

Simplicity Does Not Always Lead to Enlightenment: A Critical Commentary on “Adaptation Processes Affecting Performance in Elite Sport”

Katherine A. Tamminen
University of Toronto

Peter R.E. Crocker
University of British Columbia

This paper is a critical commentary on the article “Adaptation Processes Affecting Performance in Elite Sport” (Schinke, Battocchio, Lidor, Tenenbaum, Dube, & Lane, 2012). We review relevant literature and highlight theoretical and conceptual concerns regarding Schinke et al.’s model, particularly regarding their characterization of adaptation as a process versus an outcome, and the role of appraisals, emotions, emotional regulation, coping, and Fiske’s (2004) core motives within their model of adaptation. Adaptation or adjustment among elite athletes is a valuable area of research in sport psychology; however, Schinke et al.’s model oversimplifies the adaptation process and has limited utility among sport psychology researchers and practitioners.

Keywords: coping, appraisal, emotion, athlete, adaptational outcomes

The purpose of this paper is to present a critical commentary regarding the article “Adaptation Processes Affecting Performance in Elite Sport” (Schinke, Battocchio, Lidor, Tenenbaum, Dube, & Lane, 2012). Their adaptation model, an extension of previous work (Schinke, Tenenbaum, Lidor, & Battocchio, 2010), proposes that acute and chronic adaptation by athletes is governed by a linear process involving stressors, appraisal, and coping. As researchers in the area of stress, emotion, and coping processes, we have several concerns with the over-simplification of the adaptation process as well as the misrepresentation of research in the appraisal, coping, and adaptation literature. We also would like to expand upon some conceptual issues to contribute to a fuller discussion of these concepts in the sport psychology literature. The issues we feel deserve greater discussion relate to the characterization of adaptation as ‘equilibrium’ and the notion of adaptation as a

Katherine A. Tamminen is with the Faculty of Kinesiology and Physical Education and the University of Toronto. Peter R.E. Crocker is with the School of Kinesiology at the University of British Columbia.

process versus an outcome; appraisals, coping, and coping effectiveness; emotion and emotional regulation; the integration of Fiske's (2004) work; and Schinke et al.'s (2012) model toward adaptation. We also have concerns over whether the model is testable and we suggest some ways to move forward with investigations of stress, coping, and adjustment among elite athletes.

Adaptation as Equilibrium?

A central aim of the authors' model was to explain adaptation among elite athletes. To understand the concept of adaptation, we wanted to first explore the idea of adaptation as achieving equilibrium. Schinke et al. (2012) cited a definition by Helson (1964) indicating that adaptation is a process of adjustment to environmental conditions. Schinke et al. continued, stating that the purpose of the adaptation or adjustment process is to "restore a sense of emotional and psychological balance" (p. 181) or to "re-establish a sense of equilibrium that prevents stress overload" (p. 185). Helson's theory is an automatic habituation model, which proposes that behaviors and psychological reactions are enacted in response to deviations from an organism's current level of adaptation. Schinke et al. suggested that individuals respond to significant life events to "re-establish a sense of equilibrium that prevents stress overload" (p. 184). However, Helson stated that "to infer . . . that all behavior is directed toward the attainment of equilibrium or fixed-states is wrong" (p. 49).

Equilibrium states represent reference points from which behavior is measured, but Helson (1964) noted that equilibrium is not the goal of behavior. While the term equilibrium may seem to imply a return to previous functioning or a neutral state, Helson instead used the term 'levels' in his theory to indicate that individuals do not return to previous psychological or behavioral states. As an individual adapts or adjusts to changes in the environment, a new reference point or level is created for understanding and comparing further behavior or responses. Helson also noted that changes in the environment "require constant readjustment" (p. 111), and individuals perceive stimuli in reference to previously adapted levels. It appears that Schinke et al.'s characterization of adaptation as athletes striving for psychological equilibrium or a psychological set-point is founded upon the work of Helson; however, we suggest that it is inconsistent with Helson's description of adaptation. Rather, individuals reach new set-points or levels with each challenge they face successfully, rather than returning to previous levels. As Lazarus (2006) described, "People who cope effectively tend to 'expand the envelope' by venturing beyond where they have gone before to reach the limits of what is possible" (p. 20). This is also consistent with theoretical work by Hobfoll (2001), who suggested that "successful adaptation fosters new resources" (p. 358) that contribute to resource gain spirals in a process of acquiring, maintaining, and fostering resources to deal with stressors.

The concept of adaptation as restoring equilibrium is reminiscent of a biological model of maintaining homeostasis, which is the maintenance of a stable internal equilibrium considered essential for survival (Lazarus, 1999). Lazarus noted that thinking about stressful person-environment relationships in terms of a relative balance between environmental demands and personal resources is a useful analogy; however, the concept of homeostasis is "misleading when applied to physical, physiological, and psychological stress" (p. 58–59). Psychological stress concerns an interpretation on the part of the individual about what is happening in relation to

personal values, goals, and beliefs. As individuals appraise and respond to stressors, they are constantly reappraising and attributing meaning to ongoing and changing relationships with others and with their physical environment. Thus, rather than conceptualizing the person-environment relationship in terms of balancing or maintaining equilibrium between demands and resources, instead it may be useful to consider an ongoing process of appraisal, emotion, coping, and reappraisal informed by Lazarus' cognitive-motivational-relational (CMR) theory of emotion. This conceptualization is theoretically consistent with Helson's (1964) suggestion that adaptation involves adjustment to environmental conditions which produces new reference points for future behavior. Thus, adaptation is not considered as a restoration of a neutral set-point or equilibrium. Individuals are continually in a "dynamic process" (Lucas, Clark, Georgellis, & Diener, 2003) of appraising and adapting to environmental conditions, followed by reappraisal of their (continually changing) environment, and readjustment to the demands of the environment.

Adaptation: Process or Outcome?

