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Elaborating the Mastery State and the Confidence Frame

Jonathan R. Males
Performance1, London, UK

John H. Kerr
University of British Columbia

Joanne Hudson
Leeds Beckett University

The role of the mastery metamotivational state and the antecedents of the confidence frame have, until now, been poorly defined in reversal theory (RT) research. The purpose of this theoretical manuscript is to provide an elaboration of RT's mastery state and more clearly define its relationship with protective confidence frames, its interaction with other metamotivational states, and its antecedents. By exploiting the full theoretical range of the mastery state to consider the autocentric (striving against others) and intra-autic (striving with self), alloic (enabling others) and pro-autic (striving with others) states, we develop a series of propositions describing the relationship between mastery state combinations and sports performance. This more detailed elaboration of the confidence frame argues that it is primarily a function of the mastery state, which operates with either the telic or paratelic states to create a focused state of mind (compare to flow), that is conducive to sports performance. It has also been suggested that an individual's level of risk tolerance is mediated by the interaction between mastery and telic/paratelic dominance. This offers a different perspective not only on participation in competitive sport, but also on how different individuals might appraise any form of risk.

Keywords: mastery motivational state, protective confidence frame, self-confidence , sport performance, reversal theor

In reversal theory (RT; Apter, 1992, 2001), the mastery metamotivational state is the motivational orientation that leads the individual to value having power and control, either over others or oneself. When it is operative, winning or success (i.e., gaining in felt transactional outcome) generates pleasant feelings such as pride and satisfaction. Losing or failure (i.e., losing in felt transactional outcome) generates negative emotions such as humiliation, and, when an athlete's needs for power and control are not being met, this can result in tension-stress. This theoretical manuscript provides an elaboration of RT's mastery state and more clearly defines its relationship with protective confidence frames, its interaction with other metamotivational states, and its antecedents. The manuscript is set in the context of sport and exercise psychology, but the arguments presented have implications for other areas of psychology, and for human endeavour and performance in general. It is intended as a discussion document aimed at stimulating debate and thinking about the nature and role of the mastery state in RT.

Jonathan R. Males, Performance1, London, UK; John H. Kerr, University of British Columbia; Joanne Hudson, School of Sport, Leeds Beckett University.

Correspondence concerning this article should be addressed to Dr. Jonathan Males, Performance1, 124 Victoria Road London, UK, N22 7XQ, E-mail: malesjr@gmail.com

Utilising the Full Range of Mastery States

Wilson's (1999) contention that sustained and successful participation in competition requires the mastery state to be operative has received empirical support in both individual and team settings. Males, Kerr, and Gerkovich (1998) showed that the mastery state was prevalent throughout most stages of a canoe slalom competition and that the exceptions when a sympathy state was operative were times of either self-doubt or self-pity after failure. Similarly, Males and Kerr (2006) showed that in national standard volleyball players, the mastery state was the preferred orientation towards the competition. As the team's performance declined through a tournament, mastery became either less salient as some players reversed to sympathy states, or a source of stress to those who remained in the mastery state and resented losing. However, these studies did not fully explore the role of the mastery state for three reasons. First, attention was focused on understanding the role of the telic and paratelic states in modulating attention and emotional experience. Second, because it was so prevalent and stable in the competitive environment, mastery was taken for granted and researchers were insufficiently curious about it. Third, there were limited psy-

Table 1
Mastery state combinations in sporting contexts

	Mastery State Combination	Manifestation in a Sporting Context
Autic (Self)	Intra Autic Paratelic Mastery	Self-referenced striving for its own reward, e.g., simply enjoying the sensation of running fast.
	Intra Autic Telic Mastery	Self-referenced striving in pursuit of a goal, e.g., training to achieve a PB for the 100 metres.
	Autocentric Paratelic Mastery	Competing against others for the fun of it, e.g., playing backyard cricket and enjoying bowling out a family member.
	Autocentric Telic Mastery	Competing against others in pursuit of a goal, e.g., competing in an important tennis match and really wanting to beat your opponent and win.
Alloic (Other)	Alloic Paratelic Mastery	Helping others achieve for immediate enjoyment, e.g., pausing on a white-water trip to show another kayaker how to surf a wave.
	Alloic Telic Mastery	Helping others to attain an important outcome, e.g., coaching a hockey team towards winning a major trophy.
	Pro Autic Paratelic Mastery	Identifying with a team who are competing for its own reward, e.g., playing in a 5 a side football team for the fun of playing together.
	Pro Autic Telic Mastery	Identifying with a team who are competing to achieve an important outcome, e.g., playing in a rugby team and really wanting 'us' to win an important match.

chometric tools available at the time to specifically assess the mastery state.

