The Motivational Antecedents of the Development of Mental Toughness: A Self-Determination Theory Perspective

John W. Mahoney[1,2], Nikos Ntoumanis[2], and Clifford J. Mallett[1] and Daniel F. Gucciardi[3]

[1]*School of Human Movement Studies, The University of Queensland*

[2]*School of Sport and Exercise Sciences, Birmingham University*

[3]*School of Physiotherapy and Exercise Science, Curtin University*

Author Note

Correspondence concerning this article should be addressed to John Mahoney, School of Human Movement Studies, The University of Queensland, St Lucia, Brisbane, QLD, Australia 4067. Telephone: +61 7 3365 6240. Fax: +61 7 3365 6877. Email: jwjmahoney@gmail.com

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Abstract

Mental toughness is a topic that has received growing attention in psychological literature over the past decade. Although some researchers have attempted to understand how mental toughness is developed, little effort has been made to integrate an understanding of mental toughness development with established psychological theory and research. The aim of our review is to demonstrate the utility of theory and research on motivation for understanding mental toughness and its development. In particular, we propose that self-determination theory provides a sound basis for understanding the motivational antecedents of mental toughness. To achieve our aim, we consider concepts that bridge mental toughness and self-determination theory literature, namely *striving*, *surviving*, and *thriving*. We conclude our review with suggestions for future lines of empirical enquiry that could be pursued to further test our propositions.

Key Words: Basic Psychological Needs, Psychological Need Thwarting, Autonomy Support, Controlling Coaching, Athlete Development

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In sport, athletes who sustain unprecedented winning streaks, are victorious against all odds, persist in the face of adversities, and, amongst other feats, come from behind to win are often described as possessing some degree of *mental toughness* (MT). However, despite its constant use in sport settings – not to mention more than a decade of research (Gucciardi & Gordon, 2011) – an agreed upon understanding of MT remains elusive. As an example of this ambiguity, Andersen (2011) highlighted that over 70 attributes, characteristics, behaviors, constructs, cognitions, and emotions have been cited in past literature conceptualizing MT (see Figure 1 for a representative list). Despite this conceptual ambiguity, researchers have often defined MT similarly. In light of available empirical (Butt, Weinberg, & Culp, 2010; Jones, Hanton, & Connaughton, 2002; Thelwell, Weston, & Greenlees, 2005) and conceptual literature (Gucciardi, Gordon, & Dimmock, 2009), MT has commonly been defined as a collection of personal characteristics that allow individuals to regularly attain and sustain performances to the upper limits of their abilities. Why then might researchers define MT similarly, yet conceptualize it differently? In answering this question and to foreshadow our discussions, we suggest that MT may be less about *which* personal characteristics individuals have at their disposal and more about *what* the personal characteristics individuals possess allow them to do.

As MT has been associated with the collective processes that allow individuals to pursue goals with effort and persistence, overcome the challenges of their goal pursuits, and experience positive and adaptive experiences throughout their encounters (Bell, Hardy, & Beattie, 2013; Gucciardi, Gordon, & Dimmock, 2009), we propose that MT can be understood by the personal characteristics that facilitate human *striving*, *surviving*, and *thriving* (we define and elaborate on these concepts in the following section). Whereas

researchers have previously tended to focus on these individual difference variables as signature strengths of mentally tough performers, we believe the conceptual evolution of mental toughness can benefit from an understanding of what these attributes mean for human behavior. A synthesis of personal characteristics reported in past conceptualizations of MT into themes of striving, surviving, and thriving is represented in Figure 1. Our synthesis illustrates that the personal characteristics reported in previous conceptualizations of MT often bridge more than one component of our tripartite reconceptualization. Nevertheless, individuals may not need to possess all, but rather a combination of personal characteristics in order to demonstrate behaviors consistent with notions of striving, surviving, and thriving.

Further to the discussions about *what* characterizes MT, is *how* it is developed. Researchers have proposed a number of factors that contribute to the development of MT (e.g., Connaughton, Hanton, & Jones, 2010; Gucciardi, Gordon, Dimmock, & Mallett, 2009; Weinberg, Butt, & Culp, 2011), but little effort has been made to synthesize this evidence in a collective and comprehensive fashion. A synthesis of the antecedents of MT would provide further insight into those personal characteristics that are more common and central to conceptualizing this concept. One possibility is to consider MT development in light of established theory and research from broader areas of psychological enquiry. We propose that self-determination theory (SDT, Deci & Ryan, 1985; Deci & Ryan, 2000) provides a sound basis for understanding the motivational antecedents of MT. We also acknowledge that the antecedents of MT might be understood in light other theories (e.g., the bioecological model of human development, Bronfenbrenner & Morris, 2006), but present arguments for SDT alone due to the notable links with previous MT research, because of the strong applied implications of this theory, and, more broadly, to stimulate debate on the theoretical underpinnings of MT. Further, considering the recent interest in MT in sport, but also in other performance contexts such as surgery (Colbert, Scott, Dale, & Brennan, 2012) where high

performance is valued, we believe an understanding of MT and its development via established theory is timely and will provide a foundation upon which to conduct further research.