Schinke et al. (2012) use the term adaptation to refer to both a process of adjustment and as an end-point of that process. They define adaptation as "the athlete's capacity to act and react competently to stressors . . . by restoring an internal sense of emotional and psychological balance" (p. 181), which suggests an outcome perspective. Similarly, in a previous publication on the topic of adaptation, Schinke et al. (2010) referred to adaptation as "the end point in a process, when people respond in a positive manner to hardship, threat, and challenge, including monumental sport tests, such as international tournaments" (p. 542). However, the authors also refer in their 2012 article to an "adaptation process" (p. 181) comprised of four parts: appraisal, application of coping responses, self-regulation, and a consolidated adaptation response. The authors discussed the need to "move the athlete closer to adaptation" (p. 184), which suggests an outcome perspective, yet they also stated in the next paragraph that "adaptation . . . is a process beginning with appraisal, continuing with effective actions, and ending with an adaptive response" (p. 184). Thus, the authors have used the term "adaptation" to refer at times to a process and also to an outcome, which is problematic for researchers seeking to investigate adaptation. If adaptation refers to a process, then it would be useful to operationalize its constituent parts. However, if the adaptation refers to an end-point of a process, then it would be useful to conceptualize which outcomes are of interest for the researcher or clinician—indeed, it is unclear whether adaptation refers to one or many outcomes. Given the possibility for ambiguous interpretation of the term "adaptation," in the following sections we propose some theoretical perspectives and terminology which may help to shed light on this area.

There is some uncertainty in the wider literature surrounding the conceptualization of the term adaptation as a process or as an outcome. For example, Kessler, Price and Wortman (1985) noted that "stress exposure" sets off a "process of adaptation" (p. 565), and Lucas et al. (2003) define adaptation as a "dynamic process" (p. 527) involving changes in subjective well-being following life events. However, not all theorists are in agreement on the matter. Aldwin (2007) defined adaptation as an "overarching construct that includes concepts such as defenses, mastery, and coping strategies" (p. 95), however she also refers to "the adaptational

process” (p. 97), albeit without providing further definition of this process. Thus, the fact that Schinke et al. use the term adaptation to refer to both a process and an outcome may reflect the various uses of the term in the wider psychology literature.

We find language used by Lazarus to be helpful in trying to understand how adaptation may be conceptualized. Lazarus (1991, 1993) referred to “adaptational outcomes” such as the development of the self, the (changing) relationship between the person and the environment, feedback effects on appraisal and coping processes, and the effects of emotion on somatic and mental health (Lazarus, 1991). Lazarus also discussed other possible adaptational outcomes including improved or decreased morale, physical health, social functioning, and emotional distress or dysfunction (Lazarus, 1993). As noted previously, researchers also have used subjective well-being and happiness as indicators of adaptation following life events (Diener, Lucas, & Scollon, 2006; Lucas et al., 2003). Thus, taking together several researchers’ use of the term, we propose that adaptation is best understood as a *process of adjustment to changing physical, social, and psychological conditions*. Adjustment may be determined by various *adaptational outcomes*, which may be selected by the researcher or by the athlete. Lazarus noted that it is important to understand the “adaptational significance” (1993, p. 236) of the encounter from the perspective of the individual. That is, the outcomes which researchers may deem significant while studying stressors, coping, and emotion may be similar or different from the outcomes deemed relevant by the athletes themselves. Although sport achievement is deemed to be significant for elite athletes, it bears consideration that athletes likely have competing goals and values (e.g., maintaining interpersonal relationships, maintaining a cohesive sense of self) which should be considered when determining the ‘adaptational significance’ of an event.

Distinguishing between adaptation as a process and adaptational outcomes as indicators of adjustment allows researchers to identify which outcomes are of interest in studies of adaptation among elite athletes. This would prevent researchers from being constrained by a definition of adaptation which simply describes athletes’ ability to deal with stressors and achieve performance outcomes. Using the term adaptational outcomes would allow researchers to assess indicators of adjustment such as psychological wellbeing or happiness, life satisfaction, (e.g., Diener et al., 2006; Gaudreau & Antl, 2008), sport satisfaction, positive emotions (e.g., Blanchard, Amiot, Perreault, Vallerand, & Provencher, 2009), and subjective goal attainment (Nicolas, Gaudreau, & Franche, 2011). Sport researchers could also expand the concept of adaptational outcomes to include physical fitness, confidence, self-esteem or self-concept.

Appraisals, Coping, and Coping Effectiveness

Schinke et al. noted that their model toward adaptation among elite athletes intersects with the stress, coping, and self-regulation literatures. As such, we felt it important to discuss some conceptual issues which were not present in their paper and some inaccuracies in their paper. First, however, it is important to distinguish between coping and adaptation. Lazarus and Folkman (1984) made such a distinction, stating that “adaptation is a broader concept that includes routine, even automatic modes of getting along, whereas coping always involves some sort of stress” (p. 283–284). Costa, Somerfield, and McCrae (1992) stated that coping is a “special category of

adaptation,” elicited in response to appraisals of person-environment relationships which are perceived as “unusually taxing” (p. 45). Thus, adaptation appears to be a broader process of adjustment which may include routine and automatic processes and rational, planned behaviors as well as coping responses to stressors.

Appraisals

One point which we appreciated throughout Schinke et al.’s article was their emphasis on the concept of appraisal as an important feature which underpins subsequent emotions, coping, and psychological adjustment. At several points throughout their paper, the authors refer to the importance of appraisal as the foundation for emotion, coping, and adaptation processes. For example, they stated that athletes’ coping must be “built from a pattern of adequate, constructive appraisal” (p. 183) and they refer to “constructive appraisal . . . as the catalyst to a fuller adaptation process” (p. 186). However, despite the importance of appraisals, there was little discussion of how appraisals are constructed or how they impact athletes’ subsequent emotions, coping, and performance outcomes.

Although there are multiple perspectives regarding the nature of appraisals, we will restrict our discussion to Lazarus’ CMR theory due to its wide influence within sport psychology research; however, we felt it important to highlight the multiplicity of perspectives which exist regarding appraisals and emotions. According to Lazarus’s CMR theory of emotion (1999; 2006), appraisals involve an evaluation of the significance of one’s relationships with others and the options for coping. Appraisals allow for the construction of a variety of relational meanings, which are the meanings that the individual constructs about his or her relationship with the environment/others. Environmental variables which shape the appraisal of a situation include the demands of the environment (e.g., pressure to conform, pressure to perform), constraints which dictate unacceptable actions in the situation (e.g., retaliation, outbursts), opportunities within the situation (e.g., identifying appropriate opportunities to seek support from others), and also cultural variables (e.g., cultural differences in dealing with stressors). Appraisals are influenced by person variables including individuals’ goals, beliefs, values, and also by their personal resources, past experiences, and perceptions of control (e.g., Pensgaard & Ursin, 1998).

