CHAPTER 8

Can Adversity Promote Team Functioning In Sport?

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Chapman, M.T., & Gucciardi, D.F. (2020). Can adverse experiences promote team functioning? In R. Wadey, M. Day, & K. Howells (Eds.), *Growth following adversity in sport: A mechanism to positive change* (pp. 107-119). Routledge.

Abstract

There has been limited attention devoted to exploring the links between adversity and collective functioning. Given the nascent stage of this research agenda, our purpose with this book chapter is to discuss important considerations for understanding team functioning when adverse events occur and offer a foundation to guide future work. We first explore the ways in which adversity is experienced by individuals and collectives. The nature of adverse experiences provides an important foundation for our consideration of team functioning following adversity. We conclude by examining how experiences of adversity may enhance the collective functioning. Throughout chapter, we consider avenues of future research.

Introduction

Sport teams across all competitive levels are likely to experience adversity at some point within the performance cycle. For sporting teams, adversities can be characterised as events that have the potential to derail the collective functioning of the group, such as the loss of a key team member through major injury, the sudden change in management personnel (e.g., coach being fired), or an unexpected loss to a much lower ranked side. Typically, adversities are characterised negatively in light of the potentially deleterious effects for team functioning and ultimately destabilisation of performance. For example, as a result of the ball tampering scandal in 2018, the Australian cricket team lost three key members midway through a test series against South Africa, and subsequently suffered their second largest defeat in history in the following match and went on to lose their following two test series. However, teams can also withstand potentially deleterious effects or even develop positively following the experience of adverse events (e.g., enhanced focus and motivation following the feeling of injustice from an erroneous refereeing decision). Regardless of the immediate outcomes of such experiences, one important consideration for theory and practice is the implications of collective experiences of adversity for the future functioning of the team. In other words, can collective experiences of adversity promote the future functioning of a sporting team? Given the paucity of empirical work that has addressed this proposition, our goal in this chapter is to consider several key questions that might inspire others and guide efforts to study this proposition empirically.

Literature Review

What is Adversity?

The use of the term adversity is widespread across the literature within areas such as resilience, post-traumatic growth, and coping (Linley & Joseph, 2004). The ubiquity of this term and implicit assumptions regarding its definition has caused discrepancies in the operationalisation of adversity. For example, some scholars have defined adversity as “life circumstances that are known to be statistically associated with adjustment difficulties” (Luthar & Cicchetti, 2000, p. 858), whereas others have defined the term as a “state of hardship or suffering” (Jackson, Firtko, & Edenborough,

2007, p. 3). Within the biological literature, adversity is defined as a level within the environment that may vary in magnitude depending upon qualities such as resources, physical structure, climate, and competitors (Andras, Lazarus, & Roberts, 2007). Despite dissimilarities within the literature, and the observed conceptual proliferation with terms such as stressor and traumatic events, certain salient observations can be drawn from those definitions available across systems. For example, characteristics considered jointly necessary to differentiate adversity from related terms (i.e., trauma, stressor) have included the event to be external to the perceiver (Andras et al., 2007; Gucciardi et al., 2018), contextually meaningful to the perceiver (Fletcher, 2018), statistically associated with changes to the functioning of a system (Luthar & Cicchetti, 2000), and low to moderate in probability of occurrence (Gucciardi et al., 2018). Applicable to the domain of sporting teams, we define adversity as a "temporally bound, low-to-moderate probability event external to the perceiver that represents a major assault on the functioning of a system" (Gucciardi et al., 2018, p. 742).

How Do Individuals Experience Adversity?