One instrument that was available was the State of Mind Inventory for Athletes (SOMIFA; Apter & Kerr, 1999; Hudson, Davison, & Robinson, 2013), which included a Mastery-Sympathy item:

> I wanted to:
>
> 3a. be tough and dominating over my opponent(s) during performance
>
> 3b. be friendly and sympathetic with my opponent(s) during performance

Yet, this forced choice approach is framed only at the competitive phase of an event and does not inquire into an athlete's metamotivational orientation towards teammates, coaches or others. It is also difficult to imagine many serious performers selecting 3b in normal competitive circumstances. Mastery-Sympathy dimensions were also included in the Motivational State Profile (MSP; Apter et al., 1998) and the Apter Motivational State Profile (AMSP; Apter International, 1999). These are generally considered to be dominance instruments rather than state measures.

Perhaps the mere presence or absence of the mastery state during competition is unlikely to offer much insight into its relationship with performance. Instead, we need to exploit the nuances of the mastery state, created by its combination with the autic and alloic states, in sport competition. Autic is related to being self-centred – gaining pleasure or displeasure from what happens to oneself. Alloic is related to being other-centred – pleasure or displeasure depends on the experience of the other and there is a high value in transcendence, in going beyond one's individual identity. They both have two forms: autocentric, intra-autic, alloic, and pro-autic states (Apter, 2001). In the autocentric state, the individual perceives him or herself to be interacting with another person or an external situation (in sporting competition, this might be experienced as striving against others to win a 100m race) whereas in the intra-autic state the individual is self-focused and there is no awareness of others (in sports competition this striving with self might be a long jumper aiming for a personal best jump with no concern for competition placing). In the allocentric state the individual perceives him or herself to be interacting with another person or an external situation (for instance, a basketball coach enabling the team to achieve its goals) whereas in the pro-autic state the individual identifies with and feels immersed in a larger group (the basketball player striving with others to win a game). These possibilities are further enriched by combining them with the nature of the individual's goal orientation, which can be framed by either the telic (future outcome) or paratelic (immediate experience) motivational states. Table 1 illustrates the different motivational combinations and gives examples to show how they can capture the motivational orientations of athletes and coaches across a wide range of typical sporting and competitive situations.

In the following sections other non-RT strands of research and theory are examined to develop propositions about the possible relationship between the RT mastery state and performance, beginning with an examination of goal orientation.

Drawing on Achievement Motivation

McClelland, Atkinson, Clark, and Lowell's (1953) seminal work on achievement motivation – an individual's tendency to feel pride in success – and the converse, fear of failure – the tendency to feel humiliation in defeat – clearly sits in the same psychological territory as the RT mastery dimension. Subsequent research in the field of achievement motivation has led to understanding the different types of competence to which individuals aspire and the nature of the goals that mediate motivation into action (Treasure, Lemyre, Kuczka, & Standage, 2007). Mastery goals focus on developing competence through mastering tasks and develop task involvement. Performance goals focus on demonstrating competence relative to others and develop ego involvement (Ames & Archer, 1988; Dweck, 1986; Dweck & Leggett, 1988; Nicholls, 1984). Elliot and colleagues (Elliot & Church, 1997; Elliot & Harackiewicz, 1996) expanded the mastery-performance goal dichotomy to include the distinction between approach and avoidance motivation, itself a refinement of McClelland et al.'s (1953) achievement motivation (approach) and fear of failure (avoidance). This resulted in a 2 by 2 framework of approach and avoidance, mastery and performance goals. Mastery Approach goals are focused on attaining competence (e.g., striving to master a task). Mastery Avoidance goals represent striving to avoid incompetence (e.g., striving to not do worse than one has done previously). Performance Approach goals represent striving to reach normative competence (e.g., striving to do better than others). Performance Avoidance goals represent striving to avoid normative incompetence (e.g., striving to avoid doing worse than others).

A body of research has applied this framework and the associated Achievement Goal Questionnaire (AGQ; Elliot & McGregor, 2001) and its subsequent revision the AGQ-R (Elliott & Murayama, 2008) to motivation and performance in sport (e.g., Adie, Duda, & Ntoumanis, 2008; Conroy, Elliot, & Hofer, 2003; Moreno, González-Cutre, Sicilia, & Spray, 2010; Stoeber & Crombie, 2010). Jones et al. (2009) summarised the limited competitive sports research by suggesting that individuals with avoidance goals will tend to view an upcoming competition as a threat. An individual focused on approach goals, and therefore demonstrating competence, particularly when that competence is determined by self-referenced standards, is more likely to view a demanding and potentially stressful event as a positive challenge. The contrast between the strength of Performance Approach and Performance Avoidance goals also seems to be relevant. Stoeber and Crombie (2010) found that athletes who have a positive approach to competition, measured by the contrast between approach and avoidance goals, perform better than those with a higher ratio of avoidance to approach goals. They also noted a significant positive correlation between the strength of Mastery Approach goals and athletic performance.

