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Elite Coaches' Experiences of Creating Pressure Training Environments

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Abstract

Recent research supports the practice of pressure training in sport (Bell, Hardy, & Beattie, 2013), yet limited knowledge exists regarding how pressure is systematically created. This study explored how 11 elite coaches developed pressure training environments for the performance enhancement of their athletes. Following thematic analysis of transcribed semi-structured interviews, findings detailed how coaches manipulated a variety of stressors (e.g., task, forfeit, judgment) to manage the demands and consequences of training. Facilitated by individual differences, this process created pressure, defined as the perception that it is important to perform exceptionally. The findings provide a framework for developing pressure, coping mechanisms, and performance in training environments in preparation for future sporting competition.

Key words: pressure, training, stress, stressors, choking, coping, demands, consequences, individual differences, important to perform, elite, coaching

Elite Coaches' Experiences of Creating Pressure Training Environments

Pressure is defined as "any factor or combination of factors that increases the importance of performing well on a particular occasion" (Baumeister, 1984; p. 610). Research has highlighted that pressure can cause individuals to underperform (Greenleaf, Gould, & Dieffenbach, 2001), and evidence of this has been illustrated across a number of performance skills such as climbing (Pijpers, Oudejans, & Bakker, 2005), handgun shooting (Nieuwenhuys & Oudejans, 2011), self-defense (Rendena et al., 2014), dart throwing and basketball shooting (Oudejans & Pijpers, 2009), amongst others.

This phenomenon has been described as choking under pressure (DeCaro, Thomas, Albert, & Beilock, 2011). While a number of psychological concepts have been implicated in causing a choke (Hill, Hanton, Fleming, & Matthews, 2009), the key processes appear to be related to attentional disturbances caused by heightened anxiety (Beilock & Gray, 2007). DeCaro and colleagues (2011) have highlighted that there are two primary theories proposed to explain attentional disturbances and choking under pressure. Distraction theories propose that high-pressure situations cause performance to decrease due to working memory becoming over-loaded with task-irrelevant stimuli. The task irrelevant stimuli, comprised of thoughts such as worries about the consequences, compete with the attention needed to execute the task at hand. Explicit monitoring or skill-focus theories suggest that pressure increases self-consciousness about performing correctly (Baumeister, 1984). This causes performers to focus their attention on skill execution to ensure an optimal outcome, disrupting the learning and execution of proceduralized processes that normally run outside of conscious awareness (Hill et al., 2009).

There are a limited number of interventions offered to alleviate choking in sport and consequently there have been recommendations to develop such interventions (Hill et al.,

2009). One such intervention is pressure training (PT), which has been shown to be effective in reducing choking and improving performance under pressure (Bell, Hardy, & Beattie, 2013). This approach proposes that by strategically exposing athletes to stressors in training they can enhance their ability to perform under pressure (Bell, et al., 2013; Driskell, Sclafani, & Driskell, 2014; Oudejans & Pijpers, 2009). Looking at the origins of PT, this approach evolved from the concept of medical inoculation. In medicine, inoculation is the process of exposing an individual to a small amount of a virus, such as a vaccine, to build immunity to the virus (Meichenbaum, 1977). The initial exposure prepares the body for future attacks. The concept of inoculation was applied to psychology in the 1950's when Wolpe (1958) used it on clinical populations. Participants were gradually subjected to anxiety-arousing stressors while they practiced relaxation strategies and it was found that this was an effective method for alleviating conditioned fears. This model of clinical inoculation was eventually adopted in sport psychology where researchers exposed individuals to stressors while they trained (Smith, 1980). Initial research indicated that this approach to stress management was effective for enhancing performance across a variety of sports and activities including gymnastics (Mace & Carroll, 1989) and squash (Mace & Carroll, 1986).

Contemporary sport research has corroborated earlier findings and by documenting the effects that PT has on novice (Oudejans & Pijpers, 2010) and elite (Bell et al., 2013; Oudejans & Pijpers, 2009) performers. Oudejans and Pijpers (2009) examined the impact of PT on expert basketball players. Basketball players were exposed to two pre-tests; one with pressure and one without. A five week training protocol followed where several stressors were used to train the experimental group under pressure. In a post-test it was found the control groups' performance still deteriorated under pressure. However, the experimental groups' performance no longer deteriorated, indicating an improvement in the participants' ability to perform under pressure. Current research on mental toughness and resilience

corroborates the PT literature in linking experiences of pressure to improvements in coping and performance under pressure. For example, Bell et al. (2013) define mental toughness as "the ability to achieve personal goals in the face of pressure from a wide range of different stressors" (p. 1) and examined how PT developed mental toughness. Results showed that the experimental group who were trained under pressure made significant improvements in objective and subjective mental toughness scores. Resilience literature has also shed light on the link between pressure exposure and coping. Fletcher and Sarkar (2012) investigated Olympians' experiences and identified that all of the participants described prolonged periods of time in which they were required to withstand pressure. The results suggested that these prolonged experiences of pressure contributed to the development of resilience. These findings are representative of the wider resilience literature which seems to indicate that adverse experiences, involving periods of pressure, help individuals develop resilience in the face of future pressurized situations (Seery, 2011).

