

Reflection and Cognitive Appraisals of Stress in Sport Coaches

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Abstract

Sport coaching can be stressful as coaches are subject to a wide range of demands. Although coaches often report negative experiences of stress, they can also respond in useful ways. The current body of work examined the roles of cognitive appraisal and reflection in coaches' experiences of stress. As part of a pragmatic approach, mixed methods were used to study reflection and cognitive appraisals across a variety of coaching contexts. First, a cross-sectional study examined relationships between cognitive appraisals and coaching behaviours. This was followed by three qualitative studies to better understand how coaches' cognitive appraisals influenced their responses to stress and explore the role of reflection as a strategy to facilitate useful responses. In addition, a book chapter proposes an original reflective process designed to encourage thriving under pressure. To interpret the collective findings, this critical appraisal used contemporary challenge and threat theory (Jones et al., 2009; Meijen et al., 2020) as an explanatory framework. Quantitative results showed that coaches who appraised stressors as a challenge were more likely to offer social support, whereas coaches who appraised stressors as a threat were more likely to be autocratic and less likely to offer positive feedback. Qualitative findings revealed how coaches evaluated situational demands in terms of potential psychological danger such as anxiety and pressure. Coaches appraised their ability to meet these demands through resources such as self-efficacy and social support. Reflection facilitated coaches' resource perceptions through an enhanced awareness of their knowledge, skills, and experiences. However, reflection could lead to rumination and consequently exacerbate coaches' experiences of stress. The current research offers novel explanations of the mediating role of cognitive appraisals in coaches' varied responses to stress. Practical applications include the use of reflection to reframe situational demands and enhance resource perceptions.

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Reflection and Cognitive Appraisals of Stress in Sport Coaches

Sport coaches operate in an environment that is uncertain, pervasive, and subject to constant evaluation (Corsby et al., 2023). As such, coaches encounter a vast array of stressors relating to performance, organisational, and personal demands (Norris et al., 2017). Consequently, coaches can experience negative responses to stress, ranging from momentary changes in behaviour and mood (Olusoga et al., 2010) to long-term effects such as burnout and withdrawal from the profession (Hassmén et al., 2019). Whilst predominantly reporting negative responses of stress, coaches also experience useful responses that enhance their own performance and that of their athletes (Thelwell et al., 2017a, 2017b). According to recent stress theory, an individual can experience stress as a challenge (i.e., helpful) or threat (i.e., unhelpful), based on appraisals of their perceived resources (e.g., self-efficacy, control, social support) to meet situational demands (Jones et al., 2009; Meijen et al., 2020). However, research has yet to examine coaches' varied responses to stress through a contemporary challenge and threat framework, resulting in a limited understanding of coaches' appraisal processes. As a result, knowledge of how coaches can promote challenge states to enhance performance is also sparse. Research suggests that reflection can be an effective strategy to mitigate coaches' negative responses to stress (Loftus et al., 2022), and promote adaptive responses in future demanding situations (Cropley et al., 2020). Despite these purported benefits, knowledge of how coaches reflect to facilitate useful responses to stress is limited. Therefore, the current body of work aimed to examine coaches' cognitive appraisals of stress through a contemporary challenge and threat framework and explore the role of reflection in coaches' experiences of stress.

Literature Review

At this stage it is important to summarise the development of relevant stress theory to situate previous research and provide a conceptual underpinning to the current body of work. This section outlines the key tenets of such theories, especially those concerning cognitive appraisals, and considers the suitability of each theory as a framework to study coach stress.

Theoretical Frameworks

Transactional Theory

Lazarus and colleagues' transactional theory of stress has been widely adopted in the coach stress literature, providing a consistent framework and terminology (e.g., Didymus, 2017; Levy et al., 2009; Olsen et al., 2020; Olusoga et al., 2010; Potts et al., 2022). Moreover, review papers have advocated the use of Lazarus' transactional theory as it represents a dynamic process that incorporates stressors, strains, appraisals, and coping responses (Fletcher & Scott, 2010; Norris et al., 2017). According to this theory, stress is conceptualised as a relationship between an individual and the environment that is appraised as taxing or exceeding the individual's resources and endangering their well-being (Lazarus & Folkman, 1984). The person-environment relationship is mediated by the two key processes of cognitive appraisal and coping (Lazarus & Folkman, 1987); two concepts that are pertinent to the current body of work.

The function of cognitive appraisal is to integrate the personality and environmental variables into a relational meaning relevant to the individual's well-being (Lazarus, 1991). This process involves primary appraisals of the potential consequences of a situation, and secondary appraisals of an individual's coping resources (Lazarus & Folkman, 1984). Primary appraisals

include anticipatory evaluations of threat and challenge, and outcome evaluations of harm and benefit (Folkman & Lazarus, 1985; Lazarus & Folkman, 1984). Harm represents an individual's perception of damage that has already been sustained (e.g., to an individual's self- or social-esteem), and is characterised by negatively toned emotions such as disappointment and guilt. Threat concerns the potential for harm and is characterised by emotions such as fear and anxiety (Lazarus & Folkman, 1984). Challenge pertains to the potential for growth, mastery, or gain, characterised by pleasurable emotions such as eagerness and excitement (Lazarus & Folkman, 1984). Benefit refers to retrospective evaluations perceived as advantageous to one's well-being or the pursuit of goals, characterised by positively toned emotions such as relief and happiness (Lazarus & Folkman, 1987). Secondary appraisal involves an evaluation of available coping options (Lazarus & Folkman, 1984), consisting of generalised beliefs about one's competence to control situations, and the extent to which a situation can be changed (Lazarus & Folkman, 1987). The complex interaction between primary and secondary appraisals determines one's coping; a process through which an individual manages the demands and emotions of a transaction appraised as stressful (Lazarus & Folkman, 1984).

By illustrating the individualistic and dynamic cognitive processes that mediate an individual's responses to demanding situations, Lazarus and colleagues' work helps to explain variations in coaches' experiences of stress. However, whilst this theory provides a consistent framework to study coach stress from a transactional perspective, it offers limited explanation of behavioural and performance outcomes. Rather, the transactional theory is more concerned with the interaction between cognition and emotion, with a focus on well-being rather than performance. Indeed, coping was conceptualised as a process "in which a person struggles to manage psychological stress" (Lazarus & Folkman, 1984, p. 3). Moreover, Lazarus (1999)

acknowledged that outcome variables resulting from the appraisal process need to be elaborated and refined. Lazarus (2000) applied the theory to sport performance, providing a commentary on the potential outcomes of various discrete emotions with some anecdotal sporting examples, but lacked empirical evidence to predict specific performance outcomes. Thus, whilst offering an important foundation to study coach stress and well-being, Lazarus' transactional theory does not provide a robust explanation of behaviour and performance in demanding situations.

The Biopsychosocial Model

The biopsychosocial (BPS) model of challenge and threat was developed by Blascovich and colleagues to explain how people evaluate, react to, and behave in goal-relevant performance situations (Blascovich & Mendes, 2000; Blascovich et al., 2003). The BPS model describes how appraisals of situational demands and personal resources determine an individual's evaluation of a performance situation as a challenge or threat (Blascovich & Mendes, 2000). Challenge, a positively oriented motivational state, occurs when an individual experiences sufficient or almost sufficient resources to meet situational demands. Threat, a negatively toned motivational state, occurs when an individual experiences insufficient resources to meet situational demands (Blascovich & Mendes, 2000). Demand appraisals include perceptions of danger, uncertainty, and required effort (e.g., perceived task difficulty; Blascovich et al., 2003). Danger may be physical or psychological, including potential anxiety, loss of self-esteem, and threats to the self (Blascovich et al., 2003). Resource appraisals involve perceptions of knowledge and skills, dispositional factors, and external support (Blascovich & Mendes, 2000; Blascovich et al., 2003). This appraisal process mediates behavioural and performance outcomes, and therefore provides a useful lens to examine coach stress.

The BPS model is so named because it combines biological, psychological, and social psychological factors to explain motivational processes within human performance contexts (Blascovich, 2008). The model was formed by integrating Lazarus and Folkman's (1984) transactional theory with Dienstbier's (1989) theory of physiological toughness, which outlined a clear distinction between functional and dysfunctional cardiovascular (CV) responses during goal-relevant performance situations in animals. The BPS model postulates that challenge and threat states can be identified through CV indexes including heart rate, ventricular contractility, cardiac output, and total peripheral resistance (Blascovich et al., 2003). This hypothesis has largely been supported by research across a range of performance contexts, as evidenced by a recent meta-analysis (Behnke & Kaczmarek, 2018) and systematic review (Hase et al., 2019). In addition to physiological indices, the BPS model also encompasses the social psychology of performance situations, such as emotion, cognitive appraisals, and their related behavioural and performance consequences (Blascovich et al., 2003). Therefore, compared to transactional theory, the BPS model offers a more comprehensive framework to study the factors mediating coaches' responses to stress.

The BPS model was informed by Lazarus and colleagues' conceptualisations of the appraisal process as one which is influenced in a multivariate, multiprocess system, subject to a range of environmental and dispositional factors (Blascovich et al., 2003). However, there are some important differences to note. Firstly, the BPS model positions challenge and threat as a continuum (i.e., one can experience greater or lesser challenge or threat; Blascovich, 2008), rather than Lazarus and Folkman's (1984) conceptualisation that challenge and threat states are independent constructs that can occur simultaneously. Secondly, the BPS model focuses on anticipatory appraisals of challenge and threat and is not concerned with outcome appraisals of

benefit or harm. Thirdly, the BPS model refers to demand and resource appraisals rather than primary and secondary appraisals, partly to distinguish their model from Lazarus and colleagues' transactional theory (Blascovich et al., 2003). Notably, Lazarus and Folkman (1984) state that primary and secondary appraisals are somewhat unfortunate labels as they reflect neither relative importance nor a sequential process. Lastly, BPS scholars refer to the central psychological process as one of 'evaluation' rather than 'appraisal', to better incorporate the role of nonconscious or automatic processes, as well as purely affective influences, and conscious, cognitive appraisals (Blascovich, 2008). Where there are conceptual differences between frameworks, the current body of work adopts those of the BPS model but typically uses the term cognitive appraisal to be consistent with previous coach stress research.

The BPS model pertains to motivated performance situations; defined as ones that are active, inherently meaningful, and require instrumental cognitive, affective, and behavioural responses (Blascovich & Mendes, 2000). Such situations are prevalent in sport coaching contexts, in which coaches are highly invested in an all-encompassing role (Corsby et al., 2023) and are subject to extensive situational demands (Norris et al., 2017). Moreover, sport coaching typically occurs in complex and dynamic environments wherein the ability to maintain effective performance relates, in part, to a collection of cognitive operations (Kennedy et al., 2021). Thus, given the fluid nature of evaluative processes, in which a person continuously reappraises a situation (Blascovich & Mendes, 2000), the BPS model offers insightful explanatory potential into coaches' varying responses to stress, and their mediating cognitive factors.

