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In studying perfectionism in sport, dance, and other performance environments, researchers have typically conceptualised perceptions of external pressure to be perfect as a reflection of a performer's perfectionistic personality. However, we believe that when some performers report the experience of external pressure, their experiences are not solely generated internally. Rather, for many performers, they are reporting experiences that are to a much greater degree rooted in the behaviour of others. The major theme forwarded in this chapter is that some performers – regardless of how perfectionistic they are themselves – will have the misfortune of encountering specific others and environments that are highly perfectionistic. We are referring particularly to coaches, teachers and instructors, and clubs, teams, and classes, and how these leaders can imbue these environments with perfectionistic messages and cues. To elaborate on this theme, in the current chapter, we introduce, define, and discuss a new construct that captures the degree to which an environment is perfectionistic – *perfectionistic climate*.

Introducing and Conceptualising Perfectionistic Climate

To introduce the notion that experiences of pressure to be perfect can be externally rooted in the behaviour of others – rather than generated internally by the perfectionistic personality of performers – Hill and Grugan (2019) proposed the construct of perfectionistic climate. They defined perfectionistic climate as the *informational cues and goal structures that align with the view that performances must be perfect and less than perfect performances are unacceptable*. In the first part of the definition, the terms *informational cues* and *goal structures* refer to leader behaviours, practices, and relational styles that shape how performers experience their environment. The second part of the definition helps to delineate a perfectionistic climate from other types of climate experience. That is, the key feature of a perfectionistic climate is that it is shaped by leader interactions and practices that emphasise to performers that nothing less than perfect performance will be tolerated.

There are two major rationales underpinning the introduction of perfectionistic climate. The first rationale, which is emphasised in the opening to this chapter, is that the perfectionistic pressure experienced by many performers exists independent from their perfectionistic personality. Instead, for some performers, experiences of perfectionistic pressure are rooted in the behaviours of others, and this is demonstrably so. The second rationale is that current approaches to studying climates in sport, dance, and other performance environments (e.g., Achievement Goal Theory, AGT; Nicholls, 1984; Self-Determination Theory, SDT; Ryan and Deci, 2017) do not adequately account for the full range of practices that shape how performers experience their environment (Morgan, 2017). In particular, existing approaches do not account for how environments can be imbued with unrealistic and perfectionistic messages.

The definition of perfectionistic climate lends language from AGT and seminal work on motivational climate and, as such, is intended to sit alongside other motivational climate constructs (Ames, 1981; Ames & Ames, 1984; Ames, 1992). In line with classical climate-based research, perfectionistic climate is a construct that captures the characteristics of a social environment created by leaders (e.g., coaches, teachers, or instructors). In addition, there is the same focus on the goal structures and informational cues (i.e., behaviours, practices, and relational styles) that shape how performers experience the environment. This includes the demands and expectations, evaluative criterion, and values that are set and governed by leaders. In this sense, as with other climate-based constructs, perfectionistic climate captures a performers perceptions of the external environment shaped by the actions and behaviours of others. The key factor that distinguishes perfectionistic climate from existing climate constructs, though, is that it focusses on a unique set of behaviours that give rise to perceptions that only perfect performance is acceptable.

The behaviours, practices, and relational styles that populate the content of the perfectionistic climate construct are drawn from theory on perfectionism development. As such, the models of perfectionism development outlined by Flett, Hewitt, and colleagues (Flett et al., 2002; Hewitt et al., 2017) are also a key touchstone for the perfectionistic climate construct. These models, which are outlined by Appleton and Curran (Chapter 3), explain the various ways leaders shape environments and instil in children and adolescents the need to be perfect. The theme emphasised across these models is that perfectionism develops in environments where leaders are seen as being extremely demanding and difficult to please, highly critical and intolerant of mistakes, and extremely worried about the potential for anything other than perfect performance. On this basis, perfectionistic climate includes five specific components that capture these perfectionistic behaviours.

The first component of perfectionistic climate is *expectations*. In context of perfectionistic climate, the expectations component is the perception that leaders hold and demand unrealistically high performance expectations of others. This component is primarily grounded in the *social expectations model* or pathway of perfectionism development. In line with this model, the focus is on the extent to which young people believe a leader sets and demands unrealistically high goals. In defining this component, emphasis was placed on the distinction between high standards and unrealistically high standards. As Flett and Hewitt (2006) have emphasised, there is a difference between someone who thinks, “My parents demand absolute perfection, and nothing else will do,” *versus* someone who thinks “My parents have high expectations of me” (p. 476). In this regard, *unrealistically high performance expectations* (as opposed to *high* or *very high performance expectations)* are a notable part of the definition.

The second component of perfectionistic climate is *criticism*. In context of perfectionistic climate, the criticism component is the perception that leaders engage in harsh

criticism whenever the performance of others is not perfect. This component is primarily grounded in the *social reaction model* or pathway of perfectionism development. In line with this model, the focus is on the extent to which young people believe a leader is being overly critical. In defining this component, it was important to distinguish between perfectionistic criticism and criticism that might be considered reasonable or constructive. The defining characteristics of perfectionistic criticism are that it is harsh, unreasonable, and follows almost all mistakes, no matter how small or inconsequential. This includes being criticised despite best effort, personal improvement, or task difficulty.