As team experiences are borne out of individual perspectives, we briefly consider individuals' experiences of adversity across cognitive, emotional, behavioral, and biological domains. The biopsychosocial model of challenge and threat (BPM; Blascovich, 2013) provides a useful framework for appreciating individuals' experiences of stress and adversity occurring within contexts where people are motivated to perform, that is, when striving to attain a personally relevant and meaningful goal. Within the context of the BPM, individuals experience psychological states of challenge or threat that are characterised by patterns of physiological responses. As these physiological responses occur rapidly, often within the matter of seconds, and can be assessed non-invasively, they can be used to make inferences about two key psychological states that represent opposite ends of a bipolar continuum. Specifically, individuals experience a state of challenge if they appraise their personal resources outweigh the demands of the situations, or a state of threat when they appraise the demands of the situations outweigh their personal resources. As adversity is characterised by unique experiences where situational demands are high, it is unsurprising that cognitive (e.g., intrusive

thoughts, shift in attention), emotional (e.g., anger, emotional suppression), physical (e.g., illness, loss of fitness), and behavioral (e.g., performance withdrawal, social isolation) responses tend to reflect experiences of threat states (Howells, Sarkar, & Fletcher, 2017).

The synergistic links between psychological states and physiological processes captured in the BPM (Seery, 2011) underscores the importance of the biological experience of adversity. The BPM draws on the idea of energy mobilisation via the activation of the sympathetic-adrenomedullary (SAM) and pituitary-adrenocortical (HPA) axes during motivated performance situations (Dienstbier, 1989). In these circumstances, the SAM mobilises energy swiftly via the quick release and elimination of epinephrine and norepinephrine, whereas HPA axis activation occurs more gradually via the slow release and elimination of cortisol. Although the sudden onset of SAM activation has been outlined as an indicator of "toughened" individuals, the transient half-life within the body of only a few minutes limits its measurement potential (Dienstbier, 1989). Contrastingly, cortisol released via HPA activation has a half-life of over an hour making it amenable to measurement and therefore the preferred latent indicator of the stress response (Seery, 2011). The association between psychological stress and HPA axis activation has been especially prominent in environments with high ego involvement and low predictability and control (Kirschbaum & Hellhammer, 1994). The measurement of cortisol and representation of challenge or threat states has been approached using a range of physiological measures (e.g., urine, blood serum). Offering a real-time insight into the experiences of an individual, previous work has indexed challenge and threat states via four discrete cardiovascular measures (heart rate, ventricular activity, total peripheral resistance and cardiac output; Seery, 2011), whereas short-term (i.e., 24-hour period) accumulation of adversity has been commonly measured via saliva sampling (for a review, see Kirschbaum & Hellhammer, 1994). Hair sampling permits assessments of long-term of cortisol accumulation within the body, whereby 1cm of hair growth reflects approximately one month of cortisol secretion (Stalder & Kirschbaum, 2012). Despite the utility of such measures, a multi-modal approach that combines subjective (e.g., perceptions of stress intensity or appraisal) and biological (e.g., hair cortisol) indices is the preferred

approach to capturing stress states following adversity (Weckesser et al., 2019). This multi-model approach to stress measurement is evident in recent work in sport settings (e.g., cardiovascular indices; Moore et al., 2019).

How Do Teams Experience Adversity?

Teams represent two or more individuals working towards a shared objective. As teams encompass multiple individuals, it is common to assume a reductionist perspective in that the collective experience of adversity simply represents an aggregation of these individual experiences (Chapman et al., 2018). However, common within the group dynamics literature is the holistic Aristotelian view that the whole is greater than the sum of its parts (Kozlowski & Klein, 2000). Lower-level characteristics (e.g., individual) emerge temporally at higher-levels (e.g., team) via composition or compilation (Kozlowski & Klein, 2000). Composition describes an isomorphic form of emergence where the individual level attributes combine as a team-level characteristic that is similar in make up to its individual-level constituent elements in that is has a similar meaning across levels. Contrastingly, compilation describes a process of emergence whereby the higher-level property holds a functional resemblance to the lower level construct, yet is distinct in nature from the individual constituent elements. For example, consider the difference between the concepts of collective efficacy and team performance within sport. Collective efficacy reflects composition emergence because it captures the degree to which individual level perceptions of the team's capabilities converge as a collective construct. Contrastingly, team performance emerges via complementary patterns and configurations of diverse individual level components, whereby the unique contributions of individual members interact to produce some type of functioning that is qualitatively different yet meaningful for the collective (e.g., putting together pieces of a puzzle). Distinct differences may be present in the antecedents and mechanisms underpinning the emergence process (Kozlowski & Klein, 2000), so it is important to consider the adverse experience for individual members and the team as a collective, and the processes that underpin emergence within and across both levels.