Challenge and Threat States in Athletes

The theory of challenge and threat states in athletes (TCTSA) was proposed by Jones et al. (2009) to explain athletes' responses to competitive situations. The TCTSA was informed by

the BPS model of challenge and threat (Blascovich & Mendes, 2000), adopting the same demand appraisals of danger, uncertainty, and effort to determine the relevance of a situation. However, the TCTSA's resource appraisals differ from those in the BPS model. Specifically, three interrelated constructs of self-efficacy, control, and goal orientation determine an individual's emotional and physiological responses, and impact physical performance through mechanisms such as effort, attention, and cognitive function (Jones et al., 2009). The TCTSA's assertion that challenge states lead to superior athletic performance has been supported across a range of sporting contexts such as golf (Moore et al., 2013), netball (Turner et al., 2021), and cricket (Turner et al., 2013). Although this previous research pertains to athletes, the proposed relationship between cognitive appraisals and performance may extend to coaches, who are considered performers as they manage a multitude of tasks and face a range of psychological challenges (Thelwell et al., 2008).

In a more recent conceptualisation, the revised theory of challenge and threat states in athletes (TCTSA-R; Meijen et al., 2020) re-evaluated the TCTSA, resulting in several implications for studying stress in sport coaches. Firstly, perceived social support is recognised as a key factor in the appraisal process. For example, social support can help individuals redefine situational demands and strengthen their perceived control (Meijen et al., 2020). Given the importance of social support among sport coaches, who consistently report that collaboration is central to their development (Clements et al., 2023; Rynne et al., 2017) and psychological well-being (Norris et al., 2020) this advancement is especially pertinent. Secondly, whilst Jones et al. (2009) acknowledged the influence of dispositional factors such as optimism, hardiness, and perfectionism, Meijen et al. (2020) provide a more detailed account of how dispositional styles such as trait challenge and threat (e.g., Cumming et al., 2017) and irrational beliefs (e.g., Chadha

et al., 2019) impact cognitive appraisals. Indeed, the TCTSA-R asserts that an individual's propensity to perceive stressors as a challenge most strongly influences their acute cognitive appraisals.

Another important revision was to integrate Lazarus' idea that challenge and threat emerge from primary appraisals of motivational relevance and goal congruence. Motivational relevance reflects the extent to which a situation is personally significant to an individual's goals, whilst goal congruence reflects the extent to which the conditions are favorable for success. This primary appraisal results in a challenge or threat disposition (Meijen et al., 2020). However, according to the TCTSA-R, a primary appraisal of challenge or threat can change as an individual perceives that they have sufficient or insufficient resources to meet the situational demands. Demand appraisals are distinct from primary appraisals, as a situation perceived as personally relevant and incongruent with the individual's goals does not necessarily mean the situation is appraised as dangerous, uncertain, and effortful. Thus, the extent to which an individual experiences challenge or threat is dependent on the primary appraisal of challenge and threat, the perceived demands of the competition, and the extent to which perceived resources meet these demands. As such, demand and resource appraisals function as a bifurcation factor that dictates performance outcomes through one of four states: high challenge, low challenge, low threat, and high threat (Meijen et al., 2020). Importantly, these states are not static but changeable, as an iterative reappraisal process occurs according to changing contextual and cognitive information.

The following example, adapted from Dixon et al. (2023), illustrates the principles of the TCTSA-R in a coaching context. A coach faces a season-defining game against a difficult opponent which will be observed by the club's management. The coach's primary appraisal of

goal congruence reflects the extent to which conditions are favorable for success (e.g., recent form, availability of key players). High perceived goal congruence results in the coach entering a challenge state, whilst low perceived goal congruence results in the coach entering a threat state. However, following this initial appraisal, a reappraisal of demands and resources mediates the coach's performance through mechanisms such as decision-making and task engagement. Demands include perceptions of danger (e.g., risk to reputation), uncertainty (e.g., unpredictability of match outcome), and required effort (e.g., solving complex tactical problems). If the coach experiences high perceptions of self-efficacy (e.g., teaching and management skills), control (e.g., meticulous tactical preparation), and social support (e.g., cohesion with athletes), they are likely to enter a challenge state. This state is characterised by an approach goal orientation as the coach views the performance situation as an opportunity to demonstrate their skills. Conversely, if the coach experiences lower perceptions of their skills, doubt over their team's preparedness, and strained relationships with athletes, a threat state is likely to ensue. This state is characterised by an avoidance goal orientation as the coach disengages from the task to avoid being viewed as incompetent. However, due to the dynamic nature of the reappraisal process, the coaches' motivational state can fluctuate between challenge and threat; a notion that further helps to explain the complex nature of coaches' cognitive appraisals and their myriad emotional and behavioural responses.

Early Research

Having established a theoretical underpinning, this section proceeds by reviewing key contributions to coach stress research. The aim was to enhance and expand, rather than duplicate, the literature reviews presented in each of the published works. Therefore, not all studies in the

area were reviewed, but those deemed to represent notable advances in relation to the current research.

Early studies of coach stress typically focused on burnout but also yielded valuable insights into coach stress by highlighting the importance of cognitive perceptions. For example, Vealey et al.'s (1992) cross-sectional study of high school and college coaches revealed that whilst trait anxiety was the strongest predictor of burnout, coaches were less likely to experience burnout if they perceived their job as rewarding, exciting, and valued by others. Adopting the same design, Kelley and Gill (1993) found that greater experience and higher satisfaction with social support predicted lower appraisals of stress, whilst higher levels of stress appraisal were associated with higher levels of burnout. Similarly, Kelley's (1994) longitudinal study found that coaching issues such as conflict with athletes and pressure to win predicted perceived stress, whilst coaches' stress appraisals predicted burnout. Accordingly, these early studies established the association between perceptions of personal and situational factors with experiences of burnout and stress.

In one of the few studies to focus on coach behaviour, Kellmann and Kallus' (1994) quantitative study revealed that German sport coaches who reported being highly stressed rated themselves as significantly less active, less authoritarian, and less warm-hearted compared to their low-stressed counterparts. In support, Kelley et al.'s (1999) cross-sectional study found that although democratic leadership was not associated with coaches' stress perceptions, higher levels of autocratic leadership were related to lower perceptions of stress. Collectively, these findings highlighted important associations between perceptions of stress and coach behaviour.

These studies made significant contributions to an emerging field of research. However, due to a reliance on quantitative designs, early research generated limited understanding of the

complex and nuanced cognitive processes that moderate coaches' experiences of stress. Moreover, the findings offered limited transferability as, apart from Kellmann and Kallus (1994), the studies all sampled high school and collegiate coaches in the United States. Nonetheless, this early research emphasised the importance of cognitive perceptions in a population that consistently exhibited moderate to high levels of burnout (Kelley, 1994; Kelley et al., 1999; Kelley & Gill, 1993; Vealey et al., 1992), and thereby provided a strong rationale for further study into coach stress.

Seminal Qualitative Research

Addressing the limitations of early research, several key studies provided a deeper understanding of coaches' experiences of stress through qualitative designs. These studies primarily focused on stressors encountered by coaches working at elite levels. For example, the US Division I collegiate head coaches in Frey's (2007) study discussed prominent interpersonal stressors such as communicating with athletes and a lack of control over athletes, in addition to workload and task-related issues. Coaches also described stressors that could cause them to leave the coaching profession such as diminished enjoyment, physical hardship, a lack of free time, losing consistently, and interference with family life (Frey, 2007). Thelwell et al.'s (2008) study of elite coaches in the UK identified 182 distinct stressors related to issues concerning athlete and coach performance, in addition to organisational factors such as the working environment, leadership, personal, and team issues. Furthermore, Olusoga et al.'s (2009) study of elite coaches in the UK revealed a range of stressors that were categorised as organisational and competitive in nature. In addition to performance pressure and unpredictable working environments, coaches described stressors such as isolation, conflict, the responsibility for the status of their respective

sports, limited resources, and lack of support (Olusoga et al., 2009). Collectively, these studies provided a detailed account of the demanding environments in which high level coaches operate.

In addition to studying stressors, early qualitative research described a range of stress responses exhibited by elite level coaches. For example, coaches reported that stressors negatively impacted their focus, body language, tone of voice, and approachability (Frey, 2007). In the first study to focus specifically on coaches' stress responses and coping strategies, Olusoga et al. (2010) revealed that coaches experienced psychological responses such as anger, frustration, self-doubt, negative decision-making, and reduced confidence. Coaches also reported changes to verbal and non-verbal behaviours, and further negative effects as they became depressed, emotionally fatigued, and withdrew from interactions (Olusoga et al., 2010). Consequently, coaches' stress responses negatively impacted their athletes' mood, confidence, and performance (Frey, 2007; Olusoga et al., 2010). Although coaches' experiences were predominantly negative, they also alluded to useful responses to stress such as enhanced focus, opportunities to learn (Frey, 2007), increased productivity, and determination (Olusoga et al., 2010). Notably, coaches explained how a period of reflection was required to perceive negative experiences as positive (Olusoga et al., 2010), indicating the potential role of reflection in the stress process.

Seminal qualitative research provided additional insights regarding coaches' attempts to manage stressors and minimise negative responses. Findings highlighted the importance of social support from those within the coaches' working environment and those outside of the sporting domain (Frey, 2007; Olusoga et al., 2010). Coaches also described cognitive strategies such as maintaining a sense of perspective, altering their perceptions of demands, and focusing on elements of the coaching process that were in their control (Frey, 2007). However, despite

reports of self-talk and rationalisation, coaches' use of psychological skills was limited as they oriented toward more practical, problem-based strategies such as structuring and planning (Olusoga et al., 2010). Interestingly, coaches have explained how experience (e.g., previous success as a coach) and learning (e.g., developing their coaching abilities and knowledge) helped them to cope with situational demands (Olusoga et al., 2010). In support, Thelwell et al. (2010) found that although problem-focused and emotion-focused strategies were adopted more frequently, appraisal-focused approaches were also important. Appraisal-focused strategies involved reflecting on previous matches to help structure training and overcome disappointments, and reflecting on how others would cope with a stressor (Thelwell et al., 2010). Thus, although reflection was not a prominent strategy, qualitative research revealed the potential for reflection to help coaches manage performance demands.

Seminal qualitative studies advanced knowledge of coaches' stressors, responses, and coping strategies. Moreover, this research provided key implications for the current work as coaches perceived contextual factors as either helpful or detrimental (Frey, 2007), and highlighted how reflection could be used to facilitate useful experiences of stress (Olusoga et al., 2010; Thelwell et al., 2010). However, these studies did not specifically investigate the role of cognitive appraisals in mediating coaches' responses to stress. Furthermore, due to the qualitative nature of the research, relationships between stress and coach behaviour were not directly observed. Therefore, the current work sought to build on previous research by examining the roles of cognitive appraisals and reflection in coaches' experiences of stress.

Systematic Reviews

As coach stress became an increasingly popular area of study, several systematic reviews were conducted over a ten-year period. These are summarised below to outline key trends and developments up to the initiation of the current work.

According to Fletcher and Scott's (2010) critical review, previous literature developed an understanding of coaches' experiences of stress by detailing the dynamic and demanding contexts in which coaches operate, emphasising the detrimental impact on job performance. However, the review highlighted several important limitations that should be addressed to further advance the field. Firstly, some studies lacked theoretical frameworks and clear conceptualisations of stress (e.g., Frey, 2007). Notably, the review adopted Fletcher et al.'s (2006) definitions of stressors and strains to demarcate specific aspects of stress. Derived from Lazarus' transactional theory, strains refer to "an individual's negative psychological, physical and behavioral responses to stressors" (Fletcher et al., 2006, p. 329). Thus, Fletcher and Scott's (2010) review mirrored extant research that mostly considered the detrimental effects of stress, rather than the notion of thriving in demanding situations. Secondly, the coach stress literature omitted the role of cognitive appraisals in the stress process. Consequently, Fletcher and Scott (2010) recommended that future research should focus on cognitive appraisals to better understand coaches' stress experiences and examine the stress-performance relationship more comprehensively. Practical recommendations from the review included interventions to modify coaches' responses to stressors by enhancing their self-awareness and resilience to situational demands. Although reflection was not mentioned specifically, the authors cited Giges et al.'s (2004) recommendation that sport psychology practitioners employ questioning and discussion to help coaches become more self-aware of their thoughts, feelings, and behaviours, to initiate

change. However, the limitations and recommendations put forward in Fletcher and Scott's (2010) critical review were not addressed for some time.