Schinke et al. briefly distinguished between primary and secondary aspects of appraisal in discussing examples of acute stressors, stating that “education facilitative of adaptation [includes] correct primary appraisal processes, with secondary appraisal processes used to identify constructive strategies” (p. 186). The authors do not explain primary and secondary appraisals and in their conclusion, they state that “the process of appraisal must happen in two parts, with the relevance of the stressor discerned and next, only those stressors regarded as relevant attended to” (p. 191). We find this statement misleading, as it suggests that primary appraisal is about the relevance of the stressor and secondary appraisal is about attending to relevant stressors. According to Lazarus (1999), primary appraisal concerns a determination of “whether or not what is happening is relevant to one’s values, goal commitments, beliefs about self and world, and situational intentions” (p. 75), whereas secondary appraisal refers to a determination of “what can be done about a stressful person-environment relationship” (p. 76).

Primary appraisals involve decisions about the person-environment relationship in terms of its relevance to one’s goals, its congruence or incongruence with goals, and

ego involvement. Secondary appraisals are a determination of coping options to deal with the stressor. Secondary appraisals involve decisions regarding blame or credit (e.g., who or what is responsible for this situation), coping potential (e.g., whether the individual can act successfully to cope with the stressor), and future expectations about the stressor (e.g., will the situation improve or worsen). As a result of primary and secondary appraisals, individuals may assess the situation as threatening, challenging, or one where harm/loss has occurred. Lazarus also suggested that appraisals may result in an assessment of benefit which may require coping strategies as well—for example, a swimmer may place first in their heat, resulting in an appraisal of benefit since they will move onto the next round of competition. However, the athlete may need to manage her positive emotions to prepare for the upcoming race.

In terms of the role of appraisal in Schinke et al.'s model, they stated that “athletes must effectively appraise their stressors through primary and secondary means before responding” (p. 182) and that athletes should have “well-rooted coping and self-regulation strategies, built from a pattern of adequate, constructive appraisal” (p. 183). It is not immediately clear what ‘effective’ appraisals are or how athletes’ appraisals might become more constructive. Researchers in sport contexts have provided evidence that threat appraisals are associated with negative emotions before sport competitions, while challenge appraisals are associated with positive emotions (Nicholls, Levy, & Polman, 2012). Challenge appraisals have been characterized as leading to more adaptive forms of coping (e.g., Williams, Cumming, & Balanos, 2010). Challenge appraisals are associated with perceptions of control and with problem-focused, approach, or engagement-oriented coping (e.g., Nicholls et al., 2012). Thus, effective or constructive appraisals might refer to changing athletes’ threat appraisals to challenge appraisals. Recent research has suggested ways in which athletes might use logical analysis, focusing on the potential for gain, and imagery to appraise situations as challenging rather than threatening (e.g., Nicholls et al., 2012, Williams et al., 2010).

We could not find any reference by Lazarus to the effectiveness of appraisals. However, he did state that coping “depends on an appraisal process that seeks the most serviceable meaning available in the situation, one that supports realistic actions while also viewing that situation in the most favorable way possible” (1999, p. 124). Furthermore, he noted that “sometimes appraisal is realistic, and sometimes it is not” (1991, p. 138), describing the possibility for incongruity between the individual’s construal of a situation and the actual conditions. Thus, effective appraisals might refer to the congruence between the individual’s perception of a situation and its objective features or demands. Alternatively, it may refer to appraisals which foster realistic action given the constraints of the situation. However, if appraisals are understood as the construction of meanings about person-environment relationships, then assessing an appraisal in terms of its worth (e.g., constructive, adequate, or effective) seems inconsequential. The importance of appraisals is that they contribute to individuals’ understandings about the person-environment relationship, linking environmental demands, personal goals, beliefs, and emotional responses (Smith & Lazarus, 1993).

Coping

Coping is a central feature within the adaptation model proposed by Schinke et al. We believe, however, that their representation of coping theory may be misleading.

First, they stated that athletes “alleviate their stressors with one of two coping strategies – problem-focused coping or emotion-focused coping” (p. 183). Although sport researchers have commonly used this framework (e.g., Crocker & Graham, 1995; Kowalski & Crocker, 2001), this form of classification has proven to be problematic in the stress and coping literature. Some researchers and theorists have argued against using the problem-focused/emotion-focused conceptualization, stating that “single functions (e.g., problem vs. emotion focused) are not good action categories because any given way of coping is likely to serve many functions” (Skinner, Edge, Altman, & Sherwood, 2003, p. 248). Lazarus (2006) acknowledged conceptual and methodological issues which have arisen from the conceptualization of coping as either problem-focused or emotion-focused responses:

... it would be desirable to abandon the idea of problem-focused and emotion-focused coping as two independent types of coping ... to treat the two coping functions as separate and competing is a serious epistemological mistake, because, in most stress situations, they actually complement each other ... to separate them and set them up as competitive is to distort the way coping actually works. (p. 22–23)

Schinke et al. understated the complexity inherent in athletes’ potential coping responses, and their article does not fully reflect current perspectives and concerns regarding the classification and conceptualization of coping. Their depiction of emotion-focused as “evident when athletes seek out an emotional response to an unforeseen stressor” is incorrect. Emotion-focused coping refers to efforts aimed at regulating emotions related to the appraised stressor (Lazarus, 1999) or strategies which change the way in which the person-environment relationship is attended to or interpreted (e.g., cognitive avoidance, denial, cognitive restructuring; Lazarus, 1991). They also do not include the category of avoidance coping responses, which has been widely cited in studies of coping among elite athletes (see Hoar, Kowalski, Gaudreau, & Crocker, 2006; Nicholls & Polman, 2007 for reviews of coping in sport).