The third component of perfectionistic climate is *control*. In context of perfectionistic climate, the control component is the perception that leaders employ externally controlling strategies that place pressure on others to perform perfectly. In line with the externally controlling socialisation strategies emphasised in SDT, the focus in this component is on tangible, external, and overt contingencies that put pressure on young people (Soenens & Vansteenkiste, 2010). These are structural in the sense that they are features of the environment created by the coach and what a coach explicitly does to motivate perfect performances. This includes use of punishment and sanctions or an overemphasis on rewards. In terms of models of perfectionism development, the control component is primarily grounded in the *social reaction model* or pathway. This is because, like criticism, controlling practices shape a highly intimidating and challenging environments in which young people feel extreme pressure to be perfect.

The fourth component of perfectionistic climate is *conditional regard*. In context of perfectionistic climate, the conditional regard component is the perception that leaders employ internally controlling strategies that place pressure on others to perform perfectly. In line with the internally controlling socialisation strategies emphasised in SDT, the focus in this component is on communications that express disappointment, disregard for personal

feelings and opinions, and love withdrawal. Unlike with the strategies for control, the behaviours for conditional regard appeal primarily to forces and regulations that reside within performers (Soenens & Vansteenkiste, 2010). This component is primarily grounded in the *social expectations model* or pathway of perfectionism development. This is because this model focusses on the extent to which young people believe a leader is extremely difficult to please, reluctant to provide approval, and quick to disapprove of anything less than perfection. The behaviours emphasised in this model activate an internal compulsion to engage in perfectionistic behaviour with the aim of pleasing others.

The fifth component of perfectionistic climate is *anxiousness*. In context of perfectionistic climate, anxiousness is the perception that leaders are extremely worried and vigilant about mistakes and the consequences of others not performing perfectly. This component is primarily grounded in the *anxious rearing model* or pathway of perfectionism development. In line with this model, the focus is on the extent to which young people believe a leader is concerned over mistakes and wants mistakes to be avoided. In line with the other components of perfectionistic climate, anxiousness captures an excessive level of worry, rather than any due concern. That is, young people believe that leaders worry about all mistakes, go to extreme lengths to limit the potential for mistakes, and express a level of concern that is experienced as disproportionate to any actual consequences of being imperfect.

Applying Perfectionistic Climate to Sport

The model of perfectionistic climate outlined above can be applied to various performance environments and the leaders that operate in those environments (e.g., coach-created perfectionistic climate in sport or teacher-created perfectionistic climate in dance). Our research on perfectionistic climate has so far been in youth sport and has focused on the development of the first scale to measure the construct (Grugan et al., 2021a). The first stage

of this process involved identifying and addressing key considerations pertaining to the applicability, conceptualisation, and measurement of perfectionistic climate in youth sport. In this regard, we and other colleagues outlined several guiding proposals that helped to provide a sound foundation for the development of the Perfectionistic Climate Questionnaire-Sport (PCQ-S).

The first proposal we made was that while there are various leaders who may be influential in shaping perfectionistic climates in youth sport, the coach is especially important. This is because coaches are directly responsible for designing and delivering training activities, setting expectations and evaluative standards, and managing the overall performance environment (Alvarez et al., 2012). The influence that coaches have over athletes starts to become particularly prominent in middle-to-late childhood (Kipp, 2018). This means that even from a young age coaches play a key role in shaping the overall sporting experiences of athletes (Horn, 2008). We know now that when coaches provide appropriate reinforcement and encouragement, athletes are likely to experience positive outcomes (e.g., increased enjoyment, team unity, and stronger motives to continue participation). By contrast, when coaches provide poor social support and engage in controlling behaviours, athletes are likely to experience negative outcomes (e.g., diminished motivation, stronger motives to dropout, and athlete burnout; Duda et al., 2014).

The coach is also an important figure who can shape the extent to which youth athletes experience pressure to be perfect. Based on qualitative research in youth sport, media accounts provided by athletes, and governing body consensus statements, there is growing evidence that many youth athletes experience inappropriate and unrealistic demands and expectations from coaches (e.g., Bergeron et al., 2015; Ingle, 2021; Lavallee & Robinson, 2007). This includes accounts of coaches using physical punishment and humiliation in response to performance mistakes, putting pressure on athletes to meet increasingly high

levels of performance, and responding angrily to performance errors. In terms of quantitative research, there is also evidence that coach pressure to be perfect (i.e., unrealistic coach expectations in combination with overly harsh criticism) shares positive correlations with dimensions of athlete perfectionism (Gotwals, 2011; Madigan et al., 2019; Sagar & Stoeber, 2009). This body of evidence provides further support for the importance of considering coaches as important leaders responsible for shaping perfectionistic climates in sport.