Conroy, Elliot, and Coatsworth (2007) developed a hierarchical model that integrated achievement motivation with self-determination theory (e.g., Ryan & Deci, 2007). They concluded that defining competence in terms of mastery, rather than performance, combined with an orientation towards achieving competence rather than avoiding incompetence, enhances intrinsic motivation. Treasure et al. (2007) reviewed the self-determination literature and suggested that athletes who train and compete for more self-determined reasons (intrinsic motivation, integrated regulation, identified regulation) will be able to sustain a higher training workload and perform more reliably under pressure than athletes who are motivated by less self-determined reasons (introjected regulation and external regulation).

Returning now to RT, it is possible to suggest a number of propositions that will enhance sports performance:

1. Athletes should access both intra-autic and autocentric mastery states, so that they seek and value both self-referenced and performance-based outcomes. This recognises the importance of process-goals that direct attention towards controllable aspects of training and performance (e.g., Elliot, 2005; Hardy et al., 1996) and the importance of competitive outcomes in the real world of high-level sport.

2. An over-reliance on autocentric telic mastery is likely to be counter-productive because it will lead the athlete to rely only on uncontrollable competitive outcomes to assess their success.

3. The training environment should include opportunities for both telic (serious, goal-directed) and paratelic (playful, in the moment) mastery experiences. It should also support athletes, particularly in team sports, to reverse from autic to alloic mastery states as a way of building the strength of relationships. Incorporating all autic and alloic mastery dimensions helps to create a motivationally rich climate (Carter & Davies, 2004) in which it is easier to sustain motivation and hard training over time.

4. Goals should be freely chosen, or at least willingly accepted, rather than imposed. This increases the likelihood that athletes positively commit to them (intra-autic mastery) rather than experience them as a "job to be done". Imposed goals and the implied lack of control are more likely to lead to a telic mastery state oriented towards avoiding failure instead of seeking success.

So it can be seen that RT offers the capacity to describe a range of relevant "types" of mastery-oriented motivational states and we can describe the likely relationship between these states and enhanced sports performance. What is less clear is the relationship between the prevailing mastery motivational orientation and the conditions that allow a positive, approach-focused attitude to prevail. After all, it is possible to feel humiliated, weak and powerless in the mastery state in situations when there is a perceived loss, and as with all RT constructs, tension-stress arises when there is a mismatch

between preferred and actual level of a salient variable. This brings us back to an important and relevant RT construct, the phenomenological protective frame.

Confidence Frames

Confidence frames are a specific example of a phenomenological protective frame that Apter (1992) used to explain the psychology of risk taking in situations where the individual is aware of immediate danger but because of a protective confidence frame, is confident of avoiding trauma. In developing this concept Apter provided many examples from both risk and competitive sport, employing quotes from Formula 1 racing drivers and mountaineers. He made it clear that ability is a pre-requisite for confidence and showed how the need for control is central to the high-risk, but exciting, activities being undertaken. These examples point to descriptions consistent with the mastery state, such as proving one's ability, meeting and overcoming challenges, and developing and applying physical skills. The relationship between the mastery state and the confidence frame is, however, not clearly delineated.

Apter did not make clear just what a confidence frame is, other than it is "associated with the paratelic state... and provides feelings of safety" (Apter, 2001, p. 47). So is it an emotion or combination of emotions? Is it of the same logical order as metamotivational states? Is it a cognitive appraisal? From a critical perspective, Apter outlined an attractive analogy but did not provide a description of the antecedent factors nor an explanation for why it works, other than it allows (through an unknown mechanism) for a paratelic metamotivational state to prevail so that an individual might approach a dangerous situation that would otherwise be avoided.

Kerr (2007) proposed that the confidence frame is the consequence of a positive appraisal of one's capacity to achieve desired values (power, control, toughness) within the mastery orientation. Kerr and Mackenzie (2012) provided several examples of the confidence frame experienced by adventure sport participants. For example, a hang-glider pilot's confidence frame was based on factors such as: high personal skills, knowledge of safety procedures, confidence in the structure and capability of his equipment, and a perception that the risks involved were manageable. These appraisals served to help the pilot navigate the dynamic balance between his perceived skill and the challenges presented by his activity to maintain an effective performance state. This balance is central to Csikszentmihalyi's (1975) model of flow, a state of optimal experience and focused execution, which he suggested occurs when an individual believes that his or her skill level is at least a match for the prevailing challenges.

