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Chapter 18

c0018 Performing under Pressure: Influence of Personality- Trait-Like Individual Differences

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p0010 Will is an amateur boxer who is fighting in the heavy weight final against an unbeaten opponent whom he has wanted to beat since he started competing. He has suffered defeats from this athlete before but always picks himself back up and is determined he can win this time. He has put in hours of training because he wants to be perfect and uses his high standards as his motivation. The match begins, and he sees this opportunity as a challenge. During the match, he notices that his opponent is tired and reads his emotional language well. He flies in with a right hook and knocks the opponent to the ground and wins the final.

p0015 On the other hand, Sarah is an international junior tennis player about to compete in a qualifier for junior Wimbledon, which means the world to her. She is an outright perfectionist and everything has to be perfect, even dropping a single point just is not good enough. During the match, she loses a set, and this kick-starts her normal reaction to become anxious and very pessimistic about the remaining time in the match. She consciously tries to control her movements to perform to her perfect standards. Her performance unravels, and she loses the match; she slams her racket to the floor in frustration and storms off court.

p0020 Predicting performance under pressure can be a tricky business, with many theories providing different explanations and not one being able to provide a 100% prediction of this. If anything, a 100% prediction of performance is impossible; however, one area of interest within this domain is personality. The interest lies in the belief that, for the most part, the construct is stable, and therefore, an individual's personality is not likely to change, regardless of conditions (Boyle, 2008; Pervin & Cervone, 2010), as a constant personality has been suggested to have an underlying influence over behavior irrespective of situation (Aidman & Schofield, 2004). Therefore, if personality is stable in a range

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of situations (Boyle, 2008; Pervin, 2003) and influences behavior (Aidman & Schofield, 2004), this then advocates personality as a useful predictor of performance in pressurized environments. Specifically, this chapter will shift away from broad measures of personality such as the big five personality dimensions (i.e., Allen, Greenlees, & Jones, 2013; Garbarino, Chiorri, & Magnavita, 2014; Kaiseler, Polman, & Nicholls, 2012) and focus on the many other individual differences located at the trait level that provide support for understanding people’s behavior under pressure. These individual differences were grouped together under the umbrella term of personality trait–like individual differences (PTLID) by Laborde, Breuer-Weissborn, and Dosseville (2013).

p0025 Within the current context, individual differences relate to the different traits that “make up” an individual and how this make-up has the potential to influence behavior within the performance environment. Laborde et al. (2013) defined them as follows:

p0205 *“Reflecting psychological individual differences not belonging to the main conceptualization of personality (i.e. big five), but which are considered as traits linked to personality” (p. 26).*

p0030 A recent review by Laborde et al. (2013) highlighted a range of PTLIDs, the influence they have on sporting performance, and their applications to the sporting environment. The work by Laborde et al. (2013) provides a basis for the current chapter, which has a specific emphasis on performance under pressure.

p0035 PTLIDs have demonstrated their relevance within pressurized environments that involve facing challenges and high levels of stress such as sport (e.g., Laborde, Lautenbach, Herbert, Allen, & Achtzehn, 2014), business (e.g., Luszczynska & Cieslak, 2005), and academia (e.g., Qualter, Gardner, Pope, Hutchinson, & Whiteley, 2012). They have also shown importance in situations that can be a matter of life or death such as fire-fighting (e.g., Maddi, Harvey, Resurreccion, Giatras, & Raganold, 2007), human surgery (e.g., Malhotra, Poolton, Wilson, Ngo, & Masters, 2012), and combat (e.g., Maddi, Matthews, Kelly, Villarreal, & White, 2012). The role of PTLIDs has been highlighted in these situations and has been suggested to potentially influence the stress-coping response (Bolger & Zuckerman, 1995) and moderate the stress process (Aidman & Schofield, 2004), meaning that personality influences facilitative or debilitating behaviors within pressurized situations, which consequently affects performance outcomes.

s0010 **PTLIDs AND THE INFLUENCE ON PERFORMANCE UNDER PRESSURE**

p0040 Within this section, each trait is defined, contextualized, and its influence on performance under pressure is discussed. Figure 1 demonstrates the traits that will be addressed within the chapter. Their size denotes the amount of research present within the criteria of the particular trait and performance pressure. They will be addressed in alphabetical order.



f0010

FIGURE 1 PTLIDs addressed in the following sections (Note: This word reflects the number of studies investigating the respective PTLID together with performance).

s0015 **Competitive Trait Anxiety**

s0020 *Definition and Background*

p0045 Competitive trait anxiety (CTA) is a behavioral predisposition to perceive competitive situations as a threat and then respond with state anxiety levels that are disproportionate to the levels of objective threat (Martens, Vealey, & Burton, 1990). It is important to note that CTA is a form of domain-specific anxiety and was developed to predict how athletes respond in competitive sporting situations (Martens et al., 1990). CTA helps to predict performance as it can affect the subjective competitive situation, which is how the individual views the environment through cognitive appraisal (Martens et al., 1990). For example, if a footballer taking a penalty high in CTA is predisposed to view the situation as threatening, then thoughts would direct to the shot, which could lead to a greater somatic (bodily) response, which could result in impaired performance (Weinberg & Gould, 2011).