The second proposal we made was that there is a need to revise how we have typically conceptualised and measured coach pressure to be perfect. There are at least two problematic issues that apply to perfectionism measures that incorporate coach pressure dimensions. The first issue is that current perfectionism measures may be confounding etiological factors with core characteristics of trait perfectionism. This issue is highlighted by other researchers who argue that measures of pressure to be perfect from a specific significant other (such as a coach or parent) represent developmental features of perfectionism rather than core characteristics of perfectionism (e.g., Damian et al., 2013; Sirois & Molnar, 2016; Rice et al., 2005). To avoid any potential confusion regarding what features should constitute core definitional components of perfectionism (*versus* more peripheral components of perfectionism), the model of perfectionistic climate re-locates dimensions of coach pressure in a model capturing experiences of pressure in the environment of performers.

The second issue is that dimensions of coach pressure in existing perfectionism measures fail to distinguish between *coach expectations* and *coach criticism*. While measures typically include separate items for each component (e.g., “My coach *sets very high standards* for me in competition” *versus* “I feel like my coach *criticizes me* for doing things less than perfectly in competition”), these items are collapsed to form broader measures of coach pressure. This approach is understandable and based on factor analytical evidence (e.g., Dunn, Dunn, et al., 2006). However, expectations and criticism are separate components in

models of perfectionism development. Specifically, in line with Flett et al.'s (2002) developmental framework, leaders can have different levels of expectations and propensity for harsh criticism. In addition, different combinations of expectations and criticism exist and contribute to differences in perfectionism development. In support of this argument, McArdle and Duda (2008) found evidence for distinguishing between *parental expectations* and *parental criticism* when examining perfectionism development in youth athletes. In line with this evidence, it is important that perfectionistic climate has both components represented separately.

The third, and final, proposal we made was that other behaviours contribute to experiences of perfectionistic coach pressure in sport. As such, focusing only on expectations and criticism would mean perfectionistic climate underrepresented the other various ways it manifests. In SDT-based research, for example, Barcza-Renner et al. (2016) found that controlling coach behaviours (including controlling use of rewards and negative conditional regard) were positively correlated with perfectionism in youth athletes. Likewise, Curran and colleagues found parental conditional regard to be positively corelated with perfectionism in athletes (Curran et al., 2017; Curran, 2018). In AGT-based research, too, there are examples that suggest a wider range of coach behaviours need to be considered. Gustafsson et al. (2016), for instance, found that perceptions of worry-conducive behaviour from parents (i.e., actions signalling an extreme focus on mistakes and the importance of avoiding errors) were positively correlated with perfectionism in youth athletes. In these regards, we consider control, conditional regard, and anxiousness to all be important and unique components of perfectionistic climate in sport.

Initial Validity and Reliability Evidence for the PCQ-S

The conceptual model of perfectionistic climate and key guiding proposals outlined above were used to guide the development of the PCQ-S. The scale development project

included multiple stages and data from four samples of youth athletes. The result of the rigorous procedure was a five-factor 20-item scale with evidence supporting multiple aspects of validity and reliability (e.g., factor structure, factor stability, scale reliability, construct validity, and measurement invariance). In terms of factor structure, a five-factor model was supported based on exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and exploratory structural equation modelling (ESEM) techniques. The finding across multiple independent samples provided evidence for well-defined and discernible factors measuring expectations, criticism, control, conditional regard, and anxiousness. This evidence demonstrates that the five-factor PCQ-S adequately represents the generalised model of perfectionistic climate.

In addition to testing the first-order structure identified in the models above, we also examined the potential for a second-order PCQ-S structure using an ESEM-within-CFA modelling technique (Morin et al., 2020). In line with the results above, this model provided support for five well-defined PCQ-S factors. The key distinction in this model is that evidence was provided for the five PCQ-S factors providing meaningful second-order factor loadings onto a hierarchical perfectionistic climate factor. This evidence suggests that researchers can either study the PCQ-S components as individual factors or statistically model them in a manner to study the overall construct. This level of modelling flexibility is advantageous as it provides scope to examine the relative influence of each PCQ-S factor in relation to a specified outcome or examine the broader influence of an overall perfectionistic climate factor. This latter modelling strategy will help to reduce model complexity when examining perfectionistic climate using a structural equation modelling (SEM) framework.

To provide further evidence of construct validity for the PCQ-S, we then estimated a nomological network of relations between test scores on the PCQ-S and established coach climate measures. This network was initially assessed using a more traditional EFA approach.

The results of this analysis provided support for the distinction between the PCQ-S dimensions and measures of coach-created climate guided by AGT (task- and ego-involving coach dimensions) and SDT (autonomy supportive and controlling coach dimensions). The three-factor structure identified in the EFA provided support for the integration of AGT- and SDT-based dimensions into higher-order empowering (task-involving and autonomy supportive dimensions) and disempowering (ego-involving and controlling dimensions) coach climate factors (Duda, 2013). Importantly, the PCQ-S dimensions were found to uniquely load on a perfectionistic coach climate factor that was separate from these other factors. This finding is important as it is consistent with our view that the PCQ-S measures a climate experience that is not currently accounted for by other measures of motivational climate.