Delineating Between Striving, Surviving, and Thriving

For the purposes of this review, and in line with previous theory and research, we define *striving* as efforts individuals expend on achievement tasks (Oettingen & Gollwitzer, 2001), *surviving* as effectively overcoming both major adversities as well as minor stressors in the ongoing pursuit of goals (Luthar & Cicchetti, 2000), and *thriving* as growth through daily lived experiences (Benson & Scakesm, 2009; Porath, Spreitzer, Gibson, & Garnett, 2012). We believe the concepts of striving, surviving, and thriving, whilst sharing some conceptual space, are largely distinguishable from each other. For example, a golfer who sets a short-term goal to chip three consecutive balls onto the practice green and succeeds at the first attempt could be said to be striving without needing to survive hardships. A tennis player might be effortful in her pursuits to master a challenging repertoire of strokes, but might not necessarily feel energized during her performance or believe she has learned anything new if she believes she's simply following instructions. Athletes on a rugby team who are winning by a substantial margin might not be striving to score more points in the final stages of the match, but might still be energized and/or successfully implementing a new team tactic (i.e., thriving). A soccer player might feel energized and alive (i.e., thriving) when participating in his sport or learning new skills, but encounter only negligible challenges and, therefore, not need to survive any particular hardships. An archer who missed the opportunity to compete at a major event due to a poor performance during qualification might not be striving for achievement goals immediately following his setback, but might still be surviving the disappointment of his failure. Finally, an athlete who incurs an injury, overcomes the associated emotional anguish, and returns to pre-injury levels of functioning personifies

surviving, but at the same time she might not feel energized towards her sport or sense she has learned anything new (i.e., thriving).

We also argue that MT is characterized by the presence of all three concepts – striving, surviving, and thriving – together. Previously, researchers (e.g., Clough, Earle, & Sewell, 2002; Gucciardi, Gordon, & Dimmock, 2008; Jones et al., 2002) have been reluctant to make such a claim. As such, we present conceptual arguments to support our contention and align our points of view closely with our aforementioned definition of MT. Athletes who are not striving for goal achievement, but still survive and thrive throughout their lived experiences do not reflect MT because they are unlikely to attain performance standards indicative of the upper limit of their abilities. Instead they might simply choose to engage in what is of interest to them, but not necessarily of importance to achieving regular performance standards. Similarly, athletes who strive for goal achievements and thrive throughout their experiences, but are not able to survive hardships, do not reflect MT because they too are unlikely to attain performance standards to the upper limit of their abilities. Instead such individuals are restricted in their goal progressions because the fulfillment of performance standards is intuitively linked with, at some stage, overcoming obstacles. Finally, athletes who strive for goal achievements and survive hardships, but do not thrive throughout their experiences, are not reflective of MT because they are unlikely to be able to sustain their performance standards. Constant, intense effort with the added need to survive hardships, coupled with perceptions of stagnation (i.e., not thriving), is likely to lead to exhaustion and the resignation of goal pursuits. Notions of striving, surviving, and thriving alone are important in their own right but are not sufficient to define MT, yet together they provide an integrative framework for understanding the processes that allow individuals to attain and sustain regular high performances despite circumstances faced.

Researchers have demonstrated links between notions of striving, surviving, and thriving. For example, surviving hardships often result in enhanced perceptions of competence, which promotes more effortful goal striving (Smith, Ntoumanis, Duda, & Vansteenkiste, 2011). Similarly, feelings of vitality and the perception that one is learning (i.e., thriving), compared to feelings of stagnation and boredom, often promote striving because of the lack of barriers to and during goal pursuits (Spreitzer & Sutcliffe, 2007). This interaction is reciprocal. That is, because of the personal meaning goal pursuits can bring to individuals' lives, individuals who are striving often report higher levels of thriving (Sheldon & Elliot, 1999; Smith, Ntoumanis, & Duda, 2007).