There are a number of different ways to capture the complexity of coping in sport which were not indicated by Schinke et al. (2012). Gaudreau and Blondin (2002) provided support for classifying coping responses according to engagement, disengagement and distraction dimensions. Researchers examining coping in relation to interpersonal relationships may conceptualize coping as an inherently social enterprise, thus paying attention to the social aspects of coping (Hobfoll, Dunahoo, Ben-Porath, & Monnier, 1994). Alternatively, researchers might adopt Skinner and Wellborn’s (1994) conceptualization of stressors and coping responses which relate to individuals’ perceptions of autonomy, relatedness, and competence. Furthermore, researchers may organize coping responses in terms of their temporal features, examining strategies used in advance of a stressor (e.g., in advance of a penalty shot) versus those coping strategies used in response to stressors (e.g., after missing a penalty shot). Such an approach could be informed by Aspinwall and Taylor’s (1997) theory of proactive coping (see Tamminen & Holt, 2010). The way in which researchers choose to study or measure coping should be informed by the theory or perspective which best suits their research question, and it should also be informed by empirically-supported classifications of coping responses.

Coping Effectiveness

The concept of effective coping has been a perplexing issue in the sport psychology and general psychology literature (Richards, 2012; Somerfield & McCrae, 2000). While it is beyond the scope of this commentary to address the various perspectives regarding effective or adaptive coping, we wish to briefly touch upon the notion of coping effectiveness as it relates to athletes' subjective appraisals of the situation and their personal goals and values. Schinke et al. indicated that adaptation consists of "effective actions and reactions" (p. 184) and "correctly chosen coping and self-regulatory responses" (p. 185), and task-oriented coping strategies are indicated as part of their model toward adaptation. However, there is some debate over what exactly constitutes effective coping. Broadly, it is difficult to assess the effectiveness of a given coping strategy due to the sheer complexity of athletes' appraisal and coping process. Some task-oriented or engagement-oriented strategies are associated with positive affect and the achievement of subjective performance goals in sport (e.g., Gaudreau, Nicholls, & Levy, 2010; Nicholls et al., 2012), yet it is recognized that no one strategy is universally effective or ineffective (Lazarus, 1999; Nicholls, 2007).

Overall, the effectiveness of a particular coping strategy must be determined by taking into consideration athletes' subjective appraisals of the situation and the context, as well as athletes' personal goals in determining whether coping was effective (Richards, 2012). Thus, Schinke et al.'s suggestion that athletes need flexibility in their coping is in line with theoretical and empirical findings. However, we wanted to highlight the importance of the understanding the athlete's appraisal of the situation in determining what constitutes effective coping, and it is important that researchers and practitioners do not solely equate performance with effective coping (Crocker, Kowalski, & Graham, 1998).

The Role of Emotion

Schinke et al. referred to athletes' "emotional appraisal" which can "magnify or subdue" stressors (p. 183), they discussed the importance of "emotional investment" as a motivational factor for elite athletes, and they did refer to the use of strategies to "self-regulate emotions" (p. 181), and using strategies to "find an appropriate emotional state" (p. 184). Given recent research supporting the importance of emotions in sport contexts (e.g., Hanin, 2000; Woodman, Davis, Hardy, Callow, Glasscock, & Yuill-Proctor, 2009; Uphill & Jones, 2007), we found it somewhat surprising that Schinke et al. did not elaborate upon the role of emotion nor did they include emotion in the figure depicting their model of adaptation.

Schinke and colleagues identify emotion regulation as a key aspect of adaptation. They fail, however, to clearly identify the role of emotions and the process of emotional regulation beyond a simplistic view of problem and emotion focused coping and vague statements such as "strategies are thus used to manage responses aimed at establishing or reestablishing a sense of ease within the competitive context . . ." (p. 183). We would argue that emotion regulation is a critical factor in the adaptation process. Emotions in sport are often activated rapidly with minimal cognitive processing, and are associated with a host of neurophysiological, cognitive, behavioral, and expressive components (see Crocker, Kowalski, Hoar, & McDonough, 2004; Ekman & Cordaro, 2011). There is evidence that most

emotional states involve an interface between subcortical and cognitive brain structures (Izard, 2011), implying that an athlete's knowledge and belief systems can have direct impact on what information becomes emotionally arousing. Thus, emotions have a powerful influence on people's cognitive processing and actions (Ekman & Cordaro, 2011), with the potential to both enhance and impede effective functioning in sport (see Crocker, Kowalski, & Graham, 2002; Hanin, 2000; Uphill & Jones, 2007).

Given that emotions can influence motivational and regulatory functioning, successful adaptation requires that athletes learn to regulate what and when specific emotions are experienced, as well as their intensity, time course, and expression. Thompson (1994) defined emotional regulation as "the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals" (pp. 27–28). It considers not only self-regulation but also the role of significant others in regulating emotions. We appreciate that there is overlap between emotion regulation processes and coping since stress and emotion are interrelated. However, as Lazarus noted, "stress tells us relatively little about the details of a person's struggle to adapt. Emotion, conversely, includes at least 15 different varieties, greatly increasing the richness of what can be said about a person's adaptation struggle" (1999, p. 33). Unlike coping, emotional regulation involves both conscious and automatic processes. It can encompass regulating neurophysiological components, attention, cognitive appraisal, interpretation of internal physiological cues (as facilitative or debilitating), external coping resources, selection and/or modification of competitive situations, and selecting adaptive responses (Crocker et al., 2002; Gross, 2008; Thompson, 1994). Thus, emotional regulation is a complex process involving self and others that is necessary (but not sufficient) for elite athletes to achieve their goals. Without a clear description of emotional regulation, any model of athlete adaptation is incomplete.

Fiske (2004): Motives or Pathways?

To describe the ways in which adaptation may be 'achieved,' Schinke et al. draw upon work by Fiske (2004), stating that "Fiske has proposed that there exists [*sic*] adaptation pathways" (p. 184). These pathways are: (a) understanding, (b) controlling, (c) self-enhancement, (d) belonging, and (e) trusting. We feel that Schinke et al. have misrepresented Fiske's work on social psychological motives which serve to explain individuals' behaviors. In this section, we also refer to work by Schinke et al. (2010), as it is a similar publication regarding the authors' conceptualization of adaptation and it also provides a description of the proposed pathways.