s0025 *Influence on Performance under Pressure*

p0050 Within the sporting environment, high levels of CTA are more likely to have a debilitating effect on performance in competitive situations (Smoll & Smith, 1990). For example, in a study of professional ballet dancers, those high in CTA displayed maladaptive coping strategies when facing competition (Barrell & Terry, 2003). Therefore, it is feasible to suggest that lower levels of CTA are beneficial for performance. Weinberg and Genuchi (1980), for example, conducted a field study of golfers in competitions, finding that those with lower levels of CTA had less state anxiety and performed better than those with moderate or high CTA levels. Lower levels of CTA have also been related to higher confidence on competition days (Zeng, Leung, & Wenhao, 2008), positive post competition affective states (Cerin & Barnett, 2011), and lower levels of state anxiety (Murray & Janelle, 2007; Weinberg & Genuchi, 1980). CTA has also been linked with perfectionism, and research has shown that athletes with higher levels of maladaptive perfectionism tend to have higher levels of CTA (Gotwals & Dunn, 2007; Gotwals, Dunn, Causgrove, Dunn, & Gamache, 2010). As lower levels of CTA appear to be desirable for performance, researchers have used psychological skills training to help reduce CTA, which has been found to have a positive effect on CTA levels, for

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example, within national shooting athletes (Ma & Kim, 2011). The theory of CTA has also been applied to other performance settings such as musicians, where over 80% of the musicians reported competitive anxiety symptoms (Miller & Chesky, 2004), suggesting that CTA research should not be confined to sport.

s0030 **Trait Emotional Intelligence**

s0035 *Definition and Background*

p0055 Trait emotional intelligence (EI) is considered a personality trait rather than a cognitive ability and involves self-perceptions, which embrace the subjective nature of emotion (Petrides, Pita, & Kokkinaki, 2007). Although there have been arguments within the literature surrounding the make-up of EI, trait EI has been considered a personality dimension (Petrides et al., 2007) as opposed to knowledge or an ability (Nelis, Quoidbach, Hansenne & Mikolajczak, 2009) and, therefore, will be discussed at the trait level within this chapter. Nelis et al. (2009) have stated that trait EI refers to dispositions that are emotionally related, thus causing tendencies to behave in a predetermined manner in emotional situations. It is suggested that individuals high in trait EI are able to effectively control and modify emotions through implementing strategies, a process known as emotion regulation (Gross & Thompson, 2007). Trait EI positively influences emotion regulation, which promotes beneficial effects including coping under stress (Laborde, Brull, Weber, & Anders, 2011).

s0040 *Influence on Performance under Pressure*

p0060 It has been shown that higher trait EI produces superior performance under pressure in a range of performance settings such as academic exams (Qualter et al., 2012), experimental tasks (learning and decision-making; Laborde, Dosseville, & Scelles, 2010), and sport (Laborde, Raab, & Kinrade, 2014). Trait EI has shown beneficial effects in both long-term performance achievements (e.g., Qualter et al., 2012) and in short-term, pressurized performance (e.g., Laborde et al., 2010). Although long-term performance is important, pressure can often manifest within a particular situation or event such as a presentation. For example, students who had higher trait EI experienced less negative affect during an unfamiliar knowledge recall test (Laborde et al., 2010). Trait EI has also been linked to physiological responses during stressful situations, with individuals higher in trait EI displaying a better physiological resistance to stress (Laborde et al., 2011; Laborde, Lautenbach, & Allen, 2015) and successfully predicted cortisol secretion in pressurized tennis serving (Laborde, Lautenbach, et al., 2014). This demonstrates that higher levels of trait EI have an influence over the physiological stress response, which shows its protective role over the negative effects of stress, which in turn can positively affect performance in pressurized environments (Laborde, Lautenbach, et al., 2014). Furthermore, trait EI has shown predictive abilities over performance in pressure situations such as academic exams (Qualter et al., 2012).

s0045 **Hardiness**

s0050 *Definition and Background*

p0065 Hardiness is a personality style that helps a person cope, withstand (Gentry & Kobasa, 1984; Weinberg & Gould, 2011), and actively engage in transformational coping when faced with stressful events (Quick, Wright, Adkins, Nelson, & Quick, 2013). Transformational coping allows the person to reframe the stressful situation and perceive it as an opportunity rather than a threat (Nelson & Simmons, 2003). The trait is made up of three factors, which include the following: a sense of control over external events, commitment in daily life, and a challenge perspective if unexpected changes occur (Kobasa, 1979). The three counterparts of hardiness amalgamate, which results in the individual working harder to transform potentially stressful situations into opportunities (Maddi, 2004). Therefore, as this trait develops, it forms the pathway for resilience in stressful environments, which ultimately results in performance enhancement through active coping (Maddi, 2006).