In the most extensive systematic review to date, Norris et al. (2017) studied stressors, coping, and well-being among 4,188 sport coaches across 19 qualitative, 17 quantitative, and two mixed methods studies. Findings showed that female and male coaches who worked across a variety of coaching contexts faced a range of stressors related to organisational, performance, contextual, interpersonal, and intrapersonal factors. Additionally, 13 studies examined coaches' coping strategies, with those aimed at solving a stressor (i.e., problem-focused strategies) being the most used among coaches, while social support emerged as another important coping method (e.g., Judge et al., 2015). However, most qualitative research focused on identifying stressors, with few studies examining how underpinning factors influenced coaches' responses to stress. Only one qualitative study (Didymus, 2017) investigated coaches' appraisals of stressors, and none of the quantitative studies directly measured stress appraisals. Of the studies that employed theoretical frameworks (15 did not), the two most adopted theories were transactional stress theory (Lazarus & Folkman, 1984) and the cognitive-affective model of stress and burnout (Smith, 1986). Interestingly, cognitive appraisals are central tenets of both theories, emphasising the omission of these processes in the extant research. Regarding coach populations represented across the studies, Norris et al. (2017) highlighted a further limitation as insufficient research attention had been given to coaches who operate at development or youth levels. Thus, future research could address these shortcomings by examining the role of cognitive appraisals through suitable theoretical frameworks among coaches working outside of elite levels.

Santos and Costa's (2018) systematic review of 30 studies published from 1994 to 2016 primarily focused on sources of stress which were categorised into performance and

organisational stressors. Performance stressors consisted of concern over athletes' performance in training and competition, and concern for the coach's own performance in terms of results. Organisational stressors involved the interference of athletes' relatives in training and competition, social isolation, the need to manage workplace conflict, and inadequate training infrastructure. This review focused almost exclusively on sources of stress, with minimal attention paid to coaches' responses to stressors or the factors that mediate these outcomes. However, Santos and Costa (2018) highlighted the value of quantitative designs that employed physiological markers to establish that stress levels were elevated during competitions (e.g., Hudson et al., 2013). The authors concluded by calling for future research to study biological, psychological, and social factors to develop a "multifactorial understanding of the negative effects of stress" (p. 288). Whilst important to generate convergent evidence, this approach does not address the notion that coaches can perform effectively and experience helpful response to stress.

In the most recent systematic review, Olsen et al. (2020) focused on coping among elite level sport coaches. Each of the six studies reported different forms of problem-focused strategies such as planning, preparation, and communication. To a lesser extent, emotion-focused strategies, such as self-talk and relaxation, were also identified, whilst the use of psychological skills was sparse in terms of both frequency and diversity. However, studies highlighted how coaches drew upon their experiences to help them succeed under pressure (Olusoga et al., 2012). Moreover, coaches utilised reflection as part of a problem-focused approach (Thelwell et al., 2010), and to enhance emotional control (Kenttä et al., 2016). However, echoing the findings of previous reviews, Olsen et al. (2020) acknowledged that research up to that point had mostly been limited to the perceived stressors and employed coping strategies. Thus, a decade after

Fletcher and Scott's (2010) recommendations, there remained a paucity of research examining how coaches' cognitive appraisals could influence their experiences of stress.

Recent Advances in Coach Stress Research

Since the current body of work began, research has provided a more comprehensive understanding of stress across a range of coaching contexts. Recent studies have examined coaches' perceptions of demands and psychological well-being, experiences of burnout, and the role of cognitive appraisals in mediating coaches' diverse responses to stress.

In one qualitative study, professional soccer coaches perceived their roles as precarious, uncertain, pervasive, and subject to constant evaluation, leading to feelings of vulnerability and insecurity (Corsby et al., 2023). A cross-sectional study of elite coaches from the Netherlands and Belgium revealed that organisational stressors predicted symptoms of depression and anxiety, although no similar relationship was found for performance stressors, possibly due to the transient nature of performance versus longer-term exposure to organisational issues (Kegelaers et al., 2021). In another cross-sectional study of coaches from Spain, higher perceptions of demands at work and lower perceptions of decision-making abilities predicted higher levels of stress (Hinojosa-Alcalde et al., 2020). In sum, these recent studies show how perceptions of situational demands can influence coach well-being, a subject that has received increasing research attention.

In a narrative analysis of high-performance coaches, Olusoga and Kenttä's (2017) study revealed that the cumulative effects of professional and personal stressors, combined with a lack of coping strategies, emerged as a precursor to burnout. Similarly, Baldock et al.'s (2022) mixed methods study showed that stressors high in severity led to decreased mental well-being and

increased burnout symptoms among elite soccer coaches. In support, cross-sectional studies have found that coaches' perceptions of stress could influence the relationship between burnout and well-being (McNeill et al., 2018a), with perceived stress positively associated with burnout, depression, and anxiety (Wright et al., 2023). In a longitudinal study of eight professional soccer coaches over ten years, Hassmén et al. (2019) reported that although the accumulation of knowledge and experience enabled coaches to better identify early signs of stress and alter their behaviour, all but one participant dropped out of coaching at the elite level, suggesting a link between burnout and withdrawal. Collectively, these findings highlight a link between coaches' perceptions of stress and their psychological wellbeing. Therefore, research that aims to better understand coaches' perceptions of stress to facilitate adaptive responses is critical.

Contemporary research has developed a better understanding of coaches' diverse responses to stress. For example, negative effects were demonstrated in a cross-sectional study of female coaches as workload stressors were associated with greater physical and psychological strain (Didymus et al., 2021). In support, a qualitative study of Olympic and Paralympic coaches revealed negative responses including physiological effects, anxiety, lack of control, conflict, work-home interference, and self-doubt (Loftus et al., 2022). In addition to coach well-being, recent research has provided insights into the effects of stress on coaches' job performance. Thelwell et al.'s (2017a) qualitative study of elite coaches showed negative performance responses through undesirable coaching behaviours, reduced awareness, and reduced quality of instruction. Thelwell et al. (2017b) explored elite athletes' perceptions of coach stress, revealing how athletes recognised coach stress through verbal and behavioural signals, and viewed their coaches as lacking competence, awareness, and effectiveness (Thelwell et al., 2017b). Interestingly, these studies each reported useful responses including enhanced reflection and

awareness (Thelwell et al., 2017a), focus, effort, and empathy (Thelwell et al., 2017b), decision-making, acceptance, and enjoyment (Loftus et al., 2022), and a greater sense of purpose (Didymus et al., 2021). However, given that negative responses were more varied and frequent, further research is needed to understand the cognitive processes that facilitate coaches' productive responses to stress.

Recent research has begun to address the gap in knowledge regarding coaches' cognitive appraisals. For example, in a cross-sectional study of Italian coaches, the capacity for reappraisal was a significant factor mediating their experiences of stress (Santi et al., 2021). In addition, several qualitative studies have examined coach stress using Lazarus' conceptualisations of cognitive appraisals. Didymus (2017) found elite coaches experienced challenge by approaching stressors with enthusiasm and confidence, recognising the potential for growth. Conversely, threat appraisals were characterised by goal-related threats and potential damage to wellbeing (Didymus, 2017). In another study, elite soccer coaches described how most stressors were appraised as threatening or harmful with associated feelings of anxiety and fear, whereas only a few stressors were appraised positively, resulting in excitement and joy (Baldock et al., 2021). Additionally, a study of paid and voluntary coaches suggested that challenge appraisals strengthened relationships with others through empathy and care, whereas threat appraisals had a negative impact on autonomy (Potts et al., 2022). Consequently, these studies reveal how cognitive appraisals might influence coaches' varied responses to stress. However, limited research attention has been paid to strategies that can promote challenge states to facilitate useful responses to stress.

Reflection

One potential strategy to encourage productive responses to stress is through reflection. Coaching literature has established that reflection is an important facet of coaches' development and performance. This section considers how reflective inquiry processes might influence coaches' experiences of stress.

Reflection has been considered a central feature of coaching effectiveness and expertise (Cushion, 2018), providing a framework to understand how coaches learn through experience (Gilbert & Trudel, 2001). Previous research has demonstrated the importance of reflective practice in coach development (Knowles et al., 2001). Reflection facilitates learning as coaches enhance their knowledge by finding solutions through experimentation (Irwin et al., 2004). Moreover, reflection allows decisions to be brought into consciousness, aiding the development of craft knowledge (Hughes et al., 2009), and enabling coaches to better understand and adapt their coaching practice (Taylor et al., 2015). In addition to enhancing coach learning, research highlights potential psychological benefits of reflection by increasing self-awareness to help coaches experience demands with self-compassionate intentions such as learning from mistakes and less rumination (Hägglund et al., 2021). Therefore, reflection has the potential to impact coaches' knowledge and psychological resources.

Research has highlighted the role of reflection in developing coaches' self-awareness and stress management (Olusoga & Kenttä, 2017; Thelwell et al., 2017a), emerging as a prominent factor in coaches' coping strategies (Baldock et al., 2021; Loftus et al., 2022; Sarkar & Hilton, 2020; Thelwell et al., 2010), potentially enabling coaches to experience stress in positive ways (Olusoga et al., 2010). The cognitive processing and strategising involved in reflection supports

the reappraisal of demanding situations and encourages coaches to commit to positive action (Cropley et al., 2020). Accordingly, scholars have recommended that coaches reflect upon their appraisals, thoughts, and emotions to establish their preferred strategies of managing stress (Olsen et al., 2020), emphasising how a willingness and ability to reflect play a crucial role in managing stressful thoughts (Altfeld et al., 2018). Therefore, reflection appears to offer a useful strategy to facilitate productive responses to stress in sport coaches.

Reflection in Coaching: A Deficits-Based Approach

Despite the potential utility of reflection to help coaches manage stressors, there is a paucity of research into the reflective processes that promote adaptive responses to stress. Moreover, while reflection has been positioned as a key component of effective coaching, some reflective processes can induce stress and negative emotion.

Reflection in sport coaching has been conceptualised in myriad ways, with this ambiguity making it difficult for coaches to gain the purported learning benefits (Cropley et al., 2012). Following a systematic review across different professional contexts, Marshall (2019) developed a working definition of reflection as a “careful examination and bringing together of ideas to create new insight through ongoing cycles of expression and re/evaluation” (p. 411). However, much of the sport coaching research has adopted Schön’s (1983) conceptualisation in which a practitioner engages in a reflective conversation with a problematic situation, with this experimentation stimulating professional growth (e.g., Cushion, 2018; Gilbert & Trudel, 2001, 2005; Stodter & Cushion, 2017). Consequently, Schön’s (1983) notion of reflection being triggered by problems and ‘practice dilemmas’ is echoed throughout the coaching literature. For example, Stodter et al. (2021) revealed how professional soccer coaches’ reflection involved diagnosing problems with athletes’ performances in addition to identifying issues within their

own coaching. Indeed, coaches have consistently shown a tendency to reflect on negative experiences, problems, and weaknesses (Carson, 2008; Hughes et al., 2009; Kuklick et al., 2015). Although this deficits-based focus might be important to stimulate coach learning, such an approach could have a negative influence on coaches' experiences of stress.

