positively associated with one another, the effect sizes of which were medium or large ($r = .45$ to
5 $.50$).

6 [Table 1 near here]

7 The specified path model yielded an acceptable level of fit, $\chi^2(1) = .03, p = .867$,
8 RMSEA = $.000, p = .884, 90\% CI [.000, .000]$, CFI = 1.000 , SRMR = $.002$. The unstandardized
9 path coefficients, direct effects, indirect effects are reported in Table 2. Mental toughness was
10 not a significant predictor of anger ($\beta = .01, 95\% CI [-.12, .13]$) or shame ($\beta = -.04, 95\% CI [-$
11 $.19, .11]$). Conversely, self-forgiveness significantly predicted both anger ($\beta = -.48, 95\% CI [-$
12 $.60, -.36]$) and shame ($\beta = -.29, 95\% CI [-.42, -.17]$). Self-forgiveness ($\beta = -.29, 95\% CI [-.42, -$
13 $.17]$) and mental toughness ($\beta = -.21, 95\% CI [-.34, -.07]$) were each significant predictors of
14 self-criticism. The total and indirect effects were both in the same (negative) direction, favoring a
15 mediation effect over a suppression effect (Rucker, Preacher, Tormala, & Petty, 2011). The 95%
16 BC bootstrap confidence intervals for the unstandardized indirect effects linking mental
17 toughness with anger, shame, and self-criticism via self-forgiveness did not contain zero,
18 supporting the mediating effect of self-forgiveness⁵. Comparing the direct and indirect effects of
19 mental toughness, an indirect-only (full) mediation effect was found for anger and shame,
20 whereas complementary (partial) mediation was found for self-criticism (Zhao et al., 2010).

⁵ The standardized indirect effects (and 95% BC bootstrap confidence intervals) linking mental toughness with each of the outcome variables via self-forgiveness were as follows: anger = $-.24, 95\% CI [-.32, -.17]$, shame = $-.15, 95\% CI [-.22, -.08]$, and self-criticism = $-.15, 95\% CI [-.22, -.08]$.

1 [Table 2 near here]

2 **Discussion**

3 In this study, we examined mental toughness in relation to key self-directed, negative responses
4 among competitive tennis players who were mostly adolescents or young adults. We tested
5 whether these associations were mediated by self-forgiveness. The hypotheses that mental
6 toughness would be associated with self-oriented anger, shame, self-criticism (negative), and
7 self-forgiveness (positive) were each supported. There was also support for the mediating effect
8 of self-forgiveness. Mental toughness was fully mediated by self-forgiveness in relation to anger
9 and shame, and was partially mediated by self-forgiveness in relation to self-criticism.

10 The finding that higher levels of mental toughness are associated with less shame and
11 anger provide important details about the discrete emotional responses mentally tough tennis
12 athletes tend to have when they perform unsatisfactorily during competition. Prior studies have
13 varied in the contextual specificity used to explore mental toughness and emotionality, from
14 exclusively during competition (e.g., Cowden, Fuller, & Anshel, 2014) to more generally without
15 reference to sport (e.g., Gucciardi & Jones, 2012). In contrast, we focused on distinct, negative
16 emotions athletes are likely to direct towards themselves in response to competitive losses and
17 sub-par performances. The results in this study support common conceptualizations of mentally
18 tough athletes, including emotional stability and composure (Gucciardi, 2017), although this is
19 the first study that has found evidence of such with regard to negatively toned, performance-
20 related emotions directed towards the self.

21 Because being mentally tough involves the capacity to accept the inevitable, unpleasant
22 features of competition (Jones et al., 2002), acknowledging the prospect of performing poorly
23 might help these athletes to psychologically prepare for mistakes, lapses in performance, and

1 losses. This awareness likely contributes to being able to maintain goal-oriented focus, prevent
2 preoccupation with errors, and avoid ruminating over performance inadequacies. Even when
3 undesirable performances occur, these players are better at focusing on the positives and using
4 their setbacks as motivation to succeed. The benefits of lower levels of self-directed shame and
5 anger notwithstanding, a “darker” side to mental toughness has also been reported. For example,
6 mentally tougher individuals have been found to score higher on narcissism (Onley, Veselka,
7 Schermer, & Vernon, 2013), a trait that has been linked to claiming responsibility for successes,
8 but shifting blame to others for failures (Campbell, Reeder, Sedikides, & Elliot, 2000). Research
9 is necessary to identify whether there are potential drawbacks to experiencing less negative, self-
10 directed emotions, including the types of causal attributions and ascriptions of blame that
11 mentally tough athletes tend to apply.