The network of relations between coach climate variables was also examined using *network analysis* (Epskamp & Fried, 2018). This approach provided a visualisation of the complex covariation between the measures under investigation. In the estimated network diagram, *nodes* (circles) represented different coach climate dimensions and *edges* (lines connecting nodes together) represented associations between variables. In terms of dimensionality, exploratory graph analysis (Golino et al., 2020) provided confirmation that the coach climate data was best represented by three factors. In line with the EFA results, the nodes in each factor were representative of perfectionistic, empowering, and disempowering coach climate features. Thus, while AGT and SDT coach climate measures can be integrated to capture empowering and disempowering climate experiences, again, the PCQ-S captures a unique and independent climate experience.

Based on these findings, it is possible to further surmise how a perfectionistic climate differs from other climates. Our view is that perfectionistic coach behaviours (e.g., unrealistic demands, harsh criticism, and anxiousness over mistakes) will lead to a climate experience

that is more extreme than an environment shaped by disempowering coach behaviours. For example, a perfectionistic climate emphasises a level of expectation that is more excessive than in an ego-involving climate. In a perfectionistic climate, it would not be sufficient to simply win and outperform others, even with minimal effort. The performance must be without any flaws, exceed personal expectations and the expectations of others, and be unquestionable. In this kind of climate, success over weaker opponents may even come to be viewed as an indictment on the athletic or personal qualities of the individual (e.g., "good athletes compete only against the best"). In this way, satisfaction and enjoyment are not inevitable consequences of outperforming others in a perfectionistic climate as they are in an ego-involving climate.

The distinction between perfectionistic coach behaviour and disempowering coach behaviour is also evident when focussing on components of coach control. The components of control emphasised in perfectionistic climate (control and conditional regard) capture more extreme and specific motivational strategies than SDT-based components of control. That is, controlling practices that pressure performers to feel, think, and behave in line with a specific requirement for perfection. This differs from the more general controlling practices emphasised in SDT-based climate models. This is evident in Bartholomew et al.'s (2010) model of controlling coach behaviour, for example, which emphasises controlling practices that encourage athletes to 'do well', 'train harder', and 'stay focussed'. These outcomes are much broader and less demanding than the perfectionistic controlling practices that pressure athletes to 'stop mistakes in performances' and 'make performances perfect' (Grugan et al., 2021a).

The final psychometric examination we provided was a test of measurement invariance. In line with previous scale validation studies, the aim was to evaluate whether the PCQ-S functions equivalently across different age and gender groups (e.g., Checa et al.,

2021; Crocker et al., 2018; Gucciardi et al., 2011). This type of assessment is important as many studies in sport psychology are focussed on comparing groups of athletes (e.g., perfectionism scores in younger *versus* older athletes; Dunn et al., 2022). An important assumption in such research is that the underlying factor structure is the same for the specified groups and their responses are not confounded by other characteristics (Marsh et al., 2014; Schellenberg et al., 2014). In line with this assumption, important initial evidence was presented for the equivalence of the PCQ-S regardless of age (younger *versus* older youth athletes) and gender (males *versus* female athletes). As a result, researchers and practitioners can be confident that the PCQ-S will provide valid scores when comparing these groups or using samples which include different ages and a mix of genders.

Expanding the nomological network of perfectionistic climate

As the PCQ-S has only recently been published, research using it is extremely limited. Most of the work of our research group is in progress with some preliminary findings presented at scientific conferences (e.g., Grugan et al., 2021b). Therefore, we consider the most immediate priority for research in this area is to expand understanding of the nomological network of perfectionistic climate in sport. By reviewing relevant theoretical frameworks and empirical research, it is possible to identify potential outcomes of the perfectionistic climate construct. Once potential outcomes have been identified, researchers can use the PCQ-S and examine whether empirical relationships match the theoretical relationships. This process of expanding and testing the nomological network of perfectionistic climate in sport will help to build our understanding of the perfectionistic climate phenomenon and provide important validity information for the PCQ-S.

In terms of an existing empirical evidence base, the most relevant source of information that researchers can draw upon when identifying potential outcomes of perfectionistic climate at present is research examining perceptions of coach pressure to be

perfect. While coach pressure to be perfect and perfectionistic climate are not the same – one is operationalised at a personal level (e.g., "The coach criticises *me* if *my performances* are not perfect") and the other at a climate level (e.g., "The coach criticises performances that are not perfect") – the constructs are similar. Therefore, reviewing existing correlates of coach pressure provides a starting point for researchers designing studies on perfectionistic climate in sport and other performance environments. To aid researchers in this regard, we have reported the results of a systematic review of research that has used the subscales of coach pressure from the Sport Multidimensional Perfectionism Scale ("*Perceived coach pressure*"; Dunn et al., 2002; Dunn, Dunn, et al., 2006; Gotwals & Dunn, 2009) and Multidimensional Inventory for Perfectionism in Sports ("*Perceived pressure from coach*"; Stoeber et al., 2006) in Table 1.[1]

The systematic literature search identified 24 independent studies involving 5,702 participants and a range of criterion variables. In reviewing the 98 correlation coefficients retrieved, we identified four broad themes. The first theme was a link between coach pressure to be perfect and apprehensiveness. This theme was evident in that coach pressure to be perfect was positively correlated with cognitive anxiety, competitive worry, and fear of failure (De Maria et al., 2021; Dunn et al., 2020; Gucciardi et al., 2012; Sagar & Stoeber, 2009), as well as negatively correlated with optimism (Dunn et al., 2020). Based on these