When it comes to understanding the experiences of adversity within teams, it is important to clarify what we mean by the concept of 'shared'. Shared adversities have been described as a unique event in which the same features or circumstances are experienced directly by all group members (Windschitl, Kruger, & Simms, 2003). Examples of this conceptualisation of shared adversity include sport teams who experience extreme environmental conditions (e.g., heat), relegation to a lower competition level, or loss within the final of a major competition. Common to each of these examples is the simultaneous experience of the same type of adversity across all individuals of the team. An alternative conceptualisation of adversity experiences within groups is one where the event is experienced directly by one or more members and indirectly by others (also see Chapter 4 on vicarious experiences of growth). This type of collective adversity experience is important because indirect or vicarious experience of adversity (e.g., witnessing a teammate being physically harmed) can affect people's experiences of stress. Previous work has demonstrated this effect via enhanced levels of cortisol secretion in the observer (Engert, Plessow, Miller, Kirschbaum, & Singer, 2014). Examples of this conceptualisation of adversity for sporting teams include the loss of a team member due to major injury (e.g., anterior cruciate ligament), witnessing a team member experiencing verbal abuse/racism from supporters, and the awareness of team member losing a close family member. Consideration of these two broad types of experiences of adversity among teams is important because they may affect collective functioning in different ways and ultimately the degree to which functioning may change because of that shared experience. Owing to the limited research in this area, we consider these two types of adversity experiences collectively in this chapter unless otherwise noted.

The cognitive underpinnings of shared adversity. Cognition, which has been defined as the "mechanisms by which animals acquire, process, store and act on information from the environment" (Shettleworth, 2010, p. 4), represents an appropriate starting point for considering the nature of shared adversity experiences for teams and how they may affect collective functioning and growth. Conceptual work on shared cognition has evolved from a sole emphasis upon shared knowledge

structures across individuals towards an interactive model of shared cognition that resides in the observable activities or processes between team members (Cooke, 2015). These dynamic team-level activities or processes are grounded in the context in which teams perform and play out over time. Rather than denying the existence of previously dominant static models, this interactionist approach acknowledges the existence of shared mental models, yet underscores the importance of observing the interactions between team members as markers of team cognitive processing (McNeese, Cooke, Fedele, & Gray, 2015).

Knowledge components reflect an important start point for teams when confronted with adversity (Cooke, 2015). For example, organised knowledge structures encompassing representations of both task and team related factors that are shared between team members facilitate team coordination (Cannon-Bowers, Salas, & Converse, 1993). Shared mental models, which reflect overlapping maps of the environment between team members, enhance team effectiveness via a highly shared and accurate understanding of task constraints, and the future needs and actions of other team members (Mohammed, Hamilton, Sánchez-Manzanares, & Rico, 2017). The question of interest here is the degree to which team members are on the same page. More immediate in nature, situational awareness is reflective of an individual's knowledge of their direct environment, which includes (a) perceptions of task-relevant environmental cues, (b) comprehension of the information that is collected from that environment, and (c) projection of how such environmental information may vary in the future (Endsley, 1995). Conceptualised at the team level to be a shared interpretation of the immediate context, team situational awareness is deemed important for performance in complex and dynamic environments because members know what is going on around them (Mohammed et al., 2017). These knowledge components of a team's shared cognitive experience represent important avenues in which to explore the effect of adverse experiences upon future team functioning.