s0055 *Influence on Performance under Pressure*

p0070 Individuals high in hardiness have shown better performance under stress in a range of demanding environments and occupations such as the military (e.g., Maddi et al., 2012), academia (Maddi, Harvey, Khoshaba, Fazel, & Resurreccion, 2009), sport (Hanton, Neil, & Evans, 2013), fire-fighting (Maddi et al., 2007), and business (Luszczynska & Cieslak, 2005). For example, Hanton et al. (2013) examined the hardiness levels of 510 collegiate and club athletes who had competed to a county level or higher. They found that the athletes who rated higher in hardiness had lower levels of both cognitive (worry) and somatic (bodily symptoms) anxiety, higher levels of self-confidence, and better coping (Hanton et al., 2013). This suggests that when athletes high in hardiness are put in pressure situations, they respond in a facilitative way to the negative stressors in the environment. Hardiness also predicts better performance longitudinally and helps to buffer stress within a pressurized environment (De La Vega, Ruiz, Gomez, & Rivera, 2013; Maddi et al., 2012; Westman, 1990). This is demonstrated by Maddi et al. (2012) as they assessed hardiness in army cadets who trained within a pressurized environment to prepare them for their occupational duties. They found that hardiness successfully predicted performance in academic and physical tests, which suggests hardiness facilitates performance under pressure through an inclination to transformational learning within stressful environments (Maddi et al., 2012). [AU1]

s0060 **Mental Toughness**

s0065 *Definition and Background*

p0075 Mental toughness can be defined as “a collection of experientially developed and inherent sport-specific and sport-general values, attitudes, emotions, and cognitions that influence the way in which an individual approaches, responds to, and

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appraises both negatively and positively construed pressure, and adversities to consistently achieve his or her goals” (Gucciardi, Gordon, & Dimmock, 2009, p. 67). The conceptualization and belonging of mental toughness has been argued in the domains of personality, “traitness,” state of mind, and psychological characteristics (Crust, 2007; Gucciardi, Hanton, Gordon, Mallett, & Temby, 2014). It could be suggested that the construct lies within the realms of PTLIDs as it has been based within the theoretical dimensions of hardiness (Clough & Earle, 2002). It shares the three C’s of hardiness (control, commitment, and challenge) but has an addition of confidence; this allows the individual to be confident in their ability to overcome negative experiences (Clough & Earle, 2002). A further distinction of mental toughness, away from other concepts such as resilience and hardiness, is that it plays a role in positive challenging situations, for example, winning streaks in football (Gucciardi et al., 2009; Jones, Hanton, & Connaughton, 2007).

s0070 *Influence on Performance under Pressure*

p0080 The majority of research within mental toughness is based around its origin within sport; however, the concept is branching out to other performance domains. Within these domains, it is suggested to facilitate thriving in challenging, adverse, and pressure situations (Bull, Shambrook, James, & Brooks, 2005; Crust, 2007). A recent study by Gucciardi et al. (2014), for example, examined mental toughness in a range of achievement environments including students, athletes, employees, and army candidates. The collective results showed that mental toughness has important effects on performance, goal processes, and the ability to thrive under stress; moreover, it also endures across situations and time (Gucciardi et al., 2014). Similarly, mental toughness was shown to predict how successfully athletes will cope with the stresses of competition (Nicholls, Levy, Polman, & Crust, 2011). Furthermore, enhancement of mental toughness at a younger age appears to be an important factor in development and future performance (Bell, Hardy, & Beattie, 2013; Gucciardi, 2011; Gucciardi & Jones, 2012). For example, Bell et al. (2013) carried out a longitudinal study in which elite cricketers received intervention and education around the area of mental toughness to help them perform in threatening conditions. Post training, the cricketers had increased in the trait and showed significant improvements in performance indicators, such as indoor batting assessments, when compared to the control group (Bell et al., 2013). The evidence suggests that mental toughness provides an individual with resources to not only successfully manage performance under pressurized environments but to also approach these environments in a more facilitative manner (Gucciardi & Jones, 2012).

s0075 **Optimism and Pessimism**

s0080 *Definition and Background*

p0085 Carver and Scheier (2001) define optimists as those who expect good experiences in the future, and pessimists are those who expect bad experiences.

A further distinction between optimists and pessimists is related to the concept of dispositional optimism, which is an individual's generalized expectation of either positive or negative outcomes (Scheier & Carver, 1992). Linked to this, individuals also develop explanatory styles, which are methods of interpreting both positive and negative events (Abramson, Seligman, & Teasdale, 1978; Buchanan & Seligman, 1995). Peterson (2000) suggested when regarded as a stable trait, optimism may assist individuals in regulating their own behavior. For example, in challenging and threatening environments, optimists tend to assert more confidence, goal-directed behavior, and have belief that the adversity can be overcome (Carver & Scheier, 2001). Conversely, the behavior of pessimists in the same environment leads to having doubts, being more hesitant, disengaging effort, and anticipating catastrophe (Carver & Scheier, 2001). Therefore, it is suggested that those higher in dispositional optimism cope better in pressure situations because of greater psychological adjustment (Scheier & Carver, 1985). Similarly, those who have optimistic explanatory styles when facing adversity are more likely to view it as a challenge to be overcome (Peterson, 2000) and develop more confidence for future adversity (Seligman, 1990). Perhaps one negative aspect of optimism is the denial of reality that may suppress the instinctual nature of behavior (Peterson, 2000); although in a variety of demanding settings, optimism is associated with psychological wellbeing (Scheier, Carver, & Bridges, 2000).