Coaches' tendencies to reflect on mistakes and weaknesses can potentially lead to negative emotional responses. For example, coaches have described how reflecting on negative experiences can reduce confidence and lead to feelings of doubt and anxiety (Hamblin & Crisp, 2022). Scholars have referred to this process as 'dysphoric self-reflection' as an individual focuses on the negative aspects of personal problems rather than on a constructive problem-solving approach (Lyubomirsky et al., 1999). In support, research has revealed positive associations between self-reflection and stress and anxiety (Grant et al., 2002), suggesting that either stress encourages greater reflection, or that greater reflection leaves one at risk of rumination (Rogers et al., 2019). This issue might be especially prevalent in the context of sport coaching, a profession characterised by intense personal and emotional investment, from which it is difficult to mentally disengage (McNeill et al., 2018b). Indeed, reflection on previous experiences can encourage coaches to overstate their deficiencies and ruminate (Swettenham & Whitehead, 2021), with these thought patterns contributing to coach burnout (Hassmén et al., 2019). Therefore, coaches' inclination to reflect on problems and weaknesses might exacerbate their experiences of stress.

Strengths-Based Reflection

Although coaches' tendencies to reflect on shortcomings can be unhelpful, research also suggests that reflection can help alleviate stressors and facilitate helpful responses. For example, strengths-based reflection involves appraisals of the self that promote positive emotions through

an increased awareness of an individual's strengths (Fouracres & Van Nieuwerburgh, 2020). This approach uses inquiry processes to increase an individual's capability to interpret and act on successes, problems, and significant questions, whilst drawing upon positive emotions and relationships (Ghaye, 2011). Indeed, by promoting insight into one's existing capacities, reflection can enhance an individual's understanding of their successes to help inform future actions (Crane et al., 2019). Thus, strengths-based reflection might influence coaches' cognitive appraisals by enhancing their resource perceptions.

Whilst the utility of strengths-based reflection has not been directly examined in previous research, it is tentatively supported in the coaching literature. For example, the world class coach in Lee et al.'s (2009) study emphasised the importance of being self-critical following positive performances to better understand the reasons for success and drive improvement in a pressurised coaching context. In addition, coaches' ability to view pressure and adversity in a positive manner, coupled with positive personality traits such as optimism and proactivity, are protective factors from the potential negative consequences of stressors (Sarkar & Hilton, 2020). Similarly, coaches have described how focusing on personal, social, and task-related sources of enjoyment were critical to them remaining in the profession, providing these sources outweighed perceived stressors (Frey, 2007). Indeed, scholars have recommended studying how positive aspects of the coaching profession might be protective factors against the development of exhaustion (Lundkvist et al., 2022). However, there is a paucity of research on the specific inquiry processes pertaining to strengths-based reflection, and therefore, knowledge of how reflection can influence coaches' experiences of stress remains limited.

Reflection and Cognitive Appraisals

The theoretical frameworks that underpin the current research indicate the potential role of reflection in the appraisal process. An individual's perceptions of their knowledge, skills, and abilities to meet situational demands can promote challenge states (Jones et al., 2009; Meijen et al., 2020). Moreover, the enhanced functioning associated with challenge states is partly because an individual is more capable of drawing on such resources rather than being inhibited or blocked (Lazarus & Folkman, 1984). Indeed, quality of self-knowledge is a determining factor in one's resource/demand evaluations (Blascovich, 2008). Conscious and purposeful reflection can determine an individual's level of insight by enhancing the clarity of their thoughts, feelings, and behaviour (Grant et al., 2002). Through heightened levels of insight, individuals may be more inclined to seek and utilise social resources, and by better understanding their thoughts and emotions, may perceive an enhanced ability to moderate stress and performance (Cowden & Meyer-Weitz, 2016). Moreover, research has shown that reflection can provide coaches with enhanced perceptions of self-efficacy in terms of providing their players with meaningful learning experiences (Cassidy et al., 2006). Therefore, the insight gained through reflection can help to facilitate challenge states through a greater awareness of self-efficacy and social support.

In addition to developing coaches' resource perceptions through greater insight, coaches can consciously modify their reflections during a motivated performance situation, and therefore influence the appraisal process. For example, by reflecting in-action coaches can enhance their awareness of their coaching effectiveness and respond flexibly to changing conditions (Swettenham & Whithead, 2021). Given that cognitive appraisals are influenced by continual performance feedback through evaluative self-statements (Lazarus, 2000), reflection might facilitate the reappraisal process to promote adaptive responses. Indeed, the reappraisal process

takes place iteratively based on changing contextual and cognitive information that could alter both demand and resource appraisals (Meijen et al., 2021). Reflection encourages a re-consideration of one's initial event appraisals, allowing for potential reappraisals by prompting the individual to identify what could be done differently and engage in a search for solutions or resources (Crane et al., 2019). Therefore, reflection might play an important role coaches' cognitive appraisals by triggering adaptive changes as part of the reappraisal process.

Aims and Rationale

Extant literature has established that coaches experience both useful and harmful responses to stressors (Didymus et al., 2021; Frey, 2007; Loftus et al., 2022; Olusoga et al., 2010; Thelwell et al., 2017a, 2017b). However, less is known about the cognitive appraisal processes that mediate these responses (Fletcher & Scott, 2010; Norris et al., 2017). Although recent studies have provided insights into coaches' cognitive appraisals, these works have predominantly used Lazarus' transactional theory as a conceptual framework and therefore focused on coping (e.g., Baldock et al., 2021; Didymus, 2017; Potts et al., 2022). Whilst fundamental to coach well-being, coping does not comprehensively explain coach performance in demanding situations. Conversely, challenge and threat theory (Blascovich & Mendes, 2000; Jones et al., 2009; Meijen et al., 2020) offers a more precise framework to study coaches' cognitive appraisals and subsequent behavioural responses. Additionally, much of the coach stress research has focused on perceived stressors, with limited attention on coaches' resource appraisals to meet these demands (e.g., Baldock et al., 2022; Potts et al., 2022; Powell et al., 2022). Given the central role of perceived resources in facilitating useful responses to stress (Blascovich & Mendes, 2000; Jones et al., 2009), this is a major omission of previous research.

Therefore, the initial aim of the current research was to examine how coaches' cognitive appraisals influenced their responses to stress using a challenge and threat framework.

Research suggests that reflection can enhance coaches' perceived psychological resources (Cassidy et al., 2006; Cropley et al., 2020; Hägglund et al., 2021) and promote positive experiences of stress (Olusoga et al., 2010). However, coaches have consistently revealed a tendency to reflect on deficits and failures (Hughes et al., 2009; Kuklick et al., 2015; Stodter et al., 2021), which can lead to negative emotional responses (Hamblin & Crisp, 2022; Swettenham & Whitehead, 2021). Conversely, strengths-based reflection engenders positive emotion through an enhanced understanding of previous successes (Ghaye, 2011; Lee et al., 2009) and an increased awareness of one's abilities (Fouracres & Van Nieuwerburgh, 2020). However, research examining the reflective processes that enable coaches to experience stress in a positive way is lacking. Thus, the secondary aim of the current research was to investigate the role of reflection in coaches' experiences of stress.

Existing research offers a depth of knowledge on stress among elite coaches who work in high pressure environments (e.g., Baldock et al., 2021; Didymus, 2017; Olusoga et al., 2010; Thelwell et al., 2017a). However, these findings offer limited transfer to coaches who do not operate at the elite level (i.e., do not have access to sport psychology support or a close professional network). Moreover, coaches experience stress regardless of their level, experience, or coaching position (Pearson et al., 2020; Potts et al., 2022). Indeed, coaches working at grassroots levels experience performance demands such as meeting athletes' developmental and psychosocial needs (Kelly et al., 2018), and part-time coaches have revealed higher risks of emotional exhaustion compared to those working full-time (Lundkvist et al., 2022). To retain and develop higher quality coaches, more research attention should be dedicated to coaches working

at sub-elite levels (Norris et al., 2017). Therefore, the current body of work examined reflection and cognitive appraisals of stress in non-elite coaches.

Methodological Approach

The current research reflected Strauss and Corbin's (1998) notion of a flow of work that evolves over the course of a project, with methodological choices based on the appropriateness of various procedures. Using multiple designs over several investigations, a pragmatic approach was employed in the current research, considering the problems under study as more important than the underlying philosophical assumptions (Giacobbi et al., 2005). As a needs-based or contingency approach, pragmatism involves selecting the combination of methods and procedures that work best for answering the research questions (Johnson & Onwuegbuzie, 2004). Thus, the central aim of pragmatism is not to question if the knowledge produced by research accurately represents 'reality', but whether it has valuable external significance, and can therefore frame high-level decisions about mixed methods research (Bishop, 2015). Indeed, as the philosophical underpinning of mixed methods designs, pragmatism is adopted by researchers to improve the accuracy of their data and develop their analysis to build on initial findings using contrasting data or methods (Denscombe, 2008).

Mixed methods research incorporates the problem-based orientation of quantitative research and the process-based orientation of qualitative research, potentially leading to a greater understanding of the research question (Tashakkori et al., 2012). The current body of work adopted a sequential dominant status mixed methods design, as the quantitative and qualitative phases occurred sequentially throughout the research process, with the qualitative element given more weight (Leech & Onwuegbuzie, 2009). Specifically, the current body of work began with a

quantitative method to examine the key concepts under study, followed by qualitative methods involving detailed exploration with fewer individuals (Cresswell, 2003). This design promoted complementarity by aggregating the strengths of each method to generate a comprehensive account of the research phenomena (Gibson, 2016), and enabled the interpretation of the data from a multidimensional perspective, as each data set was informed, questioned, and enhanced by the others (Feilzer, 2010). In line with Vogt et al. (2012), research designs were combined to corroborate results and study the research question from new angles, predominantly using qualitative methods as this paradigm most appropriately addressed the research aims.

Experiences of challenge and threat are based on an individual's perceptions of events, the influence of social and personality factors in these perceptions, and the ways in which these perceptions drive behaviour (Blascovich et al., 2003). Indeed, challenge and threat states are reflected by an individual's perception that they can either bring a challenge to fruition, or cannot ameliorate a threat (Meijen et al., 2020). Qualitative inquiry enables the exploration of an individual's perspectives and interpretations of their experiences, emotions, and behaviours in relation to a research question (Smith & Sparkes, 2016). Additionally, qualitative methods generate an understanding of how people perceive their lived experiences based on the notion that social and psychological experience is a matter of subjective interpretation (Atkinson, 2012). Furthermore, this type of research is characterised by an appreciation of how experiences, thoughts, and emotions are shaped by context (Smith & Sparkes, 2020). Therefore, the current body of work adopted a mixed methods approach with an emphasis on qualitative research to better understand coaches' cognitive appraisals and experiences of stress.

Description of the Research Program

Study 1: Dixon, M., Turner, M. J., & Gillman, J. (2017). Examining the relationships between challenge and threat cognitive appraisals and coaching behaviours in football coaches. *Journal of Sports Sciences*, 35(24), 2446-2452.