A Brief Overview of SDT

Self-determination theory (Deci & Ryan, 1985, 2000) is a meta-theory of human motivation that considers the degree to which individuals' actions are freely chosen and enacted (i.e., self-determined) versus controlled. SDT comprises five mini-theories, one of which is particularly applicable to our reconceptualization of MT, namely basic psychological needs theory (Ryan, Sheldon, Kasser, & Deci, 1996). Within this mini-theory the degree to which three psychological needs – autonomy, competence, and relatedness – are satisfied is purported to influence the extent to which individuals will undergo positive psychological growth and development. Autonomy refers to the perception that one's actions are volitional; competence is the belief that one is effective in a particular task endorsed by the person; and relatedness refers to the perception that one is connected with wider social structures.

A central tenet of SDT is that the satisfaction or thwarting of psychological needs is contingent on the social contextual factors that surround them. Environments that nurture individuals' needs for autonomy, competence, and relatedness are likely to enhance perceptions of these fundamental psychological needs and, consequently, promote growth

and development. Although supportive of all three needs, researchers have typically referred to such environments as autonomy-supportive (Deci & Ryan, 2012). According to Mageau and Vallerand (2003), autonomy-supportive environments are characterized by the provision of choice, rationales for task involvement, the acknowledgement of feelings, opportunities for independent learning, and the acknowledgement of negative feelings. Conversely, social contextual factors that undermine psychological needs (controlling environments) are likely to thwart perceptions of autonomy, competence, and relatedness and, consequently, result in stagnation and restrictions of psychological growth and development. Controlling environments are characterized by the manipulation of behaviors through the provision of tangible rewards, the use of contingent feedback, actions and/or locutions that communicate personal control, intimidating behaviors, the promotion of ego-involvement, and the provision of conditional regard (for a review see, Bartholomew, Ntoumanis, & Thogersen-Ntoumani, 2009).

SDT and MT Development

We argue that the theoretical underpinnings of SDT make it an attractive backdrop from which to consider MT development. Some authors have speculated that MT development might be underscored by constructs consistent with SDT (e.g., Gucciardi & Mallett, 2010; Mallett & Coulter, 2011), however, to our knowledge, a detailed integration of literature across these research fields has not yet been undertaken. Further, the factors that researchers have previously identified as contributing to MT development share similarities with SDT principles. For example, Gucciardi, Gordon, Dimmock, and Mallett (2009) reported that coaches can facilitate MT development in their athletes by forming trusting, respectful, and positive relationships (i.e., attending to relatedness), designing challenging and pressure-filled activities (i.e., attending to competence), and involving athletes in their preparation and competition (i.e., attending to autonomy). These researchers also suggested

that being success-oriented, setting unrealistic or unchallenging activities, and ignoring and/or neglecting athletes in their preparation and competition forestalls MT development.

Beyond initial indications that MT and SDT are associated, there are conceptual grounds to support our contentions. Of foremost importance to our review is the conceptual premise that we believe binds MT and self-determination research, namely the notion of self-actualization (i.e., the fulfillment of one's potentials; Maslow, 1943). Mental toughness is arguably a process that underscores self-actualization, where self-actualization concerns the degree to which individuals fulfill their psychological heights and reflects human growth and development (Maslow, 1943). In identifying a connection between MT and self-actualization, we also acknowledge that the latter is bound to other notions such as morality and altruism and so MT is not wholly, but rather partly, indicative of self-actualization. Self-actualization has been theorized and evidenced to be predicated on by the satisfaction of psychological needs (Deci & Ryan, 2000; Ryan, Curren, & Deci, 2013). In light of these conceptual binds, we review evidence that supports our contention that the degree to which psychological needs are satisfied precedes MT development and is indicative of self-actualization. We aim to illustrate how autonomy-supportive environments might contribute to the development of MT through the satisfaction of psychological needs. We also aim to evidence that the undermining of psychological needs, emanating from controlling environments, is likely to inhibit MT development (see Figure 2). As mentioned above, to support our arguments we will focus on notions of striving, surviving, and thriving as representative of MT and detail how components of SDT are foundational to the development of these three concepts.

Striving

Drawing on broader psychological literature, striving refers to the efforts individuals expend on achievement tasks (Oettingen & Gollwitzer, 2001). Both the quality and quantity of effort individuals expend is positively related to goal attainment (Sheldon & Elliot, 1999;

Silvia, McCord, & Gendolla, 2010). Also, central to the notion of striving is the distinction between individuals' intensity and duration of effort. Because of the positive associations between intensity and duration of effort and goal achievement (e.g., Yeo & Neal, 2004), we suggest that mentally tough individuals are those who maintain a high level of intensity over a prolonged duration. Conceptual elements reported in previous MT research appear to resonate with notions of high, sustained effort, including pushing physical boundaries (Bull, Shambrook, James, & Brooks, 2005; Jones et al., 2002; Jones, Hanton, & Connaughton, 2007), working hard (Bull et al., 2005; Butt et al., 2010; Coulter, Mallett, & Gucciardi, 2010; Gucciardi et al., 2008), remaining focused on a task (Jones et al., 2002, 2007; Thelwell et al., 2005), and persisting through obstacles (Coulter et al., 2010; Gucciardi et al., 2008; Jones et al., 2002, 2007; Thelwell et al., 2005). Actions that are initially effortful, but not sustained across repeated occasions are not indicative of MT because they are unlikely to allow individuals to regularly attain and sustain performance standards (Silvia et al., 2010).