Interactions among team members are critical for team effectiveness (Cooke, 2015). For example, there may be instances where certain teams with limited shared knowledge (i.e., newly formed teams) perform effectively. The ability to compensate for this limited shared knowledge may

be explained by the presence of effective process components. Team coordination, which represents decision-making and behavior regulation with respect to the group and task context (Steiner, Seiler, & Cooke, 2017), is built largely around the communicative ability of a team (Cooke, 2015). Notably, the effective transference of adaptive information across team members at the right time is crucial to the development of new knowledge, where integration of new ideas is a marker of cognitive processing at the team level. Knowledge processes (e.g., communication, coordination) within the context of adversity therefore may supplement the exploration of knowledge components and demonstrate observable proxies from which to gain insight into the cognitive aspects of shared experiences.

The emotional underpinnings of shared adversity. Emotions are neurophysiological states characterised by dimensions of valence (i.e., negative or positive) and intensity (i.e., the strength of the emotional experience) (Barrett, 2006). For teams, the linkage and transmission of emotional experiences from one person to another/others (i.e., emotional contagion; Hatfield, Cacioppo, & Rapson, 1994) plays a pertinent role in future behavior (Barsade, 2002). Affective Process Theory (Elfenbein, 2014) provides a conceptual backdrop for understanding emotional connection via three broad mechanisms. Aligned with the direct experience of adversity, the *shared stimulus* mechanism reflects situations where team members are exposed to the same environmental stimulus and members' interpretations tend to converge over time via interactions and leadership influence despite likely in their individual experience. Mechanisms indicative of indirect experiences of adversity can occur in two ways: (a) *imitated stimulus*, where one or more individuals encounter a stimulus and then imitate their experiences in ways that resonate sequentially across other team members' (e.g., observing the reaction of a teammate to a severe injury), and (b) *empathetic-through-stimulus*, where an individual becomes aware of an event through interaction with a team member (e.g., discussion with coach about an injury to teammate). The emergence of affective convergence via these three mechanisms, and the valence of such states has been shown to influence team behaviors (e.g., communication, group conflict, cooperation) and performance outcomes (e.g., task performance, self-

related group performance, service quality appraisals) among various types of teams both inside and outside of sport (e.g., Barsade, 2002; Barsade, Coutifaris, & Pillemer, 2018; Totterdell, 2000). In essence, the dynamic nature of the affective state of a team in response to adversity holds influence upon important group processes and outcomes, and as such represents an important mediator of team functioning within such contexts. Understanding the conscious and subconscious mechanisms linking group emotions and the moderators of this dynamic state (e.g., leadership chacteristics, Johnson, 2008) represents important considerations for understanding team functioning following adversity.

What Might Changes in Functioning Look Like for Teams?

Team functioning might be affected negatively, positively or both across differing facets of team functioning following adversity exposure. In terms of deleterious effects, teams have been shown to lose an awareness of team perspective (Driskell, Salas, & Johnston, 1999) or to make poorer decisions under heightened levels of stress (Cannon-Bowers & Salas, 2001). The concept of growth is one area where teams might experience positive changes from adversity exposure. At intrapersonal and interpersonal levels, growth has been defined as "positive psychological changes experienced as a result of the struggle with traumatic or highly challenging life circumstances" (Tedeschi, Shakespeare-Finch, Taku, & Calhoun, 2018, p. 3). Fundamental to this definition is the nature of change as opposed to enhancement of attributes. This attribute of growth reflects the functional-descriptive model of change in which individuals' fundamental assumptions regarding the world are challenged and constrained to change by adverse events over time, with internal (e.g., emotional distress, core beliefs) and external factors (e.g., social support, proximal and distal social-cultural dimensions) determining subsequent growth (Tedeschi et al., 2018). Importantly, it is inappropriate to infer collective growth from individual member growth because the whole is deemed greater than the sum of parts (Tedeschi et al., 2018). For example, individual member enhancements in motivation or coping strategies may affect collective behavior negatively because it disrupts synchronicity between members. This disparity demonstrates the need to observe changes in functioning at the team

level (e.g., relationships between members) and the potential for individual level growth to foster or undermine team growth.