Dixon et al. (2017) examined relationships between coaches' cognitive appraisals of stressful situations and coaching behaviours, using a cross-sectional correlational study of 105 professional soccer academy coaches in the UK. Cognitive appraisals were measured using the appraisal of life events scale (ALE-scale; Ferguson et al., 1999). Coaching behaviour was measured using the leadership scale for sports (LSS; Chelladurai & Saleh, 1980). Irrational beliefs, a facet of cognitive appraisals related to greater experiences of threat (Evans et al., 2018), were measured using the shortened general attitude and belief scale (SGABS; Lindner et al., 1999). The ALE-scale also contained a qualitative aspect in which participants identified their most stressful experience of coaching in the previous month.

Analysis of the qualitative data generated four themes: interpersonal stressors; organisational stressors; performance stressors; and uncertainty. Bivariate correlation analyses were conducted to examine the relationships between challenge, threat, irrational beliefs, and LSS subscales (training and instruction, democratic behaviour, autocratic behaviour, social support, positive feedback). Five separate hierarchical regression analyses were then conducted to enable multiple predictors of each LSS subscale, including age, irrational beliefs, and challenge and threat appraisal.

Findings revealed significant positive associations between challenge appraisals and the provision of social support, and between threat appraisals and autocratic behaviour. Results also

showed a significant negative association between threat appraisals and positive feedback. Thus, coaches with a tendency to appraise a stressor as a challenge were more likely to offer social support to their athletes, while coaches who tend to appraise stressors as a threat were more likely to be autocratic in their coaching behaviour and less likely to offer positive feedback. Correlation analyses also revealed that irrational beliefs were positively associated with threat cognitive appraisals, but no association was found between irrational beliefs and challenge appraisals. Although not all coaching behaviours were related to cognitive appraisals in this study, challenge appraisals were associated with useful coaching behaviours, whereas threat appraisals were associated with potentially harmful coaching behaviours. It must be noted that the cross-sectional correlational design did not generate a depth of understanding into coaches' cognitive appraisals, and offered limited insight into the personal and contextual factors that influence coaches' experiences of stress. Nonetheless, this study made a significant contribution to knowledge as the first to show the relationships between coaches' cognitive appraisals of stress and their coaching behaviour. As such, findings revealed the importance of promoting challenge states to encourage more adaptive coaching behaviours.

Study 2: Dixon, M., & Turner, M. J. (2018). Stress appraisals of UK soccer academy coaches: An interpretative phenomenological analysis. *Qualitative Research in Sport, Exercise and Health*, 10(5), 620-634.

Having previously established a relationship between coaches' stress appraisals and coaching behaviours, Dixon and Turner's (2018) qualitative phenomenological study aimed to extend this knowledge by providing a more in-depth understanding of how coaches' cognitive processes mediated their emotional and behavioural responses. Ten UEFA licensed soccer academy coaches were purposively sampled across five professional soccer clubs in the UK.

Individual semi-structured interviews were conducted with each coach at their respective clubs. Interpretative phenomenological analysis (IPA) was used to explore coaches' experiences and perceptions of stressful events (Smith & Osborn, 2008). The interview guide was informed by challenge and threat theory (Jones et al., 2009), offering a framework to examine and interpret participants' reported appraisal processes. In addition to open-ended questions and prompts, the interviews consisted of a ranking exercise in which coaches identified stressful situations from their coaching practice and placed them in order of prominence.

Data analysis produced three main themes of demand appraisals, resource appraisals, and emotions and behaviours. Coaches' appraisal processes involved the evaluation of situational demands, which consisted of performance demands, conflicting tasks, time pressures, managing relationships, and uncertainty. These demands were evaluated in terms of potential psychological danger, such as anxiety, pressure, and threats to self-esteem. Coaches appraised their ability to meet demands through resources such as self-efficacy, autonomy, achievement goals, and social support. Coaches also explained how reflection was used to enhance their resource perceptions, by gaining insight into their skills, abilities, and experiences of success. The appraisal process influenced coaching behaviour in myriad ways as participants described negative responses such as distancing themselves from others and a tendency to use more autocratic behaviours and less appropriate pedagogical techniques. However, coaches also reported how they 'masked' their emotional stress and provided more social support during demanding times to alleviate their players' stress.

This study made a significant and novel contribution to literature as the first to investigate coaches' cognitive appraisals of stress using a qualitative design, and the first to offer an in-depth analysis of stressors experienced by academy coaches. Although the transferability of findings is

limited by the homogeneous sample of male soccer academy coaches, the detailed account of coaches' resource appraisals offers a foundation for practitioners to develop methods that promote challenge states in coaches. Specifically, the study offered an original contribution to the coaching literature by revealing how reflection can promote resource appraisals and facilitate useful responses to stress, whilst also highlighting the role of social support in the appraisal process.

Book Chapter: Dixon, M. (2021). The reflective coach. In A. J. G. Gill (Ed.), *Foundations of sports coaching* (3rd ed., pp. 219-242). Routledge.

Building on the notion that reflection could play an important role in coaches' cognitive appraisals, Dixon's (2021) chapter *the reflective coach* provided practical applications for using reflection to enhance coach performance in demanding situations. Drawing upon previous studies (Dixon et al., 2017; Dixon & Turner 2018) and research from within and outside of sport coaching, the chapter explained how coaches can engage in reflection to develop an enhanced awareness of their knowledge, skills, and experience; important resources that facilitate challenge responses to stress. Furthermore, the chapter positions reflection as both an individual process that develops coaches' self-insight, and a collaborative activity that encourages coaches to generate social support. Specifically, recommendations are provided for maximising learning opportunities by proactively engaging in collaborative reflection in both formal and informal learning contexts and developing productive relationships with mentors. Additionally, practical applications outline the effective use of technology, social media, and video to prompt and record coaches' reflections.

A detailed discussion of strengths-based reflection guides readers to enhance their own resource perceptions by recognising their attributes and thinking critically about how these can

be applied in demanding situations. This discussion culminated in the construction of an original reflective framework designed to prompt coaches to study their strengths and understand the factors that underpin their successes. The four-part framework encourages coaches to *identify* current behaviours and actions that could impact success in their coaching context before they *question* why these actions led to specific outcomes. Coaches are then encouraged to *design* specific improvements, by drawing on available resources, before implementing and monitoring the *change* in their coaching practice. The chapter offered a significant contribution to the coaching and reflective practice literature through an applied focus on developing reflective skills that enhance resources to promote useful responses to stress.

Study 3: Dixon, M., Lee, C., & Corrigan, C. (2021). ‘We were all looking at them quite critically’: Collaborative reflection on a university-based coach education program. *Reflective Practice*, 22(2), 203-218.

To develop a greater understanding of how coaches reflect in stressful situations, Dixon et al. (2021) examined student coaches’ experiences of reflection during a practical coaching exam. This study was directly informed by the previous research that revealed how being observed and evaluated by senior figures was a prominent stressor for coaches (Dixon et al., 2017; Dixon & Turner, 2018). Additionally, given the importance of social support in coaches’ cognitive appraisals, Dixon et al. (2021) aimed to better understand how coaches reflected in a collaborative manner to help them manage performance demands and respond to stress in useful ways.

A qualitative design was adopted as student focus groups were triangulated with coach educator interviews. The sample consisted of 17 undergraduate sport coaching students and three university instructors from a UK university. The focus group interview guide was devised by

drawing on relevant literature with open-ended questions that addressed coach reflection in terms of experience, behaviour, and context (Smith & Sparkes, 2016). Analysis of the student coach data informed the instructor interviews to obtain multiple perspectives and inform practical recommendations. All data were subject to thematic analysis, providing a flexible framework to explore transcripts for surprising data, whilst the generation of themes was informed by extant research (Braun et al., 2016).

Thematic analysis of the interview and focus group data generated three main themes consisting of reflective processes, social support, and engagement. Coaches described how their reflection was influenced by the stress of being evaluated, as they were more focused on meeting the demands of the assessment than developing their coaching skills. Findings highlighted the underpinning mechanisms of collaborative reflection as participants' evaluation of their peers' coaching performance stimulated awareness of their own practice. Reflection was also facilitated through informal knowledge exchange and the construction of peer feedback. Findings revealed a tendency for coaches to learn from the deficiencies of their peers' coaching practice rather than emulating successful practices. However, the social support generated through collaborative reflection can form part of a strengths-based approach if this is facilitated by the coach educators' feedback and directed questioning. Social support among peers took the form of both practical (e.g., advice) and emotional (e.g., encouragement) support, which was used as a resource to help coaches manage the demands of the assessment. As the first study to examine coaches' experiences of collaborative reflection, findings contributed to knowledge by demonstrating how coaches can generate self-awareness and social support to manage situational demands. Although, while the study was underpinned by the concepts of collaborative and strengths-based reflective practices, the inclusion of a theoretical framework that pertained specifically to the

accrual and use of resources in demanding situations would have facilitated more explicit links to challenge and threat theory.

Study 4: Dixon, M., & Bolter, N. D. (2023). Collegiate coaches' reflective inquiry processes to manage performance demands. *International Sport Coaching Journal*, 11(2), 169–178.

To gain a deeper understanding of how reflection can influence coaches' experiences of stress, Dixon and Bolter's (2023) qualitative study investigated collegiate coaches' reflective inquiry processes to manage performance demands. An interpretivist approach was employed to view knowledge as that which is based on developing individual awareness and critical understanding (North, 2017), allowing valuable insights into how emotion, cognition, context, and action are connected in coaches' experiences (Potrac et al., 2014). Semi-structured interviews were conducted with 13 head coaches representing a range of sports in the demanding context of National Collegiate Athletic Association (NCAA) Division II programs from three universities in the United States. Interview data were analysed using reflexive thematic analysis (Braun et al., 2019). The construction of themes was both inductive and deductive as novel insights from this relatively unexplored concept were documented, while previous research offered a lens to interpret the data (Braun & Clarke, 2021). Specifically, findings were explained through a novel integration of frameworks that connected the broaden-and-build theory of positive emotion (Fredrickson, 2001, 2004) with conditions that influence coach reflection (Gilbert & Trudel, 2005). Addressing a key limitation of Dixon et al.'s (2021) study, these theoretical frameworks enabled a more robust analysis of how coaches' reflection can enhance their resource perceptions in demanding situations.

Data analysis generated two main themes regarding coaches' reflective inquiry processes: strengths-based inquiry and deficits-based inquiry. Coaches used questions and prompts to study

the strengths of their coaching practice and the successful performances of their respective programs. Participants also engaged in strengths-based reflection by framing challenging situations positively and seeking social support through collaborative reflection with peers and mentors. Deficits-based reflection included productive inquiry processes as coaches learned from challenging situations, but also revealed debilitating thought patterns as participants ruminated on problems. This study made original and significant contributions to knowledge by examining the cognitive processes that underpin coaches' strengths-based and deficits-based reflection. These findings offered implications for encouraging productive reflective inquiry to help coaches build personal resources and respond effectively to performance demands. Additionally, this study expanded the previous qualitative research (Dixon & Turner, 2018; Dixon et al., 2021) by studying reflection and cognitive appraisals in the demanding context of collegiate coaching in the United States, thereby enhancing the transferability of the current research.