Given the impact that PT has been shown to have on performance, it is not surprising that it is currently being utilized in elite sport (Bell et al., 2013) and that the research community is encouraging further applied endeavors (Sarkar, Fletcher, & Brown, 2014). Considering this demand for continued applied efforts, however, what is surprising and worthy of concern is the lack of literature detailing how pressure is created. Indeed, DeCaro and her colleagues (2011) noted that "most investigations of performance under pressure have largely ignored the makeup of the pressure situation itself" (p. 391). While more recent research has documented specific stressors that may play a role in generating pressure (e.g., Driskell et al., 2014; Oudejans & Pijpers, 2009), studies are yet to investigate how pressure is systematically created across sporting environments. It is therefore vital to address this gap in understanding and explore a theoretical foundation to underpin future PT research. Accordingly, the present study explored how elite coaches created PT environments for

performance enhancement. Given the lack of scholarly knowledge in this area, the present research adopted a qualitative approach (Braun & Clarke, 2006; Hill et al., 2009).

Method

Participants and Sampling

With institutional ethics approval 11 professional, full-time coaches (1 female, 10 male) were included in the sample. The coaches resided in the United Kingdom and were aged between 30 and 53 years (M_{age} 41.1; SD = 7.5 years). Elite coaches were chosen as the sample population given that they are responsible for designing and managing training sessions and currently practice PT (c.f., Beaumont, Maynard, & Butt, 2015; Bell et al., 2013). The criteria for inclusion of the coaches were that they had to have worked in elite sport (Olympic or International level) for a minimum of four years (cf., Olusoga, Maynard, Hays, & Butt, 2012). Additionally, coaches had to perceive themselves to be successfully integrating pressure into training for performance enhancement. To identify this criteria, the following question was used: "Do you perceive yourself to successfully and effectively integrate pressure into training and if so, why?". A coach's expertise was then discussed amongst the wider research team to evaluate their suitability for the study. These criteria ensured that the sampled population had expertise specifically relating to the research area. Expert purposive sampling (Patton, 2002) was used to identify and recruit participants that met the specific criteria detailed above. The coaches came from Badminton, Table Tennis, Rugby Union, Rugby League, Taekwondo, Diving, Paralympic Cycling, Judo, Cricket and Speed Skating. Collectively the coaches had accumulated 106 years of experience (M_{exp} 9.6; SD = 5.2) coaching at the elite level and had worked in male and female, team and individual, disability and able-bodied, adolescent and adult elite training environments. At the time of data collection coaches were at different stages of their competitive season.

Procedure

Initial contact was made with a number of Olympic and Elite Sport Governing Bodies. Coaches were then pre-interviewed either face-to-face or over the phone. This was an opportunity for the coaches to enquire into the nature of the study and for the principle investigator to assess whether the participants met the criteria for inclusion. Once informed consent was granted from the coach and the Performance Director (PD; the chief performance leader for the Sport Governing Body), an interview was scheduled. Over the course of the study 20 Sport Bodies were contacted, and there were 16 pre-interviews. At the start of each interview an explanation of the study aims were provided and confidentiality agreed. An electronic Dictaphone was used to record the interview. The interview guide was pilot tested with two coaches and some refinements were made to the phrasing of questions.

Interview Guide

Based on existing literature concerning PT (Bell et al., 2013; Oudejans & Pijpers, 2009) a semi-structured interview guide was developed. A conversational tone was used to create a natural flow of discussion and coaches were encouraged to elaborate unreservedly on their experiences (Patton, 2002). Interviews began with introductory questions into coaches' current and previous coaching experiences. Following this introduction, the coaches' broader experiences of pressure in elite training environments were discussed (e.g., "What do you think pressure is?", "How does pressure training affect performance?"). Attention then shifted towards the specific methods coaches used to create pressure in training sessions (e.g., "Can you tell me what you do to create pressure in training?"), and the final section of the interviews allowed the coaches to expand on, discuss and question any related points. Probes were used to stimulate elaboration and clarification (Patton, 2002). All interviews were conducted in person by the first author.

Data Analysis and Trustworthiness

Detailed interviews were conducted (M_{mins} = 68.82) and transcribed verbatim by the principle investigator. The purpose of the analysis was to build an organized system of themes that explained how elite coaches created PT environments (Vallée & Bloom, 2005). To achieve this, analysis began with an initial inductive sweep of the transcripts (Braun & Clarke, 2006). This sweep involved the identification and annotation of meaningful raw data units (i.e., quotes that represented a specific aspect of the coaches' experiences of developing pressure). The raw data was then assessed for commonalities, which led to the development of lower-order themes. For example, the theme of "reward" was developed via the grouping of emergent raw data units concerning how coaches incentivized their PT sessions. These lower-order themes were then assessed for their similarities and differences as higher-order themes were generated. At this final stage the analysis of the relationships between themes produced a framework that represented coaches' experiences of creating pressure.