[1] The review is based on two electronic searches (Search #1 and Search #2) using PsychINFO, PsychARTICLES, SPORTDiscus and Google Scholar databases. The search terms were "perceived coach pressure" OR "PCP" AND "Sport Multidimensional Perfectionism Scale" (Search #1) and "perceived pressure from coach" OR "coach pressure" AND "multidimensional perfectionism inventory for sports" OR "MIPS" (Search #2). The period of each search spanned publications between December 2002–June 2022 (Search #1) and June 2006–June 2022 (Search #2). No other restrictions were placed on the searches. The searches produced $k = 144$ studies (Search #1) and $k = 56$ studies (Search #2). An abstract and full-text review of the $k = 200$ retrieved articles was then conducted to screen for relevance. This process resulted in the identification of $k = 24$ peer-reviewed journal articles which: (a) provided an empirical examination of coach pressure to be perfect (using the Sport-MPS, Sport-MPS-2, or MIPS); (b) included at least one criterion variable (other than measures of trait perfectionism); (c) reported a correlation coefficient for the relationship between coach pressure to be perfect and the criterion variable(s) examined; and (d) were published in English.

findings, we would anticipate that perfectionistic climates in sport to invoke a similar sense of fear over competition and various performance-related concerns (e.g., fear of negative social evaluation, making mistakes, and choking under pressure). More perfectionistic climates may also result in lower risk taking, willingness to make decisions, and adaptability to uncontrollable situations.

The second theme identified in the systematic review was a link between coach pressure to be perfect and negative responses to failure. This theme was evident in that coach pressure to be perfect was positively correlated with angry reactions to poor performance and negative affect after failure (Dunn, Gotwals, et al., 2006; Sagar & Stoeber, 2009). In context of the theme identified above, it may be that concerns over the perceived consequences of failure trigger strong reactions to underperformance. As for why this is the case, it may be that the stakes are perceived to be particularly high when coaches create highly demanding and perfectionistic climates. In line with this evidence, we can expect more perfectionistic climates to be positively correlated with strong feelings of disappointment and dejection following competitive failure. We may even find strong positive feelings when things go well, or at least marked relief when failure is avoided.

The third theme identified in the systematic review was a link between coach pressure to be perfect and athlete resiliency. This theme was firstly evident in that coach pressure to be perfect was negatively correlated with mental toughness and grit (Dunn et al., 2021; Fawver et al., 2020). These are interesting findings and a clear signal of how counterproductive perfectionistic pressure is likely to be in sport. Athletes who perceive higher levels of coach pressure to be perfect seemingly find it difficult to maintain focus on important goals in sport and persist in the face of adversity. Relevant to this theme were also studies that found coach pressure to be perfect was negatively correlated with global self-esteem (Gotwals & Dunn, 2009) and positively correlated with avoidant coping (Pacewicz et al., 2018). With this

evidence in mind, we would anticipate that rather than instilling characteristics conducive to dealing with adversity in an effective manner, highly perfectionistic climates in sport will give rise to poor coping and less ability to deal with stress.

The fourth and final theme identified in the systematic review was a link between coach pressure to be perfect and athlete burnout – an experiential state we would expect when athletes face external demands they cannot cope with. This theme was evident in that coach pressure to be perfect was positively correlated with total athlete burnout and the individual burnout symptoms (Gotwals, 2011; Pacewicz et al., 2018; Skwiot et al., 2020). We can expect the greater stress and ineffective coping found in other studies to partly explain this relationship. Additionally, the relationship between coach pressure to be perfect and psychological need thwarting also provides a further explanation (Mallinson & Hill, 2011). So, too, does the positive correlations between coach pressure to be perfect and markers of less adaptive motivation (e.g., avoidance motivation and external regulation; Gucciardi et al., 2012). Mirroring these findings, we would expect more perfectionistic climates to be correlated with greater athlete burnout and other risk factors and markers of motivation 'going awry' (Gould, 1996).

To guide ongoing research using the PCQ-S and develop an understanding of perfectionistic climate, researchers can use the evidence in our systematic review of coach pressure to be perfect. The retrieved data provides an important source of information that researchers can draw upon to identify outcomes and develop research questions applicable to the initial study of perfectionistic climate in sport. In reviewing the data, we identified themes of apprehensiveness, negative responses to failure, athlete resiliency, and athlete burnout. These themes are an excellent starting point and signal some of the likely effects of highly perfectionistic coach climates in sport. In considering this research, and the theoretical foundations of the construct, we would envisage that few young or aspiring performers would

enjoy the experience of being in a highly perfectionistic climate and that such climates will be ill-equipped to support and nurture performers or their talents.

Advancing Research on Perfectionistic Climate

In addition to expanding the nomological network of perfectionistic climate, there are several other areas of research that would advance the study of perfectionistic climate. We close the chapter by discussing three of them.