s0085 *Influence on Performance under Pressure*

p0090 There are themes that have been highlighted within research that demonstrate the role of optimism in performing under pressure that include coping style, dealing with failure, and superior performance (Laborde et al., 2013). Strutton and Lumpkin (1993) found that professional salespersons' job-related stress was mediated by levels of dispositional optimism due to the use of problem-focused coping; similar findings have been mirrored in athletes (Grove & Heard, 1997). When individuals use problem-focused coping, it encourages goal-directed behavior by changing or removing the source of stress (Folkman & Lazarus, 1985). Concerning coping with failure, Seligman, Nolen-Hoeksema, Thornton, and Thornton (1990) manipulated feedback to a group of elite swimmers, for example, 1.5 s was taken off a 100-m swimming performance. The results showed that after negative events (manipulated feedback), swimmers who possessed an optimistic explanatory style went on to swim the same or better in the second swim, whereas pessimistic swimmers' performance deteriorated (Seligman et al., 1990). This suggests that optimistic swimmers, on average, perform better under pressure and that optimism could be used as a performance predictor, especially when following defeat (Seligman et al., 1990). More recently, this was replicated within football and basketball, and findings are consistent with previous research (Gordon, 2008). Optimism is also linked with successful performance; for example, Chemers, Hu, and Garcia (2001) have found that optimism was strongly related to performance outcomes within

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first-year college students. Similarly, restaurant managers found to have higher levels of dispositional optimism reported lower levels of stress and job burnout, which ultimately led to higher job satisfaction (Hayes & Weathington, 2007). Furthermore, optimism can be developed with attributional style training, to help sustain performance under pressure, and this has been shown within the [AU2] research context (i.e., Parkes & Mallett, 2011).

s0090 **Perfectionism**

s0095 *Definition and Background*

p0095 Perfectionism is a personality characteristic, which is defined as “striving for flawlessness and setting exceedingly high standards for performance, accompanied by tendencies for overly critical evaluations” (Stoeber, 2011, p. 128). When competing at the highest level, where optimal or near perfect performance is required to succeed, it is understandable that the majority of competitive athletes possess this trait (Dunn, Gotwals, & Dunn, 2005; Gould, Dieffenbach, & Moffett, 2002). There have been some arguments over perfectionism being a purely negative trait that promotes self-defeating outcomes and unhealthy behavior patterns (Flett & Hewitt, 2005) that may lead to detrimental performance effects. It has been recently refined by Stoeber (2011) that perfectionism has two main concepts: perfectionistic strivings and perfectionistic concerns. Perfectionistic strivings are associated with aiming to achieve high standards of performance (Stoeber, 2011), positive emotions (Kaye, Conroy, & Fifer, 2008), and motivation that is facilitative for performance (Stoeber & Becker, 2008). Conversely, perfectionistic concerns are associated with the following: evaluation from others, performance fear, meeting personal expectations (Stoeber, 2011), and fear of failure (Sagar & Stoeber, 2009).

s0100 *Influence on Performance under Pressure*

p0100 Both positive and negative effects of perfectionism on performance are present in a range of pressure settings. It is suggested that perfectionistic striving promotes facilitative behaviors to help improving performance, for example, focusing on accuracy rather than speed (Stoeber & Kersting, 2007; Stoeber, Uphill, & Hotham, 2009) and having goal-directed behavior to increase motivation (Kaye et al., 2008; Stoeber & Eismann, 2007). In a study of triathletes, those who scored higher on perfectionistic strivings outperformed their low-scoring counterparts, thus demonstrating the effects of perfectionism on competitive performance outcomes (Stoeber et al., 2009). However, Altstötter-Gleich, Gerstenberg, and Brand (2012) used a stress-inducing concentration task and found that perfectionistic concerns successfully predicted better performance, although this was paired with negative affect, which may not be conducive to future performances (Sagar & Stoeber, 2009). Similarly, maladaptive perfectionism showed a relationship with trait anger under athletic competitive situations, which results in

greater dispositional tendencies for anger within sport (Dunn, Gotwals, Dunn, & Syrotuik, 2006). A qualitative study by Gucciardi, Longbottom, Jackson, and Dimmock (2010) examined the experiences of golfers choking under pressure, and one theme that emerged was perfectionistic tendencies in performance. One golfer said, “Your high expectations of yourself can create an unwanted source of pressure” (Gucciardi et al., 2010, p. 69): the quote demonstrates how the golfers set high standards for themselves in performance situations. This then contributed to choking under pressure, as they perceived they could not reach their own unrealistic demands (Gucciardi et al., 2010). Perfectionism seems to facilitate performance under pressure; however, it could also cause performance decrements.

s0105 **Reinvestment**

s0110 *Definition and Background*

p0105 Masters and Maxwell (2004) define reinvestment as the “manipulation of conscious, explicit, rule based knowledge, by working memory, to control the mechanics of one’s movements during motor output” (p. 208). In earlier work, Masters, Polman, and Hammond (1993) viewed reinvestment as a personality trait, which suggests that trait reinvestment levels differ across individuals, which can subsequently affect performance under pressure. The majority of research within reinvestment is based around performance under psychological pressure (e.g., Laborde, Raab, et al., 2014; Mullen, Hardy, & Tattersall, 2005). Within a pressurized environment, an individual high in reinvestment will attempt to gain conscious control of their performance. This occurs as the individual reverts to the early stages of learning in an effort to control movements and decisions that are normally autonomous (Masters, 1992), which can potentially result in performance decrements. For example, Gray (2004) examined elite baseball batters performance in a movement-specific focus task and an unrelated tone task. In the first condition, batters had to identify if their bat was moving up or down when hearing a tone during the execution of the swing. The second condition prompted the batters to signal when either a high or a low tone unrelated to the batters movement was played. The study found that the movement-specific focus caused an increase in batting errors (Gray, 2004). The nature of reinvestment has been shown to cause a breakdown in skill and decision-making, particularly under pressure.