The principal investigator had previous training and experience in conducting interview-based qualitative research (Patton, 2002). To ensure trustworthiness, three researchers outside of the primary research team independently analyzed the transcripts to make recommendations for the inclusion, removal, or adaptation of raw data and lower and higher-order themes (Patton, 2002). This process led to several reorganizations of the raw data units and lower-order themes. At each stage of the investigation, transcripts, methods, data analysis, and decision-making processes were presented to and explored by the primary research team for scrutiny (Gucciardi, Gordon, & Dimmock, 2008). Following this stage, a formal presentation of the content of the framework was delivered to a wider research panel and audience and this resulted in critical debate but no further changes. This process has been successfully used in previous sport psychology research (Fletcher & Sarkar, 2012). Member checking consisted of emailing the participants their transcripts prior to analysis and the

resultant themes and framework post analysis. At both stages coaches were encouraged to comment and feedback was received over the phone or in person to help verify the results.

Results

The raw-data themes were coalesced into six lower-order and four higher-order themes (see Figure 1). These higher-order themes regarded the demands of training, the consequences of training, individual differences and pressure. The demands and consequences of training were themes which highlighted how coaches created pressure. The demands of training concerned the difficulty of the training session, and the consequences of training regarded what the outcomes. The six lower-order themes highlighted types of stressors that coaches manipulated to shape the demands and consequences of training. Specifically, coaches altered task, performer and environmental stressors to influence the demands of training, and forfeit, reward and judgment stressors to shape the consequences of training. Coaches also highlighted that athletes responded differently to stressors due to individual differences. Consequently, coaches could tailor the manipulation of the demands and consequences of training to engender specific responses from specific athletes. Through the management of these themes coaches created pressure and conducted PT for performance enhancement. Pressure was defined as the perception that it is important to perform exceptionally. In moving past the descriptive, the analysis process generated a framework (see Figure 2) conceptualizing how coaches created PT environments. The findings are reported anonymously to respect the wishes of the sporting bodies involved.

Demands of Training

Two higher-order themes emerged that detailed how elite coaches created pressure: the demands of training, and the consequences of training. The demands of training were a higher-order theme that concerned how physically and cognitively challenging the PT was. Demands were manipulated to replicate the situations that athletes faced at competition, thus

encouraging the development of essential and transferable skills. The quote below highlighted one coach's comments regarding this theme and illustrated how pressure was developed by continually increasing the difficulty of the training demands:

> We do apply pressure because we continually ask them [the athlete] to go faster and faster for longer and longer, and therefore the training demands become a pressure in themselves. And because we set milestones as coaches do, those milestones are pressure points that are reflective of what they'll need to do in competition. And if you hit them great but you know that if you don't hit it that's not great, and you know you need to hit it.

The higher-order theme of the demands of training was made up of three lower-order themes: task, performer, and environmental stressors.

Task stressors. Task stressors were a lower-order theme that contributed to the shaping of the demands of training. Task stressors concerned the guidelines, conditions, and equipment used within a PT session. The following quote illustrates one coach describing how he would manipulate task constraints:

> I might turn around and say, "Right, we're going to do six pressure plays"… "The rules are defense can't have the ball… I'm going to allow you two stoppages in the game. If you have two stoppages, I'll allow you to pull the group in together [for a team talk]". I'll give them thirty seconds, no more, to make it hard… So they're practicing under pressure the ability to actually communicate what it is they need to say to each other.

Performer stressors. Performer stressors were created by manipulating the physical and psychological characteristics and capabilities of an athlete. By managing these stressors coaches influenced the demands of training and the difficulty of the session. Pre-fatigue was a performance stressor used by some coaches. Pre-fatiguing an athlete reduced their physical

and psychological capabilities going into the PT session, leaving them with a harder challenge ahead. Coaches also manipulated the tactical information and options athletes were provided as a method for constraining their psychological capabilities during the session. Limiting the information that athletes received around tactics and strategy inhibited decision-making and in turn made training harder. The following quote illustrated this:

> So sometimes we'll do a lot of situational stuff like sudden death which forces them into pressure because they're almost pigeon-holed into a situation. Sometimes we'll do it where there are secret situations. Team A over there with another coach, and team B will come to me and I'll tell them a strategy, or a tactical move to apply. And then team A are in the background thinking, "what is it?". And you see the people who panic and almost think too much; "what is he trying to do to me!?".