Houge Mackenzie et al. (2011) suggested that both telic and paratelic flow states were possible depending on the context and the individual's appraisals. They proposed that telic flow was more likely to occur in situations where there was a perception of high skill to low challenge, or a match between skill and challenge (see Csikszentmihalyi, 1975). Telic flow was characterised as having a high felt intensity and a narrow, outcome-oriented, achievement-seeking task focus. It also occurred more frequently in evaluative contexts with visible outcomes. Houge Mackenzie et al. (2011) proposed two varieties of paratelic flow. Where there was a low challenge and high skill balance, a lower sense of felt intensity ensued and with it a broader, more relaxed attentional focus in which individuals become immersed in the physical environment, social interaction, or their own thoughts. The other version of paratelic flow occurs in learning conditions when perceived challenge is heightened, so there is a greater degree of uncertainty about the likelihood of success than in the conditions of telic flow. There is a pleasant experience of high-intensity excitement, combined with a narrow process- and sensation-focused attention. This version seems closest to Apter's original (1992) exposition on thrill seeking behavior taking place within a protective paratelic frame but none of these conceptualisations help to understand the role of the mastery state in developing a confidence frame.

Houge Mackenzie and Kerr (2012) and Houge Mackenzie et al. (2011) give examples of confidence frames and identify the presence of the RT mastery state without exploring the mastery state in detail.[1] In fact the term "mastery" is given an explicit definition as the condition when perceived skills outweigh challenges, contrasted with a learning condition when perceived challenges outweigh skills. Yet the common factor across all these examples of successful, enjoyable performance in extreme conditions is the RT mastery state. It is the motivation to succeed, to achieve control, to overcome a challenge and learn or demonstrate a skill, that provides the motivational energy for the participants in Houge Mackenzie's studies.

The mastery state and confidence frame have relevance not just to risk sports, but to competitive sport in general. Particularly for elite athletes, danger comes not necessarily from physical risk but from a risk to self esteem, personal reputation, and in many cases, to continued financial reward. It has already been shown that more committed and professional athletes tend to be telic conformist dominant (Kerr, 1987), which brings with it the capacity to be future-oriented, manage a high training load and live a disciplined lifestyle. Telic dominance also increases the likelihood that a telic state will be operative in which athletes feel anxious, rather than excited, under conditions of high felt arousal.

[1] A more recent case study of "Vlad," an expert skydiver (Kerr & Houge Mackenzie, 2014), did explore the role of the mastery state in confidence frames in detail and concluded that his confidence frame was based on a telic mastery state combination in line with Males' (2013) findings.

The Mastery State and Confidence Frames

This section examines the relationship between the mastery state and confidence frames in competitive sport. A new definition is proposed, starting with the assertion that the confidence frame is not only associated with the paratelic state, as originally proposed by Apter (1992). Instead it is a function of the mastery state and it can engender a productive performance state in combination with *either* the telic or paratelic states. In either condition the confidence frame allows an approach, rather than an avoidant, goal orientation. The confidence frame has different consequences depending on the context and the individual's predisposition. In a challenging competitive environment in which the outcome is both visible and important, the confidence frame allows individuals with telic motivation to control their level of felt arousal so that it more closely matches their preferred arousal level and does not result in unwanted anxiety. Their attention will be narrowly focused, immersed in the task, and achievement oriented. They are more likely to seek to approach the forthcoming challenge than seek to avoid it and their primary satisfaction comes when the performance is successfully executed. This is the equivalent of telic flow (Houge Mackenzie et al., 2011) and is likely to be prevalent in competitive sport. It is consistent with the data from slalom canoeists who reported a telic mastery orientation in the pre-event period, yet went on to compete effectively in a high arousal state without necessarily reporting unpleasant emotions (Males et al., 1998).

In a non-evaluative environment, or one in which there are no serious consequences to the outcome, the confidence frame allows an individual with a paratelic motivation to enjoy the high intensity of arousal as pleasant excitement, becoming absorbed in the process and task at hand. Satisfaction arises from the integration of physical and psychological experiences in the moment. This can also take place in competitive environments, although it is likely to be less prevalent, because making a comparison with others enhances self-awareness (Burton, 1989) and the telic state (Fontana, 1988). As Houge Mackenzie and Kerr (2011) point out, there can be a dynamic interplay between these two states as an event unfolds. In both cases, individuals experience a focused state of mind that supports effective execution of their performance. The consistent underpinning in competitive sport is the mastery state and the desire for gaining power and control, whether that is self-referenced (intra-autic) or framed as a competition with others (autocentric). The confidence frame arises from the mastery state as a dynamic appraisal of the performer's own abilities and the environment.