12 The finding that tennis players high in mental toughness are less prone to feelings of
13 shame is of particular interest. This supports their lack of concern or indifference to how they are
14 perceived by others, and their self-worth is less likely to be contingent on how well they perform.
15 According to Sonstroem, Harlow, and Josephs (1994), global self-esteem is hierarchically
16 affected by multiple self-perception domains (e.g., sport competence), which are influenced by
17 an athlete’s self-efficacy towards each. Mentally tough athletes are thought to possess a range of
18 self-perceived competencies, such as towards athletic success and coping with pressure
19 (Gucciardi, Hanton, et al., 2015; Jones et al., 2002). These combine for a resolute sense of self-
20 worth, ostensibly buffering against the effects of disappointments.

21 Mentally tough tennis players were also found to be less critical of themselves when they
22 performed inadequately. In Meggs, Ditzfeld, and Golby’s (2014) study, athletes high in mental
23 toughness possessed positive-integrative self-concepts and used positive attributes to neutralize

1 negative reactions. When setbacks occur, these athletes' self-esteem remains intact and relatively
2 unaffected by performance outcomes, limiting the degree to which they engage in devaluing
3 thoughts. Mentally tough individuals are also better at purposefully forgetting unimportant
4 information (Dewhurst, Anderson, Cotter, Crust, & Clough, 2012), so it is plausible that athletes
5 of the like are able to repress negative thoughts, limit the extent to which they ruminate over
6 their failures, and rebound quicker from setbacks.

7 Self-forgiveness fully mediated the effect of mental toughness on self-directed shame and
8 anger, showing that lower levels of these self-oriented emotions among mentally tougher tennis
9 players are accounted for by the tendency to forgive themselves. This finding is important
10 because it highlights the role of key psychological mechanisms that haven't traditionally been
11 recognized in fostering mentally tough responses. It also provides an indication of how mentally
12 tough athletes tend to experience less self-directed shame and anger. Specifically, self-directed
13 shame and anger originate from making mistakes, falling short of standards (self and other), and
14 competitive losses. Feelings associated with self-unforgiveness are reduced through forgiving the
15 behavior/s that caused them, and forgiveness can only occur when it is preceded by
16 unforgiveness (Hall & Fincham, 2005). When self-unforgiveness dissipates, there are reductions
17 in a variety of negatively valenced emotions, such as anger and shame (Gilbert & Woodyatt,
18 2017). Accordingly, being mentally tough probably doesn't constitute avoiding resentful or
19 unsavory feelings towards the self, but rather signifies the tendency to be more forgiving of one's
20 shortcomings. As an adaptive form of coping (Griffin et al., 2015), the results in this study
21 suggest self-forgiveness is a process through which mentally tough athletes diminish self-
22 oriented emotions such as shame and anger.

1 Self-forgiveness was a partial mediator of the relationship between mental toughness and
2 self-criticism, which supports the role of both constructs in minimizing self-destructive thought
3 processes. The ability to control thoughts is routinely identified as an attribute of being mentally
4 tough (Crust & Azadi, 2010; Nicholls et al., 2008), and the pattern of the indirect effects in this
5 study point to the difference in how mental toughness relates to negative thoughts in comparison
6 to emotions. That is, mental toughness attributes might be important for limiting self-critical
7 thinking, but once feelings of shame and anger develop, it may be self-forgiveness in particular
8 that enables mentally tough players to reduce negative self-directed emotions. Overall, the
9 mediating effects of self-forgiveness signify that selected outcomes may not be appropriately
10 accounted for by mental toughness. This finding coincides with a number of other studies on
11 mental toughness (Jackman et al., 2017; Jones & Parker, 2017), emphasizing the importance of
12 implementing holistic and multi-dimensional interventions. As scholars continue designing and
13 evaluating programs aimed at developing mental toughness, integrating a self-forgiveness
14 component is likely to promote mentally tough responses and outcomes. Interventions that
15 incorporate self-forgiveness will also contribute to allaying the intolerance of weakness fallacy
16 associated with mental toughness, instead focusing on accepting failure and embracing responses
17 that stimulate growth.

18 ***Strengths and Limitations***

19 This study is the first to explore relationships between mental toughness and negatively toned,
20 self-oriented responses, and examine whether self-forgiveness mediates these effects. The
21 findings offer insight into how mentally tough athletes might respond to and cope with
22 shortcomings and disappointments. However, the results of this study should be interpreted in
23 light of its limitations. The study was cross-sectional, and thus causal conclusions should not be

1 made. Although the data supported our hypothesized model, other theoretical models could fit
2 the data as well. Longitudinal and experimental research is needed to provide further support for
3 the model.

4 Also, each psychological variable was measured from a dispositional perspective
5 according to athletes typical cognitive, emotional, and behavioral tendencies within competitive
6 tennis. Based on evidence that supports intra-individual, situational variability in mental
7 toughness (e.g., Weinberg et al., 2017), whether these findings replicate in specific situations
8 requires further research. Future research is also needed to see whether tennis players tested a
9 priori as high in self-forgiveness (and mental toughness) might perform better and test as more
10 self-forgiving and mentally tough throughout a tournament. Similarly, future research could
11 determine temporal changes in emotions and cognitions following specified outcomes (e.g.,
12 competitive loss), in the process determining the mental recovery patterns of athletes with
13 varying degrees of mental toughness. Another relevant area of inquiry is the extent to which the
14 current findings translate into performance outcomes, especially after an athlete experiences
15 failure.

16 ***Conclusion***

17 Mental toughness was associated with less self-condemnation, devaluation, and resentment, but
18 greater self-forgiveness. Mediation analysis revealed mental toughness may be complemented by
19 self-forgiveness, a process that facilitates lowering or minimizing the negative thoughts and
20 emotions mentally tougher athletes' direct towards themselves. Beyond offering insight into the
21 types of self-oriented responses athletes with varying levels of mental toughness experience in
22 response to underperformances, self-forgiveness may represent an alternative pathway that

- 1 interventions could target to foster mentally tough responses when athletes make specific
- 2 mistakes, generally perform unsatisfactorily, or do not achieve competitive success.

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Table 1

Descriptive statistics, normality estimates, internal consistency estimates and bivariate correlations (n = 333)

Variable	(1)	(2)	(3)	(4)	(5)
(1) Anger	.85				
(2) Shame	.50** [.41, .58]	.82			
(3) Self-criticism	.49** [.40, .57]	.45** [.36, .53]	.87		
(4) Self-forgiveness	-.47** [-.55, -.38]	-.31** [-.40, -.21]	-.40** [-.49, -.31]	.83	
(5) Mental toughness	-.24 ^a ** [-.34, -.14]	-.19 ^a ** [-.29, -.08]	-.35 ^a ** [-.44, -.25]	.51 ^a ** [.43, .59]	.90
<i>M (SD)</i>	16.98 (4.44)	16.14 (3.64)	27.51 (8.23)	26.42 (6.25)	39.35 (8.18)
<i>Skewness</i>	-.30	.03	-.49	.54	.32
<i>Kurtosis</i>	-.11	.36	-.23	.02	-.63

Note. 95% confidence intervals presented in brackets. Diagonal contains omega internal consistency estimates.

^aOne-tailed tests.

* $p < .05$, ** $p < .01$.

Table 2

Unstandardized path coefficients, total effects, and indirect effects estimates for mediation path model (n = 333)

Specific paths	Unstandardized path coefficients		Unstandardized total effects		Unstandardized indirect effects	
	Estimate [95% CI]	SE	Estimate [95% CI]	SE	Estimate [95% CI] ^a	SE
Anger ~						
Mental toughness	.00 [-.07, .07]	.04				
Self-forgiveness	-.34** [-.43, -.25]	.05				
Shame ~						
Mental toughness	-.02 [-.08, .05]	.03	-.08* [-.14, -.03]	.03	-.07 [-.10, -.04] [†]	.02
Self-forgiveness	-.17** [-.25, -.09]	.04				
Self-criticism ~						
Mental toughness	-.21* [-.35, -.07]	.07	-.36** [-.49, -.23]	.07	-.15 [-.22, -.08] [†]	.03
Self-forgiveness	-.39** [-.55, -.22]	.08				
Self-forgiveness ~						
Mental toughness	.39** [.31, .47]	.04				

Note. **p* < .05, ***p* < .01.

^a95% confidence intervals for indirect effects estimated using bias-corrected bootstrapping (10,000 repetitions).

[†]Statistically significant indirect effect.