s0115 *Influence on Performance under Pressure*

p0110 Within research where either pressure manipulation or self-focus instructions have been used to provoke conscious control of movement, the majority of performers have suffered a drop in performance (Masters & Maxwell, 2008). Differing levels of reinvestment can affect performance in both cognitive and motor tasks (Kinrade, Jackson, & Ashford, 2010). An example of this is the

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study of [Mullen et al. \(2005\)](#) that examined the effects of task-relevant coaching prompts and tone counting on the performance of a golf putting exercise in high-pressure conditions. They found that both the task-relevant coaching prompts and tone counting had a detrimental effect on performance in the high-pressure condition. This demonstrates the effects that conscious processing can have on performance under pressure, and findings have been consistent within similar research (i.e., [Hardy, Martin, & Mullen, 2001](#); [Mullen, Hardy, & Oldham, 2007](#)). A study examining reinvestment in medical students under pressure found that low “reinvesters” performed better on a laparoscopic surgery task under pressure than high reinvesters ([Malhotra et al., 2012](#)). Current research is exploring decision-making and reinvestment and has shown that decision reinvestment can also cause performance decrement under pressure (e.g., [Kinrade et al., 2010](#); [Laborde, Raab, et al., 2014](#)). A recent study by [Laborde, Furley and Schempp \(2015\)](#) found that in a high-pressure condition, individuals who scored higher in reinvestment showed performance decrements in a working memory task. In addition, they found that a physiological baseline (high-frequency heart rate variability) could predict performance beyond the self-reported reinvestment trait, which also demonstrates the underlying importance of state measures when assessing performance under pressure.

s0120 **Resilience**

s0125 *Definition and Background*

p0115 Resilience can be defined as “protective factors which modify, ameliorate, or alter a person’s response to some environmental hazard that predisposes to a maladaptive outcome” ([Rutter, 1987](#), p. 316). Although some authors argue that resilience should be seen as a dynamic process rather than a stable trait

[AU3] ([Windle, Bennett, & Noyes, 2011](#)), alternative research has classed resilience as a trait ([Block & Block, 1980](#); [Connor & Davidson, 2003](#)). The construct of psychological resilience has been studied to further understand why some individuals cope with or even flourish in stressful or pressurized situations

[AU4] ([Fletcher & Sarkar, 2013](#)). Resilience can stem from adverse life events, such as parental loss, and cause negative effects on well-being ([Seery, 2011](#)). However, the emerging concept that resilience develops through adversity ([Seery, 2011](#)) is one that has filtered through to the performance context. In this context, individuals face a variety of stressors and importantly, in some instances, i.e., sport, the individuals actively put themselves in these stressful situations and are forced to develop this quality ([Fletcher & Sarkar, 2012](#)). Resilience can be developed through negative sporting experiences, such as failure ([Fletcher & Sarkar, 2012](#); [Turner & Barker, 2013](#)), which then fosters the ability to bounce back from negative experiences ([Fletcher & Sarkar, 2013](#)), such as stress. The construct influences the stress process throughout, not only on the initial appraisal of stress, but also on the selection of coping strategies ([Fletcher & Sarkar, 2013](#)). [AU5]

s0130 *Influence on Performance under Pressure*

p0120 **Tugade and Fredrickson (2004)** explored the role of resilience while performing a stress-inducing speech task. They found that individuals that are more resilient perceived the task as a challenge rather than a threat. In a similar study by **Kaczmarek (2009)**, resilient individuals experienced more positive affect in a stressful situation, which was mediated by a challenge appraisal of the situation. Aside from laboratory experiments, it could be suggested that resilience helps build coping resources after stressful experiences. **Turner and Barker (2012)** [AU6] discuss this through the career experiences of Andy Murray, who had repeatedly failed to win in major grand slam finals such as the US Open. **Turner and Barker (2012)** suggest that these experiences helped to build resilience and develop his ability to cope under pressure. In 2012, Andy Murray lost the Wimbledon final against Roger Federer; however, two weeks later at the final of the Olympic Games, he beat him to win gold and then went on to beat the world number one Novak Djokovic and triumph at Wimbledon in 2013. If an individual experiences performing under pressure more often, the trait of resilience seemingly develops and assists in times of adversity (**Seery, 2011**).

s0135 **Sensation Seeking (Risk Taking)**

s0140 *Definition and Background*

p0125 Sensation seeking is “the need for varied, novel, and complex sensations and experiences, and the willingness to take physical and social risk for the sake of such experiences” (**Zuckerman, 1979**, p. 10). It is a stable personality trait, and those high in the trait actively seek out arousal and stimulation and have a higher tolerance to negative life events (**Zuckerman, 1979**). Furthermore, sensation seekers are attracted to competitive or opportunistic behaviors with no regard for punishment contingencies (**Ball & Zuckerman, 1990**). This attraction to these situations is also coupled with the propensity to take risks (i.e., reckless driving, extreme sports) as it leads to feelings that increase physiological reactions, which is experienced as the desired sensation (**Zuckerman, 2007**). This, in turn, could transfer to the likelihood of performing successfully under pressure.