Discussion

The current body of work addressed two research questions. Firstly, the studies each examined sport coaches' cognitive appraisals of stress, developing a deeper understanding of coaches' perceived demands, resources, and responses (Dixon et al., 2017; Dixon & Turner 2018; Dixon et al., 2021; Dixon & Bolter, 2023). Secondly, the work explored the role of reflection to help coaches manage performance demands and facilitate useful responses to stress (Dixon & Turner, 2018; Dixon, 2021; Dixon et al., 2021; Dixon & Bolter, 2023). Collectively, the research contributes original and significant knowledge by establishing the relationship between coaches' cognitive appraisals and coaching behaviours, by providing a comprehensive account of coaches' resource perceptions, and by detailing how coaches' reflection can have a facilitative or debilitating influence on their experience of stress. This section offers a synthesis of four studies

and one book chapter, highlighting further contributions to the field. Practical applications for coaches and sport psychology practitioners are provided, along with a critical evaluation of the current work, followed by recommendations for future research.

Situational Demands

Before synthesising the collective findings, it is important to outline the respective coaching contexts. The current research examined coach stress across a range of settings consisting of full-time and part-time soccer academy coaches in the UK (Dixon et al., 2017; Dixon & Turner, 2018), sport coaching undergraduate students in the UK (Dixon et al., 2021), and full-time collegiate coaches in the US (Dixon & Bolter, 2023). Academy coaches experienced stressors related to interpersonal, organisational, and performance factors, in an environment characterised by uncertainty (Dixon et al., 2017; Dixon & Turner, 2018). In the cross-sectional study, player behaviour and attitude emerged as the most frequently reported stressor (Dixon et al., 2017), whilst qualitative findings emphasised the demands of managing relationships with parents and other coaches (Dixon & Turner, 2018). These findings suggest that academy coaches experience some similar stressors to those working with senior elite athletes (e.g., Frey, 2007; Thelwell et al., 2008), with other demands comparable to coaches working at the grassroots level (e.g., Kelly et al., 2018). Current findings also demonstrated how academy coaches appraised stressors through a challenge and threat framework, and evaluated these demands based on the potential for psychological danger (Dixon et al., 2017; Dixon & Turner, 2018). Thus, the present research adds to the extant literature by establishing a more comprehensive understanding of stress among coaches working at non-elite levels.

Collegiate coaches reported some overlap with academy coaches' stressors such as the performance and well-being of their athletes, administrative duties, and conflicting demands, but also emphasised the importance of results and standings alongside limited financial and staffing resources (Dixon & Bolter, 2023). Whereas academy and collegiate coaches were primarily judged on the performance of their athletes, student coaches described the pressure and uncertainty of having their own performances evaluated (Dixon et al., 2021). Therefore, current findings support the notion that although specific stressors may differ, coaches experience stress regardless of level or role (Pearson et al., 2020; Potts et al., 2022), as demands are appraised based on the extent to which they are personally significant (Meijen et al., 2020).

Cognitive Appraisals and the Role of Reflection

By examining how coaches' responses to stress are influenced by their cognitive appraisals, the current research addressed a notable gap in the coach stress literature (Norris et al., 2017; Thelwell et al., 2010). Challenge appraisals were associated with useful responses through the provision of social support, whereas threat appraisals were associated with potentially disadvantageous responses such as more autocratic behaviour and less positive feedback (Dixon et al., 2017). Further investigation into coaches' appraisal processes revealed that demands were appraised in terms of potential psychological danger, while resource appraisals consisted of social support, perceptions of control, and efficacy beliefs established through reflection (Dixon & Turner, 2018). These findings informed practical applications for coaches to use reflection as a strategy to enhance their resource perceptions through greater awareness, enabling them to thrive in potentially stressful situations (Dixon, 2021). Exploring coach reflection in a pressurised situation highlighted the importance of collaboration and social

support to facilitate coaches' performance and development (Dixon et al., 2021). However, subsequent investigation revealed that although reflection can enhance coaches' awareness of their resources, coaches' tendencies to ruminate might exacerbate their responses to stress (Dixon & Bolter, 2023). Collectively, the current research makes a significant contribution to literature by demonstrating how coaches' reflection and appraisal processes can influence their experiences of stress. The following sections provide a more detailed explanation of prominent findings that emerged from the body of work.

Personal Resources

The current research demonstrated how coaches' varying stress responses can be mediated by their cognitive appraisals. For example, challenge appraisals were associated with greater social support, whilst threat appraisals were associated with lesser positive feedback (Dixon et al., 2017). Given that challenge states are characterised by high perceptions of resources to meet perceived situational demands (Blascovich & Mendes, 2000), subsequent studies explored coaches' resource perceptions to better understand the cognitive processes that underly challenge and threat states. Coaches reported how their perceived self-efficacy was enhanced by reflecting on previous experiences to generate a greater awareness of their organisational and practical coaching skills (Dixon & Turner, 2018). Reflection on positive performances also enhanced coaches' perceptions of their athletes' strengths, enabling them to envision further success and manage performance demands (Dixon & Bolter, 2023). Consistent with challenge and threat theory, self-efficacy emerged as a key determinant of the appraisal process, with higher self-efficacy enhancing an individual's perceived resources (Jones et al., 2009). Thus, current findings indicate that reflecting on personal resources might help coaches to promote challenge states through enhanced self-efficacy.

By shedding light on coaches' resource appraisals, the current findings build on previous coach stress research that has primarily focused on stressors and demands (Norris et al., 2017; Santos & Costa, 2018). Moreover, recent research on coaches' cognitive appraisals have adopted Lazarus' transactional theory and focused predominantly on primary appraisals (e.g., Baldock et al., 2021; Potts et al., 2022), and coping resources (e.g., Didymus et al., 2017). Therefore, the current research makes a significant contribution to knowledge by providing a greater understanding of coaches' resource appraisals to facilitate useful responses to stress.

Current findings also highlight the role of emotion in facilitating coaches' appraisal processes. For example, coaches reported that in times of stress they still experienced positive emotions such as the enjoyment derived from their practical work (Dixon & Turner, 2018). Coaches also revealed how social support generated by collaborative reflection promoted positive emotions and facilitated their ability to perform under pressure (Dixon et al., 2021). Moreover, coaches described experiences of positive affect and gratitude when reflecting on strengths and good performances (Dixon & Bolter, 2023). These findings were expected as individuals in a high challenge state are more likely to experience positive emotions, whilst negative emotions are perceived as facilitative (Meijen et al., 2020). Indeed, positive emotions broaden an individual's range of thoughts and actions by enhancing attention, cognition, and creativity (Fredrickson, 2001, 2004). Nonetheless, current findings extend previous work that positioned reflection as a coping strategy (e.g., Loftus et al., 2022; Olusoga & Kenttä, 2017; Thelwell et al., 2010) by demonstrating how reflection might enhance coaches' resource perceptions through positively oriented emotions.

The studies also revealed how coaches' negative responses to stress were influenced by cognitive appraisals and reflection. Coaches who appraised stressors as a threat were more likely

to be autocratic in their coaching behaviour and less likely to offer positive feedback (Dixon et al., 2017). Additionally, coaches described how cognitive appraisals could result in anxiety, frustration, withdrawal from interactions, and inadequate instruction to their athletes (Dixon & Turner, 2018). These responses parallel a high threat state, in which an individual perceives insufficient resources to meet perceived demands, experiences negative emotions that are perceived as debilitating, and adopts an avoidance focus (Meijen et al., 2020). Indeed, coaches experience negative emotional and behavioural responses due to the depletion of psychological resources in stressful situations (Mageau & Vallerand, 2003). For example, current findings showed that reflection on difficult situations occasionally transformed into rumination, as coaches' fixation on problems exhausted their time and energy (Dixon & Bolter, 2023). Rumination is characterised by a downward spiral as negative emotions induce narrow, perseverative, and pessimistic cognitions that restrict an individual's attentional scope whilst triggering behavioural withdrawal and further negative emotions (Fredrickson, 2013). Although coaches' tendencies to reflect on failures and deficits has been established (e.g., Carson, 2008; Kuklick et al., 2015), the relationship between rumination, reflection, and cognitive appraisals remains unexplored in the coach stress literature. Therefore, the current research contributes new knowledge by highlighting the debilitating role of rumination in coaches' experiences of stress.

Social Support

The role of social support in coaches' cognitive appraisals was a prominent theme throughout the body of research. Academy coaches described how informational and tangible social support, primarily derived from their colleagues and clubs, helped them respond to stressors effectively (Dixon & Turner, 2018). Similarly, student coaches highlighted the importance of practical support, such as technical and organisational advice, but also explained

how emotional support from their peers increased their self-efficacy and reduced nervousness (Dixon et al., 2021). Collegiate coaches actively sought support from assistant coaches and peers outside of their immediate coaching staff, which helped them find positive meaning in demanding situations (Dixon & Bolter, 2023). Although the source and form differed according to the coaching context, findings consistently showed the importance of social support in coaches' cognitive appraisals and responses to stress. Moreover, coaches who appraised stressors as a challenge were more likely to offer social support (Dixon et al., 2017), highlighting the reciprocal nature of social support. Indeed, coaches explained how they intentionally provided more positive feedback and assurance to their athletes in demanding situations (Dixon & Turner, 2018). Current findings are consistent with the idea that social support is an integral resource in the anticipation of demanding situations (Meijen et al., 2020), potentially reducing perceptions of danger and uncertainty (Blascovich & Mendes, 2000). However, despite being recognised as a core facet of an individual's cognitive appraisals, research on the role of social support in the challenge and threat process is sparse (Meijen et al., 2020). Therefore, current findings that demonstrate how coaches seek, receive, and provide social support in demanding situations offer an important addition to the cognitive appraisal literature.

Strategies for generating social support also emerged from the current research, as coaches engaged in collaborative reflection. Following a synthesis of extant literature, collaborative reflection was described as a process of experiential learning that involves observation, cooperation, and knowledge exchange (Dixon, 2021). Coaches discussed how collaborative reflection could enhance their resources through guidance and advice whilst also prompting reflection on their own practice, facilitating an awareness of their existing knowledge (Dixon et al., 2021; Dixon & Bolter, 2023). Additionally, coaches described how collaborative

reflection fostered an environment of collegiality, which helped them perform under pressure (Dixon et al., 2021). The assertion that collaborative reflection can help coaches to prepare for and perform in demanding situations is supported by extant research as high levels of connectedness promote greater resource appraisals (Slater et al., 2018), and greater social identification with one's peers is related to less perceived stress (Gillman et al., 2023). Moreover, the reflection facilitated by social support can help coaches gain perspective regarding their stressors (Olusoga & Kenttä, 2017). The current research extends this previous literature by detailing how collaborative reflection can promote social support in ways that enhance resource perceptions and reduce demands.

Demand Appraisals

Whilst coaches' resource perceptions were central to the current research, findings also explain how demand perceptions influenced coaches' experiences of stress. For example, collegiate coaches described how reflection helped them recognise rewarding aspects of their job in a way that facilitated gratitude and enabled them to frame stressors positively (Dixon & Bolter, 2023). Similarly, academy coaches revealed how positive emotional responses associated with practical 'on the grass' coaching reduced the intensity of stressors arising from other aspects of their roles (Dixon & Turner, 2018). These findings are comparable to previous studies that highlighted coaches' positive outlook in relation to stress as they focused on aspects of the profession they enjoyed whilst using gratitude as a coping strategy (e.g., Frey, 2007; Loftus et al., 2022; Powell et al., 2022). Indeed, rationalisation and gaining a sense of perspective is a useful psychological skill for coaches to manage stress (Olusoga et al., 2010). Conversely, coaches in the current research demonstrated the dysfunctional nature of irrational thinking. For example, one coach referred to losing an academy soccer game as an 'absolute disaster' (Dixon

& Turner, 2018). Given that higher irrational beliefs were associated with greater threat appraisals (Dixon et al., 2017), the current work supports the notion that rational/irrational beliefs play an important role in challenge and threat cognitive appraisals (Evans et al., 2018). Therefore, reflection that generates a sense of perspective, gratitude, and rationality, might enhance the likelihood that coaches experience stressors as a challenge.