Fiske's (2004) work is grounded in social psychology and it focuses on the way in which individuals participate in groups and it emphasizes the place of the individual within a group. In this sense, Fiske's work contributes to processes of coping and adaptation by describing ways in which individuals may interact in groups. Fiske stated that individuals have five core motives which "describe fundamental, underlying psychological processes that impel people's thinking, feeling, and behaving in situations involving other people" (p. 14). Fiske described these motives as needs for stable relationships (belonging), for shared meaning and prediction (understanding), for perceived contingency between behavior and

outcomes (controlling), for viewing the self as worthy (self-enhancing), and for viewing others as basically benign (trusting). Thus, based on our reading of Fiske's original work, we understand these concepts as underlying motives which stimulate action, or as organizing principles for explaining behaviors. For example, 'belonging' motivates actions taken to establish and maintain close relationships, while 'understanding' motivates actions taken to seek information and develop shared meanings with other people (Fiske, 2004).

It is unclear how Fiske's core motives have been transformed into pathways as suggested by Schinke et al. For example, they state that "as a pathway to adaptation, understanding is similar to appraising the organizational and competitive stressors that are part of elite sport . . ." (p. 184). However, we would argue that understanding is not similar to appraising, but rather the need for understanding *explains* or *guides* athletes' behaviors. An athlete's need to understand may explain why he seeks information from a coach about playing time or starting positions on a team; the athlete has a motive to understand why he has less playing time and how he might improve the situation. Similarly, Schinke et al. state that the pathway described as 'controlling' "targets the athlete's effective responses in managing stressors through distraction control or assertive behavior(s)" (p. 184). We offer that controlling does not target the athlete's responses, but rather 'controlling' is a need to feel "competent and effective at dealing with their social environment and themselves" (Fiske, 2004, p. 21). Our concern is that Fiske's core motives have been misappropriated and reconceptualized as "adaptation pathways" (Schinke et al., p. 184) without a clear description of how an athlete would progress along such pathways and how they are different from Fiske's motives.

Schinke et al. noted in their previous work that "adaptation has been reconceptualized by Fiske (2004) into a more comprehensive framework [which includes] five available pathways (i.e., core motives) that explain why performers achieve or fail at adaptation in context" (2010, p. 545). We were unable to find any writing by Fiske which indicates that her core motives were representations of adaptation pathways or processes, and we found no evidence that Fiske sought to 'reconceptualize' adaptation. Fiske situated her work within a social-adaptation perspective wherein "people respond to other people and seek social acceptance precisely because of social motives that have evolved to help them survive in groups – and to survive more generally" (p. 11). Fiske also stated that the focus of her work was on "the social psychology of people's adaptive, functional motives and goals" (p. xvii). However, Fiske was clear in stating that "the motives constitute *not* a theoretical model that predicts outcomes but a description of what social psychologists do, in practice" (p. 25, italics added). Thus, based on Fiske's work, core motives seem best represented as "organizing themes" (Fiske, p. 33) for describing social behaviors, rather than pathways toward an outcome.

Schinke et al.'s Model Toward Adaptation

Schinke et al. proposed a 'model toward adaptation' which begins with the 'proximity of adaptation' and ends with 'performance.' We believe the model does not fully represent the complexity of an adaptation process, and suggest that it neglects several components including emotions, personality characteristics, past experiences, and social/contextual factors which influence adaptation processes.

First, the model does not include any feedback loops or indicators of a recursive process following athletes' 'adaptation response' and 'performance.' The absence of any feedback loops suggests that their model views adaptation as an outcome, after which there is no further action required of the athlete. Representing the process toward adaptation as culminating in performance is not necessarily problematic. Various models dealing with stressors, coping, and performance in sport psychology depict a recursive process wherein the final outcome influences subsequent appraisals, coping, and future performances (e.g., Richards, 2012; Reid, 2012), while others represent performance as the outcome or end-point without any feedback loops to indicate recursive processes (e.g., Jones, Meijen, McCarthy, & Sheffield, 2009; Rees & Freeman, 2012). However, considering the ambiguity with which the term adaptation was used throughout their paper, it is unclear whether the authors conceptualized adaptation as a process or as an outcome. If researchers are interested in athletes' adjustment to a particular event or situation in which successful performance is the desired outcome, then feedback loops indicating a recursive process would not be necessary. However, if researchers were interested in examining adaptation as a process which requires continual readjustment to changing physical, social, and psychological demands in elite sport contexts (e.g., tryouts, adjusting to higher performance standards, transitions to different cultures and different levels of competition, transitions out of sport), then feedback loops indicating a recursive process seem appropriate. The inclusion of feedback loops would also provide more scope for researchers to investigate the influence of past performances on subsequent performance. Since the authors stated that the "adaptation process [they] are proposing is quite similar to" Lazarus' theory (p. 181), indicating recursive processes within the authors' model toward adaptation would be theoretically more consistent with Lazarus' conceptualization of CMR theory and adaptation (1999, 1991). We also recognize that some adaptation researchers are examining far more complex nonlinear models (e.g., Livneh & Parker, 2005).

The second point we noted was the model does not include a depiction of personality characteristics or contextual factors which are likely to influence appraisal, coping, emotions and eventual adjustment and/or performance outcomes. The authors did refer to some of these factors within the text of their paper, and it is unclear why these would be absent from their model of adaptation. There is a growing emphasis on understanding personality and contextual factors related to coping processes in the broader field of psychology and within sport psychology. For example, Lazarus (2006) noted that the most important aspect of appraisals are interpersonal, and he also advocated for a wider consideration of social factors in understanding coping: "if we limit ourselves to either personality psychology or to social psychology, we are bound to be dealing with only a small part of the whole topic of coping" (p. 41). Recent research in sport draws attention to the role of personality factors in athletes' coping (e.g., Kaiseler, Polman, & Nicholls, 2012) and on emotional regulation within groups (see Latimer, Rench, & Brackett, 2007; Tamminen & Crocker, 2013). Including personality and social/contextual factors into a depiction of the 'model toward adaptation' would more accurately represent the information presented within the text of their paper, and it would also place greater emphasis on athletes' appraisal, coping, and adjustment within a context of elite sport.