Joseph and Linley's (2005) Organismic Valuing Theory of Growth (OVT) mirrors several of these characteristics (see Chapter 2 for a detailed conceptual exposition), and has been the modal theoretical model used within studies of growth in competitive sport (Howells et al., 2017). Within the context of OVT, individuals' predisposition towards growth occurs via the changing of belief systems one holds for the world that occur following adversity (Joseph & Linley, 2005). This definition also reflects the common conceptualisation of growth as a process of change characterised via indicators of intrapersonal (e.g., self-efficacy), interpersonal (e.g., development of relationships), and physical (e.g., enhanced performance) functioning (Howells et al., 2017). When considering growth within teams, it seems pertinent to consider necessary characteristics of growth as an emergent state or outcome characterised by (a) positive change at the team level in the quality or value of a team properties (e.g., shared belief systems, relationships, mental models, team philosophy) or activities (e.g., cooperation, coordination); (b) prolonged or robust change over a period of time following adversity and relative to the quality or value prior, and (c) change relative to the quality or value prior to the onset of adversity. Interested readers are referred elsewhere for a discussion of similar themes in relation to the multilevel nature of team resilience (Gucciardi et al., 2018).

The input, mediator, output, input (IMOI) model of team effectiveness (Ilgen, Hollenbeck, Johnson, & Jundt, 2005) offers a structured yet flexible template of what collective functioning might look like for team following adversity. Inputs represent those conditions that exist prior to team performance, which can encompass individual (e.g., personality), team (e.g., composition), or context (e.g., organisational constraints) factors. Mediators include the ways by which inputs are engaged, integrated, and translated into valued outcomes via dynamic interactions among team members (e.g., communication). Outputs refer to the task and non-task consequences of the dynamic interactions among team members (e.g., learning, performance effectiveness). Finally, Ilgen et al. (2005) described the feedback-loop nature of team development and indicated the need to consider outputs

as future inputs when assessing team-related constructs. This aspect may be important when assessing collective functioning following adversity to allow for an understanding of how over time outcomes lead in to future inputs and mediators to contribute to future outcomes (e.g., prolonged growth). Linking this framework to future explorations of team functioning within a sporting context requires an understanding of the key inputs, mediators, and outcomes underpinning this construct and their interaction.

How Might Adversity Promote Growth in Sport?

Benefits of shared experiences of adversity. Shared experiences of adversity may hold important functional bearing on the development of team affect and cognitive inputs to functioning. Notably, shared adversities enhance the effective teamwork capability of groups without intervention (Paton, & Stephens, 1996; Turner, Hogg, Turner, & Smith, 1984), with experiences of adversity proposed to stimulate processes of growth (Tamminen, Holt, & Neely, 2013). Benefit finding among teams fosters relationships with others (Garrison & Sasser, 2009), matching the common identification of enhanced group cohesion following shared adverse experiences (Turner, Hogg, Turner, & Smith, 1984). As examples, shared experiences of pain in groups within laboratory settings enhances trusting interpersonal relationships between members (Bastian, Jetten, & Ferris, 2014), whereas in sport an injury to a star player may bring teammates closer together (Bloom, Stevens, & Wickwire, 2003).

Underpinned by Social Identity Theory (Tajfel & Turner, 1979), shared adversity experiences are likely to facilitate team cohesion through enhanced perceptions of positive distinctiveness following events and through perceptions of a shared fate, meaning, and affective reactions that are ascribed to the event (Pollock, Paton, Smith, & Violanti, 2003). This internalisation of social identity within teams promotes interpretations of such experiences as ‘our’ problem instead of ‘my’ or ‘your’ problem. Internalising meaning via social identities fosters communal coping strategies that promote adaptive team functioning over deleterious processes (Leprince, D'Arripe-Longueville, & Doron, 2018). Defined as “the cooperative problem-solving process salient in coping with both individual