Practical Implications

Findings from the current research offer practical implications for several professional contexts. The application of challenge and threat theory facilitates a deeper understanding of coaches' cognitive appraisals and can therefore help to develop specific interventions. This section illustrates how coaches can adjust their cognitive appraisals to promote useful responses to stress, and also provides strategies for sport psychology practitioners and coach educators.

Coaches

Findings from the current research suggest that reflection is an important strategy to help coaches reappraise situational demands. For example, reflection can help coaches gain perspective on performance issues, reframe difficult situations by focusing on opportunities for growth, and promote feelings of gratitude by recognising the rewarding aspects of their job (Dixon & Bolter, 2023). Coaches can also use reflection to promote their resource perceptions of self-efficacy through an enhanced awareness of their knowledge, skills, and experiences of success (Dixon & Turner, 2018). For example, collegiate coaches might employ reflective strategies such as strengths-based journaling, completing a 'three good things' activity, and reflecting upon previous achievements (Dixon & Bolter, 2023). Indeed, strengths-based reflection can be developed by asking 'how' and 'why' type questions following successful

performances to reveal new insights into coaches' practical skills and better understand the strengths of their athletes and colleagues (Dixon et al., 2016). Coaches also use a strengths-based approach through reflection-in-action, an important process that helps coaches modify their actions to meet situational demands (Dixon, 2021). For example, coaches can use reflection-in-action to reappraise demands previously experienced as a threat by focusing on relevant performance cues to encourage greater task engagement (Dixon et al., 2023).

Another important strategy to facilitate coaches' adaptive responses to stress is the receipt and provision of social support, an important resource associated with challenge states (Dixon et al., 2017; Dixon & Turner, 2018). By connecting with peers both within and outside of their organisations, coaches can generate different forms of social support to meet specific demands. For example, coaches might engage in reflective conversations with mentors in a way that broadens their knowledge and produces alternative solutions to performance problems (Dixon, 2021; Dixon & Bolter, 2023). Additionally, coaches might ask for tangible support from their assistants (e.g., help with administrative tasks or providing additional feedback to certain athletes) to reduce perceived demands (Dixon & Turner, 2018; Dixon & Bolter, 2023). Through reflective conversations with peers, coaches also acquire emotional support such by reducing nervousness and enhancing self-efficacy (Dixon et al., 2021). Moreover, by taking an active interest in the stressors experienced by their peers, coaches can share strategies for managing demands (Dixon, 2021). Indeed, given that not only the receipt, but also the provision of social support was associated with challenge states (Dixon et al., 2017; Dixon & Turner, 2018), current findings highlight the importance of a reciprocal approach through a process of collaborative reflection.

Sport Psychology Practitioners

Although reflection emerged as an important strategy, findings also revealed coaches' tendencies to reflect on failures and ruminate on problems, which can exacerbate negative experiences of stress (Dixon & Bolter, 2023). To establish more productive inquiry processes, deliberate interventions may be necessary. If framed productively, deficits-based reflection can help coaches learn from difficult experiences and consequently enhance future knowledge resources. For example, studying weaknesses and correcting errors can prompt feelings of satisfaction and enable professional growth (Dixon & Bolter, 2023). However, reflection is a process that requires practice in learning to ask the right questions (Jacobs et al. 2016), which might require guidance from a practitioner (Farhat et al., 2022). Therefore, sport psychologists might enhance coaches' awareness of their current reflective processes (e.g., by monitoring the coach's use of strengths-based and deficits-based dialogue; Dixon & Bolter, 2023). To encourage a rigorous approach to reflection, practitioners can introduce reflective frameworks that prompt coaches to identify, question, design, and change their actions to adapt to challenging situations (Dixon, 2021). Sport psychologists can facilitate strengths-based reflection by developing a reflective journal that prompts coaches to track and examine performance strengths throughout a season (Dixon & Bolter, 2023). Additionally, positive psychology tools such as the 'accept, change, or leave principle' and the reframing of failures into learning opportunities (e.g., Richter et al., 2021) can be used to discourage rumination and ensure that deficits-based reflections remain productive.

In addition to promoting coaches' resource perceptions through guided reflection, sport psychology practitioners might educate coaches to use challenge and threat theory as a framework to understand their experiences of stress. This can help coaches recognise and

reframe performance demands such as uncertainty (e.g., athlete behaviour and match outcome), required effort (e.g., conflicting tasks and administrative duties), and psychological danger (e.g., anxiety surrounding athlete progress and nervousness when facing difficult conversations) (Dixon & Turner, 2018; Dixon & Bolter, 2023). Furthermore, practitioners can facilitate challenge appraisals by encouraging coaches to approach these demands with a sense of rationality (Dixon et al., 2017). For example, sport psychologists could guide coaches to replace irrational beliefs about performance (e.g., awfulising following a defeat) with more productive cognitions through strategies such as rational self-talk (Turner et al., 2018) and conversations involving rational statements (Evans et al., 2018). Given that irrational thinking is an important disposition that influences the appraisal process (Meijen et al., 2020), rationality can help foster coaches' challenge appraisals and adaptive responses to stress.

Coach Educators

The current research offers guidance for educators to prepare coaches for demanding contexts, primarily by developing coaches' reflective skills and fostering social support. Firstly, coach educators can facilitate strengths-based reflection by encouraging their learners to coach 'in' strengths, rather than coaching 'out' weaknesses (Dixon et al., 2016). For example, educators could task coaches to solely focus on correct aspects of performance in a particular session, using feedback to reinforce the strengths of their athletes and strategically allow failure (Dixon, 2021; Dixon & Bolter, 2023). Secondly, educators can provide challenge-oriented feedback to enhance coaches' self-efficacy by attributing successful aspects of training sessions to the coaches' actions (e.g., Dixon et al., 2023). Thirdly, coach educators could encourage social support by establishing collaborative reflection (Dixon et al., 2021). For example, by devising a group task with directed questions that promote the discussion of a peer coach's strengths,

triggering coaches' awareness of their own skills and abilities (Dixon et al., 2021). Lastly, educators can help coaches enhance their perceptions of control and reduce the demands of uncertainty by teaching them to plan effectively for unpredictable coaching contexts. For example, by approaching their practice with a 'flexible script' in which coaches plan meticulously but can also reflect-in-action to adapt to the dynamic nature of coaching (Dixon, 2021). By building these elements into coach development programs, educators can help coaches manage performance demands productively.

Theoretical Implications

As the first studies to examine coach stress through contemporary challenge and threat frameworks, current findings offer important theoretical considerations. Prior to the current work, coaches' adaptive responses to stress were primarily studied through Lazarus' notion of coping (Olsen et al., 2020). Coping is conceptualised as an individual's effort and struggle to manage psychological stress (Lazarus & Folkman, 1984), and has typically been positioned as a process that occurs after a coach encounters a stressor (e.g., Didymus, 2017; Levy et al., 2009). Conversely, challenge refers to how an individual approaches and experiences a motivated performance situation, and is characterised by superior performance (Jones et al., 2009; Meijen et al., 2020). For example, coaches' challenge responses were expressed by adjusting their instructional methods, providing greater social support, and masking stress to prevent emotional contagion (Dixon et al., 2017; Dixon & Turner, 2018). Therefore, whilst coping provides a suitable lens to study coaches' psychological well-being, current findings highlight the potential use of challenge and threat frameworks to study coaches' performance in demanding situations.

The current research provides implications for challenge and threat theory by elucidating the role of social factors in coaches' cognitive appraisals. Previously, the influence of social support on the challenge and threat process had received limited attention (Meijen et al., 2020). Current findings highlight the reciprocal nature of social support in the appraisal process, with both the provision and receipt of social support related to challenge states (Dixon et al., 2017; Dixon & Turner, 2018). Additionally, the present research reveals how different types of social support might influence the appraisal process. For example, coaches sought tangible support to reduce perceived demands (Dixon & Turner, 2018), informational support to enhance knowledge resources (Dixon et al., 2021), and emotional support to promote positive affect and reduce negative affect (Dixon et al., 2021; Dixon & Bolter, 2023). Thus, current findings reinforce Meijen et al.'s (2020) contention that to better understand the social environment inherent to challenge and threat states, perceived social support should be considered as a key factor in the appraisal process.

By investigating the role of reflection in coaches' experiences of stress, the current research poses further theoretical considerations. Findings illustrated how coaches' reflection prompted their emotional responses and influenced their appraisal processes and responses to stress (Dixon & Turner, 2018; Dixon et al., 2021; Dixon & Bolter, 2023). These findings align reflection with challenge and threat theory, as the interplay between cognition and emotion is central to the appraisal process (Blascovich, 2008). In support, Lazarus (2000) proposed that cognitive appraisals are influenced by continual performance feedback, represented by evaluative self-statements that result in different emotional responses. The current research contributes to theory by revealing how these evaluations can take the form of conscious and purposeful reflection. For example, coaches' reflection on their skills, knowledge, and rewarding

aspects of their role facilitated feelings of self-efficacy and gratitude, which subsequently helped them manage situational demands (Dixon & Turner, 2018; Dixon & Bolter, 2023). Given that challenge and threat states fluctuate based on iterative reappraisals (Miejen et al., 2020), and reflection involves instant interpretation of a situation to inform future action (Schön, 1987), current findings suggest that reflection can be used to actively promote challenge states.

Strengths and Limitations

Sampling

The present studies examined coaches' reflection and cognitive appraisals across a range of sports, settings, and levels, facilitating the transfer of knowledge to different coaching contexts. In particular, the current work enhanced the application of research to coaches working at sub-elite levels, a population previously under-represented in the coach stress literature (Norris et al., 2017). However, the current research did not study coaches' stress appraisals in elite sport environments. Given the unique demands experienced by high performance coaches, such as media scrutiny, expectations from supporters, and job insecurity (e.g., Baldock et al., 2021; Olusoga et al., 2009), caution must be exercised when applying the current findings to elite coach populations.

Although the current studies sampled coaches from a range of settings, there were limitations regarding gender and ethnic diversity, along with inconsistencies in reporting demographic information. For example, Dixon et al. (2017) did not collect data on the participants' gender, ethnicity, or coaching experience. Demographic information collected in the other studies revealed an underrepresentation of female coaches. Dixon and Turner's (2018) sample of soccer academy coaches consisted solely of male coaches, whilst only three female

coaches participated in Dixon et al.'s (2021) and Dixon and Bolter's (2023) studies, out of 17 and 13 participants respectively. In the context of collegiate athletics in the USA, these gender ratios were representative of the population (Acosta & Carpenter, 2014). However, the current work did not accurately represent coaching in the UK as 43% of active coaches in 2019 were female (National Coaching Foundation, 2019). Given that female coaches report significantly higher levels of stress than their male counterparts (Kelley et al., 1999; Pearson et al., 2020), and experience additional challenges such as lower pay and less organisational support (LaVoi et al., 2019), the current findings might be less transferrable to female coaches.