Some additional points which would benefit from clarification in Schinke et al.'s model include a clearer description and distinction between some of the elements

of the model. For example, it appears that the first box in their model, 'proximity of adaptation' might be an element of athletes' appraisal process, although this is not specified. It is not clear from the model whether 'proximity of adaptation' refers to athletes' anticipation of future stressors, or whether it represents some global characteristic of the elite sport context. Clarification would also be helpful in distinguishing between 'strategy use' and 'adaptation response.' Schinke et al. stated that "coping strategies are employed to self-regulate emotions, either by suppressing the emotions, attempting to alter environmental conditions, or reevaluating the importance of the stressor. [Then], a response is taken to restore balance" (p. 181). It is not clear how athletes' adaptation responses would be separate and distinct from their use of coping and self-regulation strategies in dealing with appraised stressors. By clarifying the distinction between coping, self-regulation, and an 'adaptation response' in their model, it would enable researchers to determine the effects of each on athletes' adjustment and performance outcomes.

Our final point regarding Schinke et al.'s model is that it does not present any readily testable hypotheses and has limited applicability for research and intervention, and it presents a descriptive linear model outlining a process of appraisal, coping, and an outcome (performance). The authors do not specify which parts of the model would be particularly viable targets for intervention (e.g., appraisal training, coping strategy use, or 'global strategies'), nor do they indicate how changes in one part of the model might impact other parts of the model. For example, in the 'appraisal of stressors' box, it is unclear how appraisals of challenge, threat, loss/harm, or benefit might impact athletes' coping. Furthermore, as we indicated earlier, there is no indication of the role of emotion in their model, which is a key element missing from a model of stress, coping, and adaptation. In their description of the model, the authors state that "When the process is followed in sequence, decisions are founded upon constructive evidence. From a basis of comprehension and correct strategy selection, athletes take the necessary steps toward adaptation, all the while knowing that their decisions are with basis" (p. 191). This statement implies a sequential process in which an athlete makes a 'constructive' appraisal, and then chooses the correct strategy to achieve adaptation. We find that this perspective overlooks the complexity of unconscious processes, appraisals, emotions, coping, and the context in which these processes occur. As Aldwin (2007) summarized:

Coping affects adaptation in extremely complicated ways. It would be wonderful if the world were simple enough that psychologists could make recommendations such as: engage in instrumental action and all your problems will be solved . . . But it is simply not that easy. (p. 126)

Moving Forward With Research and Interventions

It is important for researchers to develop and test models which capture the complexity of athletes' adaptational processes and which also offer testable hypotheses to guide future research and interventions. We agree with Schinke et al. (2010) that strategies are needed to provide athletes with "psychological guidance and practical knowledge on how to appropriately transfer the principles of

the learned strategies from practice to real-world challenging sporting conditions” (p. 554–555). In their 2012 article, they propose that a ‘psychological adaptation process’ should be revisited to allow athletes to practice coping strategies, coordinate strategies given the contextual demands of the situation, and to develop a flexible approach to using coping strategies in unexpected circumstances. The authors state a psychological adaptation program should incorporate reflection on previous experience, athletes’ learning preferences, the existing principles of the athletes’ sport psychology program, and the identification of intended objectives, suggesting that multiple possible adaptational outcomes could be relevant targets for intervention and research.

Whether athletes’ adjustment is best facilitated through the authors’ proposed adaptation framework or through alternative coping training programs remains unknown. There are several coping training programs which have been tested in sport, including cognitive-affective stress management training (Crocker, Alderman, & Smith, 1988), stress inoculation training (Mace & Carroll, 1986), coping effectiveness training (Reeves, Nicholls, & McKenna, 2011), and COPE stress training (Anshel, Gregory, & Kaczmarek, 1990). Indeed, a promising area for researchers could be comparing and determining which interventions and educational practices are helpful for athletes in achieving various adaptational outcomes in sport. Research examining the efficacy of coping interventions is limited and would be valuable in providing practitioners with evidence-based strategies for helping elite athletes deal with the demands associated with elite sport.

One aspect which we suspect will be particularly valuable in guiding future research and interventions is the role of appraisal processes. Appraisals are important because they influence emotions, coping responses and performance in competitive sport contexts. Appraisal training may be a valuable tool with which to help athletes deal with the demands of competitive sport (Nicholls et al., 2012). Thus, highlighting the importance of appraisals among elite athletes is a strength of Schinke et al.’s article, and we suspect that understanding the appraisal process will be an important area for future research and intervention.

Finally, we wish to draw attention to previous work by Tenenbaum et al. (2003) on athletes’ stress responses and adaptation. Their model incorporated appraisals, stressors, coping, personality characteristics, and emotions which contribute to athletes’ adaptation states. These adaptation states are thought to occur along a continuum from failed adaptation to successful adaptation, with athletes exhibiting varying physiological, emotional, cognitive, and behavioural responses depending on their adaptational state. One strength of their model is the authors’ acknowledgement that athletes in a state of successful adaptation should not only adapt to a stressor, but athletes should also acquire the ability to function more effectively when faced with similar situations in the future. This is consistent with the notion that adaptation does not consist of a return to a neutral set-point or to a previous level of functioning, but rather adaptation is a process of continual adjustment to changing physical, social, and psychological conditions. An additional strength of Tenenbaum et al.’s (2003) model is that it offers testable hypotheses to guide future research while still acknowledging the complexity of athletes’ adaptation within sport. Thus, it may be worthwhile to re-visit previous models which could make valuable contributions in moving forward with interventions and research on athletes’ adaptational processes.

Conclusion

We have highlighted some theoretical and conceptual issues which we feel are relevant for researchers and practitioners interested in further understanding appraisal, emotion, coping, and adaptation processes and we have attempted to clarify the use of terminology in this area. Conceptualizing adaptation as a process would allow researchers to examine multiple aspects of elite athletes' experiences in sport by identifying various adaptational outcomes as indicators of adjustment. Overall, we feel that Schinke et al.'s model toward adaptation over-simplifies the process of adaptation and we have raised concerns about the authors' characterization of appraisal, coping, coping effectiveness, emotional regulation, the concept of adaptation as a process, outcome, or as equilibrium, and also regarding their use of Fiske's core motives as pathways toward adaptation. Given that these are all central aspects of their model and that the model offers no testable hypotheses, we believe the model has limited utility among sport psychology researchers and practitioners in its current state.

