

THE IMPACT OF PERFECTIONISM ON PSYCHOLOGICAL WELL-BEING AND
ILL-BEING IN ATHLETES WITH AND WITHOUT HEARING DISABILITY

By

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A thesis submitted to
The University of Birmingham
for the degree of
DOCTOR OF PHILOSOPHY

School of Sport, Exercise and Rehabilitation Sciences

College of Life and Environmental Sciences

University of Birmingham

June 2015

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Perfectionism is an important personality construct that impacts an individual in at least one important domain (Stoeber & Stoeber, 2009). Sport is one such context where perfectionism influences individual's cognitions, affect, and behaviours. Previous literature in sport has examined perfectionism in athletes without a disability hearing (e.g., Hall, Hill, & Appleton, 2012; Stoeber, 2011). Given that over 11 million people with disabilities in the UK participate in sport, and many of them are hearing impaired (9 million; Disability Sport, 2014; UK Deaf Sport, 2017), extending perfectionism research into this particular sample and how it impacts upon their health and well-being is important. Thus, the overarching aim of the current thesis was to assess the well-being and ill-being correlates of two perfectionism dimensions (i.e., self-oriented and socially prescribed perfectionism) in hearing and deaf athletes. In study one (Chapter Two), a cross-sectional approach revealed the similarities in the relationships between self-oriented and socially prescribed perfectionism and the broader array of burning out symptoms in deaf and hearing athletes. Study two (Chapter Three) adopted a longitudinal design, and examined whether self-oriented and socially prescribed perfectionism predicted changes in enjoyment and subjective vitality over four months, as well as whether changes in exhaustion over the same time period mediated the hypothesised relationships. A further purpose of study two was to examine whether the hypothesised relationships were invariant across hearing and deaf athletes. Study three (Chapter Four) adopted qualitative semi-structured interviews to gain a deeper understanding of high self-oriented and socially prescribed perfectionism in deaf and hearing athletes using a self-regulation framework. The majority of the findings suggest

that self-oriented and socially prescribed perfectionism function in a similar manner across deaf and hearing athletes. It is hoped that the findings presented in this thesis may inform future research in deaf athletes to help protect this growing population from the perils of perfectionism.

ACKNOWLEDGEMENTS

Completing this PhD thesis has been most challenging for me; it has been exciting and adventurous journey, during which I have gained valuable knowledge and research skills. This PhD thesis would not have been possible without the never-ending support and guidance from many people whom I owe a great deal of thanks. Without them, I could not have achieved my goals and overcome all the obstacles during the research process.

First and foremost, I would like to express my deepest gratitude to my supervisory team for giving me the valuable opportunity to pursue my PhD at the University of Birmingham, UK. To my first supervisor, Dr Paul Appleton, thanks for always being readily available to provide your expert advice throughout the process of my research and for your valuable time and effort in giving me constructive feedback on my papers, conference abstracts, and presentations, which enabled me to think, to try, and to learn independently. To my co-second supervisors, Professor Joan Duda and Dr Jennifer Cumming, thank you for kindly offering your valuable input on my work as always and for inviting me to join in the special seminars and social events, which allowed me to broaden my vision and to keep abreast of the latest research from other academics in the field. It has been a real pleasure to work with you all.

I would also like to offer my heartfelt thanks to my final year undergraduate dissertation project students, Tom Hocking, Laura Studdy, Olivia Tenberg, and Laura Wilson for your willingness and enthusiasm in assisting me with the participant recruitment and data collection, in particular for the first and second studies. It has been of enormous help. This thesis could not have been done without all the

participants who kindly agreed to take part in my research projects – a huge thank you for your participation.

To my disability advisor, Natalya, thanks for always ensuring that I received adequate and appropriate support whenever needed. To my support workers, Carrie, Gill, Janet, and Samantha, thank you for your availability in providing your professional services (include proofreading, note-taking, transcribing, and British Sign Language interpreting) to me, which I found extremely helpful.

To the Sportex-R technician, Rob Wheeler, thanks for fixing the problems with my office computer and laptop, which helped to ensure efficiency in running the complex data analysis.

To all my lovely friends, flatmates, Sportex-R officemates, and members of the Sport and Exercise Psychology Journal Club, thank you for your encouragement and laughter and for sharing the cakes, chocolates, biscuits, cheeses, wine, tea, and coffee with me so generously. Your friendship made my PhD life a lot easier. I am truly grateful to know such brilliant people – academically, culturally, and socially. Though I cannot list all the names here, you are always on my mind.

I am eternally indebted to my mum and dad. Thanks for the understanding and tremendous support (both financially and personally) you have given me throughout my PhD journey. You have both always been there for me, encouraging me to reach my potential, advising me to focus on my study as first priority, and sending me numerous parcels all the way to Birmingham, UK. Without your nurturing since I was a child, I would not be where I am today. Thank you again. Finally, to my brother, Marco, thank you for coming to visit me twice, for making me laugh, and for playing table tennis with me during my short vacation. All of which helped to keep me level-headed. I am

truly blessed to have such an amazing family. Having the unique opportunity to have my family visit me in the UK over summer 2013 is something I will cherish forever. Last but by no means least, this PhD thesis is just the beginning of a new chapter in my life...

For the endless love, support, encouragement, and sacrifices,
I would like to dedicate this thesis to my mother, Josephine, and father, Raymond.

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LIST OF PAPERS

The present thesis is comprised of the following three papers. Study design, data collection, data analysis, and writing were conducted by Mimi Ho. Dr Paul Appleton, Professor Joan Duda, and Dr Jennifer Cumming advised on study design, statistical analysis, and papers editing.

1. **Ho, M. S. H.**, Appleton, P. R., Cumming, J., & Duda, J. L. (2015). Examining the relationship between perfectionism dimensions and burning out symptoms in deaf and hearing athletes. *Journal of Clinical Sport Psychology*, 9, 156–172.
2. **Ho, M. S. H.**, Appleton, P. R., Cumming, J., & Duda, J. L. (under review). Examining the longitudinal relationship between perfectionism dimensions and psychological well-being indicators in hearing and deaf athletes: The mediating influence of exhaustion.
3. **Ho, M. S. H.**, Appleton, P. R., Cumming, J., & Duda, J. L. (in preparation). A Qualitative Investigation of High Self-Oriented and Socially Prescribed Perfectionism in Hearing and Deaf Athletes Grounded in Self-Regulation Strategies.

LIST OF CONFERENCE PRESENTATIONS

During the period of PhD study within the School of Sport, Exercise and Rehabilitation Sciences at the University of Birmingham, the following conference abstracts were accepted for presentation.

1. **Ho. M. S. H.**, Appleton, P. R., Cumming, J., & Duda, J. L. (2014). *The mediating role of self-regulation strategies in the relationships between perfectionism dimensions and psychological well-being and ill-being in hearing and deaf Athletes: A longitudinal approach*. Association for Applied Sport Psychology Annual Conference, Las Vegas, USA, October 2014.
2. **Ho. M. S. H.**, Appleton, P. R., Cumming, J., & Duda, J. L. (2014). *Understanding the effects of perfectionism in athletes with and without hearing impairments: A qualitative approach grounded in self-regulation strategies*. Association for Applied Sport Psychology Annual Conference, Las Vegas, USA, October 2014.
3. **Ho. M. S. H.**, Appleton, P. R., Duda, J. L., & Cumming, J. (2013). *Perfectionism sub-beliefs and psychological well-being and ill-being in athletes with and without hearing impairments*. European College of Sport Science Congress, Barcelona, Spain, June 2013.
4. **Ho, M. S. H.**, Appleton, P. R., Cumming, J., & Duda, J. L. (2011). *The moderating effect of the coach-created motivational climate in the relationship between perfectionism and burnout in deaf and hearing athletes*. British Association of Sport and Exercise Sciences Annual Student Conference, Chester, UK, March 2011.

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General Introduction

Theoretical Concept of Perfectionism

Perfectionism is arguably inherent in everyday life and is present in many domains (Stoeber & Stoeber, 2009), including education, work, clinical settings, and sport and exercise (e.g., Dalbert & Stoeber, 2006; Hall, Hill, & Appleton, 2012; Shafran & Mansell, 2001; Stoeber, Davis, & Townley, 2013). Interest in perfectionism is reflected in case studies commonly cited in the media of athletes who are labelled as perfectionists or perfectionistic. Within these media reports, athletes describe the consequences of their perfectionism and their ongoing attempts to repeat (and supersede) triumphant performances. For example, the American, eight-time Beijing Olympics gold medallist Michael Phelps, recorded the highest number of gold medals in a single Olympic Games, but highlighted how perfectionism negatively impacted him. After his exploits in Beijing, he stopped training for a while, saying to the press, “to accomplish what I did in Beijing required so much, mentally and physically” (Unger, 2012); “I do not want to do this anymore” (CBS Interactive Inc, 2012). Even after his return to training and competition, the expectations from the fans were that he could repeat the feat in the London Olympic Games. Shortly after his first race in the 400-meter individual medley, he told the reporters that “it was a crappy race”, because it was the first time that he failed to win a medal in an Olympic event since 2000 (Grossberg, 2012).

Another example of perfectionism within the sport context is evident in the case of Victoria Pendleton, the former British cyclist, who was a self-proclaimed perfectionist and conceded that she would never be truly satisfied with her achievements, regardless of how impressive or implausible to other people:

“I am terrible. I beat myself up the whole time because I am striving for something I will basically never achieve. I portray this image of confidence, of arrogance, and it is not really me. I am never satisfied and I am never content.”

(McRae, 2008)

The aforementioned case studies from sport are interesting because, on the one hand, they suggest that perfectionists are individuals who achieve excellence and world-class performances, and triumph at national and international championships. On the other hand, the anecdotal evidence from the aforementioned cases studies suggests that perfectionism is also associated with a constellation of debilitating cognitions and affect that may come at some cost to the individual’s health. Thus, while a perfect performance is highly desirable in sport (and other domains), perfectionism seems to leave the athlete vulnerable to poor health as they constantly engage in critical evaluations and have a phobia of making mistakes (Flett & Hewitt, 2005; Hall, 2016; Szymanski, 2011).

The case studies discussed previously suggest that perfectionism is clearly a complex concept to understand. This point is further reinforced by the empirical research literature inside and outside of sport, with a plethora of so-called perfectionism definitions (and associated constructs) being proposed by different groups of researchers. Interestingly, although there are multiple definitions of perfectionism cited in the literature (see Flett & Hewitt, 2002), on close inspection most researchers agree that perfectionism involves striving for (often unrealistically) high standards, some form of criticism, and the belief that one’s self-worth is tied to achieving perfection. Moreover, what is evident within the definitions of perfectionism is that certain facets of the construct, such as striving for high standards, may function to energise an athlete’s

motivation and enhance performance (Stoeber, 2011). However, as argued by Hall and colleagues (Hall, 2006; Hall et al., 2012) and Flett and Hewitt (2005), when perfectionism is considered as one intact construct characterised by all of the aforementioned characteristics, it will likely eventually undermine athletes' health.

The ever-growing list of variables that have been labelled perfectionism (and the associated attempts at measurement) has ultimately resulted in multiple interpretations of the construct and its implications for athletes' health and well-being. Some authors (e.g., Chen, Kee, & Tsai, 2009; Stoeber, 2011) consider perfectionism to have a dual nature that can lead to positive and negative outcomes for athletes whilst other groups of researchers (e.g., Flett & Hewitt, 2005; Hall, 2006; Hill & Curran, 2016; Madigan, Stoeber, Forsdyke, Dayson, & Passfield, 2017) consider that perfectionism is wholly undesirable for athletes. The following section presents a systematic overview of some of the main interpretations, models, and measurement approaches that currently dominate the perfectionism in sport literature and concludes, as did Hall et al. (2012), that perfectionism is best considered as a personality construct that should not be promoted in athletes.

Early Definitions of Perfectionism

Early definitions of perfectionism tended to be unidimensional, and considered perfectionism to be maladaptive. For example, one of the earliest views stems from the cognitive-behavioural therapist, Albert Ellis (1958), who defined perfectionism as:

The idea that one should be thoroughly competent, adequate, intelligent, and achieving in all possible respects – instead of the idea that one should do rather than desperately try to do well and that one should accept oneself as an imperfect creature, who has general human limitations and specific fallibilities. (p. 41)

Following on from Ellis (1958), related definitions of perfectionism were proposed by clinical researchers in the 1960s. Missildine (1963), for example, considered that perfectionism develops in response to contingent parental approval. As a result, the offspring only feels worthy when achieving perfection in everything they do, whilst anything less than perfect exposes the individual to feelings of worthlessness. Likewise, Hollender (1965) referenced the “overthinking” aspect of professionalism and the constant internal battle perfectionists have with themselves. He described a perfectionist as being “a person who sets rigid, unrealistically high standards and engages in all-or-none thinking when evaluating his or her perfectionism” (as cited in Campbell & Di Paula, 2002, p. 182).

More recently, Burns (1980) categorised perfectionists as “those whose standards are high beyond reach or reason, people who strive compulsively and unremittingly towards impossible goals and who measure their own worth entirely in terms of productivity and accomplishment” (p. 34). Likewise, Ellis (2002) identified the role of irrational beliefs in perfectionism, proposing that perfectionists can be characterised by the beliefs that “I absolutely must perform well and indeed must perform perfectly well” (p. 222). Ellis continued that perfectionist demand high standards, regardless of the inevitable costs such as facing stressful situations, sustained/prolonged difficulties, and constant dissatisfaction with their life and achievements.

The initial theorising on perfectionism revealed the construct as a complex, multifaceted personality disposition with a number of key features. Such features include striving towards perfect standards; critical evaluative tendencies; a concern for mistakes and failure and the implications for feelings of self-worth; and concomitant poor self-esteem when high personal standards remain unmet. While many of these

features (in isolation or combination) suggest perfectionism will lead to negative outcomes, the inclusion of striving for perfect standards and the associated intense achievement striving in the early writing subsequently lead some authors to propose that this specific facet of perfectionism (and thus the perfectionism construct) is desirable. This is because striving for high standards is highly valued in many activities, especially in sport, and associated with intense achievement striving and prolonged effort needed for success. It could be argued that further impetus to the notion that perfectionism can take a positive (as well as a negative) form was provided by the writing of Hamachek (1978), who proposed an early multidimensional approach to perfectionism.

Hamachek's (1978) Multidimensional Approach to Perfectionism

Based on his consultancy work, Hamachek (1978) proposed two types of perfectionists: normal and neurotic. The latter perfectionist is someone who strives for unrealistic and often unattainable goals and is overly self-critical, and thus she/he engages in punitive evaluations of even small performance errors (Hamachek, 1978). Moreover, because mistakes are overgeneralised and lead to feelings of worthlessness (Hewitt & Flett, 1991), the neurotic perfectionist engages in an unhealthy form of intense achievement striving which is fuelled by a fear of failure and attempts to avoid further performance errors (Hall, 2006). Because this process is ongoing, neurotic perfectionist encounters many of the debilitating outcomes that early theorists (Ellis, 1958; Hollender, 1965; Missildine, 1963) proposed should be related to perfectionism.

In contrast, Hamachek (1978) described normal perfectionists as individuals who strive for high, yet realistic standards that do not compromise their self-esteem. That is, their self-standards are based on an evaluation of their strengths and limitations. In addition, the normal perfectionist employs a flexible approach when evaluating whether

they have achieved high standards, to the extent that failing to achieve perfection is deemed acceptable. This means that normal perfectionists are able to experience positive emotions, adaptive cognitive processes, and healthy achievement-related behaviours.

Hamachek's (1978) dual conceptualisation of perfectionism has gained popularity in the perfectionism literature (see sections below), but is not without its critics. In particular, a number of authors have argued that Hamachek incorrectly assigned the perfectionism label to normal perfectionists. There are two main arguments associated with the rejection of Hamachek's normal perfectionism construct. First, normal perfectionists are concerned with the demonstration of excellence rather than the pursuit of impossibly high performance standards that was central to the early definitions of perfectionism (e.g., Burns, 1980; Flett & Hewitt, 2006; Pacht, 1984). Moreover, unlike the early writing on perfectionism, the normal perfectionist's achievement striving towards excellence can be considered adaptive as they adjust their goals accordingly based on current performance levels and previous achievements (or failures) (Greenspon, 2000). In sum, the first criticism of Hamachek's normal perfectionism construct is that it is more aligned to healthy achievement striving and failures to capture the defining feature of perfectionism: namely, the pursuit of perfect standards.

The second argument against Hamachek's (1978) normal perfectionism concerns the construct failing to include a number of additional facets that were central to the original perfectionism definitions. In particular, critical evaluative tendencies and a contingent self-worth are generally considered as defining characteristics of perfectionism, but are not mentioned by Hamachek in his descriptions of normal perfectionism (Greenspon, 2000, 2008). Thus, because normal perfectionist strive for

excellence (rather than perfection) without engaging in a negative patterns of evaluative cognitions, as well separating feelings of self-worth from performance outcomes, Greenspon proposed that it may be more accurate to label these individuals as healthy achievement strivers. Hall (2006) elaborated further on this point, and suggested that given the conceptual similarities between normal perfectionism and adaptive motivation, it only serves to confuse researchers by referring to adaptive achievement striving using the term normal perfectionism.

In conclusion, the above arguments against Hamachek's (1978) normal perfectionism suggest the construct fails to capture the majority of the defining features of perfectionism and may be conceptually similar to other constructs (e.g., adaptive achievement striving). Assigning the perfectionism label to normal perfectionists therefore seems inaccurate and misleading. However, despite the arguments against it, normal perfectionism (and similar constructs) has received widespread attention in the psychology literature over the past 30 years. Research on normal (and neurotic) perfectionism has been guided by a number of conceptual models and associated measurement of perfectionism (e.g., Frost, Marten, Lahart, & Rosenblate's (1990) Multidimensional Perfectionism Scale (MPS)/Dunn, Causgrove Dunn, & Syrotuik's (2002) MPS; Stoeber & Otto's (2006) tripartite model; Gaudreau & Thompson's (2010) 2 x 2 model), which have become increasingly popular in sport psychology. A discussion of these approaches/models is offered in the next section followed by an overall critique.

Frost et al.'s (1990)/Dunn et al.'s (2002), Tripartite (Stoeber & Otto, 2006) and the 2 x 2 (Gaudreau & Thompson, 2010) Models of Perfectionism

Despite being used to investigate normal perfectionism, Frost and colleagues (Frost et al., 1990) originally conceptualised perfectionism in a manner consistent with Hamachek's (1978) neurotic perfectionism construct. Frost et al. proposed that perfectionism involves "high standards of performance *which are accompanied by tendencies for overly critical evaluations of one's own behaviour*" (p. 450, italics in original), and the debilitating outcomes often reported by perfectionists were the result from critical evaluative tendencies rather than setting of excessively high standards. Furthermore, they rejected the suggestion that perfectionism can be characterised by just high personal standards alone – an approach that would blur the divide between perfectionistic individuals from those who were highly successful. Within Frost et al.'s approach, it would therefore seem that perfectionism is considered to be a dysfunctional construct. So why, then, has Frost et al.'s conceptualisation contributed to research on normal perfectionism? An inspection of the subscales comprising Frost et al.'s and how they have been investigated in previous research helps answers this question.

Aligned with their definition of perfectionism, Frost and colleagues (1990) developed the Frost Multidimensional Perfectionism Scale (MPS-F) which includes 35 items and consists of six subscales. More recently, Dunn and colleagues (Dunn et al., 2002; Gotwals & Dunn, 2009) adapted Frost et al.'s conceptualisation of perfectionism and produced a sport-specific version (the Sport-Multidimensional Perfectionism Scale; Sport-Multidimensional Perfectionism Scale-2; S-MPS-2) of the MPS-F. Across the MPS and S-MPS-2, two subscales measure high personal standards (e.g., "I am very good at focusing my efforts on attaining a goal") and organisation ("I try to be an

organised person”) are considered to reflect the more healthy, adaptive facets of perfectionism. High personal standards reflects an individual’s tendency to set and subsequently strive towards lofty and, at times, unrealistic performance standards, while organisation reflects the perfectionist’s belief that a preference for order and neatness is important and can contribute to the attainment of one’s goals.

The remaining four subscales reflect the more debilitating facets of the perfectionism construct, including excessive concern over mistakes (e.g., “I should be upset if I make a mistake”), parental expectations (e.g., “My parents wanted me to be the best at everything”), and criticisms (e.g., “I never felt like I could meet my parents’ expectations”), and doubts about actions (e.g., “I usually have doubts about the simple everyday things I do”). Reflecting the role of coaches in the development of athlete’s perfectionism, the S-MPS-2 (Gotwals & Dunn, 2009) also includes a coach pressure subscale (e.g., “My coach expects excellence from me at all times; both in training and competition”). Concern over mistakes refers to an individual’s tendency to become preoccupied with the negative implications of performance errors. Parental expectations and criticism involve the belief that one’s parents are extremely demanding and react to imperfection in a punitive and controlling style, respectively. Doubts about actions, refers to an individual’s beliefs that the task is never accomplished to one’s satisfaction and doubts about one’s ability to achieve perfection (Frost et al., 1990). In the S-MPS-2, the coach pressure subscale captures an individual’s perception about high levels of performance established by the coaches and the critical evaluation from the coaches.

Research inside and outside of sport psychology has reported on the desirable correlates of high personal standards and organisation, and these two subscales of the

MPS-F/S-MPS are typically conceptualised as part of the normal perfectionism construct. Conversely, a positive relationship between the remaining subscales and negative consequences has emerged (see Hall, 2006; Hall et al., 2012 for a review), and thus it is generally accepted that these perfectionism dimensions reflect the more debilitating qualities of the construct. Importantly, the seemingly functional or dysfunctional nature of the different subscales has encouraged some researchers to conclude that, consistent with Hamachek's (1978) approach, perfectionism exists in both normal and neurotic forms. Scores on the high personal standards subscales and, to a lesser extent, organisation have been employed to represent a normal (also termed adaptive or healthy) perfectionism construct. On the other hand, concern over mistakes, doubts about actions, parental-based pressures and, in the case of sport participants, coach-based pressures are regularly considered as characteristics of a neurotic (also termed maladaptive or unhealthy) perfectionism construct.

Building upon the approach taken by Frost and colleagues (1990), Stoeber and his associates (2006) have embarked on a programme of research testing the tripartite model of perfectionism (see Figure 1.1). The tripartite model of perfectionism was developed in response to Stoeber and Otto's (2006) review of previous research that had taken either a dimensional approach or a group-based approach to measuring perfectionism. This review resulted in a dimensional model comprising healthy and unhealthy facets of perfectionism. The healthy facet, labelled perfectionistic striving, reflected subscales concerned with high personal standards. The unhealthy dimension, labelled perfectionistic concerns, reflected negative evaluative tendencies evident in previous measures of perfectionism.

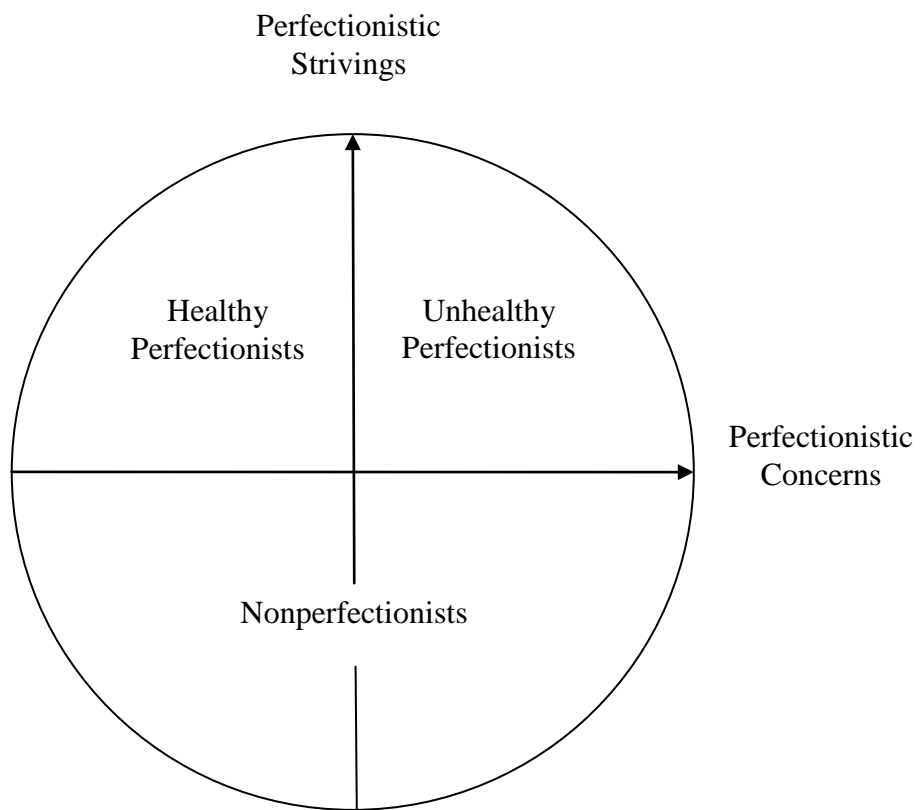


Figure 1.1. Common conceptual framework combining both dimensional and group-based conceptions of perfectionism (Stoeber & Otto, 2006, p. 21).

Stoeber and Otto (2006) proposed that individuals scoring high in perfectionistic striving and low in perfectionistic concerns were conceptually similar to Hamachek's (1978) normal perfectionism. In contrast, high scores in perfectionistic striving and concerns in the tripartite model align to Hamachek's neurotic perfectionism. Finally, Stoeber and Otto also acknowledge that individuals can score low on perfectionistic striving and concerns, which was labelled non-perfectionism. Based on the tripartite model, Stoeber, Otto, and Stoll (2006) developed the Multidimensional Inventory of Perfectionism in Sport (MIPS) which includes a subscale to capture perfectionistic striving and a second subscale (labelled negative reactions to imperfection) to measure perfectionistic concerns.

Since the publication of tripartite model (and associated MIPS), research has generally confirmed that perfectionistic striving is associated with a range of positive outcomes, whereas perfectionistic concerns (including negative reactions to imperfection) is associated with negative outcomes (see Gotwals, 2016; Stoeber, 2011 for a review). Likewise, research that has taken a group-based approach to capturing perfectionism has revealed that athletes grouped as normal or healthy perfectionists (via high scores on the perfectionistic striving dimension and lower scores on the perfectionistic concerns dimension) experience higher scores on positive outcomes (and lower scores on negative outcomes) compared to athletes grouped as neurotic or unhealthy perfectionists (via high scores on the perfectionistic striving and concerns dimensions). Based on these findings, it is clear that Stoeber and Otto's (2006) model and measurement of perfectionistic has contributed to the investigation of normal (or healthy) perfectionism in athletes.

Finally, Gaudreau and Thompson (2010) extended the tripartite model via their 2 x 2 model (see Figure 1.2). Gaudreau and Thompson suggested that normal and neurotic perfectionism exists in varying amounts in individuals and that within-person combinations of key perfectionism dimensions (captured within higher-order perfectionistic striving and evaluative concerns dimensions) should constitute the meaningful unit of analysis when trying to understand perfectionism. Within the 2 x 2 model, there are four combinations or subtypes of perfectionism: non-perfectionism (low on personal standards and evaluative concerns) which characterises individuals who experience neither social pressure nor a personal orientation towards setting and striving for perfection. The second subtype, pure personal striving standards (high on personal standards and low on evaluative concerns) characterises individuals who strive

for self-set perfect standards. This subtype is similar to healthy perfectionism from the tripartite model and Hamachek’s (1978) normal perfectionism. The third subtype is mixed perfectionism (high on personal standards and evaluative concerns), which reflects individuals who perceive pressure from others to achieve perfection and personally adhere to these standards. As a result, this subtype is a partially internalised form of perfectionism, because external contingencies operate with personal standards (Hill, 2014). Conceptually, this subtype is similar to unhealthy perfectionism from the tripartite model and Hamachek’s neurotic perfectionism. The 2 x 2 model extends the tripartite framework via a fourth subtype: pure evaluative concerns perfectionism (low on personal standards and high on evaluative concerns). This final subtype characterises individuals who strive for externally derived standards of perfection, but these standards are not internalised. As a result, this type of perfectionism is considered to be externally regulated (Gaudreau & Thompson, 2010).

Evaluative concerns perfectionism

		Low	High
<u>Personal standards perfectionism</u>	Low	Non-perfectionism (Quadrant I)	Pure evaluative concerns perfectionism (Quadrant III)
	High	Pure personal standards perfectionism (Quadrant II)	Mixed profile of perfectionism (Quadrant IV)

Figure 1.2. The 2 x 2 model of perfectionism proposed by Gaudreau and Thompson (2010, p. 533).

The 2 x 2 model hypothesises that each subtype will be associated with better or worse comparative outcomes. Pure personal standards perfectionism is hypothesised to be associated with better, worse, or is no different from non-perfectionism (hypotheses 1a, 1b, and 1c). Hypotheses 2 and 3 state that pure evaluative concerns perfectionism will be associated with worse outcomes than (2) non-perfectionism and (3) mixed perfectionism. Hypothesis 3 is unique to the 2 x 2 model (compared to other models of perfectionism) and assumes that because pure evaluative concerns is externally regulated by contingencies of self-worth, it should be associated with greater maladjustment (and less adjustment) than mixed perfectionism, which is a partially internalised form of perfectionism. One interpretation of this hypothesis is that the seemingly positive effects of personal standards perfectionism attenuates the unhealthy effects of evaluative concerns perfectionism, resulting in the mixed perfectionism subtype being less debilitating compared to the pure evaluative concerns subtype. Finally, hypothesis 4 proposes that pure perfectionistic striving perfectionism will be associated with better outcomes compared to mixed perfectionism.

In summarising the research from nine studies in sport and dance that have tested the 2 x 2 model, Hill and Madigan (2017) reported that hypotheses 1a, 2, 3, and 4 had been supported by the majority of studies. In particular, these hypotheses were supported when studies included measures of adjustment (e.g., positive affect, goal progress, challenge appraisal, emotion regulation, and physical self-worth). However, when studies included measures of maladjustment (e.g., negative affect, burnout), support had also been found for hypothesis 1c (no difference between pure perfectionistic striving perfectionism and non-perfectionism) and hypothesis 3 had been rejected (see Hill, 2014). That is, there is evidence in some studies to suggest that

mixed perfectionism is associated with maladjustment to a similar extent as pure evaluative concerns perfectionism. Therefore, the suggestion offered above that perfectionistic striving attenuates the effects of evaluative concerns, thus allowing individuals high in mixed perfectionism to experience lower maladjustment (compared to individuals scoring high in evaluative concerns), has not received consistent support in previous studies. In sum, although some studies (e.g., Crocker, Gaudreau, Mosewich, & Kljajic, 2014) fail to offer support for the hypotheses of the 2 x 2 model, this model also recognises a healthy form of perfectionism (via the pure perfectionistic striving subtype). Thus, it could be argued that the 2 x 2 model has further reinforced the notion that a normal form of perfectionism exists and leads to desirable outcomes in sport.

Critiquing Frost et al.'s (1990), Dunn et al.'s (2002), and Gaudreau and Thompson's (2010) Models

The conceptual models discussed in the previous section have undoubtedly provided a platform for the large number of studies conducted on perfectionism in sport over the past 15 years. However, as hinted at in the above section on Hamachek's definitions of normal and neurotic perfectionism, the models are not without criticism. To reinforce the central point made earlier, some authors argue that normal perfectionism lacks many of the defining characteristics associated with perfectionism, and is actually more similar to adaptive achievement striving (Flett & Hewitt, 2005; Hall, 2006; Hall et al., 2012). In their chapter on perfectionism in sport, Hall et al. (2012) provided an overview of the criticisms aimed at models that have included a normal perfectionism construct, centred on three major points: the problematic nature of disaggregating subscales from one another when employing multidimensional measures of perfectionism; limitations associated with the higher-order dimensions that emerge

from factor analyses of multidimensional perfectionism scales; and examining the correlates of normal perfectionism after controlling for the relationship with neurotic perfectionism (or vice-versa) via partial correlations.

Regarding disaggregating the subscales from one another, this involves researchers using a multidimensional perfectionism scale and examining the correlates of perfectionistic striving dimensions independently from evaluative concerns dimensions. As noted above, when this disaggregation approach is employed, researchers generally report that perfectionistic striving dimensions are positively associated to a host of adaptive outcomes/negatively correlated with maladaptive outcomes. Hall and colleagues (2012) argued that, while disaggregating the subscales is convenient approach to highlighting the positive nature of normal perfectionism dimensions, it is counterintuitive given that perfectionism is best understood as a broad multidimensional construct. Moreover, because individual subscales (or dimensions of perfectionism) do not capture the broad range of characteristics that define perfectionism, it is methodological flawed to assign them the perfectionism label. With reference to the MPS-F and the S-MPS-2, the suggestion that high personal standards and organisation can therefore be used as indicators of normal perfectionism is problematic because it runs contrary to Frost et al.'s (1990) original statement that these features are not the central feature of perfectionism. Rather, Frost et al. proposed that to truly understand the effects of perfectionism, high personal standards must be considered in conjunction with concern over mistakes which they considered the defining fundamental quality of perfectionism (Hall et al., 2012). More recently, Greenspon (2008) extended Frost et al.'s statement by suggesting that perfectionism involved an intense achievement striving towards high standards *that is associated with*

critical evaluative tendencies, a fear of failure, and a contingent self-worth. In contrast, when the pursuit of high standards is considered in isolation from negative patterns of cognitive (such as concern over mistakes), Greenspon (2000) argued a researcher is examining a striving for excellence construct rather than perfectionism. Hall et al. concluded by rejecting the disaggregation approach, stating that it fails to allow the researcher to evaluate the complex multidimensional nature of perfectionism and leads to the mislabelling of individuals as a perfectionist based on a high score on any one (but not all) perfectionism dimensions.