Studying perfectionistic climate in dance

One important area for future research is to extend the study of perfectionistic climate to other domains. We believe dance would be a particularly fruitful in this regard. The reason that dance provides an important next step for the study of perfectionistic climate is that, like sport, dance is an environment in which performers often experience a sense of perfectionistic pressure from others. That is, it is common for dancers to view their teachers, artistic directors, and choreographers as sources of extreme demands and unrealistic expectations (Mainwaring & Aujla, 2017). This view is perhaps unsurprising given that many dance schools and companies live by the principle of '*practice makes perfect*' and employ staff whose responsibility is to perfect the technical skills of their students (Ng et al., 2022). Indeed, in a qualitative study of ballet dancers, McEwan and Young (2011) found that dancers repeatedly referred to the presence of hierarchical power structures that underpinned an ultra-competitive atmosphere and drive to achieve perfection.

When applying perfectionistic climate to dance, it will be important for researchers to consider the distinctive ways perfectionistic climate may manifest in this domain. One important consideration in this regard is that a strong dance performance is contingent upon several factors (e.g., body aesthetics, musical timing, and athleticism; Chirban & Rowan, 2017). The key point to emphasise is that, in addition to pressure to learn and execute perfect technical routines, many dancers also experience pressure to achieve and maintain the perfect

dancer's body (Quin et al., 2015). Again, drawing on qualitative research, there are accounts of elite dancers who identify teachers as key sources of *pressure for thinness* (Francisco et al., 2012). This pressure came from teachers making negative and critical comments about eating, weight, and food related issues. In this regard, perfectionistic climates in dance will need to capture the particular ways in which teachers put pressure on dancers to have the perfect body, be the perfect dancer, and always give perfect performances (Mainwaring & Aujla, 2017).

In line with this thinking, perfectionistic climates in dance may give rise to outcomes that are common to perfectionistic climates in other domains, such as apprehension, negative responses to failure, and burnout. However, we might also expect that perfectionistic climates in dance will exert a unique influence on issues pertaining to appearance and body ideals. One study of female figure skaters conducted by Dunn et al. (2011) alludes to this possibility. This is evident in that Dunn and colleagues found that coach pressure to be perfect was positively correlated with negative body-image attitudes. In a similar way we would expect highly perfectionistic climates in dance to also predict eating disorder symptomology in dancers (e.g., excessive exercise, body image disturbance, and binge eating behaviours). Eating disorder symptoms are consistently correlated with trait perfectionism and the focus of the work normally emphasises personal vulnerability. Studying perfectionistic climates locates such vulnerabilities elsewhere and will better highlight the roots of these difficulties.

Perfectionistic climate as group-level construct

When studying perfectionistic climates in sport and dance in the future, researchers will need to consider the structure of data they collect. When performers are nested within groups that share the same leader (e.g., coach, teacher, or instructor), it will be important for researchers to adopt an approach that accounts for group membership (or nesting). This is especially important given that many researchers argue that climate-based constructs are

inherently group-level constructs. This argument is clearly articulated by Papaioannou et al. (2004) who emphasise that climate data are based on responses about the overall group climate created by a single leader for all group members. This means that performers can (and should where possible) be nested into higher-level units (e.g., dancers who share the same teacher). The reason that this nesting is important is because performers who share the same leader are more like each other (in terms of their climate experience) than they are to performers who belong to different groups with different leaders (Papaioannou et al., 2004). This shared experience means that data collected from individuals nested within groups violates the assumption of independence required for basic single-level statistical approaches.

In keeping with the discussion above, researchers with perfectionistic climate data should consider adopting an approach that allows them to model perfectionistic climate as both an individual characteristic and a group-level characteristic (Lüdtke et al., 2008). This can be achieved by using a multilevel modelling approach in which perfectionistic climate is modelled as both an individual experience (i.e., performer-level perfectionistic climate perceptions) and a group experience (i.e., group-level perfectionistic climate perceptions). In doing so, any observed relationship (e.g., perfectionistic climate predicting burnout) can be decomposed into within-group and between-group effects. This is important as there could be differences in how the construct operates at these two levels (Lüdtke et al., 2008). This possibility is evident in a recent study examining a task-involving coach climate in relation to reports of coach-induced effort, coach effectiveness, and satisfaction with coach (Álvarez et al., 2019). In this study, differences in the pattern and magnitude of relationships between these constructs were evident between the group-level and performer-level analyses.

A further reason why a multilevel approach is beneficial is because it will help answer new and important questions about the perfectionistic climate construct. For example, it will be possible to examine whether effects vary from one group to another and identify group

characteristics that may account for such variation (e.g., sport type, level of competition, or gender of athletes). In addition to this aim, adopting a multilevel modelling framework would provide a further (and robust) examination of construct validity. That is, it would be possible to examine the degree of similarity in perfectionistic climate data from members in the same group. The idea here is that a high level of agreement about the perfectionistic climate would be expected. This is because, in theory, the external objective reality being assessed is the same (or at least very similar) for all athletes who have the same coach (Morin et al., 2014). If there is high agreement about perfectionistic climate among performers part of the same group, then support for the construct validity of the scores would be provided.