References

- Aldwin, C.M. (2007). *Stress, coping, and development: An integrative perspective* (2nd ed.). New York: Guilford Press.
- Anshel, M.H., Gregory, W.L., & Kaczmarek, M. (1990). The effectiveness of a stress training program in coping with criticism in sport: A test of the COPE model. *Journal of Sport Behavior, 13*, 194–217.
- Aspinwall, L.G., & Taylor, S.E. (1997). A stitch in time: Self-regulation and proactive coping. *Psychological Bulletin, 121*, 417–436. [PubMed doi:10.1037/0033-2909.121.3.417](https://pubmed.ncbi.nlm.nih.gov/1213417/)
- Blanchard, C.M., Amiot, C.E., Perreault, S., Vallerand, R.J., & Provencher, P. (2009). Cohesiveness and psychological needs: Their effects on self-determination and athletes' subjective well-being. *Psychology of Sport and Exercise, 10*, 545–551. [doi:10.1016/j.psychsport.2009.02.005](https://doi.org/10.1016/j.psychsport.2009.02.005)
- Costa, P.T., Somerfield, M.R., & McCrae, R.R. (1992). Personality and coping: A reconceptualization. In M. Zeidner & N.S. Endler (Eds.), *Handbook of coping* (pp. 44–61). New York: Wiley.
- Crocker, P.R., Alderman, R.B., & Smith, F.M. (1988). Cognitive-affective stress management training with high performance youth volleyball players: Effects on affect, cognition, and performance. *Journal of Sport & Exercise Psychology, 10*, 448–460.
- Crocker, P.R.E., & Graham, T.R. (1995). Coping by competitive athletes with performance stress: Gender differences and relationships with affect. *The Sport Psychologist, 9*, 325–338.
- Crocker, P.R.E., Kowalski, K.C., & Graham, T.R. (1998). Measurement of coping strategies in sport. In J.L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 149–161). Morgantown, WV: Fitness Information Technology.
- Crocker, P.R.E., Kowalski, K., & Graham, T.R. (2002). Emotional control intervention for sport. In J. Silva & D. Stevens (Eds.), *Psychological foundations of sport* (pp. 155–176). Boston: Allyn & Bacon.
- Crocker, P.R.E., Kowalski, K., Hoar, S., & McDonough, M. (2004). Emotions in sport across adulthood. In M. Weiss (Ed.), *Developmental sport and exercise psychology: A lifespan perspective* (pp. 333–356). Morgan Town, WV: Fitness Information Technology.
- Diener, E., Lucas, R.E., & Scollon, C.N. (2006). Beyond the hedonic treadmill: Revising the adaptation theory of well-being. *The American Psychologist, 61*, 305–314. [PubMed doi:10.1037/0003-066X.61.4.305](https://pubmed.ncbi.nlm.nih.gov/1010370003066X614305/)

- Ekman, P., & Cordaro, D. (2011). What is meant by calling emotions basic. *Emotion Review*, 3, 364–371. doi:10.1177/1754073911410740
- Fiske, S.T. (2004). *Social beings: A core motives approach to social psychology*. Hoboken, NJ: Wiley & Sons.
- Gaudreau, P., & Antl, S. (2008). Athletes' broad dimensions of perfectionism: Examining change in life-satisfaction and the mediating role of motivation and coping. *Journal of Sport & Exercise Psychology*, 30, 356–382. PubMed
- Gaudreau, P., & Blondin, J.P. (2002). Development of a questionnaire for the assessment of coping strategies employed by athletes in competitive sport settings. *Psychology of Sport and Exercise*, 3, 1–34. doi:10.1016/S1469-0292(01)00017-6
- Gaudreau, P., Nicholls, A., & Levy, A.R. (2010). The ups and downs of coping and sport achievement: An episodic process analysis of within-person associations. *Journal of Sport & Exercise Psychology*, 32, 298–311. PubMed
- Gross, J.J. (2008). Emotion regulation. In M. Lewis, J.M. Haviland-Jones, & L.F. Barrett (Eds.), *Handbook of emotions* (pp. 497–512). New York: The Guilford Press.
- Hanin, Y.L. (2000). *Emotions in sport*. Champaign, IL: Human Kinetics.
- Helson, H. (1964). *Adaptation-level theory*. New York: Harper & Row.
- Hoar, S.D., Kowalski, K.C., Gaudreau, P., & Crocker, P.R.E. (2006). A review of coping in sport. In S. Hanton & S.D. Mallalieu (Eds.), *Literature reviews in sport psychology* (pp. 53–103). Hauppauge, NY: Nova Science Publishers.
- Hobfoll, S. (2001). The influence of culture, community, and the nest-self in the stress process: Advancing conservation of resources theory. *Applied Psychology*, 50, 337–421. doi:10.1111/1464-0597.00062
- Hobfoll, S.E., Dunahoo, C.L., Ben-Porath, Y., & Monnier, J. (1994). Gender and coping: The dual axis model of coping. *American Journal of Community Psychology*, 22, 49–82. PubMed doi:10.1007/BF02506817
- Izard, C.E. (2011). Forms and functions of emotions: Matters of emotion-cognition interactions. *Emotion Review*, 3, 371–378. doi:10.1177/1754073911410737
- Jones, M.V., Meijen, C., McCarthy, P.J., & Sheffield, D. (2009). A theory of challenge and threat states in athletes. *International Review of Sport and Exercise Psychology*, 2, 161–180. doi:10.1080/17509840902829331
- Kaiseler, M.H., Polman, R.C.J., & Nicholls, A.R. (2012). Effects of the Big Five personality dimensions on appraisal, coping, and coping effectiveness in sport. *European Journal of Sport Science*, 12, 62–72. doi:10.1080/17461391.2010.551410
- Kessler, R.C., Price, R., & Wortman, C. (1985). Social factors in psychopathology: Stress, social support and coping processes. *Annual Review of Psychology*, 36, 531–572. PubMed doi:10.1146/annurev.ps.36.020185.002531
- Kowalski, K.C., & Crocker, P.R.E. (2001). Development and validation of the Coping Function Questionnaire for adolescents in sport. *Journal of Sport & Exercise Psychology*, 23, 136–155.
- Latimer, A.E., Rench, T.A., & Brackett, M.A. (2007). Emotional intelligence – A framework for examining emotions in sport and exercise groups. In M.R. Beauchamp & M.A. Eys (Eds.), *Group dynamics in exercise and sport psychology: Contemporary themes* (pp. 3–22). New York: Routledge.
- Lazarus, R.S. (1991). *Emotion and adaptation*. New York: Oxford University Press.
- Lazarus, R.S. (1993). Coping theory and research: Past, present, and future. *Psychosomatic Medicine*, 55, 234–247. PubMed
- Lazarus, R.S. (1999). *Stress and emotion: A new synthesis*. New York: Springer.
- Lazarus, R.S. (2006). Emotions and interpersonal relationships: Toward a person-centered conceptualization of emotions and coping. *Journal of Personality*, 74, 9–46. PubMed doi:10.1111/j.1467-6494.2005.00368.x
- Lazarus, R.S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