Hall et al.'s (2012) second criticism of normal perfectionism concerned the use of factor analyses where subscales from multidimensional perfectionism scales load together on a higher-order normal (e.g., high personal standards) or neurotic (e.g., evaluative concerns) perfectionism factors. A number of studies outside of sport have conducted factor analyses on various multidimensional perfectionism scales, and more recently Dunn et al. (2016) conducted an exploratory factor analyses on the subscales of the S-MPS-2. Dunn et al.'s analysis revealed two higher-order factors (labelled perfectionistic striving and perfectionistic concerns) in five samples of athletes. In addition, in a separate sample of athletes who completed the S-MPS-2 and MIPS, a confirmatory factor analyses revealed an acceptable fit for the two higher-order factors models. High personal standards and organisation from the S-MPS-2 and the perfectionistic striving dimension from the MIPS loaded onto the perfectionistic striving higher-order dimension, and the remaining subscales from both scales loaded significantly onto the perfectionistic concerns higher-order dimension. Building upon aforementioned factor analyses studies, a number of studies (e.g., Madigan, Stoeber, & Passfield, 2016, 2017a, 2017b) in sport have examined the two higher-order factors and

have generally found evidence that the perfectionistic striving higher-order dimension is positively associated with adaptive correlates.

Cluster analysis techniques have also been adopted in previous sport research to determine whether athletes can be grouped based on their scores on subscales that reflect the two higher-order dimensions. Support for the two higher-order perfectionism dimensions is forthcoming when athletes in one group have higher scores on normal perfectionism subscales (e.g., high personal standards, organisation, perfectionistic striving) and lower scores on neurotic perfectionism subscales (e.g., concern of mistakes, doubts about actions, perceived parental and coach pressures, negative reactions to imperfection) compared to a second group (whose profile includes higher scores on the neurotic perfectionism subscales). Stoeber and Otto (2006) found that 12 out of 20 studies that had adopted cluster analysis techniques provided evidence of two groups that differed on their perfectionism scores and could subsequently be labelled according to the two higher-order factors. Importantly, these studies also confirmed that people in the perfectionistic striving cluster reported more positive outcomes than did those in the perfectionistic concerns cluster. In sport and dance, Hill and Madigan (2017) revealed that three out of nine studies provided support for the expected two groups, with the neurotic perfectionism/perfectionistic concerns group reporting higher scores on maladjustment than the normal perfectionism/perfectionistic striving group. The other six studies failed to provide support for the two groups; rather, these studies identified alternative group structures that included additional groups (i.e., beyond groups labelled as high in normal perfectionism or perfectionistic striving and high in neurotic perfectionism or perfectionistic concerns) or groups with varying degrees of perfectionism (rather than different types of perfectionism).

Although some support has been found for the two higher-order perfectionism dimensions that emerged from factor analyses studies, this support has not been consistent. Moreover, Hall et al. (2012) raised concerns about relying on factor analyses techniques to define perfectionism. Consistent with their critique of the disaggregation approach, Hall et al. argued that core elements that define the broad perfectionism construct are not captured by either higher-order dimension. Hall et al.'s main argument was that it is only when athletes score high on both higher-order dimensions can we accurately assign the label "perfectionistic" to this particular cluster or group of athletes. For example, it is accurate to assign the perfectionism label to unhealthy perfectionists (or unhealthy perfectionism) within the tripartite model or mixed perfectionists (or mixed perfectionism) from the 2 x 2 model, given they reflect high scores on the higher-order dimensions (or subscales reflecting the higher-order dimensions). In contrast, healthy perfectionism (from the tripartite model), and pure perfectionistic striving and pure evaluative concerns (from the 2 x 2 model) are conceptualised to reflect high scores on just one of the higher-order perfectionism dimensions (and lower scores on the second higher-order dimension). Therefore, it may be inaccurate to assign the perfectionism label to these particular constructs.

The final criticism offered by Hall et al. (2012) concerns the reliance on partial correlations to test normal and neurotic perfectionism dimensions. Over the past 10 years, partial correlations have proven popular when studying perfectionism in sport. Partialling allows a researcher to control the overlap between two perfectionism dimensions, and the resulting correlations with outcome variables is considered to represent a "pure" relationship with either normal or neurotic perfectionism (i.e., the relationship between normal perfectionism and the outcomes independent of the effects

of neurotic perfectionism). Generally, when using partial correlations, the relationship between normal perfectionism dimensions and positive outcomes becomes stronger and/or positive (see Hill & Curran, 2016, for an example applied to the perfectionism-burnout relationship). However, Hall et al. argued that partial correlations result in an artificial distinction between two core features of perfectionism that ultimately prevents the researcher from making conclusions about perfectionism. More specifically, Hall and colleagues propose that normal and neurotic perfectionism dimensions are typically correlated and thus share some commonalities.

Hill (2014, 2017) elaborated on this commonalities between the two perfectionism dimensions by suggesting that early theoretical writing on perfectionistic striving and high personal standards (which are typically central features of normal perfectionism) make the link to self-criticism and feelings of conditional self-worth, characteristics that are also evident within the conceptualisation (and measurement) of neurotic perfectionism. For example, with reference to conditional self-worth, Frost and colleagues (Frost et al., 1990) proposed that high personal standards are central to the definition of perfectionism as they allow the individual to determine feelings about themselves (DiBartolo, Frost, Chang, LaSota, & Grills, 2004). Likewise, Hewitt and Flett (1991) suggested that self-criticism is central to all forms of perfectionism. The common features of normal and neurotic perfectionism provides one explanation, accordingly to Hill (2017), as to why they are typically positively correlated in research (see Hill & Curran, 2016). Therefore, the common features of normal and neurotic perfectionism are core to what perfectionism is (Hill, 2017). Thus, to remove these core features via partial correlations results in a “residual” form of normal perfectionism (or

neurotic perfectionism) that is conceptually different from the original construct and thus further blurs the conceptualisation of normal, neurotic, and overall perfectionism.

Hall and his colleagues (2012) critique of the Frost et al. (1990)/Dunn et al. (2002) approach, and tripartite and 2 x 2 models has important implications for the study of perfectionism in sport, including the empirical studies presented in this thesis. In particular, this thesis will not study the “normal” perfectionism dimension (e.g., healthy perfectionism from the tripartite model) or subtype (e.g., pure perfectionistic striving) given they fail to capture many of the defining features of the broad perfectionism dimension and is more aligned to adaptive achievement striving (Hall, 2006). Likewise, although a number of negative perfectionism dimensions or subtypes (e.g., pure evaluative concerns) proposed by the aforementioned approaches or models represent high scores on a key characteristic of perfectionism, they too fail to capture to broad array of features that are central to the definition of perfectionism. For example, in the case of pure evaluative concerns perfectionism, this subtype is represented by low score on perfectionistic striving/high personal standards which is an inherent part of being a perfectionistic. Such negative perfectionism dimensions/subtypes will not be examined in this thesis.

In contrast, and consistent with the recommendations offered by Hall et al. (2012), the empirical studies presented in this study adopt a multidimensional approach to perfectionism with each dimension (or subtype) reflecting the core components of the broad construct. To do this, the work will be guided by Hewitt and Flett’s (1991) approach to perfectionism.

Hewitt and Flett's (1991, 2004) Multidimensional Approach to Perfectionism

Hewitt and Flett's (1991) multidimensional conceptualisation centres on three distinct perfectionism dimensions. Each dimension has an intra-individual or inter-individual focus and, importantly, captures the array of features associated with historical definitions of the perfectionism construct. As such, Hewitt and Flett's approach avoids the ambiguity evident in the models discussed in the previous section that placed emphasis on adaptive and maladaptive forms of perfectionism.

The first dimension proposed by Hewitt and Flett (1991) has an intra-personal focus and is labelled self-oriented perfectionism. Self-oriented perfectionism is defined as the belief that self-worth is contingent upon self-set perfectionistic standards, and characterises individuals who engage in self-criticism and self-blame following mistakes and errors (Hewitt & Flett, 1991). Socially prescribed perfectionism, an interpersonal dimension, is the belief that significant others hold unrealistically high standards for the individual and engage in critical evaluations of them (Hewitt & Flett, 1991). Socially prescribed perfectionists usually worry about whether people are satisfied with their performance because their self-worth is contingent upon receiving approval from significant others (Campbell & Di Paula, 2002). The third dimension, other-oriented perfectionism, which also has an interpersonal focus, involves the belief the others are only worthy of one's approval when perfection is achieved (by the significant others), coupled with a stringent and punitive evaluation of the other person's performance (Hewitt & Flett, 1991). Hewitt and Flett (1991) originally proposed that self-oriented perfectionism, socially prescribed perfectionism, and other-oriented perfectionism are debilitating, and at times dysfunctional, and ultimately undermine an individual's health.

In terms of previous research findings relating to other-oriented perfectionism, it was found that this perfectionism dimension was positively correlated with fear of failure (Flett, Blankstein, Hewitt, & Koledin, 1992) and anxiety disorders, stress, and paranoia (Hewitt & Flett, 2004) in clinical and students samples. Other-oriented perfectionism was also inversely associated with agreeableness and directly associated with conscientiousness in students (Hill, McIntire, & Bacharach, 1997; Stoeber, 2014a). In two studies with university students, Stoeber (2014a, 2014b) recently confirmed the implications for interpersonal relationships of other-oriented perfectionism. Multiple regression analyses revealed that other-oriented perfectionism was a positive predictor of narcissism, Machiavellianism, aggressive humour, uncaring traits, an individualistic orientation, and a negative predictor of nurturance, intimacy, and social development goal. In sport, there is little evidence regarding the effects of other-oriented perfectionism. A significant positive correlation was found between expectations directed at other athletes (one feature of other-oriented perfectionism) and anger (Stirling & Kerr, 2006), and Hill, Stoeber, Brown, and Appleton (2014) revealed that team-oriented perfectionism (other-oriented perfectionism towards team members) had a stronger positive relationship with team performance than self-oriented perfectionism and team-prescribed perfectionism (socially prescribed perfectionism from team members) in a sample of rowers. Although the latter findings suggest that other-oriented perfectionism may contribute to greater team performance in the short term, over time, this type of perfectionism should be debilitating for interpersonal functioning. This is because individuals scoring high in other-oriented perfectionism tend to express their dissatisfaction if others fail to live up to their expectations. This can foster rivalry, peer pressure, and hostility, which may lead to frustration and serious arguments (Flett

& Hewitt, 2002). Although other-oriented perfectionism is clearly interesting, this particular perfectionism dimension was not examined in the current thesis given it has implications for interpersonal relationships and team performance rather than having a direct impact upon athletes' health.

Consistent with Hewitt and Flett's (1991) original theorising, research has consistently demonstrated that socially prescribed perfectionism is wholly negative. Describing it holistically, Hewitt and Flett (2002) stated that socially prescribed perfectionism has a multitude of negative, maladaptive behaviours associated with it, and is consistently linked with anxiety, depression, and constant critical self-appraisal. Detrimental effects of this construct have been shown to include increase experiences of burnout (Stoeber & Childs, 2010), negative affect (Campbell & Di Paula, 2002; Stoeber & Childs, 2010), and a decrease in life satisfaction, self-esteem, and positive affect (Stoeber & Childs, 2010). In support of negative implications of socially prescribed perfectionism in sport, the findings from cross-sectional research reveal that socially prescribed perfectionism is associated with lower levels of self-esteem (Gotwals, Dunn, & Wayment, 2003), positive affect, subjective vitality, and life satisfaction (Gaudreau & Verner-Filion, 2012), and higher levels of burnout symptoms (Hill, Hall, Appleton, & Kozub, 2008; Hill, Hall, Appleton, & Murray, 2010).

The debilitating effects of socially prescribed perfectionism are unsurprising given individuals scoring high in this dimension experience external pressure to achieve a performance free of errors, and is further characterised by the belief that significant others withhold approval until they reach the required standards. As a result, the achievement striving of socially prescribed perfectionists is fuelled by the expectations of significant others, with failure being unacceptable (Sagar & Stoeber, 2009). This has

the effect that individuals scoring high in socially prescribed perfectionism tend to experience feelings of guilt, worthlessness, and hopelessness as a result of tying their self-worth so closely to externally-determined and unrealistic standards (Hall, 2006; Hewitt & Flett, 1991).

In contrast to the evidence concerning other-oriented and socially prescribed perfectionism, which has generally supported their debilitating nature, there is an ongoing debate in the literature regarding self-oriented perfectionism (see Flett & Hewitt, 2006). Although a number of authors (e.g., Flett & Hewitt, 2006; Hall, 2006; Hall et al., 2012) remain consistent with Hewitt and Flett's (1991) original conceptualisation of self-oriented perfectionism as a maladaptive perfectionism dimension, others have identified it as part of healthy, perfectionistic striving. The basis for the proposal that self-oriented perfectionism can be classified as healthy (or a feature of normal perfectionism) is found in a study by Frost, Heimberg, Holt, Mattaia, and Neubauer (1993). Frost and colleagues conducted an exploratory factor analysis (EFA) on Hewitt and Flett's 45-item Multidimensional Perfectionism Scale (which measures their three perfectionism dimensions) and the MPS-F. Consistent with the discussion in the previous section, two higher-order factors emerged from the EFA: perfectionistic striving and maladaptive evaluative concerns, with self-oriented perfectionism loading onto the former high-order factor. Follow-up analyses revealed that the perfectionistic striving higher-order dimension was positively associated with positive affect in a sample of college students. A number of subsequent studies (e.g., Bieling, Israeli, & Anthony, 2004; Blankstein & Dunkley, 2002; Cox, Enns, & Clara, 2002; Dunkley, Zuroff, & Blankstein, 2003; Slaney, Ashby, & Trippi, 1995) replicated Frost et al.'s findings, lending additional support for the seemingly adaptive nature of self-oriented

perfectionism. There is also evidence inside and outside of sport psychology that points towards the “healthy” nature of self-oriented perfectionism. For example, self-oriented perfectionism has been found to be positively correlated with conscientiousness and performance-related and decision-related subscales of the Action Control Scale (Kuhl, 1994) in undergraduates (Campbell & Di Paula, 2002), and in sport, self-oriented perfectionism was a significant positive predictor of positive affect, subjective vitality, and life satisfaction (Gaudreau & Verner-Filion, 2012) and negatively correlated with symptoms of burnout (Appleton, Hall, & Hill, 2009; Appleton & Hill, 2012; Hill et al., 2008).

Given this evidence, why do certain authors continue to conceptualise self-oriented perfectionism as debilitating for an individual’s health and well-being? There are at least two explanations. The first explanation can be found in findings reported by Campbell and Di Paula (2002), who identified two sub-beliefs underpinning self-oriented perfectionism (as well as two sub-beliefs underpinning socially prescribed perfectionism): “Importance of Being Perfect” and “Perfectionistic Striving”. According to Campbell and Di Paula, the importance of being perfect reflects a belief that perfection is highly desirable, and thus value is assigned to high achievement. However, this belief is also characterised by rigid achievement criterion where mistakes are unacceptable. Conversely, perfectionistic striving captures the belief that one should actively pursue high standards to achieve perfection. The behaviour associated with this belief will see the individual demonstrate a positive approach towards success (Campbell & Di Paula, 2002). Campbell and Di Paula showed that the perfectionistic striving belief was positively associated with a range of desirable outcomes, and the importance of being perfect belief with debilitating outcomes.

The limitation of Campbell and Di Paula's (2002) approach to identifying the sub-beliefs of self-oriented (and socially prescribed) perfectionism is that it is driven by a statistical analysis, and thus once again disaggregates key features of perfectionism. Hewitt and Flett (1991, 2004) purposely defined self-oriented perfectionism so that it captured both sub-beliefs (thus, reflecting the broad definition of perfectionism emphasised with the historical writing on perfectionism), and thus any investigation of self-oriented should consider the combined implications of sub-beliefs. When self-oriented perfectionism is considered as a broad construct (rather than separated into two sub-beliefs), Campbell and Di Paula proposed that the importance of being perfect belief will most likely attenuate the positive effects of the perfectionistic striving belief, and expose individuals scoring high in this perfectionism dimension to a host of debilitating outcomes as originally hypothesised by Hewitt and Flett.

A second explanation as to why self-oriented perfectionism will undermine an individual's health and well-being can be found in the vulnerability hypothesis. This vulnerability hypothesis proposes that self-oriented perfectionism will be involved in the onset of psychological problems when the individual experience an achievement-related stressor and/or negative life events (Flett, Hewitt, Endler, & Tassone, 1994; Hewitt & Flett, 1993, 2002; Hewitt, Flett, & Ediger, 1995). Hall (2006) proposed that under conditions of stress or goal blockage, individuals high in self-oriented perfectionism will engage in a form of overstriving towards perfection as a strategy to avoid failure. More specifically, Hall argued that self-oriented perfectionists can achieve high standards of performance because of the intense motivation that is inherent to this perfectionism dimensions, yet this motivation is ultimately underpinned by a fear of failure and the belief that even small performance mistakes will undermine feelings

of self-worth. Thus, it is unsurprising that when faced with goal blockage, stress, or potential performance difficulties, the self-oriented perfectionist will report maladaptive cognition, negative affect, and self-defeating behaviours (Hall, 2006).

In support of their vulnerability hypothesis, Hewitt and Flett's (1993) findings revealed that self-oriented perfectionism, when combined with self-related achievement hassles, predicted higher levels of depression in depressed individuals and psychiatric patients. In a follow-up study with young people, self-oriented perfectionism interacted with stress in the prediction of anxiety and depression (Hewitt, Caelian, Flett, Sherry, & Collins, 2002). With a sample of University students, Stoeber, Schneider, Hussain, and Matthews (2014) more recently found that self-oriented perfectionism predicted an increase in anxiety after repeated failure, but not after repeated successes, on a mental pairing task.

In sport, Hill, Hall, Duda, and Appleton (2011) employed an experimental research design in which student athletes scoring high(er) or low(er) in self-oriented perfectionism were compared on key outcome variables after experiencing two successive failures on a cycling task. Hill et al.'s (2011) findings provided support for the vulnerability hypothesis, as student athletes scoring higher in self-oriented perfectionism reported increases in threat and withdrawal of effort following the first failure compared to student athletes scoring lower in self-oriented perfectionism.

Overall, the evidence from inside and outside of sport suggests that individuals high in self-oriented perfectionism may be functioning in an adaptive manner. However, the true nature of this perfectionism dimension will be revealed in environments or situations that are evaluated as threatening to the attainment of perfection. This is especially likely in sporting contexts where, over the course of a competitive season,

there are multiple opportunities for athletes to experience difficulties and set-backs. Thus, in the current thesis, the conceptualisation of self-oriented perfectionism that will be adopted is consistent with Hewitt Flett's (1991) original work, and reflects a perfectionism dimension that will undermine the health and well-being of athletes when presented with certain threatening situations.

In conclusion, Hewitt and Flett's (1991) multidimensional approach to the conceptualisation of perfectionism emphasises the debilitating nature of three unique, albeit related, perfectionism dimensions. As such, their approach is closely aligned with the historical definitions of perfectionism that considered perfectionism to be an undesirable personality characteristic that undermines an individual's health. Moreover, unlike other approaches and models of perfectionism, Hewitt and Flett clearly distinguish their perfectionism dimensions from related constructs, such as adaptive achievement striving. In light of these reasons, this study will examine Hewitt and Flett's (1991) self-oriented and socially prescribed perfectionism dimensions.

Measuring Self-Oriented and Socially Prescribed Perfectionism in Sport

Much of the research (see Jowett, Mallinson, & Hill, 2016, for a review) conducted to date in sport that has investigated self-oriented and socially prescribed perfectionism has employed an adapted version of Hewitt and Flett's (1991) 45-item Multidimensional Perfectionism Scale (MPS-HF). Researchers in sport have adapted the MPS-HF by contextualising the instructions (e.g., "Listed below are a number of statements concerning personality characteristics in sport. Using the scale below, indicate the extent to which you agree or disagree with each statement by highlight the appropriate number") and the items capturing self-oriented perfectionism (e.g., "I must always be successful in sport" and socially prescribed perfectionism (e.g., "I feel that

people are too demanding of me in sport”) dimensions from the general (i.e., life in general) to the specific context (e.g., sport, training, and competition). There are a number of reasons why it is important to contextualise the MPS-HF to the sporting context when measuring self-oriented and socially prescribed perfectionism in athletes. Stoeber and Madigan (2016) proposed that perfectionists are unlikely to be perfectionistic in everything they do. Rather, it is more likely their perfectionistic tendencies are demonstrated (and thus, influence important processes and outcomes related to their health) in domains they are actively engaged and emotionally invested in, and which are intertwined with feelings of self-worth (e.g., Dunn, Gotwals, & Causgrove Dunn, 2005; McArdle, 2010).

Contextualised, multidimensional measures of perfectionism which are domain-specific are therefore necessary to understand how this personality trait impacts on people’s lives in activities such as sport (Stoeber & Madigan, 2016). In addition, contextualised measures also enable the researcher to capture the full extent of perfectionism in a given activity or context which, in turn, are better predictors of domain-specific processes and outcomes (Dunn et al., 2011; Stoeber & Yang, 2015). Hill (2016) also suggested that assessing personality characteristics in a manner that is anchored in a specific domain has received strong support from outside of sport psychology (e.g., Bing, Whanger, Davison, & VanHook, 2004; Hunthausen, Truxillo, Bauer, & Hammer, 2003; Lievens, De Corte, & Schollaert, 2008). Thus, it is likely that perfectionism can be measured effectively, and its effects observed at the general (i.e., in life), dispositional (i.e., in sport), contextual (i.e., in practice or competition), and situational (i.e., in the next match) level. Based on the arguments offered by Stoeber and Madigan and Hill, the adapted-to-sport MPS-HF was employed in the first

empirical study (see Chapter Two) in this thesis to examine the associations between self-oriented and socially prescribed perfectionism and key indicators of athletes' health and well-being. Doing so allowed a comparison between the reported and past findings that have also employed the MPS-HF in sport.

Although the MPS-HF has been extensively employed in the perfectionism literature, and the contextualised version used to examine perfectionism in sport, it is important to remain cognisant that the measure was originally developed by Hewitt and Flett (1991) with student and clinical samples. Thus, even after contextualising the measure, it is unclear with the MPS-HF's items are best suited, applicable, or readily interpretable to sport or, as Stoeber and Madigan (2016) emphasised, whether the adapted measure fully captures perfectionism applied to the sporting context (Hill, Appleton, & Mallinson, 2016). To address this critique of the adapted-to-sport MPS-HF, Hill and colleagues recently developed the Performance Perfectionism Scale for Sport (PPS-S). The PPS-S captures the three perfectionism dimensions originally identified by Hewitt and Flett but are contextualised to focus on athletic performance, rather than life generally or sport overall. This is because, according to Hill et al., performance is central to one's participation in sport and, for the perfectionistic athlete in particular, is an important facet of their life and feelings of self-worth.

Across three studies, Hill et al. (2016) reported on the development and initial psychometric properties of the PPS-S. In study one, items were developed and assessed by experts from the perfectionism literature, coaches, and by young athletes for their face validity and readability. The retained items were then subjected to exploratory factor analyses in study two across two independent samples of youth athletes. The analyses supported a 12-item, three-factor model which replicated the dimensions

proposed by Hewitt and Flett (1991), with each subscale demonstrating acceptable internal reliability scores. Finally, in study three, exploratory structural equation modeling supported the hypothesised factor structure of the PPS-S and associations between the dimensions and subscales from the S-MPS-2 provided initial content validity.

Given the argument regarding the importance of using a sport-specific measure to understand the implications of self-oriented and socially prescribed perfectionism for athletes, and the promising psychometric properties of the PPS-S, this scale was employed in studies two (Chapter Three) and three (Chapter Four) of the current thesis. In particular, the PPS-S was used to examine the relationships between self-oriented and socially prescribed perfectionism, exhaustion and indicators of athletes' health overtime in study two. In study three, athletes demonstrating high levels of self-oriented *and* socially prescribed perfectionism (and thus, conceptually similar to mixed perfectionism from the 2 x 2 model) on the PPS-S were interviewed to understand more about how this particular combination of perfectionism.

Examining Perfectionism in Deaf Athletes: Moving Beyond the Homogeneous

Clearly, there is a body of literature concerning the relationships between perfectionism, and more specifically self-oriented and socially prescribed perfectionism, and indicators of athletes' health. However, it is important to recognise that the majority of the research undertaken to date on self-oriented and socially prescribed perfectionism has been conducted with homogeneous samples of athletes. Typically, these samples comprise abled bodied athletes (i.e., do not have a disability). As a result, little is known about the effects of perfectionism, and the psychological mechanisms that may account for these effects (and whether they are similar or different compared to

hearing athletes), in disabled athletes. Although there are a diverse range of disabilities and disability classifications in sport, this particular thesis examined perfectionism in deaf athletes. The decision to focus on deaf athletes was partially informed by the author's own experiences as a deaf individual, and former athlete at the Deaflympic Games, with an interest in understanding more about how personality traits such as perfectionism impact the sporting experience of athletes with a hearing impairment.

Hearing impairment is a common condition with no age limits, with at least 16% of the UK adult population suffering significant hearing loss that impacts on their everyday lives (Action on Hearing Loss, n.d.). The term "deafness" is defined as a degree of hearing loss whereby the individual cannot fully understand spoken language through hearing, even when sound is amplified (Feldman, Salinas, & Tang, 2012). There are three different categories of hearing loss: 21–40 decibels (dB) is identified as mild, 41–70 dB is regarded as moderate, 71–90 dB is considered severe, and over 91 dB is classified as profound deafness (National Health Service, n.d.). Combining all degrees of hearing loss together, the affected individuals are commonly referred to as hearing impaired (Stewart, 1986).

People with hearing impairment can use different communication skills such as sign language, lip-reading, and writing, to overcome their communication barriers. While there are different communication skills and methods to cope with deafness, Carr (2009) reported that some form of hearing loss went undetected in around 840 babies born in the UK in a year because most of the hearing loss was not hereditary. Undetected hearing loss may result in prolonged developmental delay and further deterioration of hearing. This lack of detection is a significant problem because it puts individuals' psychological, emotional, social, and educational progress at risk, which

may ultimately adversely affect their overall health (Backenroth-Ohsako, Wennberg, & Klinteberg, 2003; Beresford, Clarke, & Greco, 2010; Goodman & Hopper, 1992). In addition, there is also evidence to suggest that hearing loss can be associated with psychosocial disadvantages that make it even more difficult for individuals to deal with obstacles in their daily lives (e.g., Danermark & Gellerstedt, 2004; Noble, 2009).

As with other populations, participating in sport has become an important activity for the promotion of deaf individuals' health. Sport is an ideal activity for deaf individuals because it has no limitations in terms of physical condition, except the technical aspects of the games such as the use of lights to replace the auditory cues. Deaf individuals who participate in sport with their hearing counterparts also experience opportunity for additional interpersonal interactions and social well-being (Stewart, 1986; Stewart, Robinson, & McCarthy, 1991). At the competitive level, athletes must have a minimum loss of 55 dB in both ears to be eligible. Moreover, to ensure that the principles of equity and fair play are fully adhered to in the sport, deaf athletes are prohibited to wear hearing aids and/or cochlear implants during competitions, as this helps to minimise the advantages for those persons who wear them over those who do not (Stewart, 1986).

It is estimated that 9 million athletes with hearing impaired participate in sports from recreational to international level (Disability Sport, 2014; UK Deaf Sport, 2017). Despite the large number of deaf people participating in sport, there is still a lack of research evidence in sport psychology regarding deaf athletes, even though Clark and Sach (1991) and Hanrahan (1998) offered practical considerations for sport psychologists working with athletes with disabilities, including the hearing impaired. Thus, the research undertaken in the current thesis included deaf (as well as hearing)

athletes in order for researchers, coaches, and sport psychology practitioners to begin to understand the differences or similarities between the two groups regarding the implications of self-oriented and socially perfectionism for health and well-being.

Although there is a lack of any research inside or outside of sport psychology regarding perfectionism in deaf athletes, there seems little theoretical reason to expect that the associations between self-oriented and socially prescribed perfectionism and indicators of health and well-being in deaf athletes will be different to the relationships emerging in hearing athletes. Indirect evidence for the negative influence of perfectionism in understanding deaf individuals' health is available in a study conducted by Luckner and Muir (2001). Using a qualitative methodology with 20 deaf students who were receiving special educational support (e.g., support from deaf education teachers, education interpreters, and professional note-takers), Luckner and Muir reported that students demonstrated a relentless pursuit towards their goals in their efforts to succeed. For example, when reflecting the students' achievement striving, the approach of one student was to "Keep trying and trying harder and harder. Do not give up on anything. Just keep going" (Luckner & Muir, 2001, p. 438). The students' parents and teachers also recognised the intense achievement striving of their children and the children's preoccupation with achieving high standards, attributing it to the children's desire "to prove that deaf people are no different and just as intelligent as hearing people" (Luckner & Muir, 2001, p. 439) and the children's perception that success in education is dependent upon achieving high performance standards. As discussed earlier, although striving towards high standards is a prerequisite for success in achievement-based domains and can lead to positive outcomes (as per the tripartite and 2 x 2 models of perfectionism), when self-worth becomes inextricably tied to these

standards (e.g., “because I am deaf I must prove to myself and/or other that I am good at sport”), and achievement striving becomes underpinned by the belief that failure must be avoided (e.g., “I must avoid failure if I am to show everyone else that I am worthy”), it could be argued that the deaf individual is demonstrating unhealthy perfectionistic beliefs (Hall, 2006). Moreover, this relentless pursuit of success may result in a range of maladaptive cognitions and emotions that eventually undermine the deaf individual’s health.

Thus, it seems feasible that the cognitions and beliefs that define self-oriented and socially prescribed perfectionism will operate in a similar manner regardless of one’s hearing ability, and consequently the influence of these perfectionism dimensions will be similar in both groups. However, to date, this assumption has not been examined in the perfectionism literature. As result, in the current thesis, each empirical study (Chapters Two to Four) tested for similarities (or differences) between the two groups when examining the influence of self-oriented and socially prescribed perfectionism in sport.

Overview of the Current Thesis

While previous research has articulated the importance of identifying factors that contribute to (or undermine) the well-being of deaf individuals, there is a still a lack of sport psychology research in the field of hearing impaired athletes. Thus, to begin to address this issue, the overall aim of the current thesis was to being to understand more about the influence of one personality trait, namely perfectionism (specifically self-oriented and socially prescribed perfectionism dimensions) in deaf athletes, and whether the hypothesised associations between perfectionism dimensions and indicators of health are similar (or different) compared to those evident in hearing athletes. A related

aim was to build upon the body of literature that has begun to consider the mechanisms that explain the effects of self-oriented and socially prescribed perfectionism in hearing athletes, by examining whether a number of these key mechanisms are invariant across deaf and hearing athletes. By examining self-oriented and socially prescribed perfectionism in deaf and hearing athletes, the current thesis also aimed to contribute to the debate regarding the specific correlates of the aforementioned two perfectionism dimensions.

In order to achieve these general aims, three empirical studies (Chapters Two to Four) are presented in this thesis:

Chapter Two (Study One). The empirical study presented in Chapter Two attempts to provide initial evidence regarding the health-related correlates of self-oriented and socially prescribed perfectionism in deaf athletes' health. A further purpose was to examine whether these associations between the perfectionism dimensions and indicators of health were similar (or different) in deaf compared to hearing athletes. Given the majority of research (e.g., Aghdasi, 2014; Hill et al., 2008, 2010) concerning self-oriented and socially prescribed perfectionism has focused on the relationship with athlete burnout, the first empirical study included symptoms of burning out (i.e., reduced accomplishment, emotional and physical exhaustion, sport devaluation) and related characteristics (e.g., negative affect, symptoms of physical ill-health) as indicators of athletes' health. Consistent with previous research in sport and Hewitt and Flett's (1991) original conceptualisation, it was hypothesised that socially prescribed perfectionism would emerge as a positive predictor of the targeted outcomes in deaf athletes. Conversely, while Hewitt and Flett originally conceptualised self-oriented perfectionism dimension as a negative personality trait, previous cross-

sectional research with hearing athletes has generally supported a negative association between this perfectionism dimension and athlete burnout when this relationship is considered in isolation from perceived stress and/or failure. Given the consistent support for this inverse relationship, it was hypothesised that self-oriented perfectionism would also be a negative predictor of the targeted outcomes when examined in deaf athletes. Finally, because the hypothesised relationships between perfectionism dimensions and the targeted outcomes were expected to be similar in nature to previous research with hearing athletes, hearing ability (i.e., deaf or non-deaf) was not expected to emerge as a moderator.

Chapter Three (Study Two). Building upon the cross-sectional findings presented in study one (Chapter Two), and in an attempt to address Stoeber's (2014b) recent recommendation that more longitudinal research is needed to clarify the effects of perfectionism in athletes, the second empirical study presented in Chapter Three examined whether changes in two indicators of health and well-being (i.e., enjoyment and subjective vitality) over the course of a competitive season in sport are predicted by athletes' self-oriented and socially prescribed perfectionism. The second empirical study also attempted to provide further evidence of the mechanisms (i.e., mediators) that help explain the relationships between self-oriented and socially prescribed perfectionism with athlete's health overtime.

Previous research that has examined the mediators of self-oriented and socially prescribed perfectionism in sport has focused on coping tendencies (Hill, Hall, & Appleton, 2010), autonomous and controlled motivation (Jowett, Hill, Hall, & Curran, 2013), motivational regulations (Appleton & Hill, 2012), and unconditional acceptance (Hill et al., 2008). In addition to these mediators, it is possible that feelings of

exhaustion will mediate the relationship between the two perfectionism dimensions and indicators of health in athletes. Previous research has supported a relationship between perfectionism dimensions (including self-oriented and socially prescribed perfectionism) and exhaustion (e.g., Appleton et al., 2009; Hill et al., 2008), as well as between feelings of exhaustion of key indicators of athletes' health and well-being (e.g., Gustafsson, Skoog, Podlog, Lundqvist, & Wagnsson, 2013). It is likely that self-oriented and socially prescribed perfectionism will be positively associated with increases in exhaustion scores over time, as mistakes and failures experienced inevitably encountered during the season bring forth the realisation that the athlete is unable to meet self-set or externally-determined standards on a consistent basis. Despite continued effort to reach high standards in the face of performance set-backs, the athlete will eventually experience feelings of exhaustion as debilitating rumination and feelings of low self-worth dominate. In turn, it is likely feelings of exhaustion will undermine the athletes' feelings of well-being experienced inside and outside of sport.

The second empirical study adopted a longitudinal research design and employed a path analysis (allowing for tests of mediation and invariance across paths) to test the hypothesised relationships between the targeted variables over time. By employing a longitudinal design, it was also possible to examine whether the vulnerable nature of self-oriented perfectionism would emerge as athletes entered a phase of the season (i.e., towards the end) where threats to important goals, stresses, and potential failure are more likely to occur (Crocker et al., 2014). It was hypothesised that Time 1 self-oriented and socially prescribed perfectionism would be positively associated with Time 2 emotional exhaustion and physical exhaustion. In turn, Time 2 emotional and physical exhaustion were hypothesised to be negatively correlated with Time 2

enjoyment and subjective vitality. Consistent with study one, the hypothesised relationships were also expected to be invariant across hearing and deaf athletes.

Chapter Four (Study Three). Building upon empirical study two (Chapter Three) that considered key mediators of self-oriented and socially prescribed perfectionism using a longitudinal quantitative design, the aim of the third study was to understand whether alternative processes (namely self-regulation strategies) could provide further insight into the nature of the two perfectionism dimensions. In particular, rather than consider the unique relationships between self-oriented and socially prescribed perfectionism and self-regulation strategies, study three identified athletes scoring high(er) levels of both perfectionism dimensions. Athletes that report high levels of self-oriented *and* socially prescribed perfectionism may be especially vulnerable to poor health and well-being, and thus it is important to understand more about this particular combination.

Identifying the self-regulation strategies employed by athletes scoring high in self-oriented *and* socially prescribed perfectionism may be especially revealing given such strategies are known to directly impact on an athlete's thoughts, feelings, and behaviours (Duda, Cumming, & Balaguer, 2005). Thus, identifying the self-regulation strategies adopted by athletes scoring high in self-oriented and socially prescribed perfectionism may provide insight into their cognitions, affect, and achievement-related behaviours during training and completion.

In study three, one-to-one interviews were conducted with a view of gaining a detailed understanding of how self-oriented and socially prescribed perfectionism impact upon the health of deaf and hearing athletes (and whether there are any differences). Unlike studies one and two, it was expected that there may be differences

between hearing and deaf athletes in their use of self-regulation strategies given the latter group's potential reliance on certain strategies (e.g., using self-awareness skills to be aware of the surrounding environment) and inability to use others (e.g., direct/immediate verbal feedback from coaches/teammates). Despite these differences, it was expected that self-regulation strategies would provide insight into the nature of self-oriented *and* socially prescribed perfectionism in both groups.

**Examining the Relationship between Perfectionism Dimensions and Burning Out
Symptoms in Deaf and Hearing Athletes**

AUTHORSHIP STATEMENT

The main role of the thesis author was to secure ethical approval, develop the initial research questions and hypotheses, manage data collection, data input, data analysis, and interpretation of the data, and write the manuscript. The other authors (Dr Paul Appleton, Dr Jennifer Cumming, and Professor Joan Duda) were the thesis author's first and co-second supervisors, who contributed their ideas on study design and research questions, helped with interpreting the data, and provided feedback on drafts of the manuscript.

Abstract

The present study examined the relationships between self-oriented and socially prescribed perfectionism and symptoms of burning out (i.e., reduced accomplishment, emotional and physical exhaustion, sport devaluation, negative affect, and symptoms of physical ill-health) in deaf and hearing athletes, and whether these relationships were moderated by hearing ability. A total of 417 athletes (Hearing = 205, Deaf = 212) completed an adapted version of the Multidimensional Perfectionism Scale (Hewitt & Flett, 1991, 2004), the negative affect subscale of the Positive Affect and Negative Affect Schedule (Diener & Emmons, 1984), the Athlete Burnout Questionnaire (Raedeke & Smith, 2001), and the Physical Symptoms Checklist (Emmons, 1991). Regression analyses revealed the hypothesised relationships were generally consistent across both groups. The current findings provide initial evidence to suggest that self-oriented and socially prescribed perfectionism are associated with indicators of burnout in a similar manner in hearing and deaf athletes.

Keywords: hearing disability, perfection, burnout

Introduction

Perfectionism is a personality trait that has long been associated with indicators of health (see Sirois & Molnar, 2016 for an overview). In particular, self-oriented and socially prescribed perfectionism are two broad perfectionism dimensions that are known to be related to an individual's experiences of well- and ill-being (see Chapter One for more information). In particular, sport research (see Hill & Curran, 2016) has established relationships between self-oriented and socially prescribed perfectionism and symptoms of burnout in athletes. Consistent with the original theorising of Hewitt and Flett (1991), socially prescribed perfectionism has typically demonstrated a positive association with burnout symptoms in athletes. Conversely, despite Hewitt and Flett originally proposing that self-oriented perfectionism will also result in ill-being and poor health, previous research in sport has generally reported a negative correlation between this perfectionism dimension and athlete burnout symptoms. It has been suggested (e.g., Hall, Hill, & Appleton, 2012) that previous findings contradict the original theorising of Hewitt and Flett regarding self-oriented perfectionism because athletes scoring high in this perfectionism dimension may seem to be functioning "normally" unless placed under stress, goals are blocked, and failure is a likely outcome. More specifically, cross-sectional designs that examine self-oriented perfectionism (and socially prescribed perfectionism) in the absence of perceived difficulties and stress are unlikely to support the hypothesised debilitating nature of self-oriented perfectionism for athletes' health. Rather, and consistent with previous research, self-oriented perfectionism will be a negative predictor of athlete burnout.

Research to date that has examined the relationship between self-oriented and socially prescribed perfectionism and burnout in the absence of perceived difficulties and

stress has been conducted in homogeneous samples of “abled-bodied” athletes. In contrast, no research has been conducted with disabled athletes to determine whether the previously reported relationships between self-oriented perfectionism and socially prescribed perfectionism and athlete burnout are consistent or different to those reported in non-disabled athletes. Such research is needed to understand how self-oriented and socially prescribed perfectionism function in a diverse range of athletes. As such, this study provided an initial examination of the relationships between the two aforementioned perfectionism dimensions and symptoms of burnout in a particular sample of disabled athletes: namely, hearing impaired athletes, who have been reported to experience high(er) levels of burnout (e.g., Hasson, Theorell, Wallén, Leineweber, & Canlon, 2011) and poor(er) health (e.g., Hogan, Reynolds, & Byrne, 2013) compared to the general population.

Athlete Burnout

Throughout the competitive season, many athletes are required to maintain exceptional standards of performance despite short periods of recovery time and high training load. Under these circumstances, some athletes are likely to experience burnout (Main & Landers, 2012). Smith (1986) defined athlete burnout as a “psychological, emotional, and at times physical withdrawal from a formerly pursued and enjoyable activity due to chronic stress or dissatisfaction” (p. 39). Based on this definition, Raedeke (1997) proposed there are three prominent symptoms that characterise burnout: a reduced sense of accomplishment, physical and emotional exhaustion, and devaluation towards sport participation. A reduced sense of accomplishment reflects an athlete’s negative attitudes towards his or her progress towards desired goals. Exhaustion refers to the consequences of intense demands of training that result in feeling emotionally

drained and physically fatigued, and devaluation reflects how athletes stop caring about their sport due to a loss of interest (Raedeke, 1997).

In addition to the aforementioned prominent symptoms of athlete burnout, a number of related factors are thought to characterise the overall burning out process which develops overtime. Although these factors are not considered defining symptoms of athlete burnout, they are conceptualised as early signs and risk factors that an athlete is susceptible to burnout (Gustafsson, Kenttä, & Hassmén, 2011). For example, key early signs that athletes may eventually experience reduced accomplishment, exhaustion, and devaluation are symptoms of distress (Morgan, Brown, Raglin, O'Connor, & Ellickson, 1987) and negative affect (Lemyre, Treasure, & Roberts, 2006). Negative affect refers to subjective ill-being involving various unpleasant mood states (Watson, Clark, & Tellegen, 1988). Research has confirmed that athletes who experience burnout also report high levels of negative affect and debilitating mood changes (Gould, Tuffrey, Udry, & Loehr, 1996; Lemyre, Hall, & Roberts, 2008). Likewise, heightened physical ill-health may be a risk factor eventually leading to the defining symptoms of athlete burnout. Smith's (1986) stress-based model of burnout acknowledged this point and proposed that, in response to excessive or threatening demands of sport, a physiological response (including tension, fatigue, and insomnia) will arise which eventually culminates in feelings of burnout. Research in occupational settings demonstrates that symptoms of physical health, including the increased risk of cardiovascular disease, impaired immunity functions, and chronic inflammation, are associated with work-related burnout (Melamed, Shirom, Toker, Berliner, & Shapira, 2006), and there is also evidence supporting the notion that burned-out athletes experience heightened symptoms of physical ill-health (Cresswell & Eklund, 2006).

To date, much of the research that has examined athlete burnout has focused primarily on the three original key symptoms identified by Raedeke (1997). However, to gain a deeper understanding of the overall burning out process in sport, it may be important for researchers to consider a broader array of factors, such as negative affect and physical symptoms, simultaneously with reduced accomplishment, exhaustion, and devaluation.

Personality Antecedents of Athlete Burnout: The Role of Perfectionism

Perfectionism is a multi-faceted personality trait that reflects a constellation of beliefs tying self-worth to the achievement of flawlessness (Flett & Hewitt, 2002). Perfectionism involves striving towards unrealistic goals and is characterised by the irrational belief that everything must be done flawlessly. This constellation of beliefs is accompanied by harsh self-criticism and doubts about the quality of performance, and thus the individual is never satisfied with his/her achievements. This pattern of dysfunctional beliefs is likely to be detrimental to feelings of self-worth and, subsequently, undermine psychological well-being (Hall et al., 2012).

As described in Chapter One, two of the most frequently assessed broad perfectionism dimensions are self-oriented perfectionism and socially prescribed perfectionism (Hewitt & Flett, 1991, 2004). Self-oriented perfectionism entails a stringent self-evaluation and belief that self-worth is contingent upon achieving excessively high personal standards. Socially prescribed perfectionism encapsulates the belief that one's approval is contingent upon attaining the unrealistic demands of significant others (Hewitt & Flett, 1991).

Since Hewitt and Flett (1991, 2004) developed the Multidimensional Perfectionism Scale to capture self-oriented perfectionism and socially prescribed perfectionism,

studies have shown that socially prescribed perfectionism is generally maladaptive in nature and related to burnout symptoms. Cross-sectional research in sport, for example, has shown that socially prescribed perfectionism is positively correlated with Raedeke and Smith's (2001) indicators of athlete burnout (Appleton, Hall, & Hill, 2009; Hill, Hall, Appleton, & Kozub, 2008; Hill, Hall, Appleton, & Murray, 2010). Cross-sectional research has also revealed that socially prescribed perfectionism is a negative predictor of subjective vitality and life satisfaction in athletes (Gaudreau & Verner-Filion, 2012). Research outside of sport has shown that socially prescribed perfectionism is positively correlated with negative affect (Campbell & Di Paula, 2002; Stoeber & Childs, 2010), depressive symptoms, and burnout (Stoeber & Childs, 2010). Furthermore, socially prescribed perfectionism is positively correlated with negative affect (Molnar, Reker, Culp, Sadava, & DeCourville, 2006) and poorer physical health (Ofoghi & Besharat, 2010) in young adults.

The maladaptive nature of socially prescribed perfectionism is the result of a belief that to obtain the approval and recognition of significant others, one is required to meet their unrealistic expectations (Campbell & Di Paula, 2002). Because individuals reporting high levels of socially prescribed perfectionism perceive little personal control over goal attainment and the avoidance of failure fuels achievement striving, self-worth is rarely validated. The resulting debilitating cognitive and affective experiences may contribute to a sense of helplessness (Appleton & Hill, 2012) and, in turn, contribute to the individual burning out (see Chapter One for a full discussion on the nature of socially prescribed perfectionism).

Despite Flett and Hewitt (2005) asserting that self-oriented perfectionism leads to debilitating outcomes, a number of studies have revealed a weak to moderate negative

correlation between this perfectionism dimension and Raedeke's (1997) athlete burnout symptoms (Appleton et al., 2009; Appleton & Hill, 2012; Hill et al., 2008). More recently, Gaudreau and Verner-Filion (2012) also demonstrated that self-oriented perfectionism was a positive predictor of subjective vitality and life satisfaction in athletes. Outside of sport, self-oriented perfectionism is also negatively correlated with burnout (Stoeber & Childs, 2010) and non-significantly correlated with negative affect in student (Campbell & Di Paula, 2002) and young adult (Molnar et al., 2006) samples. The findings from previous cross-sectional research suggest that self-oriented perfectionism may be less debilitating than socially prescribed perfectionism. As discussed in Chapter One, one explanation for the seemingly non-negative effects of self-oriented perfectionism is because the debilitating nature of this perfectionism dimension only emerges when the individual experiences perceived stress, goal blockage, or perceived failure to achieve desired standards. It has also been suggested that in the absence of these stress-related factors, athletes scoring high in self-oriented perfectionism are able, at least in the short term, to experience some success as a result of their achievement striving. This success may prevent elevated maladaptive emotional responses, physical ill-health, and feelings of burnout (Gotwals, Stoeber, Dunn, & Stoll, 2012).

Perfectionism and Burnout Symptoms in Deaf Athletes

Although the association between self-oriented and socially prescribed perfectionism and burnout symptoms have been supported across a number of studies, no previous research has examined the relationships in deaf athletes. Out of 11 million disabled people in the UK, 9 million of them have a hearing disability and are participating in sport (Disability Sport, 2014; UK Deaf Sport, 2017). Despite the

significant number of deaf people participating in sport, relatively little sport psychology research exists regarding this particular sample. To date, only one study (e.g., Clark & Sach, 1991) has focused upon the psychological qualities of deaf athletes. In this study, Clark and Sach reported that the highest and lowest mean scores among 26 female deaf athletes (who were participating in volleyball at all levels, from recreational to Olympic level) were anxiety and mental preparation compared to other variables including confidence, team emphasis, motivation, and concentration.

Although research has failed to include deaf athletes, research outside of sport has demonstrated that deaf individuals experienced low self-esteem (Hintermair, 2008; Jackson, Cavenagh, & Clibbens, 2014), symptoms of depression and anxiety (Kvam, Loeb, & Tambs, 2007), psychological distress, poorer physical and mental health (e.g., Hogan et al., 2013) compared to hearing-abled individuals. One potential explanation for the poor health of deaf individuals is that they may perceive increased demands and social pressure from fellow peers in response to their disability, which may culminate in burnout (Hogan et al., 2013). The elevated burnout of deaf individuals was recently confirmed in a study by Hasson et al. (2011) with a Swedish working population. Thus, deaf individuals may be a specific group that warrant research attention regarding the antecedents of burnout and poor psychological health. As with the hearing able population, it is expected that perfectionism will function as an antecedent of burnout in deaf individuals. Moreover, there is little conceptual reason to expect that the relationships between self-oriented and socially prescribed perfectionism and burnout, when examined in the absence of stress-related factors, will be different in deaf athletes compared to hearing athletes. Although there is no direct evidence to support the link between perfectionism and burnout in deaf individuals, Luckner and Muir's (2001)

qualitative study with 20 deaf students provides indirect evidence (see Chapter One for a detailed interpretation of their findings). One theme that emerged from the analysis revealed that students demonstrated characteristics associated with perfectionism, including intense achievement striving, attempts to prove oneself compared to peers, and feelings of self-worth contingent on academic success, that are likely to contribute to feelings of burnout.

The Present Study

To date, a number of studies have examined the relationship between self-oriented and socially prescribed perfectionism and athlete burnout. However, no study has tested the relationships between the perfectionism dimensions and a broader array of symptoms (including negative affect and symptoms of physical ill-health) that may characterise the overall burning out process. Moreover, no research has examined these relationships in deaf athletes and thus it is unknown whether the previously reported associations between self-oriented and socially prescribed perfectionism dimensions and burnout symptoms in hearing athletes are similar or different in deaf athletes. Understanding the similarities and differences in the targeted relationships between the two groups would be helpful to sport psychologists when attempting to understand the nature of the two perfectionism dimensions in diverse athletic samples. Therefore, the first purpose of this study was to provide an initial examination of the relationships between self-oriented and socially prescribed perfectionism and symptoms of burnout in deaf athletes. A secondary purpose was to determine whether hearing status moderated the associations between perfectionism dimensions and symptoms of the burning out process in deaf and non-deaf athletes. Consistent with previous research with hearing athletes that has examined self-oriented and socially prescribed perfectionism in the absence of stress-

related variables, the present study hypothesised that socially prescribed perfectionism would be positively correlated and self-oriented perfectionism negatively correlated with the outcome variables. Likewise, it was hypothesised that the targeted relationships would not be moderated by hearing status.

Methods

Participants

Two hundred and twelve deaf ($M_{age} = 27.3$ years; $SD = 9.3$ years) and 205 hearing ($M_{age} = 18.8$ years; $SD = 3.9$ years) athletes were recruited from various sport clubs across England. The athletes' competitive levels ranged from club (Hearing = 79.8%; Deaf = 45.5%) to county (Hearing = 7.4%; Deaf = 18.1%), national (Hearing = 12.8%; Deaf = 22.5%), and international (Hearing = 0%; Deaf = 13.9%), and they represented multiple team and individual sports. The deaf sample contained 156 male and 56 female athletes. The mean number of years they had been participating in their main sport was 14.0 years ($SD = 8.9$ years), and the mean number of years representing their current team/club was 5.8 years ($SD = 5.5$ years). The severity of hearing loss among the deaf athletes was categorised from mild (5%) and moderate (6%) to severe (11%) and profound (78%). In the hearing sample (males = 127; females = 78), the average number of years participating in the sport was 8.0 years ($SD = 4.4$ years), and the average number of years representing their current team/club was 2.8 years ($SD = 2.6$ years).

Measures

In addition to the athletes' demographic background information, questionnaires were used to measure the following variables: (a) multidimensional perfectionism; (b) athlete burnout; (c) negative affect; and (d) symptoms of physical ill-health.

Multidimensional perfectionism. Hewitt and Flett's (2004) Multidimensional Perfectionism Scale (MPS) was employed to assess self-oriented perfectionism and socially prescribed perfectionism. The self-oriented perfectionism (e.g., "One of my goals is to be perfect in everything I do") and socially prescribed perfectionism (e.g., "I feel that people are too demanding of me") subscales both consist of 15 items. Responses were captured via a Likert scale anchored by 1 (*strongly disagree*) and 7 (*strongly agree*). In previous research, respondents' scores on both perfectionism subscales have shown good test-retest reliability (self-oriented perfectionism: $r = .88$; socially prescribed perfectionism: $r = .75$) and internal consistency reliability (self-oriented perfectionism: $\alpha = .84-.90$; socially prescribed perfectionism: $\alpha = .80-.87$; Hewitt & Flett, 1991, 2004). The MPS has also been successfully adapted and employed with athletic samples to predict athlete burnout (e.g., Appleton et al., 2009; Hill et al., 2008).

Athlete burnout. The Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001) was selected to measure a reduced sense of accomplishment (e.g., "It seemed no matter what I did, I did not perform as well as I should"), exhaustion (e.g., "I was exhausted by the mental and physical demands of sport"), and sport devaluation (e.g., "I had negative feelings towards my sport"). Each subscale contains five items measured on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). In developing the ABQ, Raedeke and Smith (2001) have provided evidence to support the validity and reliability of the questionnaire. This includes factor structure, internal consistency ($\alpha \geq .85$), and test-retest reliability ($r \geq .86$). Athletes' scores on all subscales have also proven reliable when testing the relationship between perfectionism dimensions and athlete burnout in sport (e.g., $\alpha = .73$ for the reduced sense of

accomplishment subscale, $\alpha = .88$ for the exhaustion subscale, and $\alpha = .78$ for the sport devaluation subscale; see Hill et al., 2010).

Negative affect. The Positive and Negative Affect Schedule (PANAS; Diener & Emmons, 1984) was administered to measure athletes' negative affect. The version of the negative affect subscale adapted in the current study consisted of four items (e.g., "frustrated"). Responses were measured on a 7-point Likert scale (1 = *not very often*; 7 = *all the time*). Previous studies in sport settings have supported the psychometric attributes of the PANAS (Crocker, 1997; Quested & Duda, 2010). Athletes scores on the negative affect subscale also had sufficient reliability (e.g., $\alpha = .84-.88$) when examining its relationship with perfectionism (see Hill, Hall, Duda, & Appleton, 2011).

Symptoms of physical ill-health. The Physical Symptom Checklist (Emmons, 1991) was employed to measure the degree to which the athletes had experienced a range of symptoms of physical ill-health (e.g., leaking nose, cough, fever, headache, sleep disorders, etc.). Athletes' responses to 18 items were rated on a 7-point Likert scale with anchors of 1 (*never*) and 7 (*almost always*). The validity and reliability of the Physical Symptom Checklist has been established in non-sporting samples (Emmons, 1991). The internal reliability of athletes' scores on an adapted version of the checklist have also been established in previous studies ($\alpha = .79$ at Time 1; $\alpha = .80$ at Time 2; Reinboth & Duda, 2006).

Procedures

The authors' university ethics committee approved the current study. Before collecting data, the first author contacted the team coaches and/or managers to request their permission to approach the athletes to take part in the current research. All participants were informed of the research purpose and instructions for completing the

questionnaire were also provided. Informed consent forms were then given to the athletes to obtain their consent to participate. Parental consent was also requested for those athletes who were under the age of 18 (see Appendix A). Upon receiving the signed consent forms, all participants completed the questionnaire before or after a training session during the competitive season. Completion of the questionnaire took approximately 20 minutes for the hearing athletes and approximately 30–40 minutes for the deaf athletes. Athletes completed the questionnaire quietly in a group setting (i.e., teammates were present) and away from coaches. The lead researcher attended all data collections and provided further help and explanation about the statements in the questionnaire upon request. For the deaf athletes, this was done by providing examples in written form and/or gesture.

Results

Preliminary Analyses

The data were analysed using version 19.0 of the PASW statistical software package (Arbuckle, 2010). To ensure the accuracy of the data file, the data were first scanned for univariate ($z \geq 3.29$) outliers as recommended by Tabachnick and Fidell (2007). No cases of univariate outliers were detected. Multivariate outliers were then scanned for using the Mahalanobis distances test. With reference to the critical value (i.e., 20.52) of the chi-square distribution ($p < .001$), five cases of multivariate outliers were discovered. After deleting these five cases, the final sample comprised 412 participants, including 209 deaf ($M_{age} = 27.3$ years; $SD = 9.3$ years) and 203 hearing ($M_{age} = 18.8$ years; $SD = 3.9$ years) athletes. A Missing Value Analysis procedure was conducted to detect the missing values in the data file. Owing to small (less than 5%)

amounts of missing data, the missing values were inputted through expectation maximization technique (Roth, 1994).

Table 2.1 shows the descriptive statistics, Cronbach's alpha coefficients and bivariate correlations for all of the study variables in the hearing and deaf athletes. Athletes' scores on the subscales achieved good reliability values (i.e., $> .70$), except the socially prescribed perfectionism subscale. With reference to socially prescribed perfectionism, the original Cronbach's alpha was $.57$ for the deaf sample and $.69$ for the hearing sample. Item analyses revealed that by removing items 21 (i.e., "Others will like me even if I do not achieve high standards at everything"), 30 (i.e., "Others think I am okay, even if I do not succeed"), and 37 (i.e., "My parents rarely expect me to achieve high standards in all aspects of my life"), a reliability coefficient of $.71$ for the deaf athletes and $.73$ for the hearing athletes was obtained. The final 12 items were retained in measuring the socially prescribed perfectionism construct.

In terms of bivariate correlations, self-oriented perfectionism was negatively correlated with all three burnout dimensions (reduced sense of accomplishment: $r = -.38, p < .001$; emotional and physical exhaustion: $r = -.19, p < .01$; devaluation: $r = -.40, p < .001$), negative affect ($r = -.16, p < .05$), and physical symptoms of ill-health ($r = -.23, p < .01$) in hearing athletes. Self-oriented perfectionism was also negatively correlated with a reduced sense of accomplishment ($r = -.19, p < .01$), positively correlated with negative affect ($r = .14, p < .05$), and non-significantly correlated with emotional and physical exhaustion ($r = .03, p > .05$), devaluation ($r = -.12, p > .05$), and physical symptoms of ill-health ($r = .02, p > .05$) in deaf athletes (see Table 2.1). Socially prescribed perfectionism was positively correlated with a reduced sense of accomplishment ($r = .15, p < .05$) and negative affect ($r = .21, p < .01$), and non-

significantly correlated with emotional and physical exhaustion ($r = .12, p > .05$), devaluation ($r = .12, p > .05$), and physical symptoms of ill-health ($r = .10, p > .05$) in the hearing sample. In the deaf sample, socially prescribed perfectionism was positively correlated with emotional and physical exhaustion ($r = .15, p < .05$) and devaluation ($r = .15, p < .05$), and non-significantly correlated with a reduced sense of accomplishment ($r = -.03, p > .05$), negative affect ($r = .13, p > .05$), and physical symptoms of ill-health ($r = .11, p > .05$) (see Table 2.1).

Table 2.1

Descriptive Statistics, Cronbach's Alpha Coefficients, and Bivariate Correlations in Hearing (n = 203) and Deaf (n = 209) Athletes

	1	2	3	4	5	6	7	<i>M</i>	<i>SD</i>	α
1. SOP		.29***	-.38***	-.19**	-.40***	-.16*	-.23**	4.99	.88	.89
2. SPP	.37***		.15*	.12	.12	.21**	.10	3.74	.68	.73
3. RA	-.19**	-.03		.45***	.73***	.45***	.30***	2.41	.75	.79
4. Ex	.03	.17*	.48***		.46***	.36***	.45***	2.50	.86	.85
5. De	-.12	.15*	.63***	.64***		.33***	.40***	2.00	.88	.87
6. NA	.14*	.13	.25***	.35***	.27***		.30***	2.66	.99	.68
7. PS	.02	.11	.29***	.44***	.26***	.35***		2.19	.95	.91
<i>M</i>	4.60	4.09	2.26	2.41	2.22	2.30	1.82			
<i>SD</i>	.62	.70	.66	.82	.72	1.00	.84			
α	.70	.71	.70	.84	.75	.74	.82			

Note. SOP = self-oriented perfectionism; SPP = socially prescribed perfectionism; RA = reduced accomplishment; Ex = exhaustion; De = Devaluation; NA = negative affect; PS = physical symptoms of ill-health; Scores for hearing athletes above the diagonal, scores for deaf athletes below the diagonal.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Regression Analyses

To determine whether athletes' hearing ability moderated the relationship between self-oriented perfectionism and socially prescribed perfectionism and burnout symptoms, moderated regression analyses were conducted following Aiken and West's (1991) and Aguinis' (2004) recommendations. First, self-oriented perfectionism and socially prescribed perfectionism scores were standardised. Interaction terms between the categorical variable that represented athletes' hearing ability and self-oriented perfectionism, and between the categorical variable and socially prescribed perfectionism, were then created. The predictor variables were entered into the regression equation as a block in step one, followed by the respective interaction terms at step two. Significant interaction terms at step two indicate that hearing ability act as moderators. Separated moderated regression analyses were conducted for each outcome variable.

Inspection of Table 2.2 reveals that the interaction between athletes' hearing ability and self-oriented perfectionism was significant at step two in the regression analyses for sport devaluation, negative affect, and physical symptoms. The interactions accounted for 1% ($\Delta F(5, 406) = 16.47, p < .001$), 2% ($\Delta F(5, 406) = 8.13, p < .001$) and 1% ($\Delta F(5, 406) = 7.82, p < .001$) unique variance, respectively, in devaluation, negative affect, and physical symptoms, respectively. The interaction between socially prescribed perfectionism and hearing impairments also reached statistical significance at step 2 in the regression analysis for reduced accomplishment. The interaction accounted for 2% ($\Delta F(5, 406) = 13.77, p < .001$) unique variance in a reduced sense of accomplishment.

Table 2.2

Moderated Regression Analyses: Athletes' Hearing and Self-Oriented and Socially Prescribed Perfectionism Predicting Burnout Symptoms

Criterion Variable	<i>F</i>	<i>R</i> ²	ΔR^2	Standardised Regression Coefficients				
				Hearing	SOP	SPP	SOP x Hearing	SPP x Hearing
RA								
Step 1	20.13***	.13		-.24***	-.37***	.18***		
Step 2	13.77***	.15	.02*	-.23***	-.34***	.18***	.09	-.13**
Ex								
Step 1	6.79***	.05		-.15**	-.17**	.20***		
Step 2	4.59***	.05	.01	-.14*	-.14*	.19***	.08	-.01
De								
Step 1	25.64***	.16		-.02	-.38***	.26***		
Step 2	16.47***	.17	.01	-.01	-.34***	.25***	.11*	-.05
NA								
Step 1	9.75***	.07		-.26***	-.10	.20***		
Step 2	8.13***	.09	.02**	-.24***	-.04	.18***	.17**	-.09
PS								
Step 1	11.53***	.08		-.29***	-.18***	.16**		
Step 2	7.82***	.09	.01	-.27***	-.14*	.15**	.11*	-.04

Note. SOP = self-oriented perfectionism; SPP = socially prescribed perfectionism; RA = reduced accomplishment; Ex = exhaustion; De = Devaluation; NA = negative affect; PS = physical symptoms of ill-health.

* $p < .05$. ** $p < .01$. *** $p < .001$.

The significant interactions were further explored by plotting regression lines for hearing and deaf athletes. Post hoc analyses revealed non-significant differences in the regression lines for negative affect ($t = 1.57, p > .05$), symptoms of physical ill-health ($t = -.29, p > .05$), and a reduced sense of accomplishment ($t = .76, p > .05$). In contrast, the regression slopes representing the significant interaction between self-oriented perfectionism and hearing ability in the regression analysis for devaluation revealed a significant difference between hearing and deaf athletes ($t = -2.32, p < .05$). The regression lines (see Figure 2.1) suggest that devaluation scores decrease as self-oriented scores increase for both groups, although the slope was steepest for the hearing athletes.

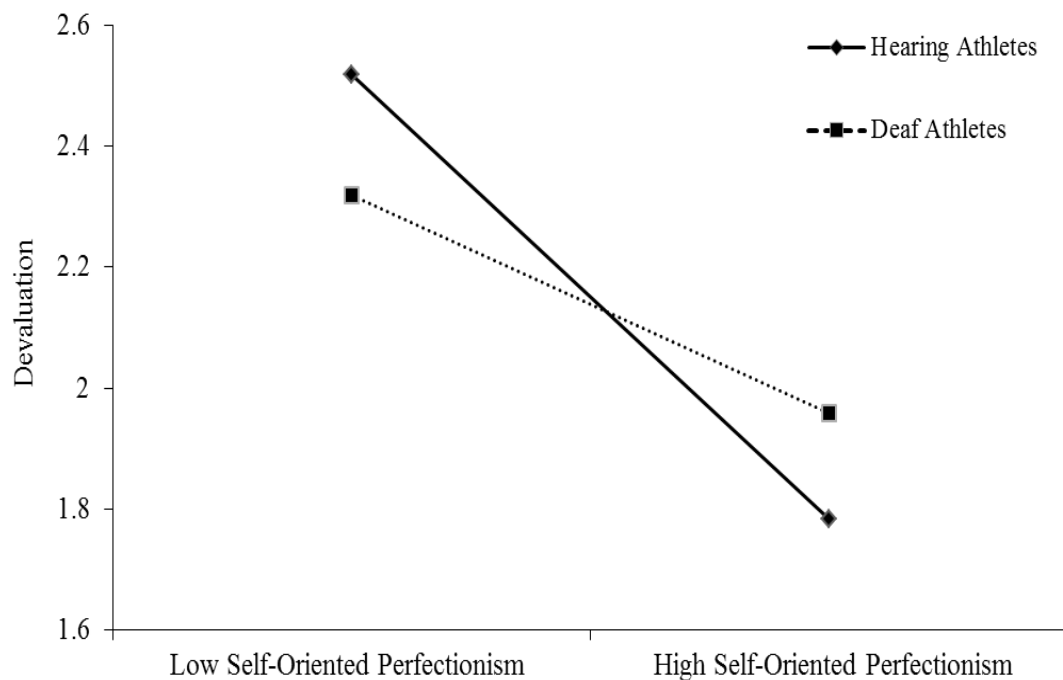


Figure 2.1. Self-oriented perfectionism predicting sport devaluation for hearing and deaf athletes

Discussion

Building upon previous research that has examined the relationships between self-oriented and socially prescribed perfectionism and burnout symptoms in hearing athletes, the first purpose of this study was to provide an initial examination of these associations in deaf athletes. Using moderated regression analyses, the second purpose of the current study was to examine whether the hypothesised relationships between self-oriented and socially prescribed perfectionism and symptoms of burning out differed between hearing and deaf athletes. The results of this study revealed a number of associations between self-oriented and socially prescribed perfectionism with the symptoms of burning out. Moreover, the associations were generally consistent across both groups.

Perfectionism and Burnout Symptoms in Deaf Athletes

The bivariate correlations revealed that perfectionism dimensions were correlated with specific indicators of burnout in the deaf athletes. Specifically, self-oriented perfectionism was negatively correlated with a reduced sense of accomplishment but positively associated with negative affect. This particular finding is unsurprising; athletes scoring high in self-oriented perfectionism are likely to achieve high levels of performance at least in the short-term, which prevents reduced feelings of accomplishment. However, the accompanying high levels of negative affect is the result of harsh, punitive self-reflection and feelings of worthlessness which prevent the athletes from deriving any satisfaction from their achievements in sport. Likewise, socially prescribed perfectionism was positively associated with exhaustion and devaluation in sport, which is most the result of constantly striving for, but ultimately

failing to achieve the externally-derived standards of achievement and subsequent feelings of worthlessness.

Moderating Role of Hearing Status

Building upon the bivariate correlations, the results from the moderated regression analyses revealed, for the first time, that hearing ability significantly moderates the relationship between self-oriented perfectionism and devaluation. However, the direction of the plotted paths suggested this relationship is similar (i.e., negative) for both hearing and deaf athletes. Moreover, although a number of the interactions were significant across the moderated regression analyses, the difference between the plotted interactions for deaf and hearing athletes were non-significant. In total, the findings of the present study contribute to a growing body of cross-sectional evidence (e.g., Aghdasi, 2014; Hill & Appleton, 2011) concerning perfectionism and athlete burnout confirming socially prescribed perfectionism as a positive predictor, and self-oriented perfectionism as a negative predictor, of symptoms of the burning out process in both hearing and deaf athletes.

A range of explanations have been offered for the debilitating effects of socially prescribed perfectionism, and specifically for the positive relationship with Raedeke's (1997) burnout dimensions in sport. For example, socially prescribed perfectionism is characterised by a contingent self-worth (Hill et al., 2008) and persistent attempts towards self-validation (Hill et al., 2010), low personal control over achievement standards (Hill et al., 2008), maladaptive forms of coping (Hill, Hall, & Appleton, 2010) and motivation (Appleton & Hill, 2012), and a preoccupation with demonstrating superiority compared with other athletes (Appleton et al., 2009). All of these characteristics contribute to feelings of reduced accomplishment, exhaustion, and sports

devaluation. It is also likely that the debilitating characteristics associated with socially prescribed perfectionism initiate feelings of low perceived ability and anxiety concerning lack of accomplishment, which in turn, initiates mood disturbances and negative affect.

Furthermore, the findings from the regression analyses provide initial evidence that the debilitating characteristics reported by athletes high in socially prescribed perfectionism are associated with symptoms of physiological ill-health, which is presumed to be early indicators of the burning out process. Given that the athletes' self-reported their symptoms of physical health, future research on Hewitt and Flett's (1991, 2004) perfectionism dimensions and athlete burnout may wish to extend the current study by examining objective measures of immune functioning and inflammation (e.g., measuring athletes' unstimulated salivary cortisol). In support of this proposal, previous research has confirmed an association between characteristics of socially prescribed perfectionism and salivary free cortisol concentration (Zureck, Altstötter-Gleich, Wolf, & Brand, 2014) and elevated blood pressure (Albert, Rice, & Caffee, 2014) in student samples.

The findings from the current study concerning socially prescribed perfectionism are particularly noteworthy because it appears that socially prescribed perfectionism may similarly undermine the psychological and physical health of hearing and deaf athletes. Future research is now required to determine whether psychological mechanisms (e.g., contingent self-worth, motivation regulations, and coping strategies) that help explain the relationship between socially prescribed perfectionism and athlete burnout in hearing athletes are invariant across the two samples. Establishing whether the mediating processes are invariant is especially important as sport psychologists

attempt to understand whether the maladaptive effects of socially prescribed perfectionism on athlete's health is invariant across hearing and deaf samples.

The regression analyses suggest the findings concerning self-oriented perfectionism are generally consistent with previous research (e.g., Hill et al., 2008) that has examined this perfectionism dimension in athletic sample in the absence of stress-related factors. That is, self-oriented perfectionism emerged as a negative significant predictor of four symptoms of burning out. Although self-oriented perfectionism was a non-significant predictor of negative affect (which contradicts the bivariate correlation for deaf athletes; see the section on suppression effects below), the direction of the association was also negative. As with socially prescribed perfectionism, sport psychologists have offered explanations for the negative relationship between self-oriented perfectionism and athlete burnout symptoms proposed by Raedeke (1997). It has been proposed, for example, that self-oriented perfectionism is associated with intrinsic motivation (Appleton & Hill, 2012), adaptive coping strategies (Hill et al., 2010) and persistent striving for high, internally-determined standards (Stoeber & Otto, 2006). In combination, these characteristics of self-oriented perfectionism may allow athletes to achieve a desirable level of performance. In turn, the achievement of high self-set standards may help to provide short-term protection against burnout (Appleton et al., 2009). The seemingly positive effects of self-oriented perfectionism in the current study are consistent with research outside of sport with deaf individuals, which suggest striving relentlessly towards high standards in an attempt to demonstrate comparable levels of ability to non-hearing impaired individuals helps to reinforce the deaf students' feelings of worth (Luckner & Muir, 2001).

Suppression Effects

It is interesting to note that although socially prescribed perfectionism emerged as a significant positive predictor of all burning out symptoms in moderated regression analyses, it was not significantly correlated with all the outcome variables at the bivariate level. As for self-oriented perfectionism, it emerged as a significant negative predictor of all burning out symptoms, except for negative affect, in the regression analyses, but was positively associated with negative affect and non-significantly correlated with exhaustion, devaluation, and physical symptoms in the deaf sample at the bivariate level. It was also negatively associated with negative affect in the hearing sample at the bivariate level. The differences between the associations at the regression analysis level and bivariate level may be because for the former, the predictive effects of the two perfectionism dimensions are based on the whole sample. In contrast, the bivariate correlations were produced for each group separately. In addition, it is possible that the differences at the bivariate and regression levels are due to suppression effects. Conger (1974) defined suppression as “a variable which increases the predictive validity of another variable by its inclusion in a regression equation. This variable is a suppressor only for those variables whose regression weights are increased” (p. 36-37). Suppression occurs when the relationship between an independent variable and a dependent variable becomes larger in the presence of a third variable (Cohen, Cohen, West, & Aiken, 2003). Applied to the current study, as an example, the significant correlation between self-oriented perfectionism and negative affect was reduced to non-significance in regression. This is probably because the association was either confounded or suppressed by socially prescribed perfectionism. In other words, the relationship between self-oriented perfectionism and negative affect differs

depending on whether socially prescribed perfectionism is present (or not) in the relationship. Suppression effects are evident in previous perfectionism research (e.g., Aldea & Rice, 2006; Flett, Besser, Davis, & Hewitt, 2003; Hill et al., 2010; Hill, Huelsman, & Araujo, 2010; Scott, 2007; Wu & Wei, 2008) and are also common in other psychological research (Tzelgov & Henik, 1991).

Aldea and Rice (2006) elaborated on suppression effects in perfectionism research. They proposed that correlated perfectionism dimensions may suppress each other to the extent that more purified associations with other variables emerge. In this study, as is the case in previous research, self-oriented and socially prescribed perfectionism were positively correlated and thus it is difficult to conclude how each dimension is correlated with the targeted outcomes when both are included in the same regression equation. Consistent with the Hill et al. (2010) study, for example, self-oriented perfectionism seems more adaptive after controlling for socially prescribed perfectionism in the regression analyses. As Hill et al. concluded, the common variance between self-oriented and socially prescribed perfectionism may be a fundamental source of the psychological difficulties associated with self-oriented perfectionism (also see Van Yperen, 2006).

Limitations and Suggestions for Future Research

A first limitation of the current study relates to examining the relationships between perfectionism dimensions and the targeted dimensions using a cross-sectional design. This is an important limitation for two reasons. First, as with all cross-sectional research, it is not possible to make inferences about causality. Second, as proposed above, it is likely the true nature of self-oriented perfectionism is hidden in cross-sectional research (especially when its interaction with stress, goal blockage, and/or

failure is not considered). Thus, future research that adopts a longitudinal design, where the naturally occurring performance-related setbacks and difficulties are likely occur, is needed to provide further insight into the true nature of self-oriented perfectionism.

An additional limitation of the current study concerns the internal reliability of deaf athletes' scores on the perfectionism scale (see Table 2.1). The Multidimensional Perfectionism Scale (Hewitt & Flett, 1991, 2004) was employed in this study to measure self-oriented perfectionism and socially prescribed perfectionism as it is the most widely used questionnaire of these perfectionism dimensions among athletes. However, in the current study three items were removed to increase the reliability of the socially prescribed perfectionism dimension, and thus researchers should remain cognisant of this when comparing the current findings with future research on socially prescribed perfectionism in deaf athletes. Researchers may also consider further testing of the relationships between perfectionism dimensions and psychological outcomes in athletes using a sport-specific measure of perfectionism, in view of the findings reported by Dunn and colleagues (Dunn, Causgrove Dunn, & McDonald, 2012) regarding the importance of a domain-specific measure of perfectionism.

A third limitation of the current study concerns the heterogeneity nature of the sample's competitive level, which may have implications for the relationship between perfectionism and symptoms of the burning out process. Previous research (Anshel, Weatherby, Kang, & Watson, 2009; Rasquinha, Dunn, & Causgrove Dunn, 2014) has established that perfectionism levels differ between athletes competing at international/elite levels and recreational athletes. As a result, competitive level may have implications for the strength (and direction) of the relationship between perfectionism and athlete burnout. In addition to examining the role of competitive

standard in the relationship between perfectionism and burnout, it would also be interesting for future research to determine whether the relationships differ between athletes varying in their severity of hearing loss. Establishing the nature of the relationships across athletes with a range of hearing disabilities may contribute to future interventions targeting perfectionism in specific groups of deaf athletes.

Despite these limitations, the current study makes a significant contribution to our knowledge of the relationships between perfectionism and burnout in athletes as it is the first study examining the relationships between self-oriented and socially prescribed perfectionism with a broader array of symptoms associated with the burning out process. In addition, the findings from the current study are novel because they provide initial insight into the similarities in the relationships in hearing and deaf athletes. The present findings also point to the importance of further work on perfectionism in deaf athletes, to understand whether the psychological mechanisms that explain the effects of self-oriented and socially prescribed perfectionism are consistent with the processes identified in hearing athletes. Moreover, further work is now needed to examine whether self-oriented perfectionism in particular continues to be a negative predictor of burnout and other health-related outcomes in deaf (and hearing) athletes over time. Specifically, research is required to determine whether the stresses, failures, and difficulties experienced by all athletes over the course of a season reveal the vulnerable nature of self-oriented perfectionism originally proposed by Hewitt and Flett (1991). These issues will be empirically tested in the next chapter of this thesis (see Chapter Three).

**Examining the Longitudinal Relationship between Perfectionism Dimensions and
Psychological Well-Being Indicators in Hearing and Deaf Athletes: The Mediating
Influence of Exhaustion**

Abstract

Building upon the study in Chapter Two, the purposes of this present study were to investigate: (1) whether changes in two key indicators of psychological health (i.e., enjoyment and subjective vitality) over four months were predicted by Time 1 self-oriented and socially prescribed perfectionism; (2) whether these relationships were mediated by changes in emotional and physical exhaustion; and (3) whether the above changes were invariant across hearing and deaf athletes. Two hundred and six hearing ($M_{age} = 19.6$; $SD = 1.4$) and 101 deaf ($M_{age} = 27.1$; $SD = 9.6$) athletes completed a questionnaire at the beginning and end of a competitive season measuring the targeted variables. A path analysis model revealed that the relationships between perfectionism dimensions and enjoyment and subjective vitality were indirect via increases in emotional exhaustion. The indirect effects of Time 1 self-oriented and socially prescribed perfectionism on Time 2 enjoyment and subjective vitality via Time 2 emotional exhaustion were also invariant across the two groups. The findings suggest that emotional exhaustion may be an important factor in explaining the longitudinal relationship between self-oriented and socially prescribed perfectionism with indicators of psychological well-being in hearing and deaf athletes.

Keywords: burnout, perfectionism, maladaptive, adaptive

Introduction

In recent years, there has been a growing body of research exploring perfectionism in sport (for reviews, see Hall, Hill, & Appleton, 2012; Stoeber, 2011). Although some researchers (e.g., Stoll, Lau, & Stoeber, 2008) contend that striving for perfection enables athletes to fulfil fundamental needs (i.e., to demonstrate competence and to gain high recognition) and facilitates performance, other authors (e.g., Flett & Hewitt, 2005; Hall, 2006) argue that there are debilitating symptoms (e.g., burnout, negative affect) associated with some perfectionism dimensions (see Campbell & Di Pula, 2002; Hill, Hall, Appleton, & Murray, 2010; Stoeber, Schneider, Hussain, & Matthews, 2014). The two perfectionism dimensions that have focused in previous sport-related research are self-oriented and socially prescribed perfectionism. Self-oriented and socially prescribed perfectionism represent a constellation of beliefs that tie self-worth to the achievement of flawlessness and entail perceptions of an individual's ability to meet the standards and expectations set by the self or significant others (Hewitt & Flett, 1991).

A growing number of cross-sectional studies (e.g., Childs & Stoeber, 2012; Gaudreau & Verner-Filion, 2012; Ho, Appleton, Cumming, & Duda, 2015 (see Chapter Two); Ofoghi & Besharat, 2010; Stoeber & Childs, 2010) have established associations between self-oriented and socially prescribed perfectionism with indicators of athletes' psychological health. In comparison, relatively few studies have examined this relationship adopting a longitudinal design. Examining the relationships longitudinally is necessary to understand the temporal effects of self-oriented and socially prescribed perfectionism in sport (Stoeber, 2014b) and their long-term implications for athletes' health. To advance our knowledge of self-oriented and socially prescribed

perfectionism in sport, this study aimed to examine the relationship between these perfectionism dimensions with indicators of athletes' psychological well-being (i.e., vitality and enjoyment) over four months.

In addition, to provide further insight into the mechanisms that explain the hypothesised relationships, the mediating role of emotional and physical exhaustion in the targeted relationships was examined. A series of studies (e.g., Appleton, Hall, & Hill, 2009; Hill, Hall, Appleton, & Kozub, 2008) has confirmed that self-oriented and/or socially prescribed perfectionism are significant predictors of exhaustion. Likewise, previous research (Jordalen & Lemyre, 2015) has also shown that exhaustion is a key predictor of individual's well-being. Thus, a model was tested to examine whether the two perfectionism dimensions at Time 1 influence changes in emotional exhaustion and physical exhaustion (from Time 1 to Time 2), and how changes in exhaustion subsequently relate to changes in psychological health and well-being over the same time period. Building upon the findings from study one (see Chapter Two), a final purpose of the study was to determine whether the hypothesised relationships were invariant across hearing and deaf athletes.

Self-Oriented and Socially Prescribed Perfectionism in Sport

As described in detail in the opening chapter of this thesis (Chapter One), self-oriented perfectionism is characterised by the belief that self-worth is contingent upon attaining exceedingly high personal standards (Hewitt & Flett, 2004). In contrast, socially prescribed perfectionism is characterised by the belief that self-worth is dependent upon gaining approval from significant people who hold unrealistically high standards for them, evaluate them stringently, and exert pressure upon them to perform perfectly (Hewitt & Flett, 2004). The attitudes and behaviours among athletes reporting

high levels of self-oriented perfectionism and socially prescribed perfectionism are tied to critical self-evaluation and self-protection because they are typified by an “all-or-nothing” approach in pursuit of perfection (Shafran, Cooper, & Fairburn, 2002).

Despite Hewitt and Flett’s (1991) original assertion that self-oriented and socially prescribed perfectionism will be associated with debilitating outcomes, previous findings have shown the two perfectionism dimensions are differentially correlated with psychological well-being indicators. In a recent study outside of sport, for example, Smith, Saklofske, Yan, and Sherry (2017) found that socially prescribed perfectionism was negatively correlated with life satisfaction in Canadian students. Socially prescribed perfectionism also has significant positive correlations with emotional exhaustion (Yu, Chae, & Chang, 2016), academic burnout (Yu et al., 2016), and negative affect (Verner-Filion & Vallerand, 2016) in students. In sport, cross-sectional studies have demonstrated a positive association between socially prescribed perfectionism and burnout (e.g., Barcza-Renner, Eklund, Morin, & Habeeb, 2016; Ho et al., 2015 (see Chapter Two)). In summary, the findings from cross-sectional studies confirm the debilitating correlates of socially prescribed perfectionism in terms of individuals’ psychological well-being.

In contrast to Hewitt and Flett’s (2004) theorising, the findings in relation to self-oriented perfectionism suggest this dimension (in comparison to socially prescribed perfectionism) is less debilitating. For example, self-oriented perfectionism has been non-significantly correlated with satisfaction with life in Canadian students (Smith et al., 2017). The relationship between self-oriented perfectionism and negative affect was also not significant in a study conducted by Verner-Filion and Vallerand (2016).

Within sport, self-oriented perfectionism was not significantly correlated with burnout among athletes (Aghdasi, 2014; Appleton et al., 2009; Barcza-Renner et al., 2016).

Despite the aforementioned findings, one cannot ignore Flett and Hewitt's (2005) suggestion that, under specific circumstances, self-oriented perfectionism has the potential to undermine athletes' psychological health. Vulnerability factors such as self-oriented perfectionism increase one's likelihood of experiencing adverse outcomes such as anger, anxiety, and depression (e.g., Flett, Besser, Davis, & Hewitt, 2003; Hewitt et al., 2002) under conditions of threat, stress, and performance difficulties (Flett & Hewitt, 2005). In support of Flett and Hewitt's vulnerability hypothesis, Hill, Hall, Duda, and Appleton (2011) reported that athletes who scored higher on self-oriented perfectionism experienced heightened threat and were more inclined to withdraw their effort in a preceding performance after experiencing failure, compared to athletes who scored lower in self-oriented perfectionism. Outside of sport, Stoeber et al. (2014) reported that students with high self-oriented perfectionism experienced increased anxiety after repeatedly failing a cognitive task compared to students with low self-oriented perfectionism (Stoeber et al., 2014). The implications of both studies are that individuals reporting higher levels of self-oriented perfectionism may be susceptible to poorer psychological health following setbacks and failure.

In addition to experimental work, longitudinal research may afford researchers an opportunity to reveal the vulnerable nature of self-oriented perfectionism. In relation to this point, Stoeber (2014b) recently proposed that although perfectionistic striving (a key facet of self-oriented perfectionism) has short-term positive effects, it may have more detrimental effects in sport over time because of the constant striving to overcome a sense of insecurity – the feeling that they are not good enough and so constantly need

to strive for perfect outcomes without rest. Such overstriving towards perfection could lead to feelings of exhaustion and poor psychological well-being, thus affecting overall health. The vulnerable nature of self-oriented perfectionism is hypothesised to emerge over time in sport due to naturally occurring challenges, personal setbacks, and performance difficulties that occur as the season progresses. These challenges and setbacks make it more likely that the negative self-evaluations about one performance standards (i.e., being discrepant from desired standards) and fear of failure associated with self-oriented perfectionism will become exacerbated over time, leading to poorer psychological and physical health (e.g., exhaustion) (Hill et al., 2011). This is likely because self-oriented perfectionism involves the belief that personal acceptance is conditional on the achievement of self-set standards of perfection (Greenspon, 2000), and thus failure (and the possibility of future failures) heightened the occurrence of maladjustment and ill-being (Flett, Blankstein, Hewitt, & Koledin, 1992).

While Stoeber (2014b) has called for more longitudinal research on perfectionism in sport, to date, very little research with athletes has examined self-oriented and socially prescribed perfectionism over time. Two studies by Madigan and colleagues (Madigan, Stoeber, & Passfield, 2015, 2017b) targeting perfectionistic striving and perfectionistic concerns found that the latter perfectionism dimension predicted longitudinal increases in athlete burnout and training distress whereas the former perfectionism dimension predicted longitudinal decreases in athlete burnout and training distress over a 3-month period of active training in junior athletes. Moreover, no research has examined the longitudinal effects of self-oriented (and socially prescribed) perfectionism for athletes' psychological health.

The Mediating Role of Emotional and Physical Exhaustion

Consistent with research reported in the general perfectionism literature (e.g., Flett et al., 2003), studies by Hill and colleagues (e.g., Appleton & Hill, 2009; Hall et al., 2009; Hill et al., 2008, 2010) have examined the role of mediators in the relationship between self-oriented and socially prescribed perfectionism and psychological outcomes in athletes, including motivation regulations, coping strategies, achievement goals, unconditional self-acceptance, and labile self-esteem. For instance, Aghdasi (2014) revealed that, while self-oriented perfectionism was not significantly associated with burnout, this perfectionism dimension had a positive indirect relationship with burnout via unconditional self-acceptance (Hill et al., 2008). Importantly, Hill et al.'s research has provided insight into why self-oriented and socially prescribed perfectionism may influence athletes' psychological health.

In addition to the mediators identified by Hill and colleagues, it is possible that athlete burnout, and specifically the core component (see Gustafsson, Kenttä, & Hassmén, 2011) of emotional and physical exhaustion, may also explain the relationships between self-oriented and socially prescribed perfectionism with indicators of athletes' psychological well-being. According to Smith's (1986) cognitive-affective stress model, burnout is caused by chronic stress when individuals are unable to meet the demands such as high training load as well as extreme expectations and pressure from significant others. Such process of striving towards achieving the increased demands and expectations is likely to cause individuals to perceive overwhelming situations and subsequently experience feelings of helplessness and recurring threat to self-worth. Under these circumstances, both physiological (e.g., fatigue) and behavioural (e.g., devaluing the activities importance) responses will arise, which

eventually result in burnout. Smith also emphasised the importance of personality factors (e.g., perfectionism) in shaping an athlete's cognitive appraisal process, which may render individual's vulnerable to burnout. As described earlier in the introduction, previous research has found that perfectionism is associated with burnout, and especially feelings of exhaustion. For example, Lemyre, Hall, and Roberts (2008) demonstrated that maladaptive perfectionism dimensions (including concern over mistakes, doubts about actions, and parental expectations and criticism) were positively associated with exhaustion at the end of a season in a sample of Norwegian elite winter sport athletes. Cross-sectional research has also demonstrated that socially prescribed perfectionism is positively correlated with athletes' emotional and physical exhaustion (Hill et al., 2008, 2010; Ho et al., 2015 (see Chapter Two)), and Childs and Stoeber (2012) also revealed that socially prescribed perfectionism was a significant positive predictor of increased exhaustion among employees over six months.

There is also evidence that emotional and physical exhaustion predicts indicators of psychological health. Cross-sectional designs have shown emotional and physical exhaustion to be negatively correlated with enjoyment and intrinsic motivation among senior swimmers and college athletes (Raedeke & Smith, 2001). Furthermore, one study revealed that emotional and physical exhaustion was a negative predictor of positive affect in Swedish soccer players (Gustafsson, Skoog, Podlog, Lundqvist, & Wagnsson, 2013). Unsurprisingly, these latter findings suggest that exhausted athletes are drained of emotional and physical resources and thus tend to find it difficult to sustain their psychological well-being during practice, competition, and outside of sport. Overall, previous research provides indirect evidence that self-oriented and socially prescribed perfectionism are associated with exhaustion, which may subsequently

predict lower levels of athlete well-being. That is, it is possible that exhaustion will mediate the relationship between the targeted perfectionism dimensions and indicators of psychological well-being in athletes.

Examining Perfectionism and Psychological Well-Being in Deaf Athletes

To date, relatively little research in sport psychology has focused on the effects of perfectionism in deaf athletes. The latest statistics revealed that there are 9 million hearing impaired people out of 11 million people with disabilities in the UK participating in sport (Disability Sport, 2014; UK Deaf Sport, 2017), so research on deaf athletes should not be neglected. Furthermore, examining perfectionism in deaf athletes could enable us to understand how this personality trait affects the health of a range of athletes, beyond “abled-bodied” hearing-abled athletes. In a recent cross-sectional study, Ho et al. (2015; also see Chapter Two) provided initial cross-sectional evidence that socially prescribed perfectionism was positively correlated with emotional and physical exhaustion in deaf athletes. Moreover, hearing status did not moderate this relationship, suggest the direction and strength of the association between socially prescribed perfectionism and exhaustion may be similar in hearing and deaf athletes. Although self-oriented perfectionism was not significantly correlated with emotional and physical exhaustion, Ho et al. argued that this relationship should emerge over time. This is because the constant striving towards self-set standards of perfection during intensive and prolonged training/competitive periods where goals blockage, stresses, and repeated failure are likely to occur and may expose harsh and excessive self-criticism, rumination, and a preoccupation with personal inadequacies (Appleton et al., 2009). In turn, this constellation of negative cognitions and beliefs may render the athlete vulnerable to burnout (Lemyre et al., 2008).

While Ho et al.'s (2015; see Chapter Two) findings are consistent with previous cross-sectional research (Hill et al., 2010) with hearing athletes, there are some important limitations that warrant attention in future research. For example, cross-sectional analyses limit the opportunity to examine changes in the targeted relationships over time, and importantly for these changes to be influenced by the naturally occurring progress/goal blockage that all athletes experience. Moreover, Ho et al. considered exhaustion as a correlate of self-oriented and socially prescribed perfectionism, but as discussed above, it is possible that feeling of exhaustion may also explain the relationship between the perfectionism dimensions and additional indicators of athletes' health. Finally, longitudinal research is needed to determine whether self-oriented and socially prescribed perfectionism function in a similar manner in hearing and deaf athletes over time. Should the hypothesised relationships be invariant, a rationale can be forwarded for developing interventions that attempt to buffer the negative effects of self-oriented and/or socially prescribed in both samples of athletes.

Aims of the Research and Hypotheses

Although previous research has contributed to our understanding of the relationships between self-oriented and socially prescribed perfectionism with athletes' psychological well-being, to date, no published research has examined the relationships over time. Moreover, no research has considered the mediating role of emotional and physical exhaustion in the hypothesised relationships, and whether the overall hypothesised model (see Figure 3.1) is invariant between deaf and hearing athletes. The current study aimed to address these gaps in the literature.

In the current study, enjoyment and subjective vitality were specifically chosen as indicators of athletes' psychological well-being. Enjoyment and vitality represent the

emotional and psychological energy components of well-being, respectively.

Furthermore, these two outcomes have been studied extensively in sport (Allen, 2003; Reinboth & Duda, 2006) and are associated with perfectionism (e.g., Gaudreau & Verner-Filion, 2012) and exhaustion (e.g., Adie, Duda, & Ntoumanis, 2008).

With regards to athletes' exhaustion, in the current study the emotional symptom was distinguished from the physical symptom. The distinction between the physical and emotional components of burnout was originally proposed by Gould, Tuffey, Udry, and Loehr (1996) in a qualitative study with burnt-out tennis players. Interviews revealed different strains of burnout, including one that was emotional and stress-based and second strain that reflected the physical stresses associated with failing to meet intense training demands. More recently, Shirom (2003) acknowledged the distinction between emotional and physical exhaustion in organisational-based burnout. According to Shirom, burnout is best represented by distinct physical fatigue (feeling tired and experiencing low energy when working) and emotional fatigue (little energy to be empathetic towards others and to invest in relationships at work) dimensions. Aligned with Gould et al.'s and Shirom's suggestions, it may also be important to consider the different strains of exhaustion separately (rather than as a composite score) because it has been proposed that perfectionism dimensions may be better predictors of the psychological emotional component compared to the physical strain (Lonsdale, Hodge, & Raedeke, 2007). To address this issue, a revised version of the emotional and physical exhaustion subscale (Sharp, Woodcock, Holland, Duda, & Cumming, 2010) from the Athlete Burnout Questionnaire (Raedeke & Smith, 2001) was used.

In terms of measuring self-oriented and socially prescribed perfectionism, in this study we employed the recently developed Performance Perfectionism Scale for Sport

(PPS-S; Hill, Appleton, & Mallinson, 2016). Although previous research (including study one, see Chapter Two) investigating self-oriented and socially prescribed perfectionism in athletes has used an adapted (to sport) version of Hewitt and Flett's (1991, 2004) Multidimensional Perfectionism Scale (MPS), a number of authors (e.g., Dunn, Gotwals, & Causgrove Dunn, 2005; Hill, 2017; Stoeber & Madigan 2016) have highlighted the benefits of adopting measures of perfectionism that are developed with the target population and are domain-specific. The PPS-S was developed within athletic population and has good initial psychometrics properties (further information regarding this psychometric scale is provided in the methods section of this chapter).

Based on previous evidence, Time 1 self-oriented and socially prescribed perfectionism dimensions were hypothesised to have a stronger positive relationship with Time 2 emotional exhaustion compared to Time 2 physical exhaustion. In turn, Time 2 emotional and physical exhaustion were expected to be negatively correlated with Time 2 enjoyment and subjective vitality (see Figure 3.1). Lastly, based on the findings reported by Ho et al. (2015; See Chapter Two), the aforementioned relationships were hypothesised to be invariant across hearing and deaf athletes.

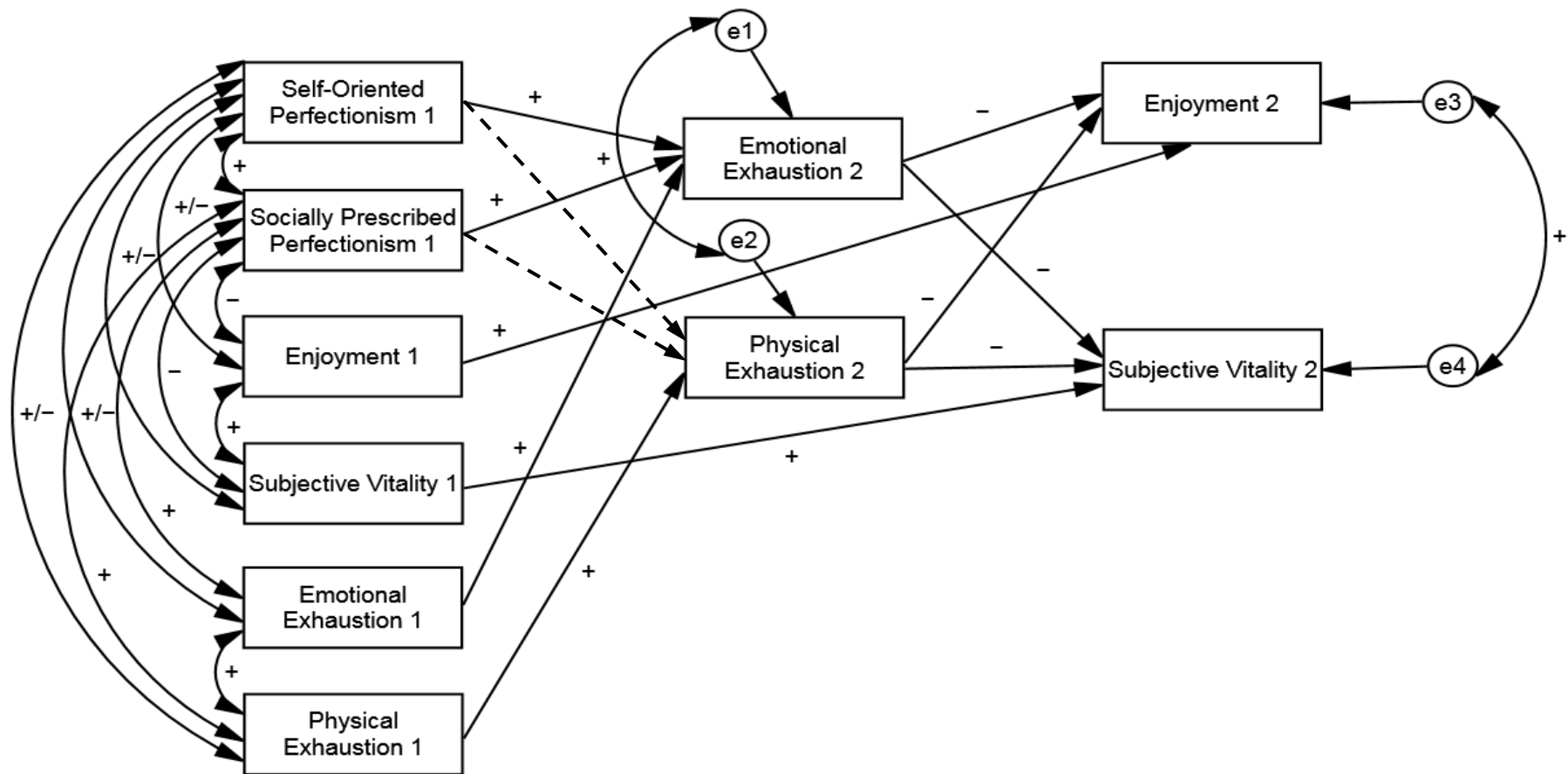


Figure 3.1. Proposed path analysis model: the mediating influence of Time 2 exhaustion in the relationship between Time 1 perfectionism dimensions and Time 2 enjoyment and subjective vitality. The negative (-) and positive (+) signs indicate the hypothesised relationship. Non-significant paths are shown in dashed lines.

Methods

Participants

At Time 1, 540 athletes ($M_{age} = 21.6$; $SD = 6.3$), consisting of 420 hearing ($M_{age} = 19.8$; $SD = 1.9$) and 120 non-hearing ($M_{age} = 28.3$; $SD = 10.5$) individuals, completed the first questionnaire at the beginning of a competitive season. Four months later, 307 athletes, including 206 hearing ($M_{age} = 19.6$; $SD = 1.4$) and 101 deaf ($M_{age} = 27.1$; $SD = 9.6$) individuals, completed the second questionnaire. This represents a 57% dropout rate for the overall sample from Time 1 to Time 2. Athletes were recruited from various sport clubs (i.e., Badminton, Football, Rugby, Swimming, Cricket, Track and Field, Netball, Hockey, Basketball, Lacrosse, Gymnastics, Volleyball, Netball, Korfbal, Squash, and American Football) from various clubs across England. The athletes' competitive levels included club (Hearing = 79.1%; Deaf = 58.4%), county (Hearing = 13.6%; Deaf = 4.0%), national (Hearing = 6.8%; Deaf = 5.9%), and international (Hearing = 0.5%; Deaf = 31.7%). The percentages of hearing loss among the deaf athletes were 9.9% at mild, 14.9% at moderate, 13.8% at severe, and 61.4% at profound levels.

Measures

Demographic information (Time 1 only). The questionnaire asked athletes to report their age, gender, main sport participation, type of sport (i.e., individual or team), playing standards (i.e., club, county, national, or international), and years of representing their current club/team. Athletes were also asked whether they had a hearing disability, and the deaf athletes were then asked to indicate the extent of their hearing disability (i.e., mild, moderate, severe, or profound).

Self-oriented and socially prescribed perfectionism (Time 1 only). The PPS-S (Hill et al., 2016) has six items capturing self-oriented perfectionism (e.g., “I only think positively about myself when I meet the standards I have set for myself as an athlete”) and five items capturing socially prescribed perfectionism (e.g., “I have to perform perfectly so that people will think positively about me”). Each statement was responded to on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) to reflect the beliefs that athletes hold when taking part in sport. Athletes’ scores on the self-oriented ($\alpha = .70-.83$) and socially prescribed perfectionism ($\alpha = .73-.75$) subscales have displayed acceptable Cronbach’s alpha (Hill et al., 2016), inter-item correlations (within .20 and .70), and item-total correlations ($\geq .30$). Factor correlations between self-oriented perfectionism and socially prescribed perfectionism in confirmatory factor analysis and exploratory structural equation modelling were large (above .50). Self-oriented perfectionism and socially prescribed perfectionism also had significant positive relationships with all subscales of the Sport-Multidimensional Perfectionism Scale-2 (Gotwals & Dunn, 2009), thus demonstrating accepting validity.

Emotional and physical exhaustion (Time 1 and 2). A revised version of the emotional and physical exhaustion subscale (Sharp et al., 2010) from the Athlete Burnout Questionnaire (Raedeke & Smith, 2001) was employed in this study. The emotional exhaustion (e.g., “I am feeling emotionally burned out in terms of my sport participation”) and physical exhaustion (e.g., “I feel so physically tired from my sport training that I have trouble finding energy to do other things”) subscales each consist of four items answered on a 5-point Likert scale anchored by 1 (*almost never*) to 5 (*almost always*). Sharp et al. reported that alpha coefficient for athletes’ scores on the emotional exhaustion and physical exhaustion subscales were .78 and .89, respectively.

Enjoyment (Time 1 and 2). The enjoyment subscale from the Intrinsic Motivation Inventory (McAuley, Duncan, & Tammen, 1989) measured the degree to which athletes enjoyed and felt good when they participated in their sport. Four items from the enjoyment subscale (e.g., “I usually have fun when participating in my sport”) were used, and athletes responded on a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). Past research has indicated good reliability for athletes’ scores on this subscale ($\alpha = .85$; Amorose & Horn, 2000).

Subjective vitality (Time 1 and 2). The Subjective Vitality Scale (SVS; Ryan & Frederick, 1997) was adopted in this study to capture athletes’ vitality levels. The SVS measures athletes’ perceptions of having energy and feelings of aliveness. It is a seven-item (e.g., “I look forward to each new day” and “I feel energised”) instrument that is attached to a 7-point Likert scale (1 = *not at all true* to 7 = *very true*). The SVS has been employed in previous research with athletes, with a Cronbach’s alpha score of .85 (see Li, 2010).

Procedures

The present study was approved by an ethics committee at a British University before the commencement of data collection. The project information sheet was then sent to the coaches and team managers to recruit the athletes. The first author circulated the questionnaires to the deaf athletes at the first time point, and two trained research assistants, who were final year sport and exercise sciences undergraduate students, distributed the questionnaires to the hearing athletes at the training venues. The first round of data collection took place at the beginning of a competitive University season in October/November. At the second time point, the lead researcher distributed the questionnaire to all available athletes at the end of a competitive season in

February/March. Appropriate instructions and consent forms were given to the athletes before or after a training session (see Appendix B). After four months, the second questionnaires were administered to athletes. Completion of the first and second questionnaires took hearing athletes approximately 20 minutes and 15 minutes, respectively. Overall, the deaf athletes took a similar amount of time to complete the questionnaire. However, a minority of deaf athletes (with profound hearing impairment and the use of sign language as their main communication method) took an additional 10–15 minutes as they requested assistance from the lead researcher when encountering difficulties in understanding the questions. Clarity was provided through written form (using simple words), lip-reading, and/or gesture (using an action and sign language).

Data Analysis

Version 19.0 of the PASW (Arbuckle, 2010) and AMOS (Arbuckle, 2010) were used to analyse the data. Although full structural equation modelling has advantages over path analysis, path analysis was specifically chosen to test the hypothesised model in Figure 2.1 because of the relatively small deaf sample in the present study. With reference to Kline's (2011) guidelines for using structural equation modelling, it is recommended that 10 to 20 participants per estimated parameter are needed to provide sufficient power. Based on this information, the minimum and maximum numbers of participants should be between 100 and 200 in a potential structural equation model with 10 parameters for the present study. It was, therefore, decided to use path analysis with maximum likelihood estimation rather than structural equation modelling due to insufficient number of athletes in the deaf sample. The assessment criteria used to determine whether the hypothesised model fit with the data included comparative fit index (CFI), non-normed fit index (NNFI), standardised root mean square residual

(SRMR), root mean square error of approximation (RMSEA), and its 90% confidence intervals. CFI and NNFI values above .90 and .95 indicate adequate and good fit, respectively. SRMR and RMSEA values below .08 are considered an adequate fit to the model (Byrne, 2010; Hoe, 2008).

Next, a comparison between full and partial mediation was tested using a causal steps approach (Holmbeck, 1997). In the first step, Model 1 (direct effects models) with only direct paths between Time 1 perfectionism dimensions and Time 2 indicators of psychological well-being was estimated. In the second step, Model 2 (constrained model) involved testing a fully mediated model with only significant indirect paths between Time 1 perfectionism dimensions and outcome variables via Time 2 emotional and physical exhaustion. In the final step, Model 3 (unconstrained model) involved testing a partial mediation model which including both direct and indirect paths from Time 1 perfectionism dimensions to Time 2 enjoyment and subjective vitality via Time 2 emotional and physical exhaustion. A comparison between Model 2 and 3 was conducted using the chi-square difference test, with a non-significant change in chi-square offering support for the fully mediated model. The effect size and statistical significant of indirect effects were examined using a bootstrap procedure with 95% bias corrected confidence intervals (BC CIs) derived from 1000 bootstrapped resamples (Efron, 1988; Shrout & Bolger, 2002).

Finally, a test of invariance was assessed to see whether the significant paths were invariant across the two samples. Using an automated multiple-group approach (Byrne, 2010) in AMOS (Arbuckle, 2010), an unconstrained baseline model and a constrained model were tested and compared. After running the analysis, the chi-square value of the configural model was subtracted from the chi-square value of the fully constrained

model to determine the chi-square difference. If the chi-square (χ^2) difference value is significant ($p < .05$), a further invariance test is needed to determine which path is variant. In contrast, if the χ^2 difference value is not significant ($p > .05$), it is concluded that the groups are invariant and no further test is needed.

Results

An initial inspection of the data revealed less than 0.6% of all items were missing, and thus the expectation maximisation algorithm was used to replace the missing values as suggested by Graham (2009). The percentages of hearing and deaf participants who completed both questionnaires compared to Time 1 questionnaire only were 49% and 84%, respectively. To check whether the participants who completed both Time 1 and Time 2 questionnaires did not differ from athletes who only completed the Time 1 questionnaire on the targeted variables, a MANOVA test was conducted. The results indicated that there were no significant differences ($p > .05$) across the two groups for the Time 1 data.

Descriptive Statistics, Reliabilities, and Bivariate Correlations

Table 3.1 illustrates the means, standard deviations, reliabilities, and bivariate correlations of the study variables utilised in this study. The internal reliabilities for scales were above .70, except the self-oriented perfectionism dimension for the deaf sample which was .67. The data output also showed that this alpha score could not have been improved by removing any items. While .70 is suggested to be an acceptable reliability coefficient, Nunnally and Bernstein (1994) state that “in the early stages of predictive or construct validation research, time and energy can be saved using instruments that have modest reliability” (pp. 264-265). Moreover, it is generally recognised that scales with fewer items than 10 have lower Cronbach’s alpha scores

(Field, 2005), and thus the six items for the self-oriented perfectionism subscale were retained.

The results also demonstrate that hearing athletes ($M = 4.63$) reported slightly higher mean scores for self-oriented perfectionism than deaf athletes ($M = 4.51$). In contrast, deaf athletes ($M = 4.14$) had higher mean scores for socially prescribed perfectionism than hearing athletes ($M = 3.48$). Independent samples t-test revealed no significant difference for self-oriented perfectionism ($t = .98, p > .05$), but a significant difference for socially prescribed perfectionism ($t = 5.96, p < .001$) across the two groups. To test for the differences in all Time 1 and Time 2 outcome variables in both hearing and deaf athletes, a repeated measures MANOVA was conducted. There were significant differences for Time 1 and Time 2 enjoyment [Hearing: $F(1, 205) = 17.73, p = .00$; Hotelling's Trace = .09; $\eta^2 = .08$; Deaf: $F(1, 100) = 6.84, p = .01$; Hotelling's Trace = .07; $\eta^2 = .06$] and subjective vitality [Hearing: $F(1, 205) = 7.55, p = .01$; Hotelling's Trace = .04; $\eta^2 = .04$; Deaf: $F(1, 100) = 9.58, p = .00$; Hotelling's Trace = .10; $\eta^2 = .09$] in both hearing and deaf athletes, only physical exhaustion was not significantly different from Time 1 to Time 2 in both groups [Hearing: $F(1, 205) = .51, p = .48$; Hotelling's Trace = .00; $\eta^2 = .00$; Deaf: $F(1, 100) = 2.18, p = .14$; Hotelling's Trace = .02; $\eta^2 = .02$]. There was also a significant difference for Time 1 and Time 2 emotional exhaustion in the deaf sample [$F(1, 100) = 5.14, p = .03$; Hotelling's Trace = .05; $\eta^2 = .05$], but no significant difference for Time 1 and Time 2 emotional exhaustion in the hearing sample [$F(1, 205) = 1.77, p = .19$; Hotelling's Trace = .01; $\eta^2 = .01$].

Table 3.1

Descriptive Statistics, Cronbach's Alpha Coefficients, and Bivariate Correlations between Time 1 (T1) and Time 2 (T2) Variables in Hearing (n = 206) and Deaf Athletes (n = 101)

	1	2	3	4	5	6	7	8	9	10	<i>M</i>	<i>SD</i>	α
T1 SOP	–	.52***	.25*	.02	.23*	.05	.12	–.15	.02	–.01	4.51	1.16	.67
T1 SPP	.51***	–	.36***	.06	.25*	.13	.14	–.06	.06	–.17	4.14	1.16	.78
T1 EE	.22**	.33***	–	.38***	.70***	.30**	–.19	–.10	–.31**	.07	2.40	.87	.87
T2 EE	.09	.33***	.49***	–	.28*	.73***	.09	–.09	.18	–.24*	2.70	.94	.87
T1 PE	.11	.26***	.63***	.42***	–	.48***	–.22*	–.11	–.29**	–.06	2.64	.89	.86
T2 PE	.07	.16*	.32***	.62**	.54***	–	–.07	–.09	–.08	–.36***	2.82	.87	.91
T1 ENJ	.14*	.02	–.28***	–.20**	–.25***	–.17*	–	.06	.45***	.07	6.46	.61	.84
T2 ENJ	.09	–.07	–.23**	–.28***	–.25***	–.16*	.43***	–	.12	.36***	6.10	.83	.91
T1 SV	.10	–.10	–.36***	–.21**	–.29***	–.13	.50***	.33***	–	.02	5.50	.84	.81
T2 SV	.03	–.12	–.32***	–.31***	–.32***	–.23*	.39***	.54***	.56***	–	5.15	.77	.80
<i>M</i>	4.63	3.48	2.29	2.37	2.67	2.70	6.26	6.00	5.09	4.92			
<i>SD</i>	.99	1.03	.78	.77	.82	.75	.70	.95	.86	.88			
α	.79	.78	.86	.87	.87	.86	.85	.92	.82	.84			

Note. SOP = self-oriented perfectionism; SPP = socially prescribed perfectionism; EE = emotional exhaustion; PE = physical exhaustion; ENJ = enjoyment; SV = subjective vitality; T1 = Time 1; T2 = Time 2; All figures are presented for hearing athletes below the diagonal and deaf athletes above the diagonal.

* $p < .05$. ** $p < .01$. *** $p < .001$.

The Hypothesised Model in Path Analysis

Mardia's coefficient of multivariate kurtosis (normalised estimate = 35.91) indicated the data was non-normal, and thus the Bollen-Stine Bootstrap procedure was employed which produces a bootstrap corrected chi-squared value (Byrne, 2010). Fit indexes in the hypothesised path analysis model (including all significant and non-significant paths) are presented in Figure 3.1 demonstrate an acceptable fit to the data: $\chi^2_{(23)} = 55.68$, $\chi^2/df = 2.42$, $p < .001$, CFI = .96, NNFI = .93, SRMR = .08, RMSEA = .07 (90% CIs = .05–.09). The path coefficients between Time 1 self-oriented perfectionism and Time 2 emotional exhaustion ($\beta = -.11$, $p < .05$) and Time 1 socially prescribed perfectionism and Time 2 emotional exhaustion ($\beta = .22$, $p < .001$) were significant. In contrast, the path coefficients between Time 1 perfectionism dimensions and Time 2 physical exhaustion were non-significant. Finally, the path coefficients between Time 2 physical exhaustion and Time 2 subjective vitality ($\beta = -.13$, $p < .05$), Time 2 emotional exhaustion and Time 2 enjoyment ($\beta = -.16$, $p < .01$), and Time 2 emotional exhaustion and Time 2 subjective vitality ($\beta = -.16$, $p < .05$) were statistically significant. The path between Time 2 physical exhaustion and Time 2 enjoyment was non-significant. The hypothesised model accounted for 12% of the variance in Time 2 emotional exhaustion, 8% of the variance in Time 2 physical exhaustion, 13% of the variance in Time 2 enjoyment, and 20% of the variance in Time 2 subjective vitality (see Figure 3.2).

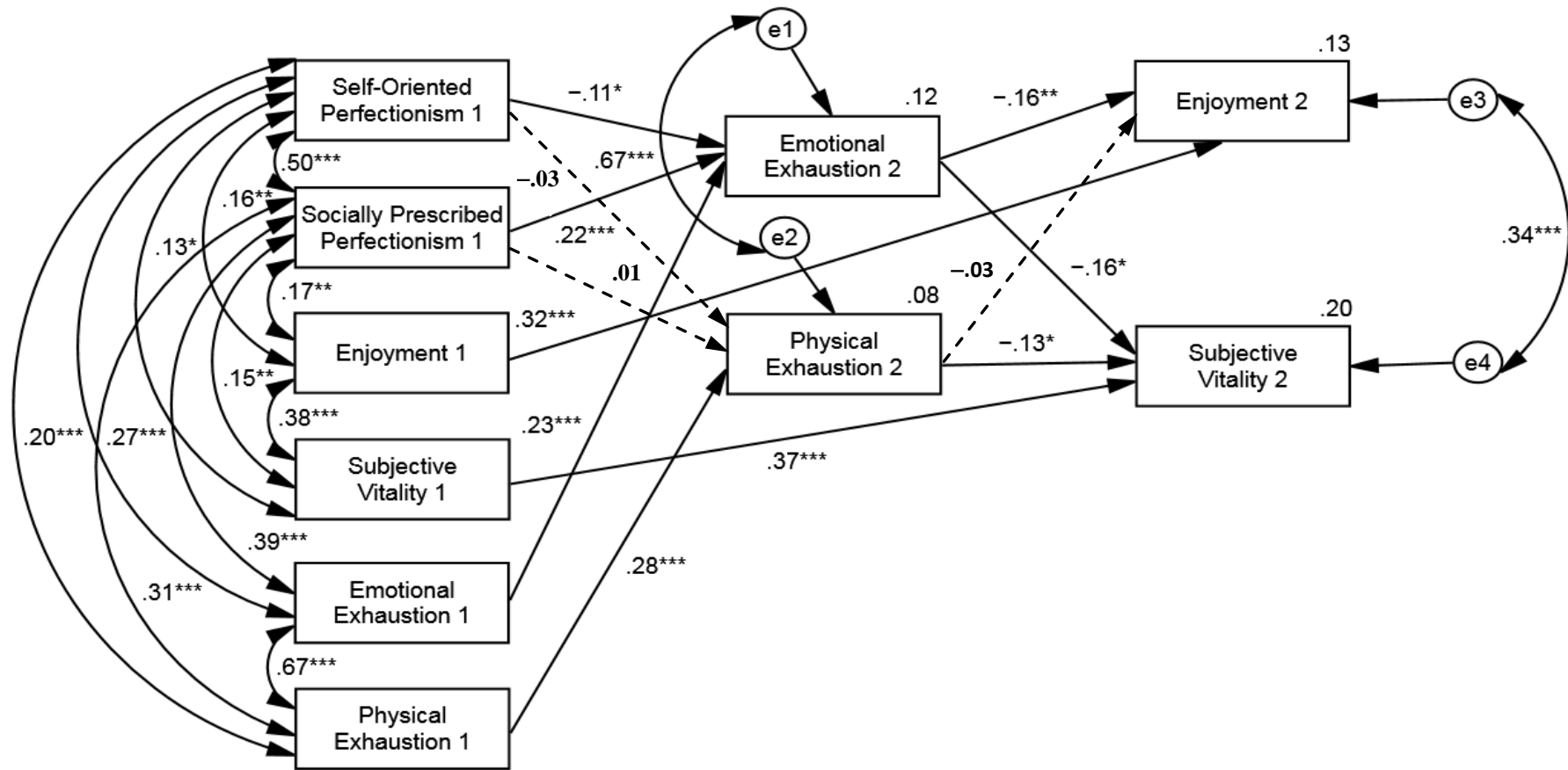


Figure 3.2. Results of path analysis model: the mediating influence of Time 2 emotional and physical exhaustion in the relationship between Time 1 perfectionism dimensions and Time 2 indicators of psychological well-being (i.e., enjoyment and subjective vitality). Non-significant paths are shown in dashed lines including Time 1 self-oriented perfectionism and Time 2 physical exhaustion, Time 1 socially prescribed perfectionism and Time 2 physical exhaustion, and Time 2 physical exhaustion and Time 2 enjoyment.

* $p < .05$. ** $p < .01$. *** $p < .001$.

N.B. The error term is known as the residual; it is a variable in a statistical model that can be associated with “either observed variables or factors specified as dependent variables” (Kline, 2011, p. 9). The error variance must be estimated in the whole path analysis model and the data; each outcome variable needs to have an error term that represents the variance unexplained by the predictors (Kline, 2011). Error terms 1 (e1) and 2 (e2) were correlated to account for the association between two components of athlete exhaustion. Error terms 3 (e3) and 4 (e4) were also correlated to account for the association between two indicators of psychological well-being. Time 1 variables were also correlated to reflect the cross-sectional paths between the perfectionism dimensions and outcomes variables previously reported in past research (e.g., Gaudreau & Verner-Filion, 2012; Hill, et al., 2010).

To reduce bias in path analysis, Kline (2011) emphasised the importance of testing alternative models when there is more than one a priori model available. Theoretically, it is possible that the psychological well-being of enjoyment and subjective vitality may predict emotional and physical exhaustion over time. As a result, an alternative path analysis model was tested in which perfectionism dimensions were independent variables, enjoyment and subjective vitality were mediators, and emotional and physical exhaustion were dependent variables. The fit of the alternative path analysis model was poorer than the original model: $\chi^2_{(26)} = 87.18$, $\chi^2/df = 3.35$, $p < .001$, CFI = .92, NNFI = .90, SRMR = .10, RMSEA = .09 (90% CIs = .07–.11). The Akaike information criterion (AIC; Kline, 2011) was also used to compare the two path analysis models, with a lower AIC value indicating a better model. The path analysis model in Figure 3.2 (AIC = 139.66) was more parsimonious than the alternative path analysis model (AIC = 165.18). Based on the goodness-of-fit statistics and AIC values, the alternative path analysis model was therefore rejected and was not further explored.

Assessment of Meditation

A test of model 1 (i.e., both self-oriented and socially prescribed perfectionism dimensions have a direct pathway to enjoyment and subjective vitality; $\chi^2_{(2)} = 8.23$, $\chi^2/df = 4.12$, $p < .05$, CFI = .98, NNFI = .97, SRMR = .04, RMSEA = .10 (90% CIs = .04–.18)) revealed that Time 1 perfectionism dimensions and Time 2 outcome variables were not significantly correlated. The direct paths between self-oriented perfectionism and enjoyment ($\beta = .01$, $p > .05$), self-oriented perfectionism and subjective vitality ($\beta = -.03$, $p > .05$), socially prescribed perfectionism and enjoyment ($\beta = -.05$, $p > .05$), and socially prescribed perfectionism and subjective vitality ($\beta = -.07$, $p > .05$) were not significant. Because the direct paths between perfectionism

dimensions and outcome variables were non-significant, it was not possible to test for mediation in Models 2 and 3. However, MacKinnon and colleagues (MacKinnon, 2000; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) suggested that it is still possible to test for indirect effects if the independent variables are significantly associated with the mediators, and the mediators are significantly associated with the dependent variables. As a result, tests of indirect effects were isolated to the paths from perfectionism dimensions to the outcome variables via emotional exhaustion in the present study (given neither perfectionism dimension was significantly associated with physical exhaustion).

Preacher and Kelley (2011) have suggested new ways to communicate the magnitude of the indirect effects in mediation analysis. Tests of magnitude of the indirect effects revealed the relationships between Time 1 self-oriented and Time 2 enjoyment (standardised indirect effect = .02, $p < .05$, 95% BC CIs = .01 to .05) and subjective vitality (standardised indirect effect = .02, $p < .05$, 95% BC CIs = .01 to .07) were indirect via Time 2 emotional exhaustion. The indirect effects of Time 1 socially prescribed perfectionism on Time 2 enjoyment (standardised indirect effect = $-.04$, $p < .01$, 95% BC CIs = $-.07$ to $-.01$) and subjective vitality (standardised indirect effect = $-.04$, $p < .01$, 95% BC CIs = $-.10$ to $-.03$) via Time 2 emotional exhaustion were also significant (see Table 3.2). To determine the strength of the indirect effect, Preacher and Kelley (2011) have suggested using a standardised effect size, in which .01, .09, and .25 are denoted for small, medium, and large effect sizes, respectively. Based on the results in Table 3.2, the indirect effects ranged from small to medium effects.

Table 3.2

Direct and Indirect Effects of the Relationship between Time 1 (T1) Perfectionism Dimensions and Time 2 (T2) Enjoyment and Subjective Vitality via Time 2 (T2) Emotional Exhaustion (N =307)

Independent variable	Outcome	Direct effect	Indirect effect
			T2 Emotional exhaustion [95% BC confidence intervals]
Performance Perfectionism Scale for Sport			
T1 Self-oriented perfectionism	T2 Enjoyment	-.00	.02* [.01, .05]
	T2 Subjective vitality	-.03	.03* [.01, .07]
T1 Socially prescribed perfectionism	T2 Enjoyment	-.05	-.04** [-.07, -.01]
	T2 Subjective vitality	.08	-.06**[-.10, -.03]

Note. All standardised beta coefficients are presented.

* $p < .05$. ** $p < .01$.

Invariance Testing Across the Two Groups

To examine whether the indirect effects via emotional exhaustion were consistent across hearing and deaf athletes, a test of invariance was carried out. The configural model, with no equality constraints imposed, yielded an acceptable fit to the data. After constraining the four targeted path estimates (i.e., Time 1 self-oriented perfectionism - Time 2 emotional exhaustion; Time 1 socially prescribed perfectionism - Time 2 emotional exhaustion; Time 2 emotional exhaustion - Time 2 enjoyment; Time 2 emotional exhaustion - Time 2 subjective vitality), the χ^2 difference value between the configural model and constrained model was statistically non-significant. The finding indicates the indirect effects via emotional exhaustion were invariant (see Table 3.3).

Suppression Effects

Comparison of the association between self-oriented perfectionism and emotional exhaustion in the absence (bivariate) and presence (path analysis) of socially prescribed perfectionism suggest the presence of suppression effects. Suppression is identified as a change (e.g., increased) regression weight between the independent variable and the dependent variable when other predictor variables exist (Cohen, Cohen, West, & Aiken, 2003). In the present study, the relationship between Time 1 self-oriented perfectionism and Time 2 emotional exhaustion was positive and non-significant at the bivariate level (see Table 3.1). However, the association between Time 1 self-oriented perfectionism and Time 2 emotional exhaustion in the presence of Time 1 socially prescribed perfectionism was significant and negative in the path analysis (see Figure 3.2). The suppression effects are further discussed in the next section.

Table 3.3

A Summary of Goodness-of-fit Statistics for Tests of Invariance across Hearing and Deaf Athletes (N = 307)

Model description	χ^2	<i>df</i>	$\Delta\chi^2$	Δdf	Statistical significance	CFI	RMSEA
Configural model	58.82	24	–	–	–	.93	.07
Fully constrained model	64.66	28	5.84	4	<i>ns</i>	.92	.07

Note. $\Delta\chi^2$ = difference in χ^2 values between models; Δdf = difference in number of degrees of freedom between models; *ns* = Not Significant.

Discussion

Despite growing interest in the consequences of perfectionism for athletes' health, little research in sport has examined the correlates of self-oriented and socially prescribed perfectionism over time. The aims of the current study were to examine: (1) whether changes in enjoyment and subjective vitality over four months were predicted by Time 1 self-oriented and socially prescribed perfectionism; (2) whether these longitudinal relationships were mediated by changes in emotional exhaustion and physical exhaustion; and (3) whether the hypothesised model was invariant across hearing and deaf athletes. It was hypothesised that Time 1 self-oriented and socially prescribed perfectionism would positively predict Time 2 emotional exhaustion, and to a lesser extent physical exhaustion. Changes in emotional and physical exhaustion, in turn, were expected to negatively predict changes in enjoyment and subjective vitality. Based on the findings reported by Ho et al. (2015; see Chapter Two), it was also hypothesised that these relationships would be mediated by exhaustion and would be invariant across the hearing and deaf athletes.

The findings from the path analysis revealed an indirect relationship between Time 1 perfectionism dimensions and Time 2 enjoyment and subjective vitality through Time 2 emotional exhaustion, but not physical exhaustion. This finding provides partial support for hypotheses one and two. Specifically, the path analysis demonstrated that Time 1 self-oriented and socially prescribed perfectionism dimensions were negatively and positively associated with Time 2 emotional exhaustion, respectively. In turn, Time 2 emotional exhaustion was negatively associated with Time 2 enjoyment and subjective vitality. The indirect effects of these relationships via Time 2 emotional exhaustion ranged from small to medium, meaning that the strength of association between variables has small to medium effects. While the findings account for a small proportion of the variance in the path analysis model, with 12% and 8% of the variance explained in Time 2 emotional exhaustion and Time

2 physical exhaustion, they are consistent with Smith's (1986) cognitive-effective stress model that describes the different stages of athlete burnout. Specifically, the emotional components of burnout could stem from vulnerable personality dispositions including maladaptive perfectionism. In support of this, existing empirical evidence from Lemyre et al. (2008) revealed that maladaptive perfectionism (including concern over mistakes, doubts about actions, and parental expectations and criticism) was positively correlated with exhaustion in sport. The final path analysis model also demonstrated that a number of significant paths were invariant across deaf and hearing athletes, providing support for hypothesis three. Overall, these findings are novel because they provide initial evidence that self-oriented and socially prescribed perfectionism dimensions, measured via a sport-specific measure, are associated longitudinally with indicators of deaf and hearing athletes' psychological health. Moreover, the current study provides initial evidence that emotional exhaustion is a mediator of the longitudinal relationship between perfectionism dimensions and indicators of psychological well-being.

The Relationship between Socially Prescribed Perfectionism and Psychological Well-Being

This study extends previous research examining socially prescribed perfectionism in sport research by demonstrating that the negative association between this perfectionism dimension and psychological health emerges over time. Moreover, the current study extends previous cross-sectional research (Hill et al., 2008, 2010; Ho et al., 2015; Chapter Two) by revealing that the effects of socially prescribed perfectionism over four months of the athletes' season are indirect via increases in emotional exhaustion.

The longitudinal positive association between socially prescribed perfectionism and athletes' emotional exhaustion is consistent with Hewitt and Flett's (1991) original theorising on the debilitating consequences of this perfectionism dimensions. This specific finding is

unsurprising given athletes scoring high in socially prescribed perfectionism rely extensively on the conditional approval of significant others in order to validate a sense of self-worth (Hewitt & Flett, 1991). As a result, a relentless pursuit of externally-determined standards characterises their achievement striving. At the same time, they also have an inability to derive any satisfaction from goal striving. This means these athletes often experience feelings of hopelessness in sport and, in turn, render them vulnerable to feelings of emotional exhaustion. The current findings suggest these feelings of emotional exhaustion may intensify over time due to a lack of sense of control over the desired outcomes (Hill et al., 2008), an inability to cope with failure (Hill, Hall, & Appleton, 2010), and low self-esteem (Filaire, Rouveix, Pannafieux, & Ferrand, 2007). With this emotional exhaustion intensifying over four months as the season progresses towards more-important competitive events, it is unsurprising that this facet of athlete burnout negatively predicted athletes' enjoyment of sport and their sense of vitality.

The Relationship between Self-Oriented Perfectionism and Psychological Well-Being

The finding that self-oriented perfectionism was negatively associated with changes in enjoyment and vitality via a negative correlation with emotional exhaustion over time is inconsistent with Flett and Hewitt's (2005) assertion that this perfectionism dimension is maladaptive. As a result, the findings are also inconsistent with this study's hypothesis that the vulnerable nature of this perfectionism dimension would be exposed via a longitudinal design as the athlete encounters naturally occurring circumstances such as setbacks towards important goals over a competitive season. However, the current findings echo previous cross-sectional findings inside (Appleton et al., 2009; Hill et al., 2008; Hill & Appleton, 2011) and outside of sport (Childs & Stoeber, 2012). It is also interesting to note that, in contrast, to the longitudinal relationships and previous cross-sectional research, the association (both

bivariate and path analysis model) between self-oriented perfectionism and emotional exhaustion at Time 1 was positive and significant.

Why might there be a difference in the cross-sectional and longitudinal relationships between self-oriented perfectionism and emotional exhaustion? It could be speculated that at Time 1 (i.e., the start of season) the athletes have experienced little-to-no success. As a result, athletes scoring high in self-oriented perfectionism are striving relentlessly towards high standards, engaging in self-criticism when making mistakes without the “positives” associated with winning/success to protect their fragile self-worth. This, in turn, may facilitate feelings of emotional exhaustion. However, over the course of the sport season, self-oriented perfectionism may boost the motivation and performance of the athlete (Stoeber, 2011) and thus enhance the opportunity to win. Thus, despite negative thoughts persisting over the course of a season, it is possible that this perfectionism dimension allows the athlete to experience feelings of success and as a result, high levels of emotional exhaustion are prevented. In turn, low levels of emotional exhaustion mean athletes scoring high in self-oriented perfectionism can experience enjoyment and derive vitality from their participation in sport.

The Suppression Effects of Socially Prescribed Perfectionism

Although the path analysis model suggests self-oriented perfectionism was negatively correlated with lower enjoyment and vitality scores via a negative path to emotional exhaustion over time, it is important to remain cognisant of the non-significant bivariate correlation between this perfectionism dimension at Time 1 and emotional exhaustion at Time 2. One potential explanation for the discrepancy between the associations at the bivariate (non-significant correlation) and path analysis (negative and significant) model is the suppression effects of socially prescribed perfectionism (i.e., the relationship between self-oriented perfectionism and emotional exhaustion is suppressed by socially prescribed

perfectionism). This occurs because the association between an independent variable and an outcome variable becomes larger when other independent variable is added to the model (Cohen et al., 2003).

Taking the current case in this study, the non-significant bivariate relationship between Time 1 self-oriented perfectionism, and Time 2 emotional exhaustion, was enhanced and became statistically significant in the path analysis. This might be due to the effects of suppression caused by socially prescribed perfectionism. In other words, the relationship between Time 1 self-oriented perfectionism and Time 2 emotional exhaustion differs depending on whether Time 1 socially prescribed perfectionism is present (or not) in the relationship. This suppression effect is consistent with past perfectionism research (e.g., Aldea & Rice, 2006; Flett et al., 2003; Hill et al., 2010; Hill, Huelsman, & Araujo, 2010; Scott, 2007; Wu & Wei, 2008). The suppression effect of socially prescribed perfectionism were also reported by Ho et al. (2015; see Chapter Two) in cross-sectional study.

It is proposed therefore that the two perfectionism dimensions may suppress each other when they share the common variance in regression and path analysis. In Ho et al. (2015) and the current study, both self-oriented perfectionism and socially prescribed perfectionism dimensions were positively correlated, thus it is difficult to make a firm conclusion as to how each dimension is correlated with other outcome variables when they are included in these two statistical analyses. Shrout and Bolger (2002) pointed out that suppression effects occur in longitudinal studies, specifically relating to mediation models, because of sampling fluctuations. Shrout and Bolger also suggested that when suppression effects are theoretically sound or reach statistical significance, the effect of the path involving suppression “must be cautiously interpreted” (p. 432). Thus, prior to concluding that self-oriented perfectionism is negatively correlated to athlete emotional exhaustion over time,

future research is required to replicate this finding to determine whether this suppression effect is isolated to this study.

The Non-Mediating Role of Physical Exhaustion

The present study found that both self-oriented and socially prescribed perfectionism were not related to changes in physical exhaustion over time. There are a number of possible explanations for the non-significant relationships. First, a close inspection of the descriptive statistics suggests relatively few athletes from both samples reported high (i.e., one or two standard deviations above the mean) level of physical exhaustion, with the majority of athletes reporting moderately low levels. Moreover, the mean scores for physical exhaustion remained relatively stable across time. The lack of variability (i.e., high and low) and change in physical exhaustion scores may have prevented the hypothesised relationships emerging with the two perfectionism dimensions. A second explanation for the non-significant paths is athletes scoring high in either (or both) perfectionism dimension may be reluctant to admit that they are experiencing physical fatigue in sport. Doing so may equate to acknowledging that they no longer have the energy to meet high, perfectionistic standards and thus they are no longer able to perform at level needed to reaffirm feelings of self-worth. Overall, the current findings support Lonsdale et al.'s (2007) argument that perfectionism dimensions are better predictors of emotional exhaustion rather than physical exhaustion. Furthermore, the findings reinforce the importance of separating the different strains of exhaustion, rather than combining emotional and physical exhaustion into one composite variable, when investigating the relationship between perfectionism and burnout in sport.

Invariance in Deaf and Hearing Athletes

The findings also showed that the indirect relationship between Time 1 perfectionism dimensions and Time 2 enjoyment and subjective vitality via Time 2 emotional exhaustion was invariant across hearing and deaf athletes. Although previous research (Backenroth-

Ohsako, Wennberg, & Klinteberg., 2003) outside of sport has revealed that deaf individuals experience higher levels of psychological (e.g., anxiety) and physical (e.g., muscle tension) ill-health compared to their hearing counterparts, the evidence from the current study suggests self-oriented and socially perfectionism dimensions are related (or not) over time to emotional exhaustion and, in turn psychological health, in a similar direction in deaf and hearing athletes. This finding builds upon the non-significant moderating role of hearing ability (i.e., deaf or non-deaf) in the relationships between the two perfectionism dimensions and indices of well-being and ill-being reported by Ho et al. (2015; see chapter two). Further research is now needed to expand upon the findings reported in Ho et al. and the current study to determine whether the indirect relationships between the two perfectionism dimensions and well-being indicators are indirect via other mediators (e.g., coping, contingent self-worth, motivation regulations) and whether these effects are invariant across the deaf and hearing athletes. Building the knowledge base of mediators that explain the effects of self-oriented perfectionism and socially prescribed perfectionism in deaf and hearing athletes is important to determine whether the nature of each perfectionism dimension and how they relate to important outcomes is similar (or different) across the two samples.

Limitations and Future Research Directions

The present investigation has some limitations that must be addressed to inform future research. The first potential limitation concerns the relatively short timeframe of four months between time points. This relatively short timeframe may have been insufficient for goal blockages and repeated failure to occur on a consistent basis, which are required to provide a test of the vulnerability hypothesis associated with self-oriented perfectionism (see Hill et al., 2011). As a result, researchers may wish to adopt a longer period of time (e.g., 12 months) between measurement points to allow sufficient time to test the vulnerability hypothesis

associated with self-oriented perfectionism in future research. Alternatively, adopting a diary methodology may also enable researchers to tap the state-like cognitions and emotions experienced by athletes scoring high in self-oriented and socially prescribed perfectionism after success and failures in training and competition. Furthermore, this study did not measure key variables (e.g., goal progress/blockage, stress, failure) associated with exposing the vulnerable nature of self-oriented perfectionism. Future longitudinal research that examines self-oriented perfectionism would do well to include at least one of these variables.

Another limitation of this current study was the difference in sample size between the two groups, which has important implications for testing invariance. The difference in sample size between the two groups was unavoidable, given the smaller number of deaf athletes competitive at a high performance level in England and attempting to retain these deaf athletes over time. Having different sample sizes across the groups has implications for the formula computing the chi-square statistics used to test for invariance and the parameter estimates in the path analysis model is sensitive to sample size (Meade, 2005). Moreover, unequal sample sizes can sometimes lead to erroneous interpretations given that one may take a non-statistically significant result as an indication of no difference between groups.

A further limitation concerns the sole focus on exhaustion as the mediator of the hypothesised relationships. Overall, the size of the indirect effects via emotional exhaustion in this study were relatively small (possibly due to the lack of variability in the emotional exhaustion scores in both groups). Although exhaustion is considered the central facet of athlete burnout (Raedeke, Lunney, & Venables, 2002), other burnout dimensions may emerge as stronger mediators of the effects of self-oriented and socially prescribed perfectionism. For example, athletes scoring high in self-oriented and socially prescribed perfectionism are likely to have unattainable goals and to experience frustration, thus experiencing a reduced sense of accomplishment over time.

Despite the strengths of this prospective study, the correlational design precludes definitive inference regarding the causal associations between the variables. It is also important to acknowledge that the correlations between perfectionism dimensions and burning out symptoms presented in this study were relatively weak over the two different time points compared to other longitudinal studies in perfectionism (e.g., Madigan et al., 2015), albeit the indirect effects were small to medium. One could speculate that in order to establish causation, future research could adopt an experimental design to manipulate athletes' feelings of exhaustion. However, this may raise some ethical concerns given that participants would be directly exposed to mental and emotional harm. In this way, an alternative research approach may be to adopt a qualitative approach using semi-structured interviews to generate rich insights of athletes own understanding of the nature of self-oriented and socially prescribed perfectionism (see Chapter Four).

Conclusion

In conclusion, this is the first longitudinal study to examine the mediating influence of exhaustion in the relationship between perfectionism dimensions and indicators of psychological well-being (i.e., subjective vitality and enjoyment) in athletes using a longitudinal approach. Regardless of the hearing ability among athletes, the findings show that emotional exhaustion may be an important factor that explains for the negative relationships between socially prescribed perfectionism for athletes' enjoyment and vitality. In contrast, the current findings suggest that athletes scoring high in self-oriented perfectionism may continue to experience enjoyment and vitality over time, and that lower levels of emotional exhaustion may mediate this relationship. Overall, the mediating role of emotional exhaustion provides some insight into the longitudinal relationship between perfectionism dimensions and indicators of psychological health in hearing and deaf athletes.

Importantly, this study also adds to the very limited knowledge base on the psychological predictors of deaf athletes' well-being.

**A Qualitative Investigation of High Self-Oriented and Socially Prescribed Perfectionism
in Hearing and Deaf Athletes Grounded in Self-Regulation Strategies**

Abstract

The main purpose of this study was to gain insight into athletes reporting high levels of self-oriented and socially prescribed perfectionism and the self-regulation strategies they use during competition and training. In doing so, the study tested two competing models of perfectionism: Hewitt and Flett's (1991) model which proposes athletes scoring high in both perfectionism dimensions may be especially vulnerable to maladjustment and ill-being versus the 2 x 2 model of perfectionism (Gaudreau & Thompson, 2010) that considers this combination to be less debilitating as the benefits associated with self-oriented perfectionism offset some of the negatives associated with socially prescribed perfectionism. Six hearing athletes ($M_{age} = 19.5$; $SD = 1.5$) and five deaf athletes ($M_{age} = 31.8$; $SD = 10.5$) scoring one standard deviation above the mean on self-oriented and socially prescribed perfectionism participated in semi-structured interviews. The results revealed that, overall, hearing and deaf athletes employ similar self-regulation strategies, albeit with differences in self-monitoring and relaxation. Moreover, the findings suggest that the quality of self-regulation strategies at the surface level seemed to range from adaptive to maladaptive, offering some support to the 2 x 2 model (Gaudreau & Thompson). However, there was also some evidence that the seemingly adaptive strategies could, in the long-term, render the athletes vulnerable to difficulties and maladjustment, thus lending support for Hewitt and Flett's model.

Keywords: self-regulation strategies, perfectionism, hearing disability

Introduction

A large body of literature in the field of sport psychology has focused on understanding able-bodied athletes. In comparison, less research has focused disabled performers, and whether key personality traits differ in their nature (i.e., how they influence the thoughts, feelings and behaviours) between the two groups. However, there is emerging research in sport psychology (e.g., Guthrie, 1999; Kavussanu, Ring, & Kavanagh, 2014; Stocker, 2001) which has begun to understand more about disabled athletes. For example, research (Ho, Appleton, Cumming, & Duda, 2015, also see Chapters Two and Three) has begun to examine the personality trait of perfectionism (and specifically self-oriented and socially prescribed perfectionism dimensions) and how it is associated with symptoms of burning out in deaf (and hearing) athletes. In an initial cross-sectional study, a series of regression analyses revealed that self-oriented and socially prescribed perfectionism dimensions predicted a broad array of burnout symptoms in hearing and deaf athletes (Ho et al., 2015; see Chapter Two). Likewise, in a second study (see Chapter Three), the aforementioned perfectionism dimensions were associated with symptoms of exhaustion and indicators of well-being at the start of a competitive season. The second study also discovered that the associations between Time 1 perfectionism dimensions and Time 2 well-being indicators of enjoyment and subjective vitality were indirect via increases in Time 2 emotional exhaustion. Moreover, both studies revealed that the correlations between perfectionism and the targeted outcomes were generally invariant across deaf and hearing athletes.

Building upon the initial work presented in Chapters Two and Three of this thesis that have examined the correlates of self-oriented and socially prescribed perfectionism in deaf athletes, this study employed in-depth, one-to-one interviews with hearing and deaf athletes scoring high in both perfectionism dimensions (labelled mixed perfectionism by Gaudreau & Verner-Filion, 2012) to gain further insight into the broad perfectionism personality trait in

sport. In order to guide the current investigation into the nature of the broad perfectionism personality trait in hearing and deaf athletes, a self-regulation framework was employed. Self-regulation is a broad term that incorporates a range of strategies employed by athletes in their attempts to manage their thoughts, feelings, and behaviours (Duda, Cumming, & Balaguer, 2005). Gaining insight into the self-regulatory strategies adopted by athletes scoring high in self-oriented and socially prescribed perfectionism, and how this influences the athlete's cognitions, affect, and behaviours in sport, seems like a fruitful avenue to explore in attempting to understand more about the overall perfectionism construct. Building upon the studies presented in Chapters Two and Three, a further purpose of this study was to compare the self-regulatory strategies adopted by hearing athletes with deaf athletes scoring high in self-oriented and socially prescribed perfectionism.

High Self-Oriented and Socially Prescribed Perfectionism

Cross-sectional (e.g., Appleton & Hill, 2012; Chapter Two), longitudinal (e.g., Damian, Stoeber, Negru, & Bahan, 2013; Chapter Three), and experimental (e.g., Hill et al., 2011) research has examined the associations between self-oriented and socially prescribed perfectionism with indicators of psychological well-being and ill-being in sports. This research considered self-oriented and socially prescribed perfectionism as separate (albeit related) constructs, with each dimension having unique effects for the cognitions, affect, and behaviours of athletes. This research has made an important contribution to our understanding of the specific nature of each perfectionism dimension. However, it is important to remain cognisant of Hewitt and Flett's (2004) advice that some individuals may experience high levels of self-oriented *and* socially prescribed perfectionism, and thus research is needed to understand how the combined effects of these dimensions influence the thoughts, feelings, and behaviours of athletes in sport.

Little research inside of sport has considered the experiences of athletes that report high levels of self-oriented and socially prescribed perfectionism. However, a number of studies (e.g., Cumming & Duda, 2012; Gotwals, 2011) have examined whether athletes can be grouped (or clustered) together based on their scores on alternative perfectionism dimensions (e.g., high personal standards, concern over mistakes, doubts about actions, parental and coach pressures) that share conceptual overlap with self-oriented and socially prescribed perfectionism. Typically, this research has demonstrated that athletes scoring high(est) on the various perfectionism dimensions (compared to other clusters) report higher levels of ill-being and lower levels of well-being. Outside of sport, a study by Speirs Neumeister, Williams, and Cross (2009) regarding the origins of perfectionism involved interviewing 15 gifted students that scored high on at least one of Hewitt and Flett's (1991) perfectionism dimensions, including three students who scored high on self-oriented *and* socially prescribed perfectionism. The three students reported that an authoritarian type of parenting (i.e., lack of parental warmth) and unrealistically high parental expectations contributed to their perfectionism, as well as harsh consequences (including withdrawal of love) when not meeting their parents' expectations (which subsequently resulted in feelings of guilt and worthlessness).

Although not discussed specifically by Hewitt and Flett (1991), if one adopts the theoretical assumptions of their model and remains consistent with their original conceptualisations of self-oriented and socially prescribed perfectionism as maladaptive personality traits, it could be argued that individuals scoring high in both perfectionism dimensions are especially vulnerable to maladaptive cognitions, negative affect, and dysfunctional achievement-related behaviour. Yet, a recent model of perfectionism proposed by Gaudreau and Thompson (2010; also see Chapter One for a full discussion of the 2 x 2 model) disagreed with this assumption. The 2 x 2 model proposes that individuals scoring

high self-oriented *and* socially prescribed perfectionism are less vulnerable to poor psychological health, and will experience greater levels of well-being, compared to individuals scoring high in the latter dimension *and* low scores on the former.

The 2 x 2 model is based on the premise that types of perfectionism can coexist within athletes to varying degree. When applied to Hewitt and Flett's (1991, 2004) perfectionism dimensions, the 2 x 2 model includes four subtypes: (1) non-perfectionism (low levels of self-oriented and socially prescribed); (2) pure self-oriented perfectionism (high levels of self-oriented/low levels of socially prescribed); (3) pure socially prescribed perfectionism (high levels of socially prescribed/low levels of self-oriented); and (4) mixed perfectionism (high levels of self-oriented and socially prescribed) (see Gaudreau & Verner-Filion, 2012). Regarding the latter subtype, Gaudreau and Verner-Filion commented that the debilitating nature of socially prescribed perfectionism exists alongside the more positive effects sometimes associated with self-oriented perfectionism. As a result, the 2 x 2 model assumes that it is possible for mixed perfectionistic athletes to experience lower levels of ill-being as well as the potential for greater well-being compared to athletes classified as pure socially prescribed perfectionists (who do not benefit from high self-oriented perfectionism scores).

To date, only one study has tested the assumptions of the 2 x 2 model based on combinations of self-oriented and socially prescribed perfectionism. In a sample of multi-sport athletes, Gaudreau and Verner-Filion (2012) reported that mixed perfectionism was associated with significantly higher levels of positive affect, vitality, and life satisfaction scores compared to pure socially prescribed perfectionism.

Despite offering partial support for one of the model's hypothesis, there are a number of limitations of Gaudreau and Verner-Filion's (2010) study. First, the study did not include measures of ill-being, and thus it was not possible to examine differences between mixed perfectionism and pure socially prescribed perfectionism with reference to maladjustment.

Gaudreau and Verner-Filion also relied on a short 10-item version of the Multidimensional Perfectionism Scale (MPS-HF; Hewitt & Flett, 1991) to measure self-oriented and socially prescribed perfectionism. Although the psychometric properties of the MPS-HF-short have been reported elsewhere (see Cox, Enns, & Clara, 2002; Enns & Cox, 2002), the extent to which the 10 items adequately capture the array of characteristics associated with self-oriented and socially prescribed perfectionism is questionable. For example, the five items measuring self-oriented perfectionism focus on striving for high, self-set standards, and high importance assigned to achieving perfection. No item makes reference to harsh self-criticism or feelings of contingent self-worth that were central to Hewitt and Flett's (1991) original definition of self-oriented perfectionism. Given the content of the five items are more aligned with high personal standards and perfectionistic striving (which have been consistently shown to predict positive outcomes; see Gotwals, 2016; Stoeber, Hutchfield, & Wood, 2008), it is unsurprising then that mixed perfectionism was associated with greater levels of well-being than pure socially prescribed perfectionism in Gaudreau and Verner-Filion's study. That is, it was high personal standards and not self-oriented perfectionism that was buffering the debilitating role of socially prescribed perfectionism in the mixed perfectionism subtype.

Based on the aforementioned critique of Gaudreau and Verner-Filion's (2010) study and the limited evidence, it is somewhat premature to propose that athletes scoring high in self-oriented and socially prescribed perfectionism will experience enhanced adjustment and lower maladjustment (especially in comparison to athletes scoring high in pure socially prescribed perfectionism). Consistent with the conceptualisation of perfectionism adopted in this thesis (see Chapter One) and originally proposed by Hewitt and Flett (1991), it is just as feasible that athletes will experience poor(er) health when their thoughts, feelings and behaviour are influenced by the maladaptive features of self-oriented *and* socially prescribed

perfectionism. However, to date, no research has attempted to understand more about how high levels of self-oriented and socially prescribed perfectionism influence athletes' thoughts, feelings, and behaviours.

Understanding Mixed Perfectionism: The Role of Self-Regulation

In order to gain further insight into the combination of high self-oriented *and* socially prescribed perfectionism, this study considered its role in influencing the self-regulation strategies adopted by the athlete. Self-regulation may provide insight because it is central to how athletes monitor and manage their thoughts, feelings, and behaviours aligned with their short-term and long-term goals (Duda et al., 2005). Undoubtedly, understanding more about how athletes high in self-oriented and socially prescribed perfectionism monitor and manage their cognitions, affect, and behaviours associated with goal striving will provide insight to this particular perfectionism subtype.

Three general models of self-regulation have been proposed: (1) Bandura's (1986) model of self-regulatory processes; (2) Kirschenbaum's (1984, 1987) five-stage model of self-regulation; and (3) Zimmerman's (1986) self-regulation learning model. There is considerable overlap between the three models, as each is generally concerned with the skills (i.e., self-awareness and self-monitoring) and techniques (i.e., goal-setting; general self-regulation skills such as self-talk, imagery, and relaxation) that athletes use to evaluate and adjust their thoughts and feelings. The whole process of developing and implementing self-regulation strategies can, when the strategies are high in quality, help the athlete make adaptive long-term behavioural changes and positively affect the athlete's thoughts and feelings (Duda et al., 2005).

Every athlete tends to regulate themselves differently, as their perceptions differ in terms of what they think, feel, and do throughout the process of training and competition (Duda et al., 2005). Research has also shown that self-regulation strategies has important

benefits for the learning process, and can reduce anxiety and fear of failure, enhance concentration, build confidence, increase skills, and promote the maintenance of positive thoughts when facing new or difficult tasks (Barkhoff, Heiby, & Pagano, 2007; Baumeister & Heatherton, 1996; Castanier, Le Scanff, & Woodman, 2011; Jonker, Elferink-Gemser, & Visscher, 2010). Acknowledging the potential benefits of self-regulation for athletes, Duda et al. also hypothesised that self-regulation will have implications for the athletes' well-being (also see Borriero, Battaglia, & Di Cagno, 2013). Conversely, when self-regulation strategies are low in quality (e.g., negative self-talk, avoidance coping, rumination about mistakes), it is equally likely they will undermine the cognitions and emotions of athletes.

In their model of self-regulation strategies applies to sport, Duda et al. (2005) suggested that social environmental (e.g., structure, involvement) and personality factors serve as antecedents of self-regulation strategies. One such personality factor could be perfectionism, and the empirical literature provides support for this assumption. For example, in sport, Hill, Hall, and Appleton (2010) found self-oriented perfectionism was positively associated with problem-focused coping strategies, while outside of sport, self-oriented perfectionism was negatively associated with self-talk (Flett, Hewitt, Whelan, & Martin, 2007) but positively associated with goal progress when self-criticism was controlled (Powers, Koestner, Zuroff, Milyavskaya, & Gorin, 2011). As for individuals with higher levels of socially prescribed perfectionism, it was found to be positively predicted avoidant coping strategies (Hill et al., 2010), negatively associated with self-talk (Flett et al., 2007), and negatively predicted goal progress (Powers, Koestner, & Topciu, 2005) inside and outside of sport. Rudolph, Flett, and Hewitt (2007) further demonstrated that individuals with high levels of socially prescribed perfectionism exhibit negative cognitive coping tendencies when they encounter difficulties meeting externally-set standards. Beyond self-oriented and socially prescribed perfectionism, there is evidence that dancers with perfectionistic tendencies experience more

debilitative imagery than dancers with moderate or no perfectionistic tendencies (Nordin-Bates, Cumming, Aways, & Sharp, 2011) and maladaptive perfectionism was positively related to emotional dysregulation (Aldea & Rice, 2006).

The aforementioned studies provide initial evidence of the unique links between self-oriented and socially prescribed perfectionism with self-regulation strategies. However, these studies did not consider the strategies adopted by athletes scoring high on both perfectionism dimensions, and thus previous research offers little support for either Hewitt and Flett's (1991) model or the 2 x 2 model (Gaudreau & Thomson, 2010) assumption about this particular combination of perfectionism. That is, little is known about whether self-oriented perfectionism is associated with a number of self-regulation strategies that could offset the debilitating nature (and self-regulation strategies) of socially prescribed perfectionism, thus offering support for the 2 x 2 model. For example, it may be that the internally-determined goals that characterise self-oriented perfectionists (Gaudreau & Verner-Filion, 2012) is one self-regulatory strategy that enables the athletes to experience heightened feelings of control over desired performance standards (Hewitt & Flett, 1991). As a result, mixed perfectionists in the 2 x 2 model may be able to experience some form of adjustment in sport (and less maladjustment), and offset some of the debilitating effect of the externally-derived goals that characterise socially prescribed perfectionism. On the other hand, it may be that despite the benefits associated with internally-derived goals, the harsh self-criticism that characterise the self-monitoring of athletes high in self-oriented perfectionism, as well as their self-awareness of even minor performance errors, becomes intensified in the presence of high socially prescribed perfectionism levels. In this instance, athletes reporting high levels of both perfectionism dimensions may be particularly vulnerable to maladjustment, which would be consistent with Hewitt and Flett's model.

Understanding Mixed Perfectionism in Deaf and Hearing Athletes

Recently, researchers have begun to consider the implications of self-oriented and socially prescribed perfectionism for disabled athletes, such as those with hearing impairment (Ho et al., in press). Consistent with previous research with hearing athletes (e.g., Appleton, Hall, & Hill., 2009), Ho et al. demonstrated that self-oriented perfectionism was a negative predictor, and socially prescribed perfectionism a positive predictor, of burning out symptoms in deaf (and hearing) athletes. Moreover, the direction and size of the relationships were generally consistent across the deaf and hearing athletes. Although there is also evidence from a longitudinal study (see Chapter Three) that emotional exhaustion is a key factor in the relationship between perfectionism and enjoyment and subjective vitality in hearing and deaf athletes, little is known about the similarities and/or differences in the self-regulation strategies adopted by hearing and deaf athletes scoring high in self-oriented and socially prescribed perfectionism. However, there is indirect evidence to suggest that there may be key differences. For example, it has been demonstrated that some deaf individuals rely on specific types of self-regulation strategies more often than their hearing counterparts. A study conducted by Parasnis (1998) stated that the visual-attention skills among deaf individuals may be different from their hearing peers because deaf individuals allegedly possess more efficient visual, observational skills compared to hearing individuals (Hauthal, Sandmann, Debener, & Thorne, 2013). This is because hearing loss often requires constant eye contact through face-to face communication, lip-reading, body language, and/or sign language (Jambor & Elliott, 2005). Deaf athletes' reliance on visual-attention skills could extend to more general self-regulatory strategies; while hearing athletes can more easily receive immediate verbal feedback from coaches, teammates, and significant others to regulate their performance, deaf athletes may rely more extensively on certain self-regulation strategies such as self-awareness skills (e.g., being aware of the surrounding environment).

Research (Soto-Rey, Pérez-Tejero, Rojo-González, & Reina, 2014) has found that athletes with hearing impairment have shorter reaction times to visual stimuli than those without hearing impairment. Moreover, based on the different methods of communicating, it is hypothesised that deaf athletes may have different types of self-regulatory skills than hearing athletes (the latter relying more on visually-based self-regulation skills compared to hearing athletes).

Rationale and Purposes of the Present Study

Despite growing interest in perfectionism in sport, the majority of research on self-oriented and socially prescribed perfectionism has taken a variable-centred approach. Although this research has revealed the correlates and mechanisms that explain the effects of self-oriented and socially prescribed perfectionism, it is also possible that some athletes score high in both the aforementioned dimensions. To date, little research inside and outside of sport has attempted to understand more about the thoughts, feelings, and behaviours of individuals that demonstrate high levels of self-oriented and socially prescribed perfectionism. Such research is important to clarify whether these individuals are especially vulnerable to poor health, as Hewitt and Flett's (1991, 2004) model would suggest, or whether these individuals are able to experience some degree of adjustment, which would be consistent with the 2 x 2 model of perfectionism. To guide this exploratory investigation of the nature of high self-oriented *and* high socially prescribed perfectionism in athletes, their links with self-regulatory strategies were considered. To build upon the research presented in Chapters One and Two of this thesis, a further purpose of this study was to determine whether the self-regulatory processes are between athletes with and without a hearing disability scoring high in self-oriented and socially prescribed perfectionism.

In order to gain in-depth and insightful perspectives on the use of self-regulation strategies from high self-oriented and socially prescribed perfectionists, a qualitative inquiry

was adopted in this study. Qualitative inquiry is an especially useful methodology in attempts to allow interviewees to express their experiences, thoughts, feelings, and knowledge about the topic under investigation (Creswell & Miller, 2000; Patton, 2002). Within the perfectionism in sport literature, past studies (Gotwals & Spencer-Cavaliere, 2014; Hill, 2015; Sellars, Evans, & Thomas, 2016) has utilised qualitative inquiry to investigate perfectionists' attitudes, beliefs, and perspectives. For example, in Gotwals and Spencer-Cavaliere's study, they recruited a small sample of athletes characterised as healthy and unhealthy perfectionists and used semi-structured interviews to understand more about the nature of perfectionism and how it influenced their experiences in sport. A similar qualitative approach would seem appropriate in an attempt to understand more about the nature of self-oriented and socially prescribed perfectionism in sport, and how this particular subtype influences the athletes' thoughts and feelings via the self-regulation strategies that are adopted.

Methods

Selection of Participants

The pool of athletes from which the participants for this study were identified is described in detail in study two (Chapter Three). Briefly, 420 hearing ($M = 19.8$; $SD = 1.9$) and 120 deaf ($M = 28.3$; $SD = 10.5$) athletes completed the Perfect Performance Scale in Sport (PSS-S; Hill, Appleton, & Mallinson, 2016) at the beginning of their competitive seasons. Athletes were identified for inclusion in the study if their PSS-S profile comprised high self-oriented and socially prescribed perfectionism scores. Because there is limited research on the PSS-S, it was decided to use Speirs Neumeister et al.'s (2009) approach for selecting individuals with high levels of self-oriented and socially prescribed perfectionism. Specifically, Speirs Neumeister et al.'s criteria states that the individual must score at least one standard deviation higher than the mean scores on both self-oriented and socially

prescribed perfectionism subscales, followed by recruiting those participants from the highest to the lowest scores on both self-oriented and socially prescribed perfectionism subscales. From the sample at Time 1 in study two (see Chapter Three), the average score on the self-oriented perfectionism subscale for the hearing sample ($n = 206$) was 4.63 with a standard deviation of .99. For the socially prescribed perfectionism subscale, the mean was 3.48 with a standard deviation of 1.03. Based on these scores, a total of 25 participants scored at least 1 standard deviation higher than the mean value on both perfectionism subscales. In the deaf sample ($n = 101$), the average score on the self-oriented perfectionism subscale was 4.51 with a standard deviation of 1.17. For the socially prescribed perfectionism subscale, the mean was 4.14 with a standard deviation of 1.16. Fourteen deaf participants scored at least one standard deviation higher than the mean value on both perfectionism subscales. With reference to the selection criteria, six hearing athletes ($M_{age} = 19.5$; $SD = 1.5$) and five deaf athletes ($M_{age} = 31.8$; $SD = 10.5$) agreed to take part in one-on-one interviews (for further information, see Tables 4.1 and 4.2).

Table 4.1

An Overview of Each Hearing Athlete's Sport, Participation Level, and Scores on Sport-Specific Self-Oriented and Socially Prescribed Perfectionism

	Sports	Participation Level	Self-oriented perfectionism score (5.62 or above)	Socially prescribed perfectionism score (4.51 or above)
Hearing athlete 1	Football	Club	5.67	4.60
Hearing athlete 2	Lacrosse	County	6.00	5.20
Hearing athlete 3	Netball	Club	5.67	4.60
Hearing athlete 4	Rugby	Club	7.00	5.80
Hearing athlete 5	Swimming	County	5.83	4.80
Hearing athlete 6	Volleyball	Club	5.83	4.80

Table 4.2

An Overview of Each Deaf Athlete's Sport, Participation Level, Severity of Hearing Loss, and Scores on Sport-Specific Self-Oriented and Socially Prescribed Perfectionism

	Sport	Participation level	Severity of hearing loss	Self-oriented perfectionism score (5.68 or above)	Socially prescribed perfectionism score (5.30 or above)
Deaf athlete 1	Badminton	International	Profound	5.68	5.80
Deaf athlete 2	Basketball	International	Profound	5.68	5.80
Deaf athlete 3	Cricket	International	Profound	6.00	5.40
Deaf athlete 4	Football	Club	Profound	5.83	5.40
Deaf athlete 5	Squash	International	Profound	5.83	6.60

Interview Protocol

An interview guide was designed for the present study (see Appendix C). The guide was employed during the semi-structured interviews and subsidiary questions were included to enable the flexible collection of relevant information. This technique enables the researcher to change or adapt the questions during conversations to obtain true and accurate information from the participants (Gratton & Jones, 2010).

Interview Procedures

After obtaining ethics approval from the researchers' university, two pilot interviews with one hearing athlete and one deaf athlete were carried out. The pilot interviews gave the interviewer (lead author) the opportunity to become familiar with the interview procedure, as well as to refine the interview questions and probes. The lead researcher then approached all deaf and hearing athletes from the larger pool of participants who reported elevated scores on the self-oriented and socially prescribed perfectionism subscales.

Owing to the different communication methods among participants with hearing impairments, the deaf athletes were asked to indicate their preferred choice of communication, so that appropriate support could be provided. Prior to interviews, the questions were sent to all the participating deaf athletes via email to allow them to prepare answers in advance. Various support mechanisms for the interview were offered to the deaf athletes, including a laptop ($n = 2$), a sign language interpreter ($n = 2$), or an online communication tool (i.e., messaging via Skype; $n = 1$). Three deaf athletes chose to be interviewed at home, one deaf athlete chose to be interviewed at sport club, and one deaf athlete was interviewed at the researchers' University. The interviews with the deaf athletes took approximately 90 minutes, with a short break in the middle.

The procedures adopted were similar to previous research involving a semi-structured interview with deaf individuals in education (Silvestre, Ramspott, & Pareto, 2007). For the

hearing athletes, all the interviews were held at a private room in the University; each lasted approximately 60 minutes, with a digital voice recorder used to record the conversations.

After the completion of the interviews, recordings with the hearing participants were transcribed verbatim by a transcription facilitator. The interview transcripts from the deaf participants were drafted by the lead author. The credibility of the data collected was established through a member-checking process. Lincoln and Guba (1985) described member checks as “the most crucial technique for establishing credibility” (p. 314). A draft of the transcript was sent to each participant for validation and verification purposes. All hearing and deaf participants returned the transcripts. Minor changes (e.g., spelling) were made and further questions and answers were added based on the responses from all participants.

Upon receiving all the revised transcripts, the lead author read the scripts and identified tentative themes and then met with three other researchers – the supervisory team who are experts in perfectionism and/or self-regulation strategies and have published on these topics – on three occasions (2 hours per meeting). Initially, the lead researcher came up with the original themes and then discussed with the research team about whether the original themes were appropriate based on identified portions/quotes from the transcripts. After the first meeting, several new themes were added. In the next two meetings, we continued to work on refining the themes and verified whether the text and quotes from the transcripts aligned with a particular theme. At the end of the third meeting, the final five first-order themes and eight second-order themes were mutually agreed (see the results section). This “team-based” approach to analysing the data has been recommended by other qualitative researchers, who proposed that a group of investigators work collaboratively to confirm the themes emerging from the data (Creswell & Miller, 2000; Meyrick, 2006).

Qualitative Approach to Data Analysis

Inductive approach. In order to allow the elucidation of a theory from the raw data, and to assess the research findings emerging from the significant themes therein, an inductive approach was utilised (Glaser & Strauss, 1967; Thomas, 2006). This was considered appropriate because an inductive approach is more open-ended and exploratory, enabling the researcher to establish possibilities and make better future predictions. The first stage of data analysis involved multiple readings and interpretations of the raw data by the lead author. Several precautions were taken to minimise bias and to confirm the validity of the analysis of the interviews, such as comparing the themes emerging from the data analysis with previous research findings and/or theory-informed hypotheses concerning the relationships between perfectionism and self-regulation (Thomas, 2006). Other methodological procedures were performed with multiple data sources, including refinement and revision during the qualitative data analysis in different time periods. Other data gathering methods included interview transcripts and the written notes of the interviewer (Thomas, Nelson, & Silverman, 2011).

Inductive thematic analysis. Thematic analysis is “a method for identifying, analysing, and reporting themes within data” (Braun & Clarke, 2006, p. 79) and is a flexible and useful research tool that allows the researcher to provide rich and detailed data. Thematic analysis can also be applied across a range of epistemological approaches (e.g., objectivism, constructivism, and subjectivism; Braun & Clarke, 2006; Gray, 2014; Vaismoradi, Turunen, & Bondas, 2013). All interview data were fully coded and analysed inductively, case by case, using QSR NVivo 10. The transcripts were imported into the software, where free nodes (open coding) were created to identify and categorise chunks of text, such as text relating to performance routines, daily activities, psychological preparation, and goal progress. The responses from the participants were categorised into raw data

themes, which were then clustered into first-order themes. Following this, they were clustered into second-order themes to form the general dimensions of self-regulation strategies among the deaf and hearing athletes. Axial coding was also conducted in order to develop central categories.

Strategies for ensuring trustworthiness. The trustworthiness of the data collected in qualitative research is of vital importance so that the readers can be confident of the findings that will inform further research. Morse, Barrett, Mayan, Olson, and Spiers (2002) and Shenton (2004) identified four key strategies when assessing whether the data in a qualitative research project is trustworthy: credibility, transferability, dependability, and confirmability. To ensure reliability and (external and internal) validity of data, several verification strategies, including sampling sufficiency, methodological coherence, and investigator responsiveness, were applied (Morse et al., 2002).

Credibility tells us whether “the research findings represent a credible conceptual interpretation of the data drawn from the participant’s original data” (Lincoln & Guba, 1985, p. 296). It is preferred over internal validity (Shenton, 2004). Although the sample size comprised 11 participants (six hearing and five deaf athletes), the lead researcher ensured that all the participants met certain criteria (i.e., athletes scored one standard deviation above the mean scores for self-oriented and socially prescribed perfectionism) and conducted two pilot interviews before the real interviews. The trustworthiness of the data was assured through two key methods. In addition to the member-checking process used to enhance the accuracy of the transcripts, the principal investigator completed all of the initial coding, followed by a collaborative discussion in a group setting with the supervisory team to agree a plan for conducting the qualitative data analysis and for coding the themes in order to resolve any problems among the research team. The qualitative analysis considered the number of participants and the data collection methods, as well as duration, in order to standardise and

triangulate the findings, aiming for the congruence of information from distinct sources (Shenton, 2004).

Transferability refers to the findings of an inquiry being transferred beyond the bounds of the project, giving preference to external validity and generalisability (Lincoln & Guba, 1985; Shenton, 2004). This study highlighted the main findings based on past research on similar topics. Content analysis may yield meaningful units of information which can be transferred from transcripts into results to generate further research questions, which enable the study procedures to be repeated and to allow for comparison.

Dependability refers to the reliability and consistency of the results obtained, confirmability refers to the quality of the results in terms of objectivity; the findings should be supported by the participants' experiences and ideas, and not the characteristics and preferences of the researcher (Shenton, 2004). There are several strategies used to enhance dependability and confirmability, including the process of illustrating how the data were gathered and processed during the study. Checking and re-checking as well as the interview questions and probes will have heightened the accuracy of the data, and documentary evidence throughout the analysis was provided. Moreover, the chosen qualitative approach arguably appears to have achieved the trustworthiness criterion (i.e., ensuring credibility, transferability, dependability, and confirmability).

Results and Discussion

Five first-order themes were identified: outcome goals, performance goals, goal rigidity, cognitive specific and cognitive general, along with eight second-order themes: high standards, goal striving, personal reflections, reliance on others, over-awareness of mistakes and poor performance, self-talk, relaxation, and imagery. These were placed into four general dimensions of self-regulation strategies proposed by Duda et al. (2005): goal-setting skills, self-awareness skills, self-monitoring skills, and self-regulation capabilities. The raw

data were grouped together into first order themes. The same process was then repeated with the first order themes grouped into second order themes to form the general dimensions of self-regulation strategies, which were aligned with the self-regulation strategies proposed by Duda et al. Several quotes from the participants are presented in four different sub-sections as follows: (1) goal-setting skills; (2) self-monitoring skills; (3) self-awareness skills; and (4) self-regulation capabilities (i.e., self-talk, relaxation, and imagery).

Table 4.3.

Outcome Themes in Relation to Self-Regulation Strategies Identified by Deaf (n = 5) and Hearing Athletes (n = 6) with Mixed Perfectionism

Self-regulation strategies	First-order themes	Second-order themes	Prevalence	
			Hearing athletes	Deaf athletes
Goal-setting skills	Outcome goals	High standards	Shaded	Shaded
	Performance goals			
	Goal Rigidity	Goal striving		
Self-monitoring skills		Personal reflections	Shaded	Shaded
		Reliance on others		
Self-awareness skills		Over-awareness of mistakes and poor performance	Shaded	Shaded
Self-regulation capabilities		Self-talk		
		Relaxation		
	Cognitive specific	Imagery		
	Cognitive general		White	Shaded

Note. Shaded area indicates when a theme was prevalent in a perspective

Goal-Setting Skills

In terms of goal-setting, there were very few meaningful differences between hearing and deaf athletes. Thus, the following sections presents a discussion of the sub-themes that emerged in both samples using quotes from deaf and hearing athletes.

Goal-setting is a common strategy identified in the self-regulation models outlined in the introduction (Bandura, 1986; Kirschenbaum, 1984, 1987; Zimmerman, 1986).

Setting goals is an important discrepancy-inducing process that can, when optimal goals are set, help athletes make progress towards the desired standards and subsequently enhance motivation and the achievement of optimal performance (Latham & Locke, 1991). While setting goals is useful, some perfectionist athletes set unrealistically high, or impossible goals which are tied to feelings of self-worth and may lead to detrimental outcomes such as negative affect and damage to self-worth (Flett & Hewitt, 2005). In the present study, goal-setting skills are identified as the tendency for the athletes to set (and strive towards) goals which reflect high performance standards. Athletes' goal-setting was reflected in outcome and performance goals.

Outcome and Performance Goals

Outcome goals refers to the goals that focus on the results when playing against other competitors (e.g., to beat the opposite team, to win the match/tournament) (Gould, 2006). Athletes made reference to outcome goals that included focusing on the results when competing and winning a competition. For example, one of the hearing athletes reported that:

It's more keeping myself at a very high standard so that obviously you know people can actually like you know, you do not want a captain that cannot play.

My goals are now more team based....more about sort of winning the games and not losing so I suppose, my goals are more to do with winning the league.

Likewise, one of the deaf athletes said:

My goal is to get a medal at [an] international event. Maintain my national ranking by winning the annual Deaf Badminton Championships for doubles and mixed. To achieve the goals, I really need to keep training, lots of training, to achieve the skills required at the highest standard.

Evidence of performance goals (i.e., focusing on performance when perfectionistic athletes participate in training and competition) was also provided by the sample, including a hearing athlete who said:

I do not like to say I want to make 10 tackles...I kind of want to say I want to make as many tackles as possible. My goal is to play the highest standards of rugby possible because that shows my achievement levels if I can play [at] as high [a] level as possible. I kind of want to focus on my goals for the match, so I go on what I want to achieve, for example [the] number of tackles, or I set myself targets.

There was also evidence during the interviews that the athletes adopted a combination of performance and outcome goals which were discussed by another deaf athlete who said:

Our aim with the English Deaf Cricket Team is to become the top team in the world. With the home club, the aim really is to win the league, win the cup. My aim really is to get over 40 wickets for my home club this year, that's my aim. I want to bat well, to improve my bowling, to get really perfect bowling, to get my bowling perfected. With the Deaf Cricket Team, we are planning and aiming to be the best Deaf Team in the world.

The above quotes reveal that athletes scoring high in self-oriented and socially prescribed perfectionism set a mixture of outcomes and performance goals that represent defining features of the overall perfectionism construct: achieving high standards of outperforming opponents. This is unsurprising given that high standards have been a common facet of perfectionism in the various definitions of the construct that have been forwarded over the years. It is also noteworthy that the above quotes suggest that the athletes' goals seem more closely aligned to self-oriented perfectionism: that is, the athletes' quotes make reference to their own goals, rather than goals that have been demanded by significant others (i.e., goals that are more closely aligned to socially prescribed perfectionism). These findings illustrate that athletes scoring high in both perfectionism dimensions may focus (although not entirely, as discussed below) on the achievement of self-set goals, which may subsequently provide some sense of control over achievement standards. In turn, Flett and Hewitt (2005) proposed that feelings of heightened control are partly responsible for increasing the self-oriented perfectionists' resiliency to setbacks and performance difficulties. Likewise, Gaudreau and Verner-Filion (2012) proposed that self-oriented perfectionists exhibit a personalized endorsement of perfectionistic goals for themselves, which are partially consistent with personal values, interests, and priorities. As discussed elsewhere in this thesis, previous research (Appleton et al., 2009; Campbell & DiPaula, 2002) has consistently shown that striving towards self-set perfectionistic standards is associated with a host of adaptive outcomes, and research in sport (e.g., Healy, Ntoumanis, Veldhuijzen van Zanten, & Paine, 2014) has also confirmed the healthy nature of goals that are consistent with one's own values and interests.

Although the majority of athletes discussed self-set standards when discussing goal-setting, the data suggests their goals may not have been truly internalised and self-determined. The data suggests that athletes' goals may have been, to some extent, externally focused, as evident in the quote from the hearing athlete who spoke about the importance achieving very high standards in order to be liked by significant others. This is in keeping with the goals of a socially prescribed perfectionist, which are tied closely focused on achieving high standards to gain the approval significant others. It may be, then, that the while the goals referred to by the athletes were generally self-set and in keeping with self-oriented perfectionism, these goals have not been truly internalised and integrated into the athletes' self-definition. If these goals and standards are not fully integrated into the self and intertwined with gaining others' recognition, it is likely they (and subsequent achievement striving) will be far from adaptive in the long-term (Pedersen, 2002; Schmuck, Kasser, & Ryan, 2000). In this instance, the combination of high self-oriented and socially prescribed perfectionism is likely to lead to maladjustment, and is thus in keeping with Hewitt and Flett's (1991) model.

Rigid Goals

Athletes also discussed their tendency to rigidly adhere to their difficult goals, as reflected by a hearing athlete who said "if I find something difficult, I keep going over and over again and try and reach the goals", and by deaf athletes who stated that "if I cannot achieve (my goal), I just carry on. For example, I [broke] a record [of] 61 wickets when I was 20, so I'd like to break my record [again] next year", and, "I will be disappointed with the results if I could not win the basketball tournament for my team, but I keep trying until I meet the targets."

The quotes relating to goal rigidity are interesting because on the one hand they suggest that, despite difficulties and setbacks in achieving their goals, the athletes continue to persist in their efforts towards achieving high standards. This is seemingly consistent with positive pattern of achievement behaviour referred to by Hall (2006) and is consistent with a task goal orientation (Dunn, Causgrove Dunn, & Syrotuik, 2002; Williams, 1994), where competence is defined in a self-referenced manner and the athlete maintains their effort regardless of performance outcomes. Previous perfectionism research (e.g., Appleton et al., 2009) has confirmed that a task goal orientation is positively associated with self-oriented perfectionism, and a large body of literature from the sport psychology field has confirmed the positive implications of a task orientation (see Duda & Balaguer, 2007). Thus, it is possible this task-oriented approach to competence provides one explanation for the seemingly positive nature of mixed perfectionism in Gaudreau and Verner-Filion's (2012) 2 x 2 model.

On the other hand, the quotes regarding goal rigidity suggest the athletes may be reluctant to disengage from their goals regardless of how difficult the goals are and how many times they have been unsuccessful. This reluctance to relinquish their goals is consistent with the proposal that the performance-related goals characterising self-oriented and socially prescribed perfectionism are intertwined with feelings of self-worth, and only goal attainment will enable the individual to feel worthy (DiBartolo, Frost, Change, LaSota, & Grills, 2004; Greenspon, 2000). The perfectionist is therefore unable to adjust, or even relinquish goals because to do so would undermine their attempts to validate their self-worth, yet rigidly adhering to important goals in the face of reoccurring goal failure may eventually prove to be debilitating for the athlete (Erozkan, Karakas, Ata, & Ayberk, 2011; Flett & Hewitt, 2007).

Self-Monitoring Skills

Self-monitoring skills have also been identified as a key self-regulation strategy and are considered vitally important in efforts to self-regulate. Once a goal-setting plan has been developed, athletes need to possess the ability to monitor their progress towards set goals (Kirschenbaum, 1987). Without sufficient monitoring, goals may not be achievable (Behncke, 2005; Zimmerman & Kitsantas, 1996) and the opportunity for enhanced performance and well-being undermined. There are various self-monitoring techniques which are used to keep track of performance such as the use of diaries, logbooks, written or verbal feedback, and/or videotaping (Boekaerts & Corno, 2005).

Based on the present qualitative data, athletes' reported the personal reflections independent of others and reliance on others for assistance, feedback, and information regarding progress towards set goals as two key self-monitoring strategies.

Personal Reflections

Personal reflections were captured by the following quote from a hearing athlete who said, "I look at my stats for that match and see what my percentage of [the] points I scored, how many service errors I made or how many blocks I made", and another hearing athlete who commented "I'd monitor continuously how I think I am going and then when it comes to a competition, I'd see whether I'd achieved my goals". Self-monitoring was also referred to by deaf athletes. For example, one deaf athlete stated that "I would go home straight away and re-evaluate myself and how I should improve next time, and then I need to take one step backwards and restart again to improve things again via training more regularly". Similarly, another deaf athlete also said:

I compare my notes between the previous matches and my first match of [the] season. For example, how many wickets or runs I have scored. I keep a record of

how many runs/wickets/catches to see how far I am off from my targets/goals I set at the start of the season.

The quotes suggest that one independent self-monitoring strategy adopted by the athletes in this study involved personally reflecting on their progress towards set goals, as well as regularly identifying areas for improvement in their performance. In particular, the quotes suggest the athletes use strategies that enable them to self-evaluate their performance. This self-monitoring strategy may provide the athletes with a sense of order and organisation regarding their sports participation, reflecting their overemphasis on precision, and may ultimately maximise opportunities for the successful attainment of desired standards (Gotwals & Dunn, 2009). A need for organisation and precision has been recognised as central features (or closely related outcomes) of the perfectionism construct, and the need for planning and orderliness are recurrent themes identified among independent samples of perfectionists outside of sport (e.g., Rice, Bair, Castro, Cohen, & Hood, 2003; Slaney & Ashby, 1996; Slaney, Chadha, Mobley, & Kennedy, 2000), albeit Hewitt and Flett (1991) did not make specific reference to organisation in their definitions of self-oriented and socially prescribed perfectionism. It has been hypothesised that through organisation, perfectionists are able to maximise control over their performance and attempts towards achieving perfection (Enns & Cox, 2002). Moreover, previous sport research has revealed the benefits of being highly organised, demonstrating positive associations with global self-esteem (Gotwals & Dunn, 2009), lower levels of anxiety (Gotwals, Dunn, Causgrove Dunn & Gamache, 2010), and fewer symptoms of athlete burnout (Gotwals, 2011). Thus, monitoring their progress towards goals may be a reflection of the athletes' desire to be highly organised and may assist in the progress towards

important goals. At the same time, however, Gotwals and Dunn (2009) acknowledge that independently self-monitoring (and the associated organisation) may be dangerous for an athlete if it becomes obsessive and encourages feelings of stress, anxiety, and/or fatigue.

The quotes also reveal how the athletes “continuously” employ personal reflections, which are done “straightaway” following performance. One interpretation of this ongoing self-reflection is that the athletes are constantly evaluating their strengths and weaknesses with a view of improving performance, and in some instances (e.g., after success), this may be beneficial to the athlete. However, if personal reflections regarding performance begin to dominant an athlete’s every thought (i.e., during and outside of training and competition), and these thoughts eventually become preoccupied with having to perform perfectly and/or an inability to ever complete the task to the desired standard, it is highly likely that this self-regulation strategy will be unhelpful (Besser, Flett, & Hewitt, 2004).

Reliance on Others

The interviews revealed that the hearing athletes also relied on significant others as a source of feedback which, in some cases, involved highlighting performance-related mistake, as exemplified by the following quotes:

Usually we have a talk with the captain. After the match, we come together, we sit down, and we explain what we...did not do well, what lost us the game, and you [use] dialogue and talking between each other straight after.

I think what I would do is just watch the video back and talk to my coach and then he can tell me what he thinks about the race and I can tell him how it felt and what

I think was bad, and then just make sure that I fix those things for the next time that I swim.

Likewise, in reference to reliance on others for feedback, two deaf athletes said:

We rely on the team manager for feedback on why we lost the matches. We usually talk together with the team...revising the mistakes made in the previous matches, what we should improve, and what we should not do in the next matches. We have debriefing meetings and we reflect in many different ways, for example to criticise on our weaknesses in team performance and how to improve it next time. I also ask the coach and performance analyst about how it went.

The excerpts reveal that both deaf and hearing athletes relied on others for feedback regarding progress towards goals. Externally derived feedback may be helpful in improving performance, and when it is positive and constructive, may even have a positive effect for the athletes (Ilies & Judge, 2005). However, given their hypersensitivity to even small performance errors, it is likely that any type of externally-derived feedback will be interpreted by athletes scoring high in self-oriented and socially prescribed perfectionism as revealing performance deficits. Moreover, given athletes scoring high in self-worth depend on positive feedback from significant others to reaffirm feelings of self-worth, feedback focused on performance errors, weaknesses, and mistakes may be detrimental.

The quotes concerning reliance on others also provide initial evidence that deaf and hearing athletes scoring high on mixed perfectionism may have different ways of monitoring their progress towards achieving perfectionistic standards. For example, the hearing athletes mentioned using videos to keep track of their performance, whereas this was not the case for the deaf athletes. It is also interesting to note the terminology used

by the two groups, and how the deaf athletes' quotes imply a heavier reliance on significant others (e.g., coach, performance analyst) for performance-related feedback (e.g., "We rely on the team manager for feedback" and "I also ask the coach and performance analyst about how it went"). In contrast, this reliance is less evident in the quotes from the hearing athletes. One possible explanation for these findings can be found in the work on Stewart, Robinson, and McCarthy (1991) who proposed that, due to communication barriers, deaf individuals rely on significant others more so than their non-deaf counterparts. In the current, study, it may be that the deaf athletes relied more on their coaches as they monitor their own progress towards perfection. Overall, this suggests there may be subtle differences in this self-monitoring strategy associated with reliance on significant others between deaf and hearing athletes scoring high in self-oriented and socially prescribed perfectionism.

Self-Awareness Skills

Self-awareness is an important part of the self-regulation strategies for athletes (Behncke, 2005). Athletes need to identify their strengths and weaknesses and be aware of what performance and behavioural mistakes they made in training and competition. In the context of the current study, athletes' discussions regarding self-awareness centred on focusing on mistakes and avoiding poor performance, as per the following quote from a hearing athlete:

I tend to make a few service errors in a given match. You have eight seconds to serve the ball. I just bounce the ball around and use more [than] eight seconds and then make the service, just to make sure I do not make the error (again).

Likewise, a deaf athlete said:

I think about what is the next so that the mistakes could be minimised. I tend to prepare for the better opportunity because making mistakes will get me out of the squad; put me in the substitute which is quite stressed. Preparation is needed to be aware of the mistakes. Otherwise, I will feel frustrated.

The aforementioned quotes reflect that hearing and deaf athletes' self-awareness is focused predominantly upon the avoidance (and potential consequences) of mistakes rather than what they did well, as well as being overly preoccupied with avoiding errors in future performance. This is unsurprising given that the defining features of the overall perfectionism construct include concern over the implications of mistakes for feelings of self-worth and an all-or-nothing approach in which even the smallest performance error is equated with total failure (Flett & Hewitt, 2002). The findings in the current study also provide additional support for establishing a link between high levels of self-oriented and socially prescribed perfectionism and rumination about mistakes (Flett, Madorsky, Hewitt, & Heisel, 2002) as well as perfectionistic cognitions centred on achieving perfection and avoiding imperfection (Hill & Appleton, 2011).

It is unsurprising that athletes characterised by self-oriented and socially prescribed perfectionism have a heightened awareness of performance errors because mistakes are appraised internally by the athlete, as well as externally by significant others, as unacceptable and threatening to their quest for perfection. It is likely that over-thinking the consequences of mistakes, and the need to avoid errors, will cause immense strain on the athlete. Moreover, this debilitating pattern of self-awareness could turn into a vicious cycle whereby, in an effort to avoid further mistakes, the athlete becomes distracted during performance and continues to underperform. Based on this interpretation, it seems that the self-awareness strategies used by the athletes in the

current study would offer support for Hewitt and Flett's (1991) model, in which high levels of self-oriented and socially prescribed will be maladaptive in nature.

Self-Regulation Capabilities

Throughout training and competition, athletes also need to possess the self-regulation capabilities required to regulate their thoughts and behaviours to produce the desired outcomes (Behncke, 2005; Cleary & Zimmerman, 2004). Different self-regulation techniques were mentioned by the hearing and deaf athletes, including self-talk, relaxation, and imagery.

Self-Talk. Athletes referred to self-talk as the ability to talk to themselves either aloud or internally (Hatzigeorgiadis, Theodorakis, & Zourbanos, 2004). With reference to the self-talk they employ in competition, a hearing athlete said, "if I drop the ball, I will be like 'oh no! I cannot catch the ball today. That is so annoying'". Another hearing athlete also said "oh gosh! What am I doing wrong with this mistake? I won't do that again, I won't make that mistake again. I know how to throw and catch so stop being so stupid".

As per the self-awareness theme, the above quotes suggest a preoccupation with avoiding performance errors dominates the content of the athletes' self-talk. It is also interesting how the quotes from the hearing athletes imply that one mistake leads to the conclusion that future attempts at the same skill will also be unsuccessful. The finding in relation to self-talk used by the hearing athlete is similar to that described by Flett et al. (2007) who argue that perfectionists tend to use negative self-talk. It is possible that the athletes in the current study negative self-talk also reflects their tendency to blame themselves if things are not done exactly right. This form of self-talk is potentially debilitating for the athlete, and previous research has supported a negative association

with performance (Van Raalte, Brewer, Rivera, & Petitpas, 1994), reduced self-esteem (Johnson, Hrycaiko, Johnson, & Halas, 2004), and increased anxiety (Hatzigeorgiadis & Biddle, 2008). Consistent with the self-awareness theme, then, the self-talk adopted by athletes scoring high in self-oriented and socially prescribed perfectionism suggests this particular subtype of perfectionism may be far from adaptive.

Relaxation. Athletes also referred to relaxation as a self-regulation strategy, employed primarily to distract themselves from their goals. The hearing athlete explained:

I just bang my earphones in with the music [and] listen to some of my favourite songs, some songs that mean a lot to me. On the way to games, I used to read a magazine, just to try and take my mind away from what we [were] doing. When travelling to games, I'd sit there and play on my iPad or my phone or I'd play games, chat with the lads.

Another hearing athlete said,

“I just make sure that I have time to relax before I go and hopefully don't have too much work because I find if I am working a lot and then going straight to training, I am quite tired. So I just make sure I get a lot of sleep and have a good meal.”

As for the deaf athletes, they said, “when I feel exhausted, I usually go straight to bed, no matter what time it is”, “in football competition, I tend to relax an hour before the match by doing nothing”, and “sometimes I was unable to rest well...because I was quite nervous and anxious.”

The present findings illustrate that the athletes from both groups used a variety of relaxation techniques, which is somewhat contradictory to Hewitt and Flett's (1991) assertion that perfectionists could struggle to relax (except one of the quotes from the

deaf athletes). Interestingly, some of the hearing and deaf athletes suggested that sleep was their relaxation strategy, often as a result of exhaustion and tiredness. Such findings suggest that sleep may be the only way for some deaf and hearing athletes scoring high in self-oriented and socially prescribed perfectionism to cope with the constant pursuit of high standards, attempts to avoid performance errors, and the need to validate self-worth. Although sleep is crucial for maintaining good mental and physical health (Brand et al., 2009), other relaxation strategies (e.g., progressive muscle relaxation and breathing techniques) employed prior to, during and immediately following completion and training may actually prove more effective in coping with the burden of such high expectations the athletes place upon themselves (e.g., Kutlesa & Arthur, 2008; Parnabas, Mahamood, Parnabas, & Abdullah, 2014). In other words, if athletes scoring high in self-oriented and socially prescribed perfectionists rely solely on sleep to “relax”, they may be undermining their opportunities to derive a sense of well-being from their participation in sport.

While both hearing and deaf athletes suggested sleep as their main relaxation technique, the hearing athlete also reported other relaxation techniques including listening to music, reading magazines, chatting with others, and playing games via i-pad or mobile phone before the matches. The deaf athletes’ disability may limit their employment a number of relaxation strategies that can be employed by hearing athletes (e.g., chatting with others, listening to music) (Backenroth-Ohsako, Wennberg, & Klinteberg, 2003).

Imagery. Imagery, in general, refers to the cognitive process that athletes use to create or recreate an experience in their mind that is similar to a real situation (Vealey & Greenleaf, 2006). Using imagery is beneficial for athletes to maintain existing skills

and recap past performances (for a review, see Cumming & Williams, 2013). The emphasis placed on two types of imagery by the hearing and deaf athletes were cognitive general and cognitive specific imagery. Cognitive specific imagery involves imagining specific sport skills or seeing oneself performing specific skills to improve performance (Hall, Mack, Paivo, & Hausenblas, 1998; Paivio, 1985). The hearing athletes said, “I imagine myself doing the right technique as soon as a point is about to start or if I have made a bad move”, and:

I usually just sit down for 5 or 10 minutes and then try to visualise how I want to look by the end of the training session if I were to improve like skills or techniques, and I try to picture myself doing that. It is like an image in your head so you can see yourself doing it and you can almost like feel yourself doing it.

The deaf athletes who played cricket explained, “I try to imagine the same environment in training, visualise myself performing skills like batting”, and:

I usually visualise my performance before the game and that helps me to prepare for any situations in the match. For example, I go up to the wicket with my bat and I play some shots, visualising game situations. Or I go to the nets and hit some balls before the game.

The use of cognitive general imagery involves applying images of strategy and game plans related to a competitive event (Munroe-Chandler, Hall, Fishburne, & Shannon, 2005). The hearing athletes explained, “the imagery I used would involve things like imagining performing a drill and performing successfully, all the way through to now you are in front of goal and you shoot a great shot”, and, “I imagine something that could make a good move or a good tackle or a good defensive pick-up, [which] helps me to boost my confidence.” The deaf athletes said, “I usually close my

eyes and think about previous games that were very high quality that I won”, and, “sometimes, I visualise when I have to be responsible for kicking [a] penalty in front of the goalkeeper.”

In terms of cognitive specific and cognitive general imagery, the interview responses reflect that both hearing and deaf athletes visualised the images related to moving towards the achievement of high goals, and performing successfully, which may help promote confidence with skill execution during training and competition. Interestingly, the current findings regarding imagery are somewhat inconsistent with previous research (Frost & Henderson, 1991) that suggests athletes scoring high in perfectionistic tendencies reported images of mistakes before competition. However, the present findings are consistent with past research that dancers with perfectionistic tendencies were reported to have similar levels of facilitative imagery to dancers with moderate or no perfectionistic tendencies. In contrast to the past research, dancers with perfectionistic tendencies revealed more debilitating imagery than dancers with moderate or no perfectionistic tendencies (Nordin-Bates et al., 2011). It may be that the athletes in the current study had experienced recent success, and were able during the interview to focus on images that contributed to this success. Likewise, it may be that when asked to discuss their use of imagery, the most immediate scenario that came to their mind was when they had performed perfectly (or as close to perfection as possible). It would be interesting for future research to determine whether the imagery of athletes scoring high in self-oriented and socially prescribed perfectionism continues to be so adaptive immediately before competition and/or immediately after failure. The findings also show that there were no differences emerged between the deaf and hearing athletes in terms of their use of cognitive specific and cognitive general imagery. This is not

surprising given that both deaf and hearing athletes could not get on-court coaching during their matches. Visualising their previous skills learnt in training may help deaf and hearing athletes to prepare for action, to maintain high quality of performance, and to avoid errors.

General Discussion

The general purposes of the present study were to understand the types of self-regulation strategies used by deaf and hearing athletes scoring high in self-oriented and socially prescribed perfectionism, and whether there were any differences or similarities between the two groups. More specifically, the study sought to determine whether the self-regulatory strategies employed by the athletes lend support for Hewitt and Flett's (1991) contention that both self-oriented and socially prescribed perfectionism are negative perfectionism dimension, and thus in combination may represent a highly debilitating form of perfectionism. Or, whether the findings offered support for the 2 x 2 model of perfectionism, which suggests athlete scoring high in self-oriented and socially prescribed perfectionism may be less vulnerable to negative outcomes and poor health (especially in comparison to athletes scoring high socially prescribed perfectionism and low self-oriented perfectionism).

With regards to the selected participants in this study, athletes were identified as high self-oriented and socially prescribed perfectionism if they scored one standard deviation higher than the mean scores. However, despite scoring one standard deviation above the mean, the scores of the recruited participants reveals that some athletes' perfectionism levels were just above the mid-point (e.g., around 4.50 in socially prescribed perfectionism in the hearing sample). It is important to note that the findings are interpreted in this light that some of the sample did not score high levels of self-

oriented and/or socially prescribed perfectionism. At the same time, it is worth pointing out that the recruited participants in the present study were the most “perfectionistic” out of a larger sample of 206 (for hearing) and 101 (for deaf) athletes, and thus are representative of athletes scoring the highest levels of self-oriented and socially prescribed perfectionism. In addition, the procedures adopted in the current study to identify perfectionists were adopted from the Speirs Neumeister et al. (2009) study of students scoring high in perfectionism. A comparison of the current sample of athletes and the students in the Speirs Neumeister et al.’s study reveal similar levels of self-oriented and socially prescribed perfectionism.

The overall qualitative findings indicate that deaf and hearing athletes scoring high in self-oriented and socially prescribed perfectionism employed a range of self-regulation strategies. Specifically, the athletes in this study reported using both positive and negative strategies during self-regulation which may offer support for the hypothesis regarding mixed perfectionism in the 2 x 2 model (Gaudreau & Verner-Filion, 2012). In the present study, the findings regarding the more positive self-regulation strategies theoretically emerged as a result of the athlete self-oriented perfectionism. In particular, striving for perfectionistic goals (whether they be the outcomes and/or performance-focused) may be beneficial because they enable the athletes to retain personal control over achievement standards. This sense of personal control may be especially important to mixed perfectionists because it is possible, as a result of their socially prescribed perfectionism, that they are also striving for externally-determined goals. As argued by Hewitt and Flett (1991) and Gaudreau and Verner-Filion (2012), it is this sense of control that partially account for the positive (negative) correlations between self-oriented perfectionism and indicators of better (poorer) health in cross-sectional research.

Despite adopting some positive self-regulation strategies, it was also clear from the interviews that the athletes employed a number of more maladaptive strategies. Notably, the deaf and hearing athletes' self-awareness skills were overly preoccupied with avoiding mistakes. They also referred to self-monitoring skills which heighten the opportunity for receiving negative feedback from significant others, and employed debilitating forms of self-talk that focused on the consequences of making mistakes. The evidence from this study suggests that the self-regulation strategies such as self-monitoring, self-awareness, and self-talk associated with high self-oriented and socially prescribed perfectionism may, despite the positives self-regulation strategies reveal this combination of perfectionism dimensions as highly debilitating which is consistent with Hewitt and Flett's (1991) model. Moreover, when the athletes faces personal setbacks, goal blockage, and failure, it is likely that some of the self-regulation strategies referred to by the present sample will further exacerbate the negative implications of high self-oriented and socially prescribed perfectionism, leading to further maladjustment for the athletes.

With regards to the differences between the two groups, the overall findings presented in this study also revealed that goal-setting skills, self-awareness skills, and imagery technique were similar for mixed perfectionism hearing and deaf athletes. Conversely, there were some discrepancies in the self-monitoring skills and relaxation technique employed by the two groups.

Practical Implications

The evidence from the current study suggests that deaf and hearing athletes scoring high in self-oriented and socially prescribed perfectionism clearly employ self-regulation strategies, albeit the strategies employed may not always be adaptive. Thus,

athletes scoring high in self-oriented and socially prescribed perfectionism should (regardless of their hearing ability) be taught to change the quality of some self-regulation strategies, whilst ensuring more adaptive strategies (e.g., striving towards internally-set, high standards) are maintained. This suggestion is in keeping with Hall et al.'s (2012) proposal that psychological skills training (which could include self-regulation strategies) may be vital in the management in the perils of athletes' perfectionism. In fact, there is evidence outside of sport that suggests targeting specific self-regulation strategies may assist in reducing the debilitating nature of perfectionism. For example, a study by DiBartolo, Frost, Dixon, and Almodovar (2001) revealed that restructuring many of the cognitions associated with the self-regulation themes described by the athletes in the current study (e.g., heightened self-awareness of mistakes, constant self-monitoring of performance errors), as well as promoting more adaptive strategies (e.g., enhancing coping efficacy) helped reduce anxiety and negative appraisals associated with public speaking. More recently, in a study with non-clinical samples of perfectionists, Kearns and colleagues (Kearns, Forbes, & Gardiner, 2007) revealed the effectiveness of cognitive behavioural coaching, which included self-monitoring of significant goals and self-awareness of patterns of behaviour that may prevent goal attainment.

Limitations

As discussed above, one limitation of this study is that, whilst the recruited athletes scored the highest levels of self-oriented and socially prescribed perfectionism from a larger sample, a number of the athletes' levels could be considered moderately high. Moreover, as the PPS-S (Hill et al., 2016) has not been used extensively in the sport literature, it is not possible to know whether the cut-off scores on the two

perfectionism dimensions identified in this study accurately represent high self-oriented and socially prescribed perfectionism. As future research begins to employ the PPS-S it may be possible to more accurately estimate what scores constitute “elevated” perfectionism and how these scores compare to Hewitt and Flett’s (2004) recommendations. Doing so would allow additional studies to elaborate on the self-regulation strategies adopted by athletes labelled as “mixed perfectionists”

A further limitation is that, although a qualitative methodology provided an in-depth insight into the self-regulation strategies adopted by the athletes, it is not possible to establish statistically supported associations and the strength of these associations. As such, quantitative methodologies should be employed in future research to empirically test the relationships between high self-oriented and socially prescribed perfectionism and self-regulation strategies, as well as whether self-regulation strategies explain the relationship between self-oriented and socially prescribed perfectionism and important outcomes.

An additional limitation is the sole focus on mixed perfectionism, excluding athletes scoring high in the other combinations proposed by the 2 x 2 model (e.g., pure self-oriented and pure socially prescribed perfectionism). To gain a deeper understanding of how perfectionism impacts on athletes, future research in this area may wish to determine whether (and why) pure self-oriented and/or pure socially prescribed perfectionists employ similar and/or different self-regulation strategies compared to athletes scoring high in both.

There are also important limitations associated with conducting qualitative interviews with the deaf athletes. Various data collection protocols (e.g., a voice recorder, an online communication tool, relying on a sign-language interpreter) were

used, and each protocol has its strengths and weaknesses and this may have affected the quality of the interviews with the deaf athletes. For example, the use of a web messenger prevented the interviewer from observing the participant's emotions, facial expressions, and body language. Although the lead researcher attempted to use different methods to interview deaf athletes, further research is also required to solicit the full interview experience of the deaf participants (and the interviewer), with a view to providing recommendations for qualitative researchers who wish to interview deaf athletes in future sport psychology research.

Conclusion

Overall, the findings in the present study provide qualitative evidence regarding a number of self-regulation strategies, including goal-setting skills, self-monitoring skills, self-awareness skills, and self-regulation capabilities solicited from athletes scoring the highest levels of self-oriented and socially prescribed perfectionism in a larger sample. More specifically, the findings reveal that, in addition to some maladaptive self-regulation strategies, additional strategies seem to be as adaptive for the athletes. This interpretation would, on the surface, provide one explanation for why mixed perfectionism within the 2 x 2 model is conceptualised as adaptive. However, on closer inspection, these seemingly adaptive strategies may eventually prove to be debilitating for the athlete, revealing a host of negative cognitions, feelings of contingent self-worth, and negative self-appraisal. In this instance, the self-regulation strategies associated with high self-oriented and socially prescribed perfectionism may reveal this combination as particularly maladaptive for athletes.

The present study also provides limited support to the hypothesis that deaf and hearing athletes would differ on certain self-regulatory strategies, albeit there were some

differences (e.g., in self-monitoring skills, the hearing athletes used videos to keep track of their performance whilst the deaf athletes did not). As a result, the findings in this study suggest that the same self-regulation strategies may be important in explaining the nature of high levels of self-oriented and socially prescribed perfectionism athletes, regardless of their hearing ability. These findings are consistent with Chapters Two and Three where there were very few differences across the two groups in unique relationships between the two perfectionism dimensions and indicators of well-being and ill-being.

General Discussion

General Discussion

Overview

To date, many researchers (e.g., Greenspon, 2000; Stoeber & Otto, 2006) have debated whether perfectionism could lead to adaptive or maladaptive outcomes; a debate stimulated by the varying definitions of perfectionism in the existing literature (Burns, 1980; Flett & Hewitt, 2002; Frost, Marten, Lahart, & Rosenblate, 1990; Hamachek, 1978; Hollender, 1965; Missildine, 1963). Building upon previous research inside and outside of sport on perfectionism, the present thesis had four primary objectives. The first objective was to provide initial evidence that self-oriented and socially prescribed perfectionism are correlated with indicators of health in deaf athletes. This objective was achieved in Chapters Two and Three, with both empirical studies confirming associations, albeit generally weak, between the two perfectionism dimensions and symptoms of burnout and well-being. The second objective was to examine a potential mediator (i.e., exhaustion) in the relationships between athletes' self-oriented and socially prescribed perfectionism with indicators of well-being, which was tested in Chapter Three. The third objective was to test, using a longitudinal design, the hypothesis that self-oriented perfectionism is a vulnerability factor associated with poorer health overtime in athletes, which was also tested in Chapter Three. The fourth objective was to consider whether a combination of high self-oriented and socially prescribed perfectionism is a particular debilitating form of perfectionism via the self-regulation strategies adopted by this subtype of perfectionist, which was tested using a qualitative design in Chapter Four. Finally, the fifth objective was to determine whether there were similarities or differences in the findings relating across objectives 1-4

between hearing and deaf athletes. This final objective was tested in Chapters Two, Three, and Four.

The findings presented in this thesis demonstrated that self-oriented and socially prescribed perfectionism are significantly associated with a number of indicators of well- and ill-being in deaf athletes, albeit the associations may be weak (Chapters Two and Three) and in the case of well-being, are limited to cross-sectional relationships (Chapter Three). Regarding objective two, the study presented in Chapter Three revealed that emotional (but not physical exhaustion) was a mediator of the longitudinal relationships between self-oriented and socially prescribed perfectionism and indicators of athletes' well-being, albeit the indirect effects were small to medium. Contrary to the stated hypothesis, self-oriented perfectionism did not emerge as a vulnerability factor and was not positively associated with lower well-being/higher ill-being over time in Chapter Three.

Chapter Four extended the approach to investigating self-oriented and socially prescribed perfectionism in Chapters Two and Three, by examining the self-regulation strategies adopted by athletes scoring high in both perfectionism dimensions. Overall, the results presented in Chapter Four suggested the athletes' self-regulations strategies are consistent with historical definitions of self-oriented and socially prescribed perfectionism. Moreover, the findings in Chapter Four suggest that while athletes characterised by this combination of perfectionism dimensions may employ some adaptive self-regulation strategies, the long-term consequences of their strategies are unlikely to contribute to personal growth and sustained well-being.

Finally, regarding objective five, relatively few differences emerged between deaf and hearing athletes in Chapters Two, Three, and Four, suggesting that self-oriented and

socially prescribed perfectionism may be associated with association processes and indicators of health in a similar manner across the two groups. All the findings are explained in further detail in the following sections.

Summary of Research Findings Associated with Self-Oriented Perfectionism

The regression analyses presented in Chapter Two provide initial evidence that self-oriented perfectionism is associated cross-sectionally with symptoms of burnout in deaf and hearing athletes, albeit in a negative direction. Likewise, the findings from Chapter Three showed that self-oriented perfectionism was negatively associated with changes in emotional exhaustion across four months. However, this perfectionism dimension did not emerge as a direct predictor of changes over time in enjoyment and vitality. Moreover, the predictive strength of self-oriented perfectionism (as well as socially prescribed perfectionism) in both studies was relatively weak. In Chapter Two, both perfectionism dimensions account for 5-16% variance in burnout symptoms, and in Chapter Three, perfectionism dimensions were partially responsible for predicting 13% variance in emotional exhaustion, albeit not too dissimilar to the predictive strength reported in previous research in sport (e.g., Chen, Kee, & Tsai, 2009).

The finding that self-oriented perfectionism was (weakly) negatively associated with key indicators of athletes' health, both cross-sectionally and longitudinally, is consistent with previous research in sport (e.g., Appleton, Hall, & Hill, 2009; Hill, Hall, & Appleton, 2010), as well as previous findings reported in the general perfectionism literature (Stoeber, 2011; Stoeber & Otto, 2006). Together, the findings reported here and in previous research seem to contradict Hewitt and Flett's (1991) original proposal that self-oriented perfectionism is a debilitating perfectionism dimension. However, the findings do provide indirect support for Hewitt and Flett's (1993) latter proposal that

self-oriented perfectionism is a vulnerability factor. That is, the studies reported in Chapters Two and Three measured the correlates of self-oriented perfectionism in the absence of (either manipulated and perceived) stress, goal blockage, and/or failure, and thus the studies' design failed to directly test the vulnerable nature of self-oriented perfectionism. In other words, the debilitating "side" of self-oriented perfectionism was somewhat hidden in the two studies, and thus it is not surprising that this perfectionism dimension was negatively correlated with symptoms of burnout. The study presented in Chapter Three did attempt to test the vulnerability hypothesis via a longitudinal design, hypothesising that the naturally occurring stresses of a competitive season would influence the relationships stemming from self-oriented perfectionism. However, it would seem, at least based on the initial evidence presented in Chapter Three, that the longitudinal design was not sufficient to tease out the vulnerable nature of self-oriented perfectionism in the recruited sample of hearing and deaf athletes. It is also possible (although no direct measure was included) that the athletes in Chapters Two and Three were experiencing little stress and or goal blockage, and thus did not feel vulnerable during their participating in sport. In support of this study, relatively few athletes in both chapters reported high levels of burnout and related symptoms, suggesting they had a relatively healthy profile of health.

There are numerous explanations on the perfectionism why, in the absence of stress and failure, self-oriented perfectionism will be negatively associated with indicators of ill-being. For example, there is evidence showing that athletes scoring high in self-oriented perfectionism tend to adopt task-oriented goals (Appleton et al., 2009), employ problem-focused coping strategies (Hill et al., 2010), report growth seeking tendencies (Hill, Hall, Appleton, & Murray, 2010), are partially intrinsically

motivated (Appleton & Hill, 2012), and can be characterised by intense achievement striving (Bieling, Israeli, & Anthony, 2004), all of which enhance the opportunity for success and the adjustment of goals in a proactive manner (Appleton et al. 2009). In addition, self-oriented perfectionism induces a sense of control over achievement standards (Gaudreau & Verner-Filion, 2012; Hewitt & Flett, 1991), and this may help develop some form of resilience against the harsh self-criticism and negative rumination that also characterises self-oriented perfectionism (Flett & Hewitt, 2005). The sense of personal control associated with self-oriented perfectionism was clearly evidenced in the qualitative interviews reported in Chapter Four, where the goal-setting strategies of the athletes included self-set goals. In turn, this sense of personal control and resilience may be sufficient, at least over the short-term, to prevent poor psychological and physical health (Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000).

In the absence of stress and failure, then, self-oriented perfectionism is likely to seem desirable. However, as noted elsewhere in this thesis, it is important that researcher, coaches, and sport psychologists remain cognisant of the likely debilitating nature of this perfectionism dimension when the athlete eventually (and inevitably) encountered goal-blockage and undesirable performance outcomes (Hill, Hall, Duda, & Appleton, 2011). The debilitating nature of self-oriented perfectionism is understandable given that this perfectionism dimension is associated with a conditional self-acceptance (Hill, Hall, Appleton, & Kozub, 2008), in which feelings of self-worth are contingent upon achieving self-set standards of perfectionism on a consistent basis (i.e., every time an athlete competes). It is logical that when athlete scoring high in self-oriented perfectionism encounter (repeated) failure, feelings of threat are heightened

(Hill et al., 2011) and self-worth is undermined, consequently rendering the individual vulnerable to burnout and other indicators of ill-being.

Summary of Research Findings Associated with Socially Prescribed Perfectionism

Hewitt and Flett (1991, 2004) defined socially prescribed perfectionism as a constellation of beliefs that tie self-worth to the achievement of the standards and expectations determined by significant others. Previous research findings in relation to socially prescribed perfectionism are generally consistent with Flett and Hewitt's (2005) proposal that this perfectionism dimension will undermine the health of athletes. For example, socially prescribed perfectionism was found to be positively associated with athlete burnout (Hill et al., 2008, 2010) and negatively associated with subjective vitality and life satisfaction (Gaudreau & Verner-Filion, 2012) in sport. Aligned with previous cross-sectional research (Gaudreau & Verner-Filion, 2012; Hill et al., 2008, 2010), the findings from study one (Chapter Two) suggest that socially prescribed perfectionism was a significant positive predictor of a reduced sense of accomplishment, exhaustion, devaluation, negative affect, and physical symptoms of ill-health in both deaf and hearing athletes. The findings from the first study are important because, for the first time, socially prescribed perfectionism has been shown to be positively correlated with three burnout dimensions (i.e., reduced accomplishment, devaluation, and exhaustion) and the broader array of symptoms that characterise the burning out process (including negative affect and physical symptoms of ill-health). However, as noted above, socially prescribed perfectionism predicted a relatively small amount of variance in the burnout symptoms. This may be because of the limited number of athletes that scored high levels of burnout, limiting the opportunity for stronger associations between socially prescribed (and self-oriented) perfectionism and burnout.

It may also be that socially prescribed (and self-oriented) perfectionism are distal predictors of burnout symptoms, and their effects are explained by additional variables and processes. This statement has received support in previous sport psychology research that has examined the mediating role of motivation regulations (Appleton & Hill, 2009), coping strategies (Hill et al., 2010), unconditional self-acceptance (Hill et al., 2008), and was tested in Chapter Three via the mediating role of exhaustion (see next section for a detailed discussion).

Building upon the cross-sectional design in study one (Chapter Two), the findings from study two (Chapter Three) provide first evidence that socially prescribed perfectionism is weakly associated with decreases in enjoyment in sport and vitality over time indirectly via increases in exhaustion. Taken together, the findings from studies one and two (Chapters Two and Three) therefore provide partial evidence that socially prescribed perfectionism plays a direct and indirect role in predicting maladjustment and poorer health in deaf athletes. Socially prescribed perfectionism appears to be wholly negative because athletes scoring high in this dimension are very concerned about making mistakes and others' negative evaluations. If the athlete makes mistakes, this will inevitably result in disapproval and rejection by significant others. This explanation is supported by previous research that demonstrates a positive relationship between socially prescribed perfectionism and concerns over mistakes and maladaptive evaluation concerns (Frost, Heimberg, Holt, Mattia, & Neubauer, 1993), as well as with low personal control over achievement standards (Mor, Day, & Flett, 1995).

Importantly, the findings from the longitudinal study (Chapter Three) extended previous cross-sectional research (Hill et al., 2008, 2010; Chapter Two) that have revealed that socially prescribed perfectionism is detrimental to athletes' health over

time. The finding that socially prescribed perfectionism was positively associated with emotional exhaustion over time is unsurprising given that socially prescribed perfectionism is related to self-validation (Hill et al., 2010) and constant preoccupation with comparing oneself to others (Appleton et al., 2009). Moreover, socially prescribed perfectionism has a negative impact on athletes' health over time because this perfectionism dimension is associated with validation-seeking (Hill et al., 2010) and unconditional self-acceptance (Hill et al., 2008). Thus, it seems that athletes scoring high in socially prescribed perfectionism are constantly striving for standards that are externally determined. They fear the negative implications of mistakes, doubt the quality of their performance, and are subsequently unable to validate feelings of self-worth. If this pattern of achievement striving and associated negative thoughts and feelings persist, it is not surprising that socially prescribed perfectionism emerges as a negative predictor of athletes' emotional exhaustion.

While the findings in Chapters Two and Three are consistent with previous research (e.g., Gaudreau & Verner-Filion, 2012) that the socially prescribed perfectionism dimension is wholly maladaptive to athletes' health, both cross-sectional and longitudinal studies also revealed the suppression effects of socially prescribed perfectionism. For example, the relationship between Time 1 self-oriented perfectionism and Time 2 emotional exhaustion was not significant at the bivariate level but was enhanced and became statistically significant in the path analysis (see Chapter Three), and this association was suppressed by socially prescribed perfectionism. Suppression occurs between an independent and a dependent variable after adding a third variable to the data analysis (MacKinnon, Krull, & Lockwood, 2010). Another explanation for this effect is due to the addition of a predictor which improves the

predictive power and validity of another predictor variable in the same equation (Paulhus, Robins, Trzesniewski, & Tracy, 2004). Nevertheless, the suppression effects are common in psychological research (e.g., Aldea & Rice, 2006; Flett, Besser, Davis, & Hewitt, 2003; Hill et al., 2010; Hill, Huelsman, & Araujo, 2010; Scott, 2007; Wu & Wei, 2008) and testing (MacKinnon et al., 2010; Stoeber, Kobori, & Brown, 2014; Watson, Clark, Chmielewski, & Kotov, 2014) in that the suppression effects are valuable in explicating the construct validity of perfectionism measures.

Explaining the Effects of Self-Oriented and Socially Prescribed Perfectionism via Exhaustion

Building upon Hill and colleagues' research (Hill et al., 2008, 2010) that has provided insight into mediating variables that help explain the effects of self-oriented and socially prescribed perfectionism, Chapter Three hypothesised that exhaustion may be another potential mechanism to enable researchers to understand how these two perfectionism dimensions are associated with indicators of psychological health. Emotional and physical exhaustion was conceptualised as a mediator of self-oriented and socially prescribed perfectionism because, although other burnout symptoms (e.g., reduced accomplishment) are likely to be associated with the two perfectionism dimensions), feeling of exhaustion have been hypothesised to be caused by excessive external pressures and/or the intense demands associated with achieving high standards in training and competition (Raedeke, 1997). Furthermore, Gustafsson, Kenttä, and Hassmén (2011) proposed that exhaustion was the defining, central symptom of athlete burnout.

Previous cross-sectional research has demonstrated that several perfectionism dimensions (socially prescribed perfectionism, concern over mistakes, doubts of actions,

and parental expectations and criticism) were positively associated with emotional and physical exhaustion (Hill, et al., 2008, 2010; Lemyre, Hall, & Roberts, 2008), while other perfectionism dimensions such as personal standards and self-oriented perfectionism have been negatively correlated with exhaustion (Appleton et al., 2009; Lemyre, et al., 2008). In turn, emotional and physical exhaustion has emerged as a negative predictor of enjoyment and intrinsic motivation in swimmers and college athletes (Raedeke & Smith, 2001), suggesting that this central feature of athlete burnout may help explain the relationship between the targeted perfectionism dimensions and indicators of athlete in athletes.

Study one (Chapter Two) built upon previous research findings that has confirmed across-sectional associated between perfectionism dimensions and exhaustion. Specifically, it was found that self-oriented perfectionism was a significant negative predictor of emotional and physical exhaustion and socially prescribed perfectionism was a significant positively predictor of emotional and physical exhaustion in both hearing and deaf athletes. These findings provided the platform to examine the mediating role of emotional and physical exhaustion in study two (Chapter Three). Study two (Chapter Three) revealed that Time 1 socially prescribed perfectionism positively predicted Time 2 emotional exhaustion and Time 1 self-oriented perfectionism negatively predicted Time 2 emotional exhaustion. However, neither perfectionism dimension predicted physical exhaustion. In turn, Time 2 emotional exhaustion negatively predicted Time 2 enjoyment and subjective vitality. In terms of the assessment of mediation, the relationships between perfectionism dimensions and enjoyment and subjective vitality were also indirect via emotional exhaustion, with small-to-medium effect sizes reported. The findings from the second study (Chapter

Three) therefore provides initial evidence that role emotional exhaustion may be an important mechanism that helps explain the longitudinal relationship between self-oriented and socially prescribed perfectionism with indicators of athletes' health.

The findings from the second study (Chapter Three) also emphasise the importance of separating the different strains of exhaustion (in accordance with Shirom's (2003) suggestion) when investigating its relationship with perfectionism dimensions. Specifically, the findings in the longitudinal study (Chapter Three) provide support to Lonsdale, Hodge, and Raedeke's (2007) recommendation that perfectionism dimensions are better predictors of the emotional component than the physical component. Again, one potential explanation for this non-significant finding is the limited variability in the athletes' physical exhaustion scores, with few athletes reported high levels on this dimension of burnout, which may have limited the strength of the association. Thus, future research should re-examine the relationships between the two perfectionism dimensions and physical (and emotional) exhaustion with a more homogenous sample (i.e., greater number of athletes who report high and low levels of exhaustion). It is also possible that the two perfectionism dimensions will be associated with physical exhaustion in future research, albeit the relationship may be indirect via important mediating variables (e.g., unconditional acceptance, motivational regulations, coping strategies) that have received empirical support in previous research on perfectionism and burnout. Finally, although the two perfectionism dimensions did not predict physical exhaustion over a short period of time (i.e., four months), it is possible that athletes with high levels of self-oriented and socially prescribed perfectionism will experience physical exhaustion over the longer term, as they continue to strive relentlessly for unattainable goals and experience the resulting constellation of

debilitating cognitions that characterise self-oriented and socially prescribed perfectionism. As a result, researchers may wish to extend the timeframe when examining the mediating role of physical exhaustion in the relationships between the two perfectionism dimensions and indicators of well-being (e.g., enjoyment and subjective vitality) (e.g., 12 months).

Understanding the Nature of High Self-Oriented and Socially Prescribed Perfectionism

The studies presented in Chapters Two and Three measured self-oriented and socially prescribed perfectionism as separate (albeit related) constructs. Although self-oriented and socially prescribed perfectionism have unique relationships with key indicators of well- and ill-being of athletes, the current thesis also considered that athletes have within-personal combinations of self-oriented and socially prescribed perfectionism. Therefore, the third study (Chapter Four) moved beyond treating the two perfectionism dimensions as separate constructs, and aimed to consider the nature of a subtype that reflects high scores on both dimensions. Study three (Chapter Four) attempted to extend previous research on perfectionism by adopting a self-regulation framework to understand whether this subtype of perfectionism can be conceptualised as debilitating or whether it may also be associated with adjustment. The strategies discussed by the athletes were consistent with three models of self-regulation (Bandura, 1986; Kirschenbaum, 1984, 1987; Zimmerman, 1986); namely goal-setting skills, self-monitoring skills, self-awareness skills, and self-regulation capabilities (i.e., self-talk, relaxation, and imagery), and were consistent with historical descriptions of key features of perfectionism (Hewitt & Flett, 1991, 2004; Greenspon, 2000, 2008). However, the findings of this particular study need to consider in the context of the

major limitation of the study; inspection of the mean scores indicate that socially prescribed perfectionism scores were between 5 and 6 (out of 7), and thus more accurately represent moderately high levels (rather than high), and self-oriented perfectionism scores ranged between 5.7 and 7 (representing moderately high to high). Thus, the extent to which all the athletes interviewed in Chapter Four can be accurately labelled as high self-oriented/high socially prescribed perfectionist is unclear. However, the interviewees did report the highest levels of perfectionism out of a larger sample of athletes, and their perfectionism scores were somewhat similar to individuals labelled as high perfectionists in previous research (Speirs Neumeister, Williams, & Cross, 2009).

In terms of the goal-setting, it was not surprising the athletes' goals were primarily internally-determined, given their scores on self-oriented perfectionism were stronger than their socially prescribed perfectionism levels. Moreover, the interviews revealed that athletes showed rigidity towards achieving high. As discussed above, it is likely that setting and striving towards internally-determined, high goals is one self-regulation strategy that explains the negative association between self-oriented perfectionism and indicators of burnout reported in Chapters Two and Three. It is also possible that this self-regulation strategy contributes to the high(er) adjustment scores of athletes labelled as mixed perfectionists in research testing the 2 x 2 model. As Gaudreau and Verner-Filion (2012) hypothesised in the test of the 2 x 2 model, the internally-determined goals associated with self-oriented perfectionism fosters self-determined motivation, where the athletes' achievement striving is consistent with valued goals and values and promotes well-being. It is also well established in the perfectionism literature that striving for high, perfectionistic standards is associated with a range of positive outcomes.

The athletes in Chapter Four also reported a number of other self-regulation strategies that may contribute to higher adjustment and lower maladjustment. For example, the athletes engaged in personal self-reflections of their performances, which reflected their desire for order and organisation in their preparation to compete. Likewise, the athletes employed imagery, in which they visualised images related to moving towards the achievement of high goals, and performing successfully. Again, this particular self-regulatory strategy may help develop a sense of resilience when encountering mistakes and enhanced confidence to execute performance to the desired levels in training and competition. The findings regarding imagery are consistent with past research that revealed dancers with perfectionistic tendencies had similar levels of facilitative imagery compared to dancers with moderate or no perfectionistic tendencies (Nordin-Bates, Cumming, Aways, & Sharp, 2011). It would be interesting for future research to determine the extent to which the setting of internally-determined goals and the associated resilience that follows contributed to the athletes' ability to imagine being successful rather than imagery that focuses on failing and/or the negative consequences of mistakes, which one would typically expect of athletes scoring high in perfectionism (i.e., Frost & Henderson, 1991). It is also possible that athletes' self-oriented perfectionism had enabled previous successes, which fostered their ability to engage in adaptive forms of imagery which they described during the interview.

The findings in Chapter Four also revealed that athletes reported a number of self-regulatory strategies that can be conceptualised as maladaptive. For example, although less prominent in the interviews (maybe because of the lower socially prescribed perfectionism scores), athletes' made reference to goal-setting focused on gaining the approval of significant others, relying on external feedback that oftentimes emphasised

performance weaknesses, as well as a heightened self-awareness and negative self-talk that were preoccupied with avoiding mistakes. Many of these self-regulation strategies are logical given the defining characteristics of self-oriented and socially prescribed perfectionism. For example, given that socially prescribed perfectionism involves the belief that self-worth is contingent upon achieving externally-derived standards of perfection (Hewitt & Flett, 1991), it makes sense that athletes scoring (relatively) high in this dimension would seek performance-related feedback from others. However, socially prescribed perfectionists perceived significant others to be overly critical, and this was reflected in Chapter Four via the punitive feedback received by the athletes from coaches and teammates. Likewise, self-awareness and self-talk that reflects a hypersensitivity about avoiding mistakes are self-regulation strategies that may be employed in response to the negative ramifications of failure for athletes scoring high in self-oriented or socially prescribed perfectionism. In combination, the self-regulations strategies referred to by the athletes in Chapter Four that are more maladaptive nature provide insight into how and why high levels of self-oriented and socially prescribed perfectionism may contribute to poor health and ill-being in athletes.

A key objective of the study presented in Chapter Four was to consider whether athletes characterised by self-oriented and socially prescribed perfectionistic tendencies are more or less likely to experience adjustment and maladjustment via the self-regulation strategies they adopt. What is evident from the findings in Chapter Four is that the athletes reported a range of self-regulation strategies that could have positive but also negative implications for athletes' health and well-being. Within the context of the 2 x 2 model of perfectionism (Gaudreau & Thompson, 2012), the findings from Chapter Four may be interpreted that the positive self-regulation strategies, which were

generally linked to self-oriented perfectionism, may offset some of the negative self-regulation strategies emanating from socially prescribed perfectionism, thus providing one mechanism that accounts for the model's hypothesis that mixed perfectionism should be able to experience some degree of well-being. However, there are certain limitations to this conclusion. First, the extent to which the self-regulation strategies adopted by the athletes in Chapter Four were associated with indicators of well- and ill-being was not examined. Thus, it may be premature to conclude that the findings offer support for the 2 x 2 model's hypothesis regarding mixed perfectionism. Second, as discussed in detail above in this chapter, self-oriented perfectionism is a vulnerability factor and what remains to be determined is the extent to which the self-regulation strategies highlighted by the athletes in Chapter Four continue to be employed under conditions of stress and perceived failure. For example, it may be that repeated failure will restrict the athletes' engagement in imagery that focuses on being successful and achieving one's self-set perfectionistic goals. Furthermore, it is unknown whether the seemingly positive nature of these self-regulation strategies is maintained under these conditions. For example, goal-setting that involves self-set standards of perfection may initially energise behaviour (Stoeber, 2011) and represent a partially quality form of motivation (Gaudreau & Verner-Filion, 2012). However, continuing to rigidly set and subsequently strive towards perfectionistic goals will prove unhealthy for the athlete in the face of repeated failure (Stoeber, 2014b) and limit creativity and development of innovative solutions (Ferrari & Mautz, 1997), to the extent that it may expose the vulnerable nature of self-oriented perfectionism. Clearly, in this instance, the self-regulation strategies adopted by the athletes would expose the debilitating nature of having high levels and self-oriented and socially prescribed perfectionism, which would

align with the key assumption of Hewitt and Flett's (1991) model. Future research is needed, then, to examine the self-regulations strategies and associated indicators of psychological health associated with the mixed perfectionism subtype under conditions of stress, goal blockage, and failure.

Comparison between Deaf and Hearing Athletes

To date, research has examined perfectionism in hearing athletes (e.g., Gaudreau & Verner-Filion, 2012; Hill et al., 2010), with no studies attempting to include more diverse samples of sport performers, such as deaf athletes. This gap in the literature is important because hearing disability has been associated with ill-being, including burnout, as a function of the perceived increased demands and social pressure associated with hearing disability (Hasson, Theorell, Wallén, Leineweber, & Canlon, 2011).

Therefore, one of the main objectives of the present thesis was to understand whether similarities or differences exist in the effects of self-oriented and socially prescribed perfectionism in hearing and deaf athletes. Further to this, the first study (Chapter Two) tested whether hearing status moderated the relationships between self-oriented and socially prescribed perfectionism and burning out symptoms. Moderated regression analyses revealed that only the interaction between self-oriented perfectionism and hearing ability emerged as a significant predictor for devaluation. The plotted regression lines (see Figure 2.1) demonstrated that the scores for devaluation decreased as self-oriented perfectionism increased in both groups, even though the slope was steepest for the hearing athletes. Building upon the first study (Chapter Two), the second study (Chapter Three) demonstrated that the indirect effects of Time 1 self-oriented and socially prescribed perfectionism on Time 2 enjoyment and

subjective vitality via Time 2 emotional exhaustion were invariant across deaf and hearing athletes. The findings in the longitudinal study (Chapter Three) are thus consistent with study one (Chapter Two), and provide further evidence that the effects of self-oriented and socially prescribed perfectionism in hearing athletes are similar in deaf athletes.

The third study (Chapter Four), in contrast, reported similarities and differences in terms of the self-regulation strategies employed by deaf and hearing athletes scoring high in mixed perfectionism. In particular, relaxation technique and self-monitoring skills were different. Regarding self-monitoring skills, the hearing athletes made reference to using videos to keep track of their performance whilst the deaf athletes did not use video. The deaf athletes, in contrast, seem to rely more heavily on significant others (e.g., coach, performance analyst) for feedback. Such findings could simply reflect the availability of different resources associated with performance analysis. Another explanation of the findings, however, is that due to communication barriers, deaf athletes rely on significant others as a form of social support (Stewart, Robinson, & McCarthy, 1991). While reliance on others can be an initial form of social support, the deaf athletes scoring high in mixed perfectionism may come to depend heavily on significant others in their attempt to validate self-worth. This is especially problematic given mixed perfectionists will likely evaluate the feedback of significant others as critical and debilitating, as evidenced in the findings reported in Chapter Four.

As for the relaxation technique, both hearing and deaf athletes referred to sleep as an important relaxation technique. However, the hearing athletes also referred to other relaxation techniques including listening to music, reading magazines, chatting with others, and playing games via i-pad or mobile phone before the matches. In contrast,

the deaf athlete did not report any other relaxation techniques before competition and this may be partly due to some of the alternative relaxation activities (e.g., listening to music, chatting with others) requiring the ability to hear. It may be that the hearing athletes had developed a range of relaxation techniques in preparation for their performance, albeit the extent to which these techniques were effective in helping the athletes to relax is unknown. However, given that deaf athletes also discussed additional self-regulation strategies that emphasised the avoidance of performance errors, it is possible that while the aforementioned relaxation techniques were employed, the hearing athletes' cognitions were still centred upon achieving perfection and the implications of mistakes.

Apart from the differences in relaxation technique and self-monitoring skills across the two groups, the findings of the qualitative study revealed a number of similarities in goal-setting skills, self-awareness, and imagery. In terms of goal-setting, this is not surprising given that athletes characterised by mixed perfectionism (regardless of hearing ability) tend to set unrealistically high standards for themselves. It is also unsurprising that both hearing and deaf athletes characterised by mixed perfectionism have a heightened awareness of performance errors because mistakes are appraised internally by the athletes, as well as externally by significant others, as being unacceptable and threatening to their quest for perfection. No differences emerged between the deaf and hearing athletes in terms of cognitive specific and cognitive general imagery. Visualising their previous skills learnt in training may help deaf and hearing athletes to prepare for action, and thus function as an important pre-performance routine for achieving a high quality performance. Moreover, many of

these self-regulation strategies do not depend on being hearing-abled, and thus are just as likely to be adopted by deaf athletes as by hearing athletes.

Overall, then, the findings from studies one to three (Chapters Two to Four) suggest that self-oriented and socially prescribed perfectionism has similar implications for deaf and hearing athletes' health. Moreover, emotional exhaustion and a number of key self-regulation strategies provide insight into processes by which the two perfectionism dimensions (either unique or in combination) may influence the health of hearing and deaf athletes. Interestingly, there are some specific self-regulation strategies that differed between the two groups of mixed perfectionists, albeit further research is required to replicate the findings, and subsequently understand why these differences emerged.

Practical Implications

The following section considers the implications of the findings presented in this thesis for protecting athletes from the perils of perfectionism. Given the points raised earlier in this chapter that the findings should be interpreted with reference to a number of important conceptual and methodological limitations, these limitations also apply to a consideration of the practical implications proposed in this section. In particular, the practical implications should be interpreted in light of that fact that many of the effect sizes and relationships from self-oriented and socially prescribed perfectionism were small. Nevertheless, significant relationships (in the case of Chapters Two and Three) and key processes (in the case of Chapter Four) associated with self-oriented and socially prescribed perfectionism did emerge in studies one to three, and thus their implications are discussed here.

Given the findings from studies two and three, it seems that practical implications concerning emotional exhaustion and self-regulation strategies may be particularly important to consider. One approach to ameliorating feelings of exhaustion (and specifically emotional exhaustion) may be through training significant others such as coaches and parents to create more task-involving and autonomy-supportive environments. Previous research has demonstrated that coach-created task-involving and autonomy-supportive climates are positively associated with positive affect and negatively associated with negative affect and exhaustion (Quested & Duda, 2010). Further evidence also found that coach-autonomy support emerged as a significant negative predictor of emotional and physical exhaustion in soccer (Adie, Duda, & Ntoumanis, 2012), and handball players that perceived a high task-involving climate at the beginning of the season reported lower burnout scores at the end of the season (Isoard-Gauthier, Guillet-Descas, & Duda, 2013). It is likely that task-involving and autonomy-supportive climates will be effective in reducing emotional exhaustion (as well as promoting well-being) because these climates have been associated with higher psychological need satisfaction (i.e., competence, autonomy, and relatedness; Deci & Ryan, 2000). Increased competence and autonomy may be particularly important for athletes scoring high in socially prescribed perfectionism, as their opportunities to experience feelings of mastery and ownership over their performance are generally thwarted (Mallinson & Hill, 2011).

In addition to targeting the motivational climate, research outside of sport has revealed the benefits of interventions in the work setting for reducing emotional exhaustion. Zolnierczyk-Zred (2005), for example, carried out a two-day intervention programme that aimed to reduce work-related burnout while dealing better with high

job demands and low job control in teachers in an educational setting. Participants received a six-hours-a-day stress management workshop and the findings revealed that emotional exhaustion decreased significantly in