In order to develop this proposition further, we will examine Kerr's (2007) case study, one of the earliest applications of the confidence frame to a sporting context. Kerr reported an in-depth interview with Julie, an experienced skydiver who withdrew from the sport, and suffered serious difficulties in her life, after witnessing the death of a close friend and having a narrow escape from death herself. Kerr (2007) suggested that Julie "lost" her confidence frame and so was unable to access the paratelic mastery state and therefore was no longer motivated by her sport. Kerr (2007) interpreted the case study from a starting assumption that the paratelic-telic dimension was most salient, but an alternative interpretation focuses more on the role of the mastery state. It can be argued that the experience of seeing a friend die in unexpected circumstances led to a profound, even existential, fear of losing control and of being subject to unpredictable events. Before the accident, Julie's successful access to the mastery state was based on an implicit appraisal that death – the ultimate loss of control and autonomy – was not random. She believed that death only occurred if someone made a serious mistake or took risks; consequently, she approached not just skydiving, but also her whole life, with an appropriate degree of confidence. The death of her friend was a tragic and unpredictable accident that occurred despite him not taking any risks or making a significant mistake. He did nothing "wrong" yet he died.

This seemed to trigger a deep existential depression in Julie. She now believed the world was no longer predictable, and she could no longer assume that she would be safe if she did the right thing – that is, conformed to rules and social expectations. The impact of losing this fundamental sense of control flowed into other parts of her life as well. As a result, she stopped accessing the paratelic state in all aspects of her life, becoming withdrawn and nervous. An alternative proposal is that the loss of the confidence frame was due not to her spending all her time in the telic state, as Kerr suggested, but from a loss of her ability to access the mastery state. She reported feeling anxious (a telic emotion) but also feeling powerless (a description consistent with mastery related tension-stress). This analysis supports a further development of the confidence frame. Rather than only being present as a phenomenological frame in situations of perceived danger, perhaps it is more appropriate to consider it as a confidence continuum that applies across all activities. To engage in everyday life requires a degree of confidence in oneself and in one's basic safety in the world. In unusual situations like Julie's, the normal world becomes a frightening place because of her incapacity to adopt a mastery orientation and feel confident in her ability to remain safe and in control. Her ability to find a dynamic balance between her own skills and the challenges of life was lost. So perhaps each of us requires a confidence frame all the time even to function in normal life, not just in situations of perceived danger? After all, we each face potentially life-threatening risks from traffic accidents, robbery, or random acts of nature every time we leave our houses.

Nettle (2007) expressed a related idea in his description of the personality trait of neuroticism. He describes this trait

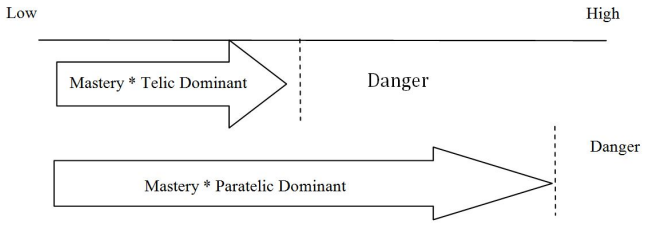

Figure 1. Hypothesised relationship between motivational dominance and perceived risk.

as being related to one's level of environmental risk awareness and suggests that it functions much like a smoke detector that triggers an alarm when a particular threshold is reached. People who have low levels of neuroticism have a high threshold for detecting risks in their environment and therefore tend to exhibit low anxiety. Those high in trait neuroticism have a low threshold for danger and as a result are more anxious. Likewise, one's confidence threshold could vary based on both the context and on individual personality. It seems likely that telic and paratelic dominance – or at least the arousal-seeking and arousal-avoiding dimension – is highly relevant, based on the identified relationship between this factor and risk-seeking behavior (Trimpop et al., 1999). This is expressed visually in Figure 1. The actual risk threshold could be a result of the interaction between mastery and telic or paratelic dominance. Paratelic dominance increases the threshold, meaning that more risk can be taken before a situation feels seriously dangerous, whereas telic dominance decreases the threshold, so that the danger point is felt earlier. This proposal is speculative and is not explored further here but does lend itself to future empirical scrutiny.

The Role of Self-Confidence in Sport Performance

At this point we discuss the relationship between anxiety and self-confidence because there are obvious, but unexplored, parallels between self-confidence and the mastery state. First, we will examine the evidence for the relationship between self-confidence and sports performance, then we will consider the antecedents of self-confidence in sport. This builds a new foundation from which to understand mastery and the confidence frame.