- Livneh, H., & Parker, R.M. (2005). Psychological adaptation to disability: Perspectives from chaos and complexity theory. *Rehabilitation Counseling Bulletin, 49*, 17–28. doi:10.1177/00343552050490010301
- Lucas, R.E., Clark, A.E., Georgellis, Y., & Diener, E. (2003). Reexamining adaptation and the set point model of happiness: Reactions to changes in marital status. *Journal of Personality and Social Psychology, 84*, 527–539. PubMed doi:10.1037/0022-3514.84.3.527
- Mace, R., & Carroll, D. (1986). Stress inoculation training to control anxiety in sports: Two case studies in squash. *British Journal of Sports Medicine, 20*, 115–117. PubMed doi:10.1136/bjism.20.3.115
- Nicolas, M., Gaudreau, P., & Franche, V. (2011). Perception of coaching behaviors, coping, and goal attainment in a sport competition. *Journal of Sport & Exercise Psychology, 33*, 460–468. PubMed
- Nicholls, A.R. (2007). A longitudinal phenomenological analysis of coping effectiveness among Scottish international adolescent golfers. *European Journal of Sport Science, 7*, 169–178. doi:10.1080/17461390701643034
- Nicholls, A.R., Levy, A.R., & Polman, R.C.J. (2012). A path analysis of stress appraisals, emotions, coping, and performance satisfaction among athletes. *Psychology of Sport and Exercise, 13*, 263–270. doi:10.1016/j.psychsport.2011.12.003
- Nicholls, A.R., & Polman, R.C.J. (2007). Coping in sport: A systematic review. *Journal of Sports Sciences, 25*, 11–31. PubMed doi:10.1080/02640410600630654
- Pensgaard, A.M., & Ursin, H. (1998). Stress, control, and coping in elite athletes. *Scandinavian Journal of Medicine & Science in Sports, 8*, 183–189. PubMed doi:10.1111/j.1600-0838.1998.tb00190.x
- Reid, C. (2012). Losing to win: A clinical perspective on the experience of loss among elite athletes. In J. Thatcher, M. Jones, & D. Lavallee (Eds.), *Coping and emotion in sport* (2nd ed., pp. 261–283). London: Routledge.
- Rees, T., & Freeman, P. (2012). Coping in sport through social support. In J. Thatcher, M. Jones, & D. Lavallee (Eds.), *Coping and emotion in sport* (2nd ed., pp. 102–117). London: Routledge.
- Reeves, C.W., Nicholls, A.R., & McKenna, J. (2011). The effects of a coping intervention on coping self-efficacy, coping effectiveness, and subjective performance among adolescent soccer players. *International Journal of Sport and Exercise Psychology, 9*, 126–142. doi:10.1080/1612197X.2011.567104
- Richards, H. (2012). Coping processes in sport. In J. Thatcher, M. Jones, & D. Lavallee (Eds.), *Coping and emotion in sport* (2nd ed., pp. 1–32). London: Routledge.
- Schinke, R.J., Battochio, R.C., Lidor, R., Tenenbaum, G., Dube, T.V., & Lane, A.M. (2012). Adaptation processes affecting performance in elite sport. *Journal of Clinical Sports Psychology, 6*(2), 180–195.
- Schinke, R.J., Tenenbaum, G., Lidor, R., & Battochio, R.C. (2010). Adaptation in action: the transition from research to intervention. *The Sport Psychologist, 24*, 542–557.
- Skinner, E.A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: A review and critique of category systems for classifying ways of coping. *Psychological Bulletin, 129*, 216–269. PubMed doi:10.1037/0033-2909.129.2.216
- Skinner, E.A., & Wellborn, J.G. (1994). Coping during childhood and adolescence: A motivational perspective. In D. Featherman, R. Lerner, & M. Perlmutter (Eds.), *Life-span development and behavior* (Vol. 12, pp. 91–133). Hillsdale, NJ: Erlbaum.
- Smith, C.A., & Lazarus, R.S. (1993). Appraisal components, core relational themes, and the emotions. *Cognition and Emotion, 7*, 233–269. doi:10.1080/02699939308409189
- Somerfield, M.R., & McCrae, R.R. (2000). Stress and coping research: Methodological challenges, theoretical advances, and clinical applications. *The American Psychologist, 55*, 620–625. PubMed doi:10.1037/0003-066X.55.6.620
- Tamminen, K.A., & Crocker, P.R.E. (2013). “I control my own emotions for the sake of the team”: Emotional self-regulation and interpersonal emotion regulation among

- female high-performance curlers. *Psychology of Sport and Exercise*, 14, 737–747. doi:10.1016/j.psychsport.2013.05.002
- Tamminen, K.A., & Holt, N.L. (2010). Female adolescent athletes' coping: A season-long investigation. *Journal of Sports Sciences*, 28, 101–114. PubMed doi:10.1080/02640410903406182
- Thompson, R.A. (1994). Emotion regulation: A theme in search of definition. *Monographs of the Society for Research in Child Development*, 59, 25–52. PubMed doi:10.2307/1166137
- Uphill, M.A., & Jones, M.V. (2007). Antecedents of emotions in elite athletes: A cognitive motivational relational perspective. *Research Quarterly for Exercise and Sport*, 78, 79–89. PubMed doi:10.1080/02701367.2007.10599406
- Williams, S.E., Cumming, J., & Balanos, G.M. (2010). The use of imagery to manipulate challenge and threat appraisal states in athletes. *Journal of Sport & Exercise Psychology*, 32, 339–358. PubMed
- Woodman, T., Davis, P.A., Hardy, L., Callow, N., Glasscock, I., & Yuill-Proctor, J. (2009). Emotions and sport performance: An exploration of happiness, hope, and anger. *Journal of Sport & Exercise Psychology*, 31, 169–188. PubMed