Key aspects of SDT pertinent to our reconceptualization of MT have been associated with sustained effort (e.g., Ntoumanis, 2001; Pelletier, Fortier, Vallerand, & Brière, 2001). Findings from this body of research reveal that individuals whose psychological needs are satisfied are more likely to pursue goals with greater sustained efforts than those whose needs are thwarted. Psychological needs satisfaction precedes individuals' sustained efforts (Vallerand, 1997) because of the internalized perceptions of causality, the belief in skills and abilities, and the sense of social connectedness that emanates from such individuals (Deci & Ryan, 2000). As an example, a hurdler is more likely to sustain her efforts if she believes her actions will affect task outcomes, her skills and abilities are efficacious for achieving task goals, and others support and encourage her during her pursuits. In contrast, individuals are likely to commit less effort over time or forfeit their efforts altogether if their psychological needs are undermined (Bartholomew et al., 2009). Explaining this point, individuals whose

psychological needs are thwarted believe their actions are dictated to by external sources (e.g., coach demands), perceive their skills and abilities as being undermined through coercive actions or locutions, and feel bullied or ostracized by others.

In addition to this body of research, Sheldon and Elliot's (1999) self-concordance model of goal pursuits (embedded within SDT) illustrates links that support our contentions. Specifically, Sheldon and Elliot proposed that autonomous (i.e., self-selected) goals are pursued with sustained effort because such goals are likely to be aligned with individuals' developing interests and deep-seated values. Consequently, Sheldon and Elliot showed that sustained effort results in goal attainment. In contrast to autonomous goals, individuals who pursue goals for controlled reasons are more likely to forfeit their efforts and goal achievement, especially when faced with difficulties, because such goals hold little personal meaning and are disconnected from individuals' interests. Smith, Ntoumanis, and Duda (2007) have garnered support for Sheldon and Elliot's (1999) model in two studies with British athletes. In these studies, athletes who reported setting autonomous goals were more likely to sustain their efforts and achieve their goals compared to those who reported controlled motives for goal selection. Importantly, Smith et al. found that athletes were more likely to self-select goals if they also perceived that their coaches provided autonomy-supportive environments, whereas controlled goals resulted from controlling coaching environments. Taken together, the aforementioned findings highlighted that components of SDT have utility for understanding the striving concept that we argue is indicative of MT.

Surviving

Notions of surviving have been evidenced in all previous conceptualizations of MT (e.g., resilience, Gucciardi et al., 2008; handling failure and pressure, Jones et al., 2007; the ability to hang on, Thelwell et al., 2005). Theory and research from diverse fields of psychological enquiry support notions of surviving as central to the attainment and

sustainment of high performance, in particular, theory and research on coping and resilience. Although coping and resilience concern individuals' responses following stressors or adversities, MT is as much about these experiences as it is about how individuals respond to successes, achievements, winning streaks, times of rest, and benign situations. Hence, we argue that coping and resilience explain some, but not the entire concept of MT.

Performers who employ effective coping strategies to overcome situational demands typically outperform those who employ ineffective coping strategies (Levy, Nicholls, & Polman, 2011). Although such findings indicate meaningful links between coping and MT, they also raise questions about what is considered effective coping. Researchers (Folkman & Lazarus, 1985; Lazarus & Folkman, 1984) have proposed that individuals who appraise stressors as *challenging* (i.e., individuals feel energized, ardent, and confident about being able to overcome stressors) are more likely to interpret situations, their personal characteristics, and their options as more controllable. In comparison, those who appraise stressors as *threatening* (i.e., individuals anticipate damage to their physical or psychological selves) or *harmful* (i.e., individuals perceive damage to their physical or psychological selves as having occurred) are more likely to appraise situations, their personal characteristics, and their options as less controllable. Individuals who appraise their experiences as more controllable are likely to employ problem-focused coping strategies (e.g., planning, effortful actions), whereas those who appraise their experiences as less controllable are more likely to employ emotional-focused coping strategies (e.g., distancing, rationalizing). Neither one of these coping strategies is viewed as inherently superior to the other (Lazarus & Folkman, 1984). Instead, the effectiveness of particular coping strategies is dependent on intra- and inter-individual differences.