s0145 *Influence on Performance under Pressure*

p0130 **Cromer and Tenenbaum (2009)** conducted a laboratory study in which participants completed a motor task under pressure. They found that individuals higher in sensation seeking performed better under pressure when compared to those low on the trait. However, the performance of sensation-seeking individuals was not affected by low- or high-pressure manipulation (**Cromer & Tenenbaum, 2009**), thus suggesting that lower levels of sensation seeking may have greater effects on performance under pressure, due to avoidance behaviors, for instance. Within a business environment, entrepreneurs are found to have high levels of trait risk taking as the need for profit expectations, growth, and performance outcomes are paramount (**Pines, Dvir, & Sadeh, 2012**). When compared with

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those in managerial positions, entrepreneurs had higher levels of the risk-taking trait because of the personal outcome and growth nature of the demands placed on entrepreneurs (Stewart & Roth, 2001). This research suggests that risk-taking and sensation-seeking traits are linked to the demands of the situation and may act as a motivation to engage in potentially stressful situations (Castanier, Le Scanff, & Woodman, 2010; Chirivella & Martínez, 1994; Stewart & Roth, 2001). [AU7]

s0150 **PTLID Summary**

p0135 Overall, each of the PTLIDs highlighted influence performance under pressure in a variety of ways. It is important to note that PTLIDs may not have a direct influence on performance or provide a definite prediction of outcome, but they possess a moderating role (Aidman & Schofield, 2004), which may affect pressurized performance. For example, a tennis player who is a set down in a final may cope with this situation more effectively if they are higher in optimism (Seligman et al., 1990). Similarly, a musician high in perfectionistic strivings may have higher intrinsic motivation to practice more to prepare for an important upcoming performance, which could lead to increased performance achievements (Stoeber & Eismann, 2007). These examples demonstrate how PTLID's have an influence over how individuals deal with the stressors faced within pressurized environments. By assessing PTLIDs in these environments, understanding can be furthered for the reasons behind successful or unsuccessful performance and help to develop traits, which may help to improve performance.

p0140 PTLIDs demonstrate the vast number of differences that may be apparent when studying those individuals within a performance context. However, as there is an array of PTLIDs, this then prompts previously highlighted issues within the trait concept; which (and how many) traits have the largest effects under pressure? Furthermore, how might a group of traits interact in differing performance situations, or even with the situation itself? Although PTLIDs provide an insight into predicting and facilitating performance under pressure, there are still many questions surrounding this area.

s0155 **FUTURE RESEARCH DIRECTIONS WITHIN PTLID RESEARCH**

p0145 Building on the preceding summary, two main areas of future research have been highlighted to further the understanding of performing under pressure. The first is combining traits to understand the influence over performing under pressure and interplay between them that ultimately affects behavior. The second is to adopt an interactionist approach to personality and measure both traits and states within performance settings to understand the role of situations on personality traits.

s0160 **Integrating and Combining PTLIDs**

p0150 Laborde et al. (2013) highlighted the actuality that PTLIDs overlap; for example, mental toughness shares the three C's—commitment, control, and challenge—of

hardiness (Clough & Earle, 2002). This forces the issue of clarification within the area of PTLIDs but also the role they take/have when performing under pressure. The need for integration of PTLIDs has been emphasized within Laborde's et al. (2013) work stating that studying PTLIDs together would reveal the overlapping elements and contributions to the prediction of human behavior. Building theoretical knowledge of PTLIDs and their interactions is a necessity to both understand and to identify higher order PTLIDs, i.e., those that possess stronger moderating effects on performance. If this can be further understood, it may help to build on theoretical knowledge of PTLIDs and how they interact. This may help to identify if there are high-order PTLIDs that possess a stronger moderating effect over performance, which could have many applications. For example, from an applied perspective, if particular PTLIDs are associated with superior performance under pressure, they can be used as screening tools. Furthermore, these PTLIDs can be developed to help facilitate performance under pressure, as shown in Bell's et al. (2013) longitudinal mental toughness study.

p0155 The current literature surrounding combinations of PTLIDs within research is limited. One insightful study by Gould and Dieffenbach (2002) examined the psychological characteristics of Olympic champions. They measured a number of factors, including personality traits, that were based on previous research with elite athletes and those that are potentially linked with athletic success. Concerning personality characteristics, they found that mental toughness/resiliency, adaptive perfectionism, dispositional hope, and optimism showed links to the characterization of Olympic athletes (Gould & Dieffenbach, 2002). This demonstrates the range of PTLIDs that are present in the elite performers. All of these may play a role when competing on the world's biggest stage, the Olympic Games. Furthermore, this study used a mixed methods design to gain a qualitative insight to the personal beliefs and experiences behind athletic success. They found that optimism was triangulated between the psychometric scores of the Life Orientation Test Revised (one method of measuring optimism; Scheier, Carver, & Bridges, 1994) and the qualitative findings from the interviews. In other research, Hanton, Evans, and Neil (2003) found that the commitment and control counterparts of hardiness helped to increase the levels of facilitative interpretations of the competitive anxiety response. Inadvertently, the link between CTA and perfectionism is clear, and research shows that athletes with higher levels of maladaptive perfectionism tend to have higher levels of CTA (Gotwals & Dunn, 2007; Gotwals, Dunn, Causgrove Dunn, & Gamache, 2010). Similar complimentary relationships were found between hardiness and perfectionism (Sindik, Nazor, & Vukosav, 2011). [AU8]