Observed and perceived assessments of perfectionistic climate

The final important area of future research is the need to develop and validate an observational tool for assessing perfectionistic climate in sport and other performance environments. As perfectionistic climate is conceptualised as the experience of external pressure from the social environment, the behaviours that produce this perception should be amenable to more objective observation. In addition, it should be possible to systematically record and analyse perfectionistic leader interactions (e.g., behaviours signalling extreme expectations or harsh criticism) and correlate them with various performer outcomes. Other observational tools grounded in AGT, SDT, and Duda's (2013) hierarchical model of the coach-created climate are also available (Boyce et al., 2009; Smith et al., 2015; Webster et al., 2013). As such, these tools could be used to validate any new instrument and confirm existing findings on how components of a perfectionistic climate relate to other climate measures.

The development of an observational perfectionistic climate tool would allow researchers to evaluate the *actual behaviour of leaders* rather than *performer perceptions of how leaders behave* (Langdon et al., 2017). There are two major reasons why this approach to

data collection would be useful. The first reason is that it would provide data against which the validity of test scores generated using self-report measures of perfectionistic climate could be assessed. That is, it would be possible to examine the degree of similarity in observational perfectionistic climate data (e.g., perfectionistic coach behaviour coded during a specified training session) *versus* self-report perfectionistic climate data (e.g., athlete perceptions of the coach-created perfectionistic climate reported after a specified training session). Once again, as with the group-level approach to assessing construct validity outlined above, a high level of agreement in the data obtained using each method would support the validity of the self-report measure. In research in education, this method of comparing observed *versus* perceived assessments of climate-based constructs has provided evidence to support the validity of self-report climate data from students (e.g., Haerens et al., 2013).

The second reason that an observational approach to data collection would be useful is for developing and evaluating future climate-based interventions aimed at reducing perfectionism. This approach to intervention could be designed to help leaders create less perfectionistic climates for their performers. To evaluate the effectiveness of such an intervention, it will be important for researchers to use both observational and self-report tools. This combination of data collection strategies will help researchers to identify whether an intervention has been effective in relation to both the observable behaviour of leaders and the self-reported experiences of performers. The data provided by self-report measures is important as it evidences intervention-enabled change at a perceptual level. This evidence of change is important given that climate-based perceptions have ‘functional significance’ in terms of how performers feel, think, and behave (Ryan & Grolnick, 1986). The benefit of the observable data is that it allows researchers to evaluate ‘real’ changes in perfectionistic leader behaviour, and as such will be of additional value when assessing intervention-enabled change (Haerens et al., 2013).

Concluding comments

In this chapter we argued that experiences of external pressure to be perfect are not always explained by a performer's perfectionistic personality. Rather, for many, the pressure for perfection is grounded in the behaviour of others and the features of the social environments they encounter. To formalise this way of conceptualising pressure to be perfect, we defined perfectionistic climate, summarised a generalised perfectionistic climate model, and described how this model has been operationalised in sport. We then conducted a systematic review of existing research that has examined coach pressure to be perfect and argued that this research suggests that perfectionistic climate will most likely be correlated with markers of apprehensiveness, negative reactions to failure, performer resiliency, and burnout. In addition to testing these relationships, we encouraged researchers to advance the study of perfectionistic climate by studying it in other domains, particularly dance, adopting nested and multi-level approaches, and developing observational tools for assessing perfectionistic climate.

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Table 1. *A systematic review of research examining coach pressure to be perfect*

Study	*Sample(s)*	*Domain*	*Instr.*	*Criterion variable*	*r*
De Maria et al. (2021)	644 junior, adolescent, and adult athletes (43% females)	Sport	MIPS	Cognitive anxiety	**.12**
				Somatic anxiety	.07
				Self-confidence	.07
Dunn, Gotwals et al. (2006b)	138 adolescent athletes (26% females)	Sport	S-MPS-2	Reactions to mistakes: Feeling angry	**.31**
				Reactions to mistakes: Feeling like expressing anger at someone/something	**.19**
				Reactions to mistakes: Feeling like expressing anger verbally	**.33**
				Trait anger: Angry temperament	**.26**
				Trait anger: Angry reaction	**.40**
Dunn et al. (2011)	119 female junior athletes	Sport	S-MPS-2	Body image: Appearance orientation	**.27**
				Body image: Appearance evaluation	**-.33**
				Body image: Overweight preoccupation	**.29**
				Body image: Self-classified weight	**.22**
				Body image: Body areas satisfaction	**-.28**
				Body image: Body image ideal	**.30**
Dunn et al. (2020)	144 male junior athletes	Sport	S-MPS-2	Worry about failure / Negative social evaluation	**.40**
				Worry about the unknown	**.33**
				Worry about injury	**.18**
				Optimism	**-.17**