and collective stressors involving [sic] the appraisal of a stressor as our issue and cooperative action to address it" (Lyons, Mickelson, Sullivan, & Coyne, 1998, p. 579), communal coping strategies may reflect important transitionary processes for future functioning or an outcome of growth in itself following the immediate experience of adversity should pre adversity coping strategies be enhanced in some way (Howells et al., 2017). Communal coping strategies in sport include problem-focused communal efforts (e.g., information sharing, refocusing, back to basics), relationship-focussed coping (e.g., motivational support, social bonding), communal management of emotions (e.g., interpersonal emotional regulation, reassurance), and communal goal withdrawal (e.g., task disengagement, venting emotions) (Leprince et al., 2018). An integral communal coping strategy triggered by adversity is systematic reflection upon experiences. For individuals, stressor reflection enhances awareness of current capacities and limitations (Crane, Searle, Kangas, & Nwiran, 2019). At the team level, reflections may clarify the capacities and limitations of the collective unit, and enhance awareness of the strengths and weaknesses of team members. Thus, purposeful reflections of shared experiences of adversity may promote the salience of the social identity within teams, enhance the cohesiveness of a group, and maximise the likelihood of effective strategies being adopted following such experiences to promote team functioning.

Training and shared adversity experiences. Team development interventions foster team competencies, processes, leadership and interactions that are critical to collective effectiveness (Lacerenza, Marlow, Tannenbaum, & Salas, 2018). Of these approaches, team competencies or teamwork expertise are key inputs to established teams that may benefit from training within the context of adversity (see Chapter 19 for detailed information). Team training has been defined as "a formalised, structured learning experience with preset objectives and curriculum that target specific team competencies" (Lacerenza et al., 2018, p. 519), with previous work showing the advantageous nature of training prior to stressful experiences (Driskell et al., 1999). Several specific team training strategies have been outlined including coordination training, cross training, and stress exposure training (Burke, Salas, Wilson-Donnelly, & Priest, 2004), with training within the context of adversity

holding three overarching benefits (Driskell, Salas, Johnston, & Wollert, 2008). Firstly, training within the context of shared adversity has been proposed to enhance a team's familiarity with the performance environment. Developing a shared understanding of effects of adversity upon environmental and task constraints, teammates' behaviors under such circumstances (i.e., shared mental model), and the affective state of the team, with training in the context of adversity has been shown to generalise to novel, unexperienced adversities experienced by teams (Driskell, Johnston, & Salas, 2001). Secondly, adversity may foster the development of coordinative team performance strategies and skills to meet the demands of this context. For example, teams may adjust their playing strategy following the loss of a star performer to injury. Shared adversity experiences may also enhance creativity among team members; thus, applying training techniques within the context of adversity may facilitate novel solutions to problems (Bastian, Jetten, Thai, & Steffens, 2018). Finally, grounding training in adversity may enhance the collective efficacy of a group when they encounter similar experiences in the future and the collective efficacy of the group more generally (Friedland & Keinan, 1982). For example, teams who experienced and successfully overcame the adversity of an unexpected managerial change may propel their confidence to a higher level when it comes to overcoming similar hurdles and subsequent adversities in future. In sum, experiences of adversity may add significant value to training programs where performance is incumbent (e.g., elite stage) through the development of core knowledge, skills, and affective processes and may be a prerequisite to desirable functioning following these experiences. However, it is important to adopt caution and awareness of the moral implications of such training. The relaying and sharing of previous adverse experiences has the potential to result in re-traumatisation, whereas sudden experiences of high severity adversity may also result in undesirable outcomes. Drawing a line in the sand ultimately requires a delicate balance of care, control, and progression (e.g., athlete driven).

Conclusion

There is intuitive and practical appeal to the idea that adversity experiences can promote collective functioning and growth among sporting teams. However, little systematic empirical or

theoretical work has addressed this proposition directly. In this chapter, we reviewed research and theory from related fields with the view to shed light on several key questions that might provide a platform from which to consider the nature of this proposition and guide future work. It is essential that future work clarify the multilevel, temporally dynamic nature of adversity experiences for collective functioning.

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