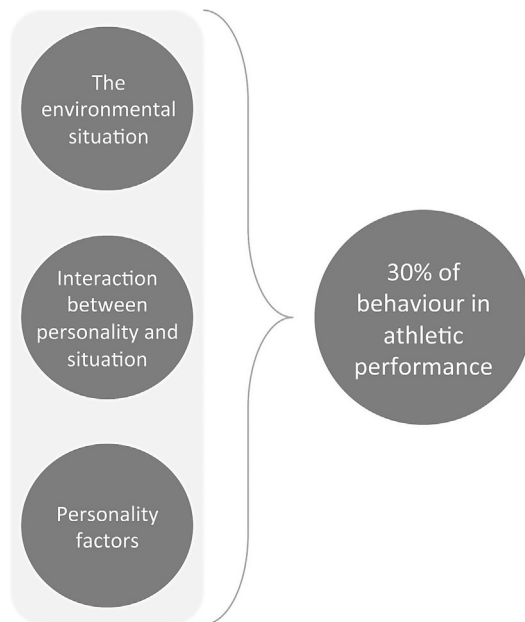
p0160 Current research suggests that combinations of traits can contribute to athletic success (Gould & Dieffenbach, 2002) and that particular traits complement each other to benefit/promote performance (Hanton et al., 2003; Sindik et al., 2011). This has only been achieved on a small scale, either with a small, specific sample (Gould & Dieffenbach, 2002) or with only two traits (Hanton et al., 2003). Therefore, there is a need for a wide range of trait screening under pressurized conditions to further understand the combinative and integrative roles of PTLIDs on performance.

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s0165 **PTLIDs: An Interactionist Approach**

p0165 Interactionism suggests that traits and situations interact together to affect behavior, and neither dimension alone can be considered as the cause of behavior (Carver & Scheier, 2012). Personality is not the sole contributor or predictor of pressurized performance outcomes. However, if the concept of PTLIDs is combined with other variables, such as appraisal and physiological parameters, a more rounded prediction starts to develop. Another contributor is the influence of the situation on the individual, and it is widely agreed that understanding behavior is enhanced through the interactions between the individual and the situation (Fleeson, 2001; Zuckerman, 1983). The person–environment interaction is a widely accepted conceptual paradigm within psychology (Schneider, 2001; Walsh, Craik, & Price, 1992) and this represents an interactional approach to personality (Bowers, 1973). As an example of this, Cox (2012) devised a model of estimation of importance of these factors in relation to the sporting environment.

p0170 Figure 2 demonstrates the contribution to performance behaviors from personality, situational factors, and the interaction between them; if the three areas are summed, it accounts for approximately 30% of an athlete’s behavior (Cox, 2012). Although this model excludes other factors that contribute to an individual’s performance, for example motor ability, it does demonstrate how the highlighted factors may be a moderator for performance under pressure.



f0015

FIGURE 2 Factors effecting athletic behavior: situation, personality, and interaction. (Adapted from Cox (2012).)

This area of interest is highlighted through current research trends below that are linked to situational or state factors.

s0170 *Trait Activation*

p0175 Personality traits may predict behavior in particular situations, but the individual's behavior may fluctuate due to situational demands (Fleeson, 2001). Fleeson (2001) uses a density-distribution approach and believes that a person has an accumulation of traits, which are distributed among particular situations. This suggests that different traits play individual roles in particular situations, a concept recently explored within the sporting domain as trait activation (Geukes, Mesagno, Hanrahan, & Kellmann, 2012). For example, if an athlete is performing well during a training session, reinvestment may not play a role in determining behavior. However, if they were losing in the final of a competition, it may play a huge part in coping with the pressure. This is demonstrated in Geukes, Mesagno, Hanrahan, and Kellmann (2013a), who found in a private, high-pressure condition, the situational demands activated self-focus traits, i.e., reinvestment, but these findings were not matched within the low-pressure condition. When assessing differing pressurized situations such as private, mixed, and public, a similar result was found in that with differing situational demands, self-focussed traits were activated (Geukes, Mesagno, Hanrahan, & Kellmann, 2013b). This shows the need to investigate together both traits and states within pressurized environments. The notion that particular traits can be activated dependent on situational demands is one of great interest. However, the situational demand may be first dependent on the individual appraisal processes.

s0175 *Appraisals*

p0180 The way individuals view the situation that they are exposed to depends on a process known as cognitive appraisal (Lautenbach & Laborde, Chapter 19). This relates to the individual's perception of the stressors within the environment (Lazarus, 1984). More specifically, individuals view performance situations, where valued goals are strived toward, as either a challenge or a threat (Jones, Meijen, McCarthy, & Sheffield, 2009). Those who respond positively to potentially stressful situations are considered to have a challenge appraisal and those who respond negatively, a threat appraisal (Jones et al., 2009). This concept is present within personality not only in the composition of individual traits but also as a moderator of the resulting behavioral responses. For example, hardiness has a challenge component, which encourages individuals to see the situation as a challenge to be overcome rather than as a threat to themselves (Nelson & Simmons, 2003). This appraisal of stress promotes transformational coping, which is demonstrated in competitive anxiety research (Hanton et al., 2003). Kaczmarek (2009) found that those higher in resilience used challenge appraisals resulting in greater positive affect within stressful situations. Therefore, it may be a valuable route for future research to understand the role of