Environmental stressors. Environmental stressors were created via manipulations to the environment within which the athletes trained. For example, coaches could manage sounds, temperatures, and the visual surroundings. In the following quote, a coach explained how they chose to train at altitude in order to make the training demands tough and create pressure:

> We went [abroad] last year and we're going again this year. That for me is the best way because at that altitude level we can train for less time at a very intense level and keep the load off the players… And that is, for what we've done as the England program, that is probably one of the biggest pressures we can achieve. Because it's tough out there.

Environmental stressors were commonly manipulated to replicate the conditions of competitions. Illustrating this, one coach noted that "If you know you're going to a hot competition, we can do something with the heating."

Consequences of training

The consequences of training were a second higher-order theme to emerge as being instrumental in the creation of pressure. Elite coaches created environments where athletes received positive or negative consequences based on how they performed. Illustrated below is a quote exemplifying one coach's explanation of the role of consequences in developing pressure:

> In training, I'd say it [pressure] is also anything outcome-based or where people are always being watched, or assessed. That usually creates some kind of apprehension or anxiety which either makes their heart-rate go higher or they make more mistakes and they don't deliver what they should do. Which is usually what we try to get to at the top end because, at the Olympics, everyone's watching them and obviously it's outcome-based… Whether that be [sport specific tool] allowing them to see their scoring, or whether there's an outcome-based on it, as in it is for selection.

The consequences of training could be understood as being comprised of three lower-order themes: forfeit, reward and judgment.

Forfeit stressors. Forfeit stressors included the potential to receive something negative, such as a physical punishment, or losing something positive, such as having to miss a training session. The following quote illustrates one coach's description of the ways forfeits were used to create pressure.

> At the end of some of the pressure training we would have consequences that the players know about before they start… [It] might be missing an afternoon's training that they really want to do. So they would see that as four hours of valued time they're missing. And they've got to work with the winning team. So they're not the lap dogs, but they're… not actually going to have a go… So there are a number of ways of doing it. We set consequences, they also set consequences. Some of those can be very physical, and some of those can be taking things away.

Coaches also highlighted the need for caution and strategy when altering stressors. Using the example of missing training, one coach commented that, "Restricting contact time and giving it to somebody else can create that kind of idea of pressure… Though I think that it's difficult and can backfire. If you do that and it goes the wrong way you've damaged a relationship."

Reward stressors. Reward stressors were a second lower-order theme that contributed to the shaping of the consequences of training. These stressors regarded the potential to win something positive and the following quote highlights one coach's use of selection as a reward stressor:

> And they're playing for places in the team as well… Selection… [keeps] it competitive. You've kept the ones who think they might be playing [in the competition] training really well. You've got the ones who think they've got a chance of competing [training] really well, which increases the quality of your sessions for longer… Selection. That has to be the biggest pressure going.

While some reward stressors were common, such as selection, other stressors were less so. For example, one coach utilized the reward of being able to shape the larger sporting training program, including access to support services. Commenting on this, the coach explained, "What they [the athletes] see is the benefits from being at the top of the tree at the end of the session. Whether that's the ability to access all services. Whether that's the ability to dictate the pathway of our program, as well."

Judgment stressors. Judgment stressors, a lower-order theme, created the opportunity for athletes to be evaluated in some way. These stressors contributed to the shaping of the consequences of training by enabling there to be an outcome of positive or negative judgment for an athlete. Coaches highlighted that the more important the athlete viewed the judge to be, the more likely that this stressor will lead to pressure. For example,

the presence of a Performance Director would often be a powerful judgment stressor. Illustrating this, one coach described how peer judgments can come from the PD as well as teammates or coaches:

> If we stood everyone down and put them in a circle around two people who are being watched, just by their team mates, the difference is phenomenal. The pressure switch is on... Obviously you can go further if you've got the ability to bring other people in like spectators or family members, or the PD of the program, who will assess them and at the end it could influence his opinion.

The impact of a judgment stressor could be emphasized by the coach talking explicitly with the athlete about their expectations. Discussing this, one coach commented: "So actually the pressure is applied when you say, 'This is what you're doing, by your own volition, and actually you're not hitting the mark. So you need to change something in this session'. By saying that we'd be clear about the consequences of their actions and that'd bring the pressure".

Individual differences

The higher-order theme of individual differences regarded how coaches believed that athletes responded individually to stressors. Coaches believed that athletes responded differently due to individual differences, and understood that what generated pressure for one athlete may not for another. The following example highlights one coach's explanation on how individuals differed in their assessment of stressors:

> And I think it's really specific to the individual - so what pushes some peoples' buttons really doesn't push other peoples'… It's usually different depending on the individual, as much as a fingerprint. Obviously because of the way we all take in information.