Dunn et al. (2021)	251 student athletes (41% females)	Sport	S-MPS-2	Grit: Consistency of interests	**-.13**
				Grit: Perseverance of effort	.03
Fawver et al. (2020)	169 junior athletes (52% females)	Sport	S-MPS-2	Grit	**-.17**
				Mental toughness: Total	**-.13**
				Mental toughness: Confidence	-.05
				Mental toughness: Constancy	**-.13**
				Mental toughness: Control	**-.15**
Gotwals (2011)	117 student athletes (41% females)	Sport	S-MPS-2	Athlete burnout: Exhaustion	**.42**
				Athlete burnout: Reduced accomplishment	**.31**
				Athlete burnout: Devaluation	**.24**
Gotwals & Dunn (2009)	251 student athletes (46% females)	Sport	S-MPS-2	Global self-esteem	**-.14**
Gucciardi et al. (2012)	423 junior, adolescent, and adult athletes (58% females)	Sport	S-MPS	External regulation	**.12**
				Intrinsic motivation	-.07
				Mastery avoidance goals	**.24**
				Performance avoidance goals	**.25**
				Mastery approach goals	-.02
				Performance approach goals	**.27**
				Fear of failure	**.39**
Ismaili et al. (2013)	55 male athletes	Sport	S-MPS-2	Positive attitudes toward doping	**.33**

Klund & Sæther (2021)	115 male junior athletes	Sport	S-MPS	Player self-assessed skills	.04
				Coach assessed player skills	-.08
				Training volume: Number of organised training sessions	.02
				Training volume: Hours of organised training	-.02
				Training volume: Number of independent training sessions	-.11
				Training volume: Hours of independent training	-.09
Madigan et al. (2016)	130 male junior athletes	Sport	MIPS	Positive attitudes toward doping	.10
Madigan et al. (2017)	261 junior, adolescent, and adult athletes (26% females)	Sport	MIPS	Reasons for training: Avoidance of negative affect	**.13**
				Reasons for training: Weight control	.08
				Reasons for training: Mood improvement	.01
Mallinson & Hill (2011)	205 junior athletes (57% females)	Sport	S-MPS-2	Autonomy thwarting	**.41**
				Competence thwarting	**.31**
				Relatedness thwarting	**.28**
Martinent et al. (2010)	642 junior, adolescent, and adult athletes (47% females)	Sport	S-MPS-2	Somatic anxiety: Intensity	.12
				Cognitive anxiety: Intensity	.15
				Self-confidence: Intensity	**.25**
				Somatic anxiety: Frequency	.10
				Cognitive anxiety: Frequency	**.18**
				Self-confidence: Frequency	**.17**
				Somatic anxiety: Direction	-.11

				Cognitive anxiety: Direction	-.14
				Self-confidence: Direction	**.18**
Pacewicz et al. (2018)	173 student athletes (50% females)	Sport	S-MPS-2	Athlete burnout: Total	**.31**
				Athlete burnout: Exhaustion	**.26**
				Athlete burnout: Reduced accomplishment	**.23**
				Athlete burnout: Devaluation	**.26**
				Problem-focussed coping	-.01
				Emotion-focussed coping	-.11
				Avoidant coping	**.23**
Pineda-Espejel et al. (2021)	377 junior athletes (57% females)	Sport	MIPS	Task-involving coach climate	-.13
				Ego-involving coach climate	**.53**
				Coach autonomy support	.13
Sagar & Stoeber (2009)	388 student athletes (46% females)	Sport	MIPS	Fear of experiencing shame and embarrassment	**.29**
				Fear of devaluing one's self-estimate	**.12**
				Fear of important others losing interest	**.25**
				Fear of upsetting important others	**.40**
				Fear of having an uncertain future	**.20**
				Positive affect after success	**.12**
				Negative affect after failure	**.21**
		Sport	S-MPS-2	Mother authoritativeness	**-.34**

Sapieja et al. (2011)	194 junior athletes (0% females)			Father authoritativeness	**-.22**
Sindik et al. (2011)	74 male adult athletes	Sport	S-MPS	Hardiness: Commitment	-.07
				Hardiness: Control	.07
				Hardiness: Challenge	-.07
				Personality: Extraversion	-.14
				Personality: Agreeableness	-.07
				Personality: Conscientiousness	-.09
				Personality: Emotional stability	-.05
				Personality: Intellect	-.19
				Group cohesion: Individual attractions to the group-social	-.19
				Group cohesion: Individual attractions to the group-task	**-.27**
				Group cohesion: Group integration-social	**-.26**
				Group cohesion: Group integration-task	**-.32**
Šíp & Burešová (2020)	180 junior athletes	Sport	S-MPS	Perceived training load	**.18**
Skwiot et al. (2020)	207 junior, adolescent, and adult athletes (36% females)	Sport / Dance	S-MPS-2	Athlete burnout: Exhaustion	**.25**
				Athlete burnout: Reduced accomplishment	.09
				Athlete burnout: Devaluation	**.24**
Vaartstra et al. (2018)	216 junior athletes (75% females)	Sport	S-MPS-2	Perceived social loafing	.04
				Social loafing acceptability	.04

Vallance et al. (2006)	229 junior athletes (0% females)	Sport	S-MPS-2	Trait anger: Angry temperament	**.22**
				Trait anger: Angry reaction	**.29**

Note: MIPS = Multidimensional Inventory of Perfectionism in Sport (Stoeber et al., 2006); S-MPS = Sport Multidimensional Perfectionism Scale (Dunn et al., 2002); S-MPS-2; Sport-Multidimensional Perfectionism Scale 2 (Dunn et al., 2006a; Gotwals & Dunn, 2009). Bold typeface denotes a significant correlation. All study designs were non-experimental and cross-sectional.