Martens, Burton, Vealey, Bump, and Smith (1990) factor analyzed state anxiety data collected from college students and identified a three-factor solution, which they labelled somatic anxiety, cognitive anxiety, and self-confidence. The resulting multi-dimensional model formed the Competitive State Anxiety Inventory-2 (CSAI-2) that measured the intensity of responses in each factor. Martens et al. (1990) hypothesized different performance relationships for each factor: (a) for cognitive anxiety, a negative linear relationship; (b) for somatic anxiety, a quadratic (inverted-U shaped) relationship; and (c) for self-confidence, a positive linear relationship. Although self-confidence emerged as an orthogonal factor in their analysis, Martens et al. (1990) suggested that it had a bi-polar relationship with cognitive anxiety – that is, if self-confidence was high then cognitive anxiety must be low, and vice versa. This hypothesis received limited and mixed empirical support (Krane & Williams, 1987; Parfitt & Hardy, 1987) and the view that cognitive anxiety had solely a negative performance impact was challenged by Parfitt, Jones, and Hardy (1990), who pointed to theoretical reasons why a performer's appraisal and response to anxiety may lead to a performance improvement. Jones and Hardy (1990) drew on qualitative data that showed how experienced, elite athletes in a range of sports were able to use the stress of competition and the subsequent physiological response to increase their focus and determination.

Subsequently, Jones and Swain (1992, 1995) made an important contribution by modifying the CSAI-2 to include scales that measured the direction of each response, in addition to the intensity. Respondents rank whether they interpreted a particular response as either helpful (facilitative) or unhelpful (debilitative) for their forthcoming performance. This added a valuable new dimension by generating data on how the performers appraised their psychological state, and, in the process, spurred a fresh wave of anxiety-based research. Directional anxiety ratings showed that subjects who were high in self-confidence and more competitive perceived their feelings of "anxiety" as generally positive (Hanton & Connaughton, 2002; Hanton, Mellalieu, & Hall, 2004; Mellalieu, Neil, & Hanton, 2006) and that many athletes perform well even when reporting symptoms of high anxiety (Mellalieu, Hanton, & O'Brien, 2006).

However, not all sport psychology researchers are in agreement with this model, pointing to the alternative that facilitative anxiety is in fact excitement (Jones & Uphill, 2004; Polman & Borkoles, 2011) or a parapathic emotion (Apter, 2001). A more critical evaluation of the anxiety literature suggests that researchers only turned to qualitative studies (e.g., Hanton, Cropley, & Lee, 2009) when the limitations of a nomothetic approach that sought a relationship between a small number of psychological variables and performance became impossible to ignore. This development is to be welcomed, as it has taken this field into a richer understanding of how the performer's emotional response is actively shaped by their experience and context. As Males (1994) wrote in an unpublished review:

> Regardless of the instrument or methodology used, anxiety-based sports research has suffered from a number of limitations. Few of these studies have taken into account the athlete's interpretation of his or her experience and group-based studies... seem to assume that equivalent ques-

Table 2
Summary of 1st person sources of self-confidence

Practitioner	Vealey et al. (1998)	Wilson et al. (2004)	Hays et al. (2007)	Hays et al. (2010)	Bandura (1977)
Experience	High school and college athletes	Masters athletes	UK world class athletes	National level javelin thrower	Self efficacy theory
Experience of similar performances	Mastery (improving skills)	Mastery (improving skills)	Preparation	Training	Enactive mastery experiences (have done it before)
Physical condition	Physical/mental preparation	Physical/Mental preparation	Performance and competition accomplishments	Weight training	Vicarious experience (have seen others do it)
Realistic expectations	Physical self-presentation	Physical self-presentation	Experience		Imaginal experiences (can imagine doing it)
Expertise and technical skill	Vicarious experience	Vicarious experience	Innate factors, Competitive advantage, Self-awareness		Physiological & emotional states (feeling appropriately "psyched" or "pumped")

tionnaire scores represent equivalent, or even identical, affective states. Those studies that have sought more subjective detail from subjects have resulted in the realisation that individuals may place different meanings on both their physical state and the meaning of their thoughts.

Nevertheless, this leads to the important question of what factors influence the appraisal athletes give to their affective state? Jones (1995) proposed that the degree of control perceived by a performer is critical. Control is conceptualised as the cognitive appraisal that a performer is able to exert influence over both the environment and the self. When control is high, implying that there is a positive expectancy of being able to cope and achieve goals, there will be a positive, facilitative interpretation of anxiety symptoms. Conversely, when control is low, a negative, debilitative interpretation of anxiety symptoms is likely. This definition of control is equivalent to Kerr's (1997) definition of the confidence frame referred to earlier; the confidence frame is the consequence of a positive appraisal of one's capacity to achieve desired values (power, control, toughness) within the mastery orientation.