In understanding this variation, coaches could strategically engineer stressors to target athletes. On one hand, stressors that shaped the demands of training could be managed to alter how difficult the training was for certain athletes. On the other hand, stressors that defined the consequences of training could be manipulated to make the session more important for specific athletes. For example, one coach targeted an athlete by manipulating stressors to create a low level of demand. In this instance, the coach would require the athlete to perform a simple skill and this created pressure for the athlete due to an increased perception of expectation:

> [There's] more [pressure] because there is more "should". "I should get this right; I should be able to do it well". She'd put more pressure on herself because it's an easy [skill] and therefore she should be able to do it well. She'd probably put less pressure on herself on a harder one because a lot of people drop that. That would be her thinking.

Important to Perform

This was a higher-order theme which regarded coaches' beliefs regarding what athletes experienced when under pressure. Coaches defined pressure as the perception of knowing that it is important to perform ones best. Illustrating this theme, the following quote highlights one coach's perception of pressure:

> I think that pressure is the stress of knowing you have to perform due to the outcome being very important to the game, particularly, and due to the challenges ahead of you… You're trying to determine what you need to do and how much it matters.

It was believed that PT developed coping mechanisms and performance by providing athletes with the opportunity to practice delivering their skills whilst experiencing a pressure response. In line with this, while the coaches often replicated the same demands found at competition, many competition consequences were deemed impossible to replicate. Due to

this, the coaches focused instead on using alternative consequences to engender a pressure response. The following quote exemplifies one coach's perceptions regarding the role of PT as a means for enhancing performance, and the lack of a need to replicate competition stressors:

> I think there are definitely certain things that can be done to replicate things that go on in [competition] and one hundred percent there are things you can never replicate. Like the penalty shoot-out in a football match, let's say... But, when you do it you're aiming for the athlete to practice pressure management. If you have the skill sorted within that pressure training environment, so that it withstands, then it should prevail [at competition]. So there are ways of putting your team under pressure constructively within training."

Discussion

Literature has indicated that experiences of pressure can facilitate the development of mental toughness, resilience, and an ability to perform under pressure (Bell et al., 2013; Fletcher & Sarkar, 2012). In line with this, PT is currently used by elite coaches and additional applied and academic endeavors have been encouraged (Beaumont, et al., 2015; Driskell et al., 2014; Sarkar et al., 2014). However, no investigations have explored how pressure is systematically produced by coaches across performance contexts. To further knowledge in this area the current investigation examined the methods used by elite coaches to create PT environments for performance enhancement.

Results detailed that coaches manipulated variables to generate task, performer, environmental, forfeit, reward, and judgment stressors. These stressors could be classified as demands or consequences of training. Coaches also believed that individual differences were responsible for athletes responding differently to stressors, and coaches would consider these differences when manipulating stressors. Through this process of stressor management

coaches generated pressure and conducted PT. The following section discusses these findings in relation to previous research, future research and applied practice.

Coaches created challenging demands and meaningful consequences to generate pressure, and current literature echoes this finding. For instance, research applying Newell's (1986) model of constraints in sport has highlighted how task, performer and environmental variables can be manipulated to effectively produce challenging training demands. Exemplifying this, Pinder, Davids, Renshaw and Araújo (2011a) manipulated task variables to expose cricketers to three different bowling challenges involving a "live" bowler, a ball projection machine, and a near life-size video. Results showed that each distinct combination of task constraints led to significant variations in the standard of performance, due to varying levels of challenge. Additional evidence can be seen in recent research on dart throwers experiences' of pressure. Environmental stressors were generated by requiring participants to throw darts from different heights on a climbing wall, and it was found that these manipulations to height contributed to varying degrees of anxiety (Oudejans & Pijpers, 2009; 2010).

Regarding the consequences of training, broader research illustrates the effectiveness of using forfeits, rewards and judgments in sport and reinforces the role of meaningful consequences in generating pressure. For instance, forfeit and judgment stressors were used to create pressure in Bell and colleagues' (2013) research with elite cricketers. Judgment stressors included having to re-perform a failed test in front of the training group, and forfeits included having to miss the next training session. Rewards are also evidenced as a viable stressor for creating pressure. For example, Oudejans and Pijpers (2009) studied the impact of pressure on expert basketball players' free throw performances. In this study, the experimental group trained under pressure, partly induced via the presence of a 25 Euro reward for the individual with the best shooting percentage. Judgment stressors were also

used in this study, whereby the players were filmed and informed that their performances would be evaluated by experts. Collectively, the research highlighted above, together with the findings from the present study, offer insight into the use of demands and consequences as mechanisms for generating pressure.

The findings of the current investigation transcended current literature in providing novel information regarding how coaches replicated competition stressors. Specifically, it was found that the coaches adopted a contrasting approach when choosing how to manipulate the demands and consequences of training. It could be seen that while coaches commonly managed training demands to replicate the demands of competition, training consequences were rarely organized in this way. For example, it was normal for a coach to structure the training demands in such a way that they present athletes with a situation they might find at competition, such as having to defend a score, chase a score, or score the next point to win. In this way, the demands were identical to competition demands. However, when dealing with consequences of training, coaches rarely endeavored to replicate the consequences found at competition. This appeared to be due to the difficulty, and sometimes impossibility, of mobilizing such resources, such as 50,000 spectators or thousands of pounds in prize money. Accordingly, while competition consequences were occasionally replicated when possible, predominantly the consequences were not replicative. Instead, coaches' manipulated the consequences to be as meaningful to the recipient as those found at competition.