Evidence from research on MT appears to align with coping literature. Specifically, mentally tougher athletes have been described as those who use both problem-focused coping

(e.g., competitive effort, Coulter et al., 2010; pushing self, Jones et al., 2007) and emotion-focused coping strategies (e.g., emotional intelligence and control, Coulter et al., 2010; accepting anxiety and coping, Jones et al., 2002). Further, mentally tough individuals have been described as those who have a superior knowledge of their performance contexts and their emotional experiences (Gucciardi, Mallett, Hanrahan, & Gordon, 2011). Arguably, it is this knowledge that allows mentally tougher individuals to select the coping strategy (either problem- or emotion-focused) that is most likely to facilitate regular attainment and sustainment of performance standards.

Autonomy-supportive environments are theorized to directly, as well as indirectly predict effective coping via the satisfaction of individuals' psychological needs (Ntoumanis, Edmunds, & Duda, 2009). Such theorizing complements our contention that surviving is fostered through concepts central to SDT. Individuals exposed to autonomy-supportive environments are more likely to appraise stressors as challenging because they are afforded opportunities to freely express their feelings, garner guidance and advice, and meet demands with the support of others, whilst not being exposed to hostility, coercion, and/or judgment (Ntoumanis et al., 2009). For example, a golfer is more likely to view a poor mid-tournament round as an opportunity to grow, learn, and re-apply skills if his coach listens to his worries, offers guidance, and encourages him to meet the demands of the next round. In comparison, individuals exposed to controlling environments are more likely to appraise stressors as threatening and/or harmful because their surrounding social contexts offer little reprieve from the anticipated and feared damages associated with the stressor (Ntoumanis et al., 2009). For example, a golfer who is belittled, made to feel embarrassed, ignored by his coach, and told what to do following a poor mid-tournament round will be more likely to resign his efforts and forfeit his performance goals due to the perceived fear of, or the inability to escape, damage to his self-esteem.

Theory and research on resilience is also pertinent to the concept of surviving – indeed, resilience itself is a personal resource reported in a number of previous MT conceptualizations (e.g., Gucciardi et al., 2008; Jones et al., 2007). Resilience is defined as individuals' abilities to experience positive adaptations or maintain healthy levels of physical and psychological functioning following experiences of adversity (Lepore & Revenson, 2006; Luthar & Cicchetti, 2000). Resilient individuals are often described as those who remain unaffected or return to usual levels of functioning following the experience of adversity (Luthar & Cicchetti, 2000). These views are echoed in research that has conceptualized mentally tough individuals as those able to resist (e.g., dedication and commitment, Bull et al., 2005; focus despite distractions, Jones et al., 2002; ignore distractions, knowing how to persist through obstacles, the ability to hang on, Thelwell et al., 2005) and recover (bounce back from setbacks, regain psychological control, Jones et al., 2002; react positively, Thelwell et al., 2005) following major upheavals and minor challenges. Seemingly, resilience is inherently linked with the ability to maintain performance standards. That is, following adversities, resilient individuals are those who continue to pursue performance standards with little or no interruption. The link between resilience and performance has been reported in empirical research. For example, Seligman, Nolen-Hoeksema, Thornton, and Moe Thornoton (1990) showed that swimmers who were rated as more resilient by their coach performed better following adversities compared to less resilient individuals (also see, Fletcher & Sarkar, 2013).

Literature on resilience can also be used to illustrate how each of the three needs proposed by SDT underscore the development of the surviving component of MT. Specifically, autonomous athletes are more likely to perceive their actions as the catalyst for change (Deci & Ryan, 2000) and, as such, are arguably more likely to engage in behaviors directed towards making performance gains following adversities. For example, a tennis

player who loses her tour privileges because of poor performances is not only more likely to continue to commit to her training and competitions, but also attempt to develop a stronger skill set if she endorses her actions. In comparison, a tennis player who believes sources other than herself determine her behaviors and outcomes is more likely to retire her efforts after losing her tour privileges or commit to training and competition for non-self-determined reasons (e.g., 'shoulds' and 'musts'). In such a case, the athlete's actions limit the likelihood that positive adaptations will occur.

Competent individuals also personify resilience because they perceive their actions as efficacious in overcoming the adversities they encounter (Fletcher & Sarkar, 2013). For example, upon returning from a long-term injury, a baseball player who perceives he is competent is more likely to attempt to advance his skills further by pursuing goals that challenge his current abilities because he feels able to bring about desired outcomes by personal means. In comparison, a baseball player who returns from a long-term injury and perceives himself as incompetent is more likely to engage in easier, less challenging activities and avoid opportunities for growth, meaning he is limiting the likelihood of positive adaptations occurring following the experience of adversity.