A further limitation pertains to the lack of data collected on participants' ethnicity. Racial minorities experience distinct stressors due to discrimination, fewer advancement opportunities, and higher occupational turnover intentions (Cunningham et al., 2017). Moreover, minority racial coaches might experience lower perceptions of social support due to marginalisation and social exclusion (Bradbury et al., 2018). By using purposive sampling methods, the current research aimed to ensure participants had the requisite knowledge and experiences to address the research questions. However, whilst purposive sampling is appropriate when accessing a targeted sample quickly, sampling for proportionality is not the primary concern (Atkinson, 2012). Thus, the transferability of findings could have been improved by consistently reporting participants' demographic information and recruiting from underrepresented populations who encounter distinct situational demands.

Methodological Approach

A strength of the current body of work was the mixed methods used to study coaches' stress appraisals. Consistent with a pragmatic approach, the knowledge generated using one type of method in one specific setting was used to develop knowledge in other situations (Morgan,

2007). For example, the first study to quantitatively measure challenge and threat in sport coaches (Dixon et al., 2017), informed the first qualitative study to analyse coaches' cognitive appraisals through a contemporary challenge and threat framework (Dixon & Turner, 2018). Much of the previous research on coaches' stress appraisals has been solely qualitative, and therefore has not directly examined cognitive appraisals and their associated responses (e.g., Baldock et al., 2021; Didymus, 2017; Potts et al., 2022). Additionally, previous cross-sectional studies (e.g., McNeill et al., 2018a; Santi et al., 2021) used the perceived stress scale (PSS-10; Cohen et al., 1983) to assess general perceptions of stress over one month, and therefore offered limited understanding of the cognitive processes that influence coaches' responses to stress. In contrast, the mixed methods adopted in the current work enabled the examination of relationships and exploration of underlying cognitive processes, promoting complementarity between the findings to develop a more comprehensive understanding (Gibson, 2016).

Despite the advantages of pragmatism, the current work could be criticised for lacking a consistent approach. For example, the current research mixes a positivist research paradigm (Dixon et al., 2017) with interpretivist approaches (Dixon & Turner, 2018; Dixon et al., 2021; Dixon & Bolter, 2023). Additionally, while the qualitative studies each prioritised the participants' subjective experiences, either through Smith's (2004) interpretive phenomenological analysis or Braun et al.'s (2016) reflexive thematic analysis, it was not until the final study that a relativist ontology and interpretivist epistemology were stated. The lack of a consistent methodological grounding can be problematic. For example, some scholars contend that quantitative and qualitative inquiries constitute opposing epistemological paradigms (Ryba et al., 2022), and that by adopting a 'what-works' approach, pragmatist research prioritises methods at the expense of addressing philosophical concerns (Sparkes, 2015). Advocates of

pragmatism also warn of the potential pitfalls of mixed methods research, such as problems related to paradigm mixing, qualitative analysis of quantitative data, and the interpretation of conflicting results (Johnson & Onwuegbuzie, 2004). Having acknowledged these limitations, I hope that the collective findings have been synthesised and discussed in a way that generates a cohesive research program.

Theoretical and Conceptual Issues

As the first studies to analyse coach stress through contemporary challenge and threat frameworks, the current research offers a novel contribution to literature. Compared to general transactional theories of stress (e.g., Lazarus & Folkman, 1984, 1987), biopsychosocial-derived models of challenge and threat enable a more robust examination of how cognitive appraisals influence performance. However, the BPS model and associated theories have been criticised for lacking clarity in the proposed relationships and interactions between appraisal components. For example, Wright and Kirby (2003) argued that the BPS model's conceptualisations of demand appraisals are vague, with no detailed explanation of how an individual's perceptions of effort, uncertainty, and danger combine, leaving the appraisal process difficult to assess. Indeed, Blascovich et al. (2003) conceded that the balance between demands and resources was a "fuzzy algorithm," and the authors were "reluctant to prematurely specify the exact nature of how demands and resources combine" (p. 239). The BPS and TCTSA models have also been disputed on the grounds that they differ fundamentally from Dienstbier's (1989) theory of physiological toughness, which proposed that responses to performance situations are not a function of the relation between demands and resources, but rather, between opportunities for growth and the potential for harm or loss (Uphill et al., 2019). Therefore, whilst challenge and threat theories offer an interesting framework for studying coach stress, it must be acknowledged that the exact

nature of the appraisal process and its mediating effect on performance remain contentious issues.

Limitations of applying athlete-based theories to sport coaches must also be highlighted. Previous research has studied challenge and threat responses in athletes using performance measures that are quantifiable yet ecologically valid (e.g., golf performance; Moore et al., 2013; cricket batting; Turner et al., 2013; throwing accuracy; Turner et al., 2014). However, coach performance is subject to the intricacies and nuances of coaching practice, characterised by complex social and cognitive contexts (Bowes & Jones, 2006). Indeed, coaching practice is influenced by coaches' personal idiosyncrasy and their unique perceptions of context (Cassidy et al., 2004). In contrast to more simplistic indicators of athletic performance, coaching effectiveness is difficult to assess in controlled settings. Thus, theories of challenge and threat states in athletes (Jones et al., 2009; Meijen et al., 2020) are not entirely congruent with the nuanced and context-driven nature of coach performance, which might present challenges when interpreting coaching effectiveness in times of stress.

Given the complexity of the appraisal process, issues of self-report measures used in the current research must also be highlighted. By predominantly using qualitative designs, the current research aimed to provide an in-depth account of participants' experiences and perceptions (Atkinson, 2012; Smith & Sparkes, 2016), which are key determinates of the appraisal process (Blascovich et al., 2003; Meijen et al., 2020). However, whilst subjective measures can yield important information about appraisals, self-report methods are less reliable than physiological measures (Blascovich & Mendes, 2000). Individuals encounter performance situations and process information both deliberately and automatically, and therefore, might not have conscious access to their appraisals (Blascovich et al., 2003). Similarly, reflection can be

tacit, with coaches consciously unaware of their practice (Cushion, 2018). In addition, self-report measures are subject to social desirability and participants may have difficulties verbalising their emotions (Jones et al., 2009). Therefore, the current research lacks the objective precision associated with physiological measures (e.g., cardiovascular indices; Turner et al., 2014), which must be considered when drawing conclusions about coaches' challenge and threat responses.

Research Quality

To meet the essential standards for qualitative research proposed by the American Psychological Association (APA), studies should include rich and detailed data sets with heavily contextualised descriptions that emphasise the specific settings in which experiences occur. Additionally, these data should be subject to intensive analyses that involve researchers' self-examination about their influence upon the research process (Levitt et al., 2018). In the current qualitative studies, these standards were met through consistent use of researcher triangulation, reflexivity, and thick description. However, issues of credibility must be noted. The current research did not include participants' interpretations of the data, which help gauge the impact and relevance of findings and inform further data collection (Tracy & Hinrichs, 2017). Indeed, by omitting member reflections, research offers a less meticulous, robust, and intellectually enriched understanding of the data (Smith & McGannon, 2018). Additionally, collecting data at one time point rather than spending an extended period with participants might have yielded a limited understanding of the social context (Lincoln & Guba, 1985). The cross-sectional study is also subject to temporal issues. Data from cross-sectional surveys contain no information about whether a change in one variable causes a change in another, and therefore cannot assess the pattern of causation (Hagger & Smith, 2019). Moreover, transient occasion factors can bias cross-sectional data (Spector, 2019). The lack of prolonged engagement in the research setting,

characterised by singular data collection processes, limits the scope of the conclusions that can be drawn from the current research.

Future Research

The current studies provide a deeper understanding of the role of reflection in coaches' cognitive appraisals. Building on these findings, I am currently leading a cross-sectional study of professional coaches to assess the relationships between reflection, rumination, and challenge and threat appraisals. Using the self-reflection and insight scale (Grant et al., 2002), this study differentiates between the extent to which one engages in reflection, with the clarity of understanding one's thoughts, feelings, and behaviour. The relatively unexplored role of rumination is measured through the perseverative thinking questionnaire (Ehring et al., 2011), and coaches' challenge and threat appraisals are measured through Skinner and Brewer's (2002) cognitive appraisal scale. As such, the study aims to extend knowledge of how specific reflective processes relate to coaches' stress appraisals.

To better understand causal patterns and inform applied practice, longitudinal studies that measure temporal aspects of reflection and cognitive appraisals would be a valuable addition to the coach stress literature. Previous longitudinal studies reveal increases in coaches' emotional stress and burnout throughout a season (Altfeld et al., 2015; Bentzen et al., 2016). Given the dynamic nature of stress in which demand and resource appraisals fluctuate (Jones et al., 2009), longitudinal studies can better uncover the mechanisms that underpin changes in challenge and threat states. For example, longitudinal research might include the measurement of coaches' demands and resources (e.g., Mendes et al., 2007) and perceptions of social support (e.g., Zimet et al., 1988) to better understand how these constructs combine as part of the appraisal process.

Having gained insight into causal factors, intervention studies are required to inform how coaches strategically use reflection to promote adaptive responses to stress. Previous intervention research shows promising findings. For example, following a mental skills training intervention, coaches valued their time spent reflecting, sharing experiences with other coaches, confidence building, and an enhanced ability to relax when facing stressors (Olusoga et al., 2014). Interventions utilising mindful practice have led to decreased anxiety and lower perceived stress (Longshore & Sachs, 2015), and an increased awareness of situational demands (Hägglund et al., 2021). However, there is a dearth of research on reflection-based interventions for coach stress. Given that reflective practice is a core component of coach development (Brown & Slater, 2023), and is used by elite level coaches as a coping method (Loftus et al., 2022; Thelwell et al., 2010), reflection-based interventions might be more readily adopted compared to other strategies.

To further extend current knowledge, future research might adopt more objective markers to incorporate coaches' non-conscious appraisals. For example, observational and intervention studies could use CV indices such as cardiac output and total peripheral resistance (e.g., Blascovich et al., 2004; Turner et al., 2014), to identify characteristics of challenge and threat states with greater precision. However, intrusive data collection measures such as CV monitoring equipment could reduce ecological validity by creating an unrealistic coaching context. In a recently published study, my co-authors and I adopted a single-case experimental design to study coaches' instructional behaviours in response to challenge or threat feedback in a pressurised yet naturalistic setting (Dixon et al., 2023). Behaviour analysis data showed no uniform responses as coaches in both the challenge and threat conditions revealed increases and decreases in instructional behaviour. However, follow-up interviews revealed that increases in instructional behaviour were underpinned by enhanced resource perceptions and an approach goal orientation.

Future research that analyses coaches' behavioural responses to stress in naturalistic settings can enhance the transfer of coaching research to practice (Lyle, 2018). Therefore, it is recommended that objective data collection processes are combined with qualitative inquiry to study the multifaceted nature of cognitive appraisals that incorporate physiological, behavioural, and emotional information (Blascovich et al., 2003).

Conclusion

The current body of work contributes significant knowledge of coaches' reflection and cognitive appraisals of stress. The research found relationships between challenge and threat appraisals and coaching behaviours, highlighting the influence of cognitive appraisals on coaches' responses to stress. Cognitions that underpin these processes were elucidated, providing a comprehensive account of coaches' perceived resources to meet demands encountered in non-elite coaching contexts. The research also indicates how coaches' reflection and rumination can have a facilitative or debilitating influence on their experiences of stress. Collectively, the findings provide a foundation to further examine how coaches can use reflection to facilitate challenge states and useful responses to stress.

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