Bearing in mind the dichotomy between training and competition consequences, these findings have implications on the issue of transferability. They raise the question as to whether developed skills will transfer from training to competition. Previous research illustrates mixed findings on the matter. On one hand there is a literature base proposing that representative demands (Brunswik, 1956) and action fidelity between the training and competition environment is key for promoting transferability (Pinder, Davids, Renshaw, &

Araújo, 2011b). On the other hand, there is research illustrating that this might not be necessary. For example, Bell and his colleagues' (2013) study on elite cricketers found that PT, involving the use of consequences such as punishment, facilitated performance enhancement at competition. This transference of skill took place despite the competition consequences differing from those used in the PT. As there is contrasting evidence, additional research is required to clarify the relationship between replicative training demands and consequences, and transferability of skills under pressure. This is needed in order to inform current applied practice and either validate or reject the current approach adopted by elite coaches as presented in the present study.

Another interesting finding concerned coaches' perceptions of why and how PT improved performance. Coaches believed PT affected performance via allowing athletes to practice performing whilst experiencing a pressure response. Training in this way ensured athletes could develop their ability to make decisions and perform specific skills whilst under pressure and performance gains would then transfer to competition. This finding is important as it documents novel information at a behavioral level regarding how coaches believed PT enhanced performance. Wider literature examining performance under pressure supports the coaches' perceptions and provides an insight into the functions that might underpin this process at a cognitive level (Baumeister, 1984; Eysenck & Calvo, 1992). Literature concerning explicit monitoring theories of choking has highlighted that athletes who are often self-focused under pressure are less likely to choke because they become immune to the effects of explicit monitoring (Baumeister, 1984). According to this theory, individuals still experience heightened self-monitoring but are able to function in a way where it longer affects them. Concerning distraction theories, it has been argued that the adverse effects of anxiety can be avoided when individuals perform a second stream of processes involving an increase in effort towards the task (Eysenck & Calvo, 1992). Oudejans and Pijpers (2010)

indicate that it is these secondary self-regulatory processes which develop as a result of being exposed to stressors. As these processes improve, pressure management improves.

Future Research

Based on the findings of this study, future research should explore the reliability and ecological validity of coaches' methods in generating pressure. Task, performer, environmental, forfeit, reward and judgment stressors could be manipulated in order to assess whether demands and consequences of training genuinely create pressure. Such a study would highlight how these themes (i.e. stressors) enable bespoke, sport specific PT environments to be produced. Refining knowledge of this sort is important considering that the area is still largely ignored (DeCaro et al., 2011) yet currently being applied and relied upon in elite sport (Beaumont, et al., 2015; Bell et al., 2013, Driskell et al., 2014).

Additional research examining the effects of specific stressors on choking might also be of value. This could be important as evidence outside of sport indicates that different stressors might illicit different types of choking (for a review see Hill, Hanton, Matthews, & Fleming, 2010). For example, DeCaro et al. (2011) found that the pressure of being watched by others increased attention to skill processes and consequently increased self-conscious methods of choking. Alternatively, reward stressors distracted attention away from the task and consequently lead to distraction forms of choking. This research is important for PT as it indicates that it might be possible to strategically evoke a specific type of choke. This seems pertinent as it could empower coaches with the ability to choose what type of coping mechanisms their athletes develop. For example, a coach could create self-consciousness, via the use of stressors shown to illicit this specific type of choke, such as judgment (Carver & Scheier, 1978), in order to provide an athlete with the opportunity to develop the coping mechanisms to this choke. Being able to control the type of coping mechanisms an athlete develops could be vital in instances such as when an individual is susceptible to a particular

type of choke (e.g., self-consciousness). Accordingly, it is proposed that future research explores the relationship between specific stressors and choking in sport as this might facilitate coaches in being able to strategically develop precise coping mechanisms.

Two final future research considerations concern development level athletes and the timing of PT. Firstly, it is worthwhile deliberating how suitable PT is for younger athletes, and athletes below the elite level. While the present study did not actively pursue information on this subject, it was evident that coaches put more emphasis on creating challenging demands of training, and purposefully neglected consequences, when working with development level athletes. It could be important for future research to address this area considering that the findings of the present study indicate that coaches don't adopt the same methods when working with this population. It was also found that coaches believed the timing of PT was vital due to its ability to impact confidence. A number of coaches highlighted that PT had the potential to initially lower confidence, depending on the ability of the athlete. This perception is backed up by research linking pressure to confidence (Hays, Thomas, Maynard, & Bawden, 2009), and would be an interesting area for future research to investigate.