In their meta-analysis of the impact of both cognitive anxiety and self-confidence on performance, Woodman and Hardy (2003) reviewed 48 studies, 40 of which used the CSAI-2. They found that in 60% of the studies, cognitive anxiety had a negative performance relationship, 16% reported a non-significant relationship, and the remaining 23% showed a positive relationship with performance. The overall effect size for cognitive anxiety was -0.10. While significant, this contrasted with an effect size of 0.24 for the relationship between reported self-confidence and performance. 76% of these studies found a positive relationship between self-confidence and performance, 14% of the relationships were non-significant, and 10% showed a negative relationship. Both effect sizes were greater for high standard (defined as national or international level) than lower standard (defined as below national level competitors, e.g., regional) athletes.

Woodman and Hardy (2003) suggest that one possible reason is that more experienced athletes are more skilled at controlling all the relevant factors within their performance, with less variation due to technique or physical constraints. This body of research points to the important role of self-confidence both as a positive performance factor in its own right, and as a mediator of anxiety symptoms. This lends support to the contention that a full RT understanding of the relationship between mental state and performance must include the mastery state in combination with the telic and paratelic states. Indeed, the confidence frame likely impacts mastery directly, while impacting the telic and paratelic states by moderating the way that arousal is interpreted. The next section turns to research that has explored the antecedents of self-confidence in sport, in order to develop a more comprehensive understanding of the confidence frame and the mastery state.

Table 3
Summary of 2nd person sources of self-confidence

Practitioner	Vealey et al. (1998)	Wilson et al. (2004)	Hays et al. (2007)	Hays et al. (2010)	Bandura (1977)
Experience	High school and college athletes	Masters athletes	UK world class athletes	National level javelin thrower	Self efficacy theory
Effective team relationships	Coaches' leadership	Coaches' leadership	Coaching	Coach feedback	Verbal persuastion (being told you can do it)
	Social support	Social support	Social support	Pre-competition feedback	
	Demonstration of ability (compared to opponents)	Demonstration of ability	Trust	Training partners	

Antecedents of Self-confidence

Contemporary research into the antecedents of self-confidence in sport has taken two contrasting approaches. Overall, studies in the US have used a nomothetic methodology, while UK-based studies have taken an idiographic approach. Vealey, Hayashi, Garner-Holman, and Giacobbi (1998) developed and validated the Sources of Sport Confidence Questionnaire (SSCQ) with a population of 335 college athletes. This was an important development because it broadened the range of sources beyond those based on Bandura's seminal work on self-efficacy (e.g., Bandura, 1986) to include sport specific factors and showed that self-confidence is a multi-dimensional construct.

Vealey et al. (1998) identified a nine factor model, comprising mastery, demonstration of ability, physical/mental preparation, physical self-presentation, social support, vicarious experience, coach's leadership, environmental comfort, and situational favorableness. Wilson, Sullivan, Myers, and Feltz (2004) subsequently tested the SSCQ with a population of 216 Masters athletes aged from 50 to 96 years. This study failed to confirm the original factor structure, suggesting that sources of self-confidence varied between different athletic populations and that the SSCQ needed psychometric adaptation for use with a Masters population.

Given that sources of self-confidence appeared to be highly contextual and, influenced by a body of research suggesting consistent gender differences (e.g., Gill, 1988), Hays, Maynard, Owen, and Bawden (2007) took an idiographic approach to its investigation. They interviewed 14 world-class athletes who were Olympic medallists or World record holders in their respective sports. This approach elicited a model of different types of self-confidence, i.e., what it is that participants felt confident about; and also of different sources of self-confidence, i.e., where this confidence came from.

While Hays et al. (2007) noted that both sources and types of confidence are highly individual and dependent on context, all participants in their study nominated physical preparation and performance and competition accomplishments as sources of confidence. Females valued coach support more as a form of social support, while male athletes derived confidence from a belief in their coach to establish an appropriate training program.

In an extension of this approach, Hays, Thomas, Butt, and Maynard (2010) used an individualized confidence profiling approach to underpin applied consultancy interventions with seven athletes that produced individualized profiles of each athlete's types and sources of self-confidence. Athletes were then invited to rate their current level of each factor from 1 to 10, to help them raise their self-awareness and develop strategies to improve their confidence.

Both nomothetic (Vealey et al., 1998) and idiographic (Hays et al., 2007) research approaches identified similar antecedents of self-confidence. Both approaches are of value, but the idiographic approach taken by Hays et al. (2007) is more flexibly attuned to a specific athlete's experience. While a questionnaire such as the SSCQ (Vealey et al., 1998) offers potential advantages for larger scale quantitative research and normative comparisons, Vealey et al.'s (1998) and Wilson et al.'s (2004) attempts to find statistical certainty and a stable factor structure appear over-engineered and unwieldy in comparison with the profiling approach developed by Hays and her colleagues.