Finally, individuals who perceive themselves as connected with their wider social networks are more likely to experience positive adaptations following adversities because they are supported in their attempts to reestablish their levels of performance, functioning, and development (Galli & Vealey, 2008; Hjemdal, 2007). As an example, a boxer who loses the first rounds of a bout is more likely to direct her actions towards improving her performances in subsequent rounds if she perceives strong support and encouragement from her coach and trainers. She is likely to act this way because she knows that she will receive unconditional support from those around her regardless of the outcome of the bout. In comparison, a boxer who views herself as being bullied and ostracized by her coach and

trainers is more likely to engage in low risk behaviors (e.g., avoid delivering potential knock-out punches) following a losing opening round to avoid further social torment from significant others.

To conclude, as with striving, research has shown that the provision of autonomy-supportive environments promotes individuals' perceptions of need satisfaction and, in turn, encourages effective coping and resilience (i.e., surviving). In comparison, controlling environments that thwart individuals' psychological needs are likely to undermine individuals' abilities to survive hardships. As such, components central to SDT are useful for understanding how the surviving concept of MT is developed.

Thriving

Thriving has been described as an everyday experience where individuals not merely survive, but grow through their daily, lived experiences (Benson & Scakesm, 2009; Porath, Spreitzer, Gibson, & Garnett, 2012). Thriving is conceptualized as comprising two dimensions: feelings of vitality (i.e., a sense that one is energized; a zest for the task at hand; Porath et al., 2012) and a sense that learning is occurring (Spreitzer, Sutcliffe, Dutton, Sonenshein, & Grant, 2005). Mental toughness has been conceptualized as thriving on pressure (Jones et al., 2002), thriving on competition (Bull et al., 2005), enjoying pressure, and being in control of one's life (Thelwell et al., 2005). Arguably, these conceptual properties reveal mentally tough individuals as those who do not merely survive hardships, nor make gains through periods of rest alone; these individuals are more often than not experiencing a heightened sense of vitality and feel as though they are mastering new knowledge, skills, and abilities. Further, context intelligence, that is the acquirement and application of knowledge and skills reported in previous MT conceptualizations (e.g., Gucciardi et al., 2011), aligns with the learning dimension of thriving. Illustrating these arguments with an example, a mentally tough weightlifter would be one who is energized and

366 enthusiastic about participating in her sport, whilst also sensing that she is acquiring and
367 applying new skills, abilities, and knowledge about her performances.
368 In further support of the value of thriving for understanding MT, individuals who
369 experience ongoing thriving are likely to attain and sustain regular performance standards
370 (Porath et al., 2012; Spreitzer & Sutcliffe, 2007). Individuals who are thriving have also been
371 suggested to commit to performance tasks, practice initiative taking, and be proactive (Porath
372 et al., 2012; Spreitzer & Sutcliffe, 2007). These findings align with evidence from MT
373 research that has emphasized the role of valuing hard work (Bull et al., 2005; Gucciardi et al.,
374 2008), attending to task-cues and ignoring distractions (see, Gucciardi et al., 2011), taking
375 risks (Bull et al., 2005; Coulter et al., 2010), and making the most of opportunities (Bull et
376 al., 2005). As an example, a triathlete who is thriving works hard towards his goals and
377 attempts to advance his knowledge of his sporting domain by taking calculated risks. A
378 triathlete who is not thriving is less confident and committed to his goals, easily distracted,
379 and cautious in his actions.
380 Researchers (Ryan et al., 2013; Spreitzer & Porath, 2013) have evidenced that
381 thriving is facilitated by mechanisms consistent with SDT (this is particularly true when one
382 considers thriving is often described as reflecting well-being, e.g., Ryan, Bernstein, & Brown,
383 2010). In particular, when individuals' psychological needs are satisfied, they are more likely
384 to undergo psychological growth and development (Deci & Ryan, 2000). This growth and
385 development is representative of a progression toward self-actualization – or reaching one's
386 full psychological potentials. Not surprisingly then, when individuals are progressing towards
387 self-actualization they emanate considerable psychological energy (e.g., enthusiasm,
388 aliveness). It is this energy that is reflective of feelings of vitality (Deci & Ryan, 2000; Ryan
389 et al., 2013; Spreitzer & Porath, 2013). Researchers have also shown that individuals'
390 energies are maintained and enhanced when their psychological needs are satisfied, and

391 depleted when their needs are undermined (Gagné, Ryan, & Bargmann, 2003; Nix, Ryan,
392 Manly, & Deci, 1999; Ryan et al., 2010; Vansteenkiste, Simons, Lens, Sheldon, & Deci,
393 2004).