Applied Considerations

The findings offer some implications for practitioners desiring to conduct PT. It might be imperative to start PT with an assessment of individual differences. This will provide information for understanding how to make PT ethical, meaningful and promote development. This could include considerations relating to how the athlete responds to specific demands of training as well as how they attribute meaning to specific rewards, forfeits and judgments. It might then be useful to evaluate what demands and consequences on training are available in a respective sport. When selecting demands of training, the findings indicate the benefit of constructing them to form challenges that are replicative of

competition. Additionally, forfeit, reward and judgment stressors could be manipulated to create consequences that are suited to the culture of the sport and meaningful to the athlete. The initial information collected on individual differences, accompanied by perceptions regarding how each athlete is coping with the PT program, could then be used to appropriately graduate the intensity of these demands and consequences as the athlete progresses through the training.

Once the PT program has begun, the results imply that this process could continue until each athlete is being exposed to consequences as meaningful as, and demands as difficult as those present at competition. Throughout this process the practitioner might also wish to consider where they can support the coach. For example, assistance might be required when gathering information, tailoring demands and consequences to suit an individual, negotiating resources to be used as stressors, or monitoring and debriefing sessions with coaches, athletes and support staff.

An additional applied consideration concerns the finding that coaches evaluated individual differences using their subjective perceptions and athletes' verbal reports. Given the importance of understanding individual differences, applied practitioners are encouraged to consider the merits of progressing additional techniques that go beyond that of verbal report and subjective perception. For example, information could be collected regarding how susceptible an athlete is to a particular kind of choke. The Movement-Specific Reinvestment Scale (Masters, Eves, & Maxwell, 2005) is a tool that could be used to provide information on an individuals' reinvestment style, such as how likely they are to become self-conscious under pressure. This information could then inform how stressors are selected and adjusted to facilitate the athletes' development. For instance, those who are more likely to choke due to heightened self-consciousness could be exposed more slowly to stressors that, in wider literature, are known to elicit this type of choking (DeCaro et al., 2011). By expanding

methods beyond coaches' subjective perception and athletes' verbal reports practitioners could advance the ability for PT to be efficient, ethical, and meaningful.

Limitations

There are two main limitations to the present study. Firstly, data collected is based on coaches' perceptions and therefore it is not possible to objectively verify the effectiveness of their methods. Measures were taken during the recruitment process to account for this limitation. Specifically, the criteria used to select coaches for inclusion ensured that there was a strict review by the wider research team of each individual coach and their experiences of successful PT. This limitation reinforces the value of future research testing the reliability and ecological validity of the methods reported in this study. The second limitation of the study is that the coaches were interviewed in relation to their experiences delivering PT elite adolescent and adults exclusively. Therefore, the findings might not generalize to athletes below elite and to ages below adolescence.

Concluding Remarks

Research has highlighted that PT is an effective tool for developing coping mechanisms and enhancing performance under pressure (e.g. Bell et al., 2013). Despite this, research had not provided a theoretical foundation detailing how pressure can be systematically created for performance enhancement across training environments. Addressing this gap, the findings of this study demonstrate the importance of demands and consequences of training and begin to highlight, in context, some specific methods that can be used to generate pressure across sports.

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651

Figure Captions

Figure 1: Higher- and lower-order themes (parentheses refer to the number of coaches cited).

Figure 2: Framework illustrating how elite coaches created pressure training environments.