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appraisals and its link to PTLIDs and performance under pressure. This could be further enhanced by incorporating the objectivity of physiological measures.

s0180 *Physiological Measures*

p0185 Individual differences and personality research often involve measuring constructs that we cannot directly observe, also known as latent variables (Caprara & Cervone, 2000). Therefore, by using an objective measure, such as physiological parameters, we are able to objectify how a person is reacting under a pressurized situation. Furthermore, by using an objective measure, it helps to increase the validity of measuring personality through self-report measures, given the fact that personality is considered to have links to physiological responses (Allport, 1961) and neural pathways (Davis & Panksepp, 2011). Recent PTLID research has utilized a measure known as heart rate variability (HRV), which is a cardiac measure of activation within the autonomic nervous system (ANS). The ANS is involved with physiological activation within the stress response, and HRV represents the efficiency and adaptability of the ANS in response to environmental and situational demands (Appelhans & Luecken, 2006; Thayer & Lane, 2000). Therefore, by using HRV, researchers can understand the levels of stress an individual is experiencing; this objectifies the reaction that can be directly linked with personality's role under pressure. One trait successfully linked to HRV is emotional intelligence (see also Laborde, Chapter 17; Lautenbach & Laborde, Chapter 19). Two studies (Laborde et al., 2011; Laborde, Lautenbach, et al., 2015) found that those higher in emotional intelligence had a better physiological resilience to stress when exposed to laboratory stressors. Similarly, at the hormonal level when using cortisol as the physiological marker of stress (Lautenbach & Laborde, Chapter 19), a higher trait EI was associated to a lower cortisol secretion but not performance under pressure (Laborde, Lautenbach, et al., 2014). HRV has been assumed to be part of the neurophysiological basis of the reinvestment trait under pressure, as high reinvestors were found to have a higher decrease in parasympathetic activity as well as a decreased performance in comparison to low reinvestors during a pressurized decision-making task (Laborde, Raab, et al., 2014). More recently, Laborde, Furley, et al. (2015) found that HF-HRV baseline (high-frequency heart rate variability) could predict performance beyond the self-reported reinvestment trait. This demonstrates that physiology helps to support findings from personality research and may even be able to predict performance beyond traits.

s0185 **THE BLANKET APPROACH: GUIDELINES FOR USE AND CONCLUDING REMARKS**

p0190 So why is studying PTLIDs so pertinent within the pressurized performance domain? Not only does the stable concept demonstrate a moderating role within varied pressurized performance environments, it also stimulates the idea that PTLIDs can be developed and combined to enhance performance under

- pressure. The development of PTLIDs has been evidenced through interventions (i.e., mental toughness, [Bell et al., 2013](#)) and exposure to stressful environments (i.e., resilience, [Turner & Barker, 2013](#)). This demonstrates that the stable influence of PTLIDs cannot only be developed but also enhanced through psychological interventions, which ultimately can foster coping under pressure.
- p0195 There is, however, a need for guidelines of use for PTLIDs within both the applied and research domains from both the administrative and interpretive fields. This is to ensure that PTLIDs are applied effectively but also to avoid overlooking the power of personality. For example, there may be some speculation surrounding personality screening through self-report measure in environments, such as talent selection, where superior ratings on desirable traits would lead to positive outcomes. However, rather than excluding the concept all together, by integrating PTLIDs with other predictors of performance, i.e., appraisals and physiological reactions, it provides a more holistic approach to understanding performance under pressure.
- p0200 The current chapter is not an exhaustive review of all PTLIDs that are present within today's research; however, the featured PTLIDs were selected because of their role in performance under pressure. Its aim was to act as a means of illuminating the potential moderating effects they possess over human behavior through a pressurized performance lens. A further aim was to suggest areas for future research that may be useful in further understanding the relationships between combined PTLIDs, the environment, and physiological measurements. Thus, a "blanket approach" to performing under pressure emphasizes the need to gain an informed understanding of the many elements of phenomenon. As [Laborde et al. \(2013\)](#) states, "people can differ greatly from the average" (p. 56), thus demonstrating the relevance of studying PTLIDs in more detail to further understand the individualized nature of performance under pressure.

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Non-Print Items

Abstract

Personality is often considered as a stable construct and, therefore, is not likely to change and can have underlying influences over behavior regardless of the conditions faced. Subsequently, this advocates personality as a valuable predictor of performance in pressurized environments. The current chapter shifts away from broad measures of personality, such as the big five personality dimensions, as these may not account for the unique individual differences that may influence the behavior and experience of pressure. The emphasis for this chapter is an individualized approach that focuses on the many other individual differences situated at the trait level, a term known as personality trait–like individual differences (PTLIDs). The selected group of PTLIDs were chosen for their influence on performance under a range of pressured environments and include traits such as hardiness and trait emotional intelligence. The current chapter provides a theoretical perspective of PTLIDs to further understand individuals' behavior under pressure and to suggest pathways for future research.

Keywords: Individual differences; Performance; Personality traits; Pressure; Psychology.