Antecedents of the Confidence Frame

Existing research into self-confidence provides a valuable foundation for establishing the antecedent appraisal factors that meet the mastery needs of performers. It is posited here that a successful appraisal based on these factors cre-

Table 4
Summary of 3rd person sources of self-confidence

Practitioner	Vealey et al. (1998)	Wilson et al. (2004)	Hays et al. (2007)	Hays et al. (2010)	Bandura (1977)
Experience	High school and college athletes	Masters athletes	UK world class athletes	National level javelin thrower	Self efficacy theory
Familiar environment	Environmental comfort	Environmental comfort	None identified	None identified	None identified
Equipment that confers competitive advantage	Situational favorableness				

ates a confidence frame that mediates athletes' experience of high felt arousal and their ability to maintain their preferred arousal level in either the telic or paratelic states. The actual combination and weighting of these factors will be dependent on the individual, the nature of their sport, and the context in which they are operating (Hays et al., 2007).

Males (2013) summarised the relevant research into the sources of self-confidence in Tables 2, 3, and 4 where he grouped the factors using 1st, 2nd, and 3rd person domains (Wilber, 2001) to give additional insight. The first column of each table describes the factors that he developed through reflection on his applied experience working with athletes. The remaining columns show the factors identified in the research summarised above. Note that Bandura's (1977) theory placed no emphasis on environmental factors, which appear in the other columns based on applied experience or research evidence.

The role of the coach is clearly important and is subsumed within a general category of effective team relationships. Physical and mental preparation is consistent across all evidence sources, particularly where this means that the athlete has "done it already." In addition, "realistic expectations" was included as a factor, which was not made explicit in other models (it does appear however as a type of – rather than a source of – confidence in Hays et al.'s 2007 study). It is included because realistic, but high, expectations are more likely to lead to a positive emotional and motivational state when there is a close match between skill level and the perceived challenge (Csikszentmihalyi & Csikszentmihalyi, 1988).

While Hays et al. (2007) make it clear that experiencing confidence is a highly individual process, there is utility in developing an over-arching framework for the sources of confidence. This could serve coaches, sport psychologists and athletes by pointing their attention to the full range of possible sources. Otherwise there is a risk that athletes might remain ignorant of, or overlook, potential sources of confidence. For example, the javelin thrower's confidence profile described by Hays et al. (2010) does not include any environmental factors. Given that the aim of the intervention was to increase the athlete's confidence, it would be valid to explore the impact of the athlete's environment and whether any changes would be beneficial. Accordingly, we propose a guiding framework that could be used to help athletes, coaches, or sport psychologists identify the most individually relevant antecedents to support a confidence frame (see Table 5). Our proposal is that reversal theory offers a richer phenomenological understanding of the antecedents of confidence and the confidence frame than what is "measured" using scales.

Conclusion

This manuscript has presented several novel contributions to the RT field. By exploiting the full theoretical range of the mastery state to consider the autocentric (striving against others) and intra-autic (striving with self), alloic (enabling others), and pro-autic (striving with others) states, we have developed a series of propositions describing the relationship between metamotivational mastery state combinations and sports performance.

A more detailed elaboration of the confidence frame argues that it is primarily a function of the mastery state, which functions with either the telic or paratelic states to create a focused state of mind (flow) that is conducive to sports performance. We also suggest that an individual's level of risk tolerance is mediated by the interaction between mastery and telic/paratelic dominance. The role of the mastery state and the antecedents of the confidence frame have, until now, been poorly defined in RT research. Sports research in the parallel fields of anxiety and self-confidence has been of assistance, in particular, to show the mediating effect of perceived control on the interpretation of anxiety symptoms.

Finally, we examined research into sources of self-confidence, allowing a new synthesis of these antecedents, presented in a novel framework that sets out the contribution of self, team, and environmentally-based factors. This provides a simple yet functional framework that can be used by sport psychologists, coaches, or athletes to identify the full

Table 5
Proposed antecedents of the confidence frame in competitive sport

Domain	Confidence Sources
Self	Quality physical and mental preparation
	Previous experience and accomplishments
	Personal qualities (e.g., competitiveness, determination, Mastery Dominance)
	Vicarious experience (direct observation or video)
Team	Trust in coach's feedback and support
	Effective team relationships
	Support from friends and family
Environment	Familiarity with environment
	Equipment that confers competitive advantage
	Situational favorableness

range of potential sources of a confidence frame within the mastery state. This framework could be used in an informal or light-touch manner – as simple as inviting an athlete to systematically consider each of the three domains (self, team, and environment). It is in no way intended to be prescriptive, as both the research and experience show that athletes are idiosyncratic.

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