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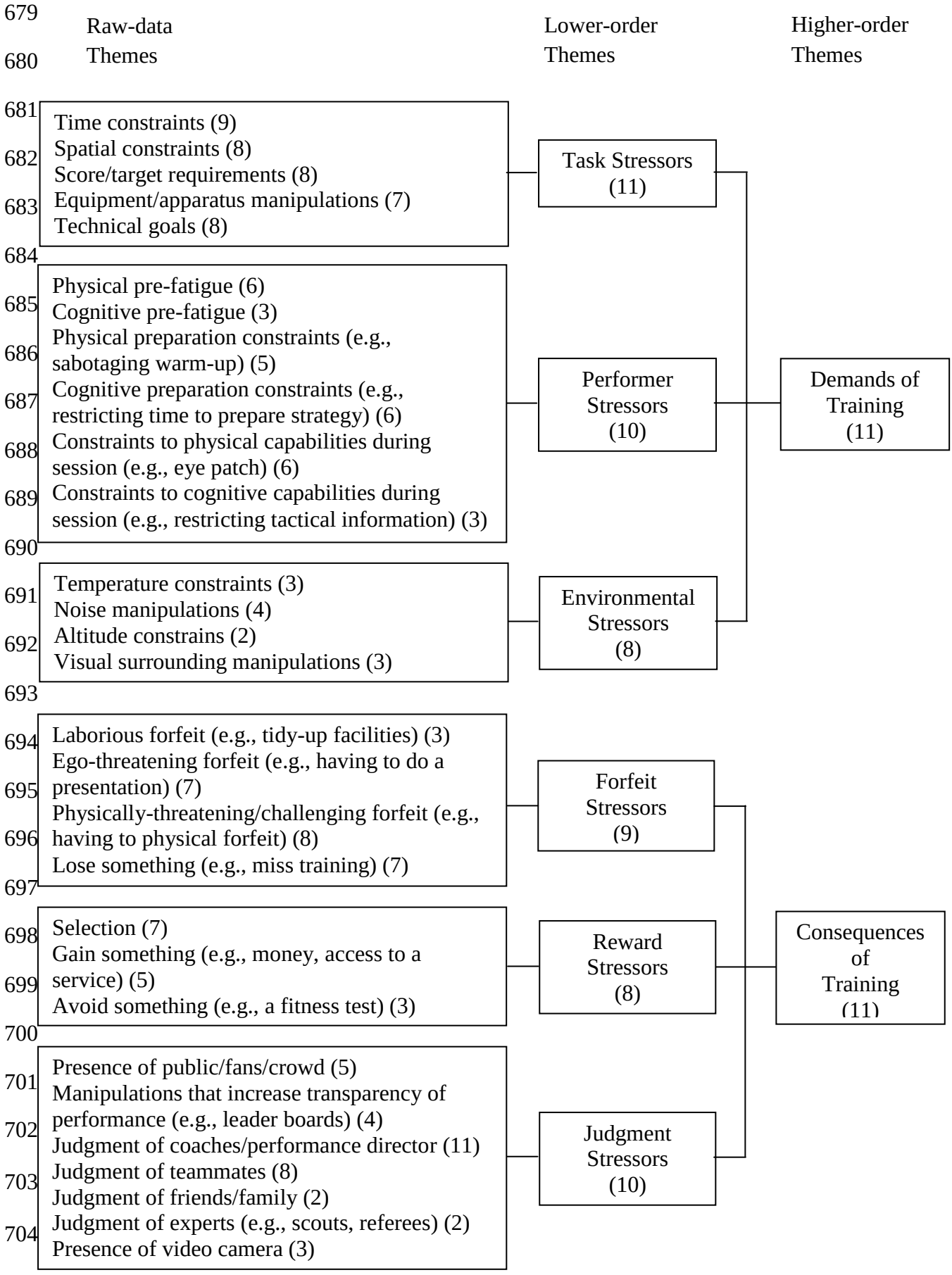

Figure 1: (continued).

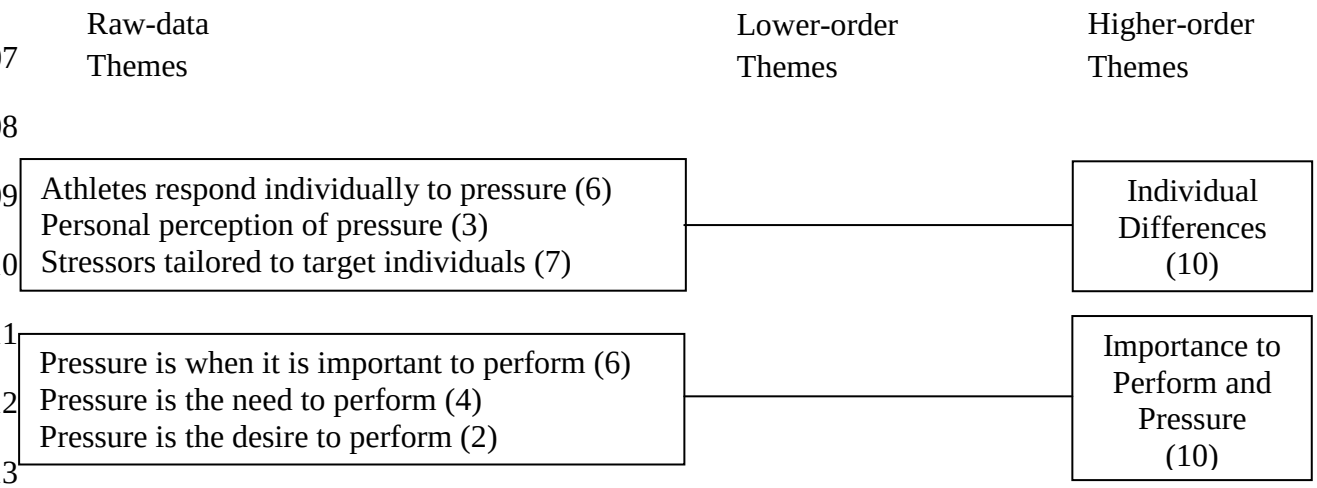

Figure 2: Framework illustrating how elite coaches created pressure training environments.