394 Researchers have also illustrated the role social contextual factors play in facilitating
395 the relationship between psychological needs and vitality. Specifically, autonomy-supportive
396 environments have been found to enhance perceptions of vitality through psychological needs
397 satisfaction, whilst the contrary is true of controlling environments (Gagné et al., 2003; Ryan
398 et al., 2010; Vansteenkiste et al., 2004). Thus, it is reasonable to contest that thriving, as one
399 underlying notion consistent with MT, is fostered through the satisfaction of individuals'
400 psychological needs in autonomy-supportive environments.

401 Although a strong link has been evidenced between SDT and feelings of vitality,
402 support for links between SDT and Spreitzer et al.'s (2005) second facet of thriving, the sense
403 that learning is occurring (Spreitzer & Sutcliffe, 2007), is less discussed in the extant
404 literature. Nevertheless, some researchers have indicated that those individuals whose
405 psychological needs are satisfied are more likely to engage in behaviors that are
406 representative of a sense that learning is occurring. For example, individuals whose
407 psychological needs are satisfied self-guide practice during 'free-choice' periods (i.e., a time
408 when individuals can engage in self-chosen tasks), compared to those whose psychological
409 needs are undermined (Ryan, Koestner, & Deci, 1991; Vansteenkiste et al., 2004). Further,
410 individuals who are exposed to autonomy-supportive social contexts are more likely to
411 evidence deeper levels of processing, whereas those exposed to controlling environments are
412 more likely to report only surface level processing (Vansteenkiste et al., 2004).

413 Taken together, the aforementioned findings illustrate that individuals' perceived
414 satisfaction of psychological needs, enhanced through the provision of autonomy-supportive
415 environments, predicts thriving. Further, thriving is likely to be inhibited when individuals'

psychological needs are thwarted as a result of being exposed to controlling environments. As such, components central to SDT are useful for understanding how the thriving concept consistent with our MT reconceptualization is developed.

Conclusions

Unique to our review is our tripartite MT reconceptualization (i.e., striving, surviving, and thriving). Our reconceptualization represents a theory-based attempt to address disagreements evident in previous research by directing the focus away from the collection of personal characteristics that comprise MT and instead focusing on what the personal characteristics individuals possess allow them to do. In so doing we have argued that MT is indicative of how athletes strive, survive, and thrive in their ongoing pursuits of performance standards. Despite this novel contribution to the literature, there is a need to empirically substantiate our contention that striving, surviving, and thriving serve as a useful unifying reconceptualization for MT. One approach would be to identify if established measures of striving, surviving, and thriving load meaningfully onto a general factor of MT and explore the shared variance between these factors. Beyond factorial analysis of these concepts, researchers could experimentally manipulate variables such as pressure to examine if our tripartite reconceptualization distinguishes those individuals who sustain performance standards across low and high pressure conditions, with individuals who succumb to the pressure manipulation and perform worse.

Also unique to our review is the consideration of the motivational antecedents of MT using a SDT lens. Specifically, we contested that striving, surviving, and thriving – as representative of qualities reported in previous MT research – are predicted by the degree to which individuals' psychological needs are satisfied through the provision of particular social contextual factors. Specifically, we argued that autonomy-supportive environments facilitate MT development through the provision of needs satisfaction and autonomous goal striving,

whereas controlling environments thwart MT development through the undermining of individuals' psychological needs and the promotion of controlled goal striving. It is necessary to acknowledge that SDT is only one lens through which to consider MT development. In the future, the consideration of other theoretical frameworks outside the motivation literature (e.g., the bioecological model of human development, Bronfenbrenner & Morris, 2006) would be fruitful for composing a comprehensive understanding of MT development.

Our contentions also hold practical value for individuals invested in the development of athletes. For example, coaches could attempt to provide autonomy-supportive training environments, whilst avoiding the use of controlling sanctions, to nurture psychological needs and encourage striving, surviving, and thriving in their athletes. We believe that the ideas we have presented offer researchers and individuals such as coaches new insights into MT and its development, as well as promote future research along these lines.

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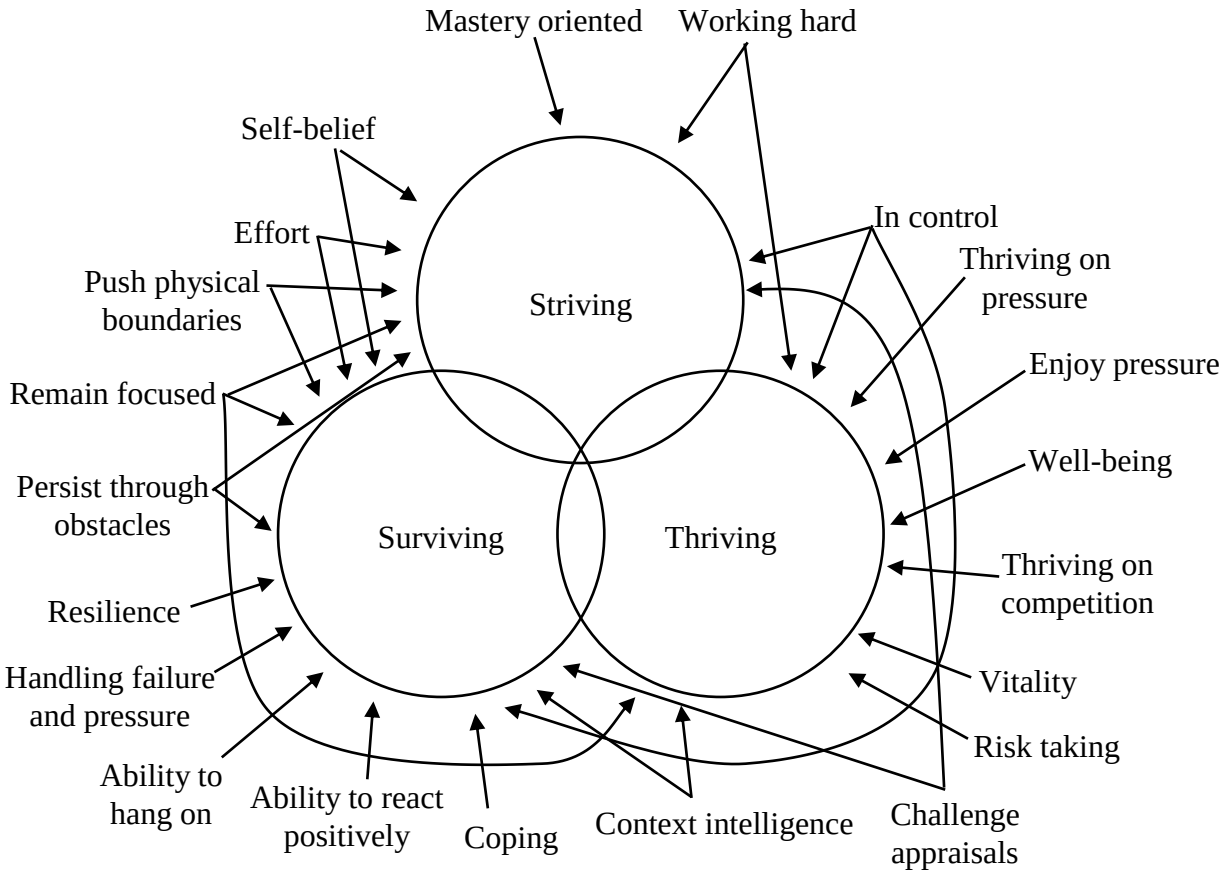

Figure 1. A synthesis of prominent previous conceptualizations of MT (Bull et al., 2005; Butt et al., 2010; Clough, Earle, & Sewell, 2002; Coulter et al., 2010; Gucciardi & Gordon, 2009; Gucciardi et al., 2008; Jones et al., 2002, 2007; Thelwell et al., 2005) into notions of striving, surviving, and thriving

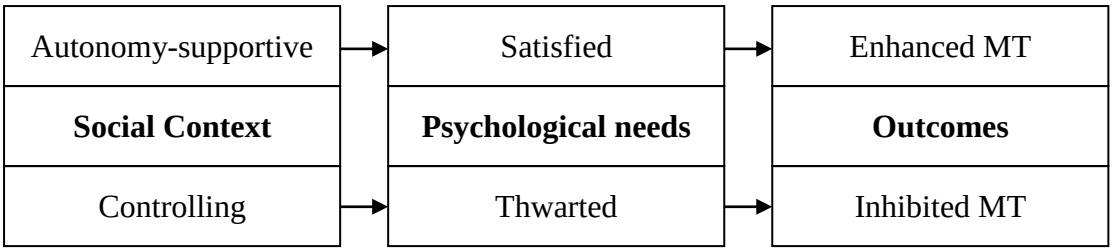

Figure 2. Motivational antecedents of the development of MT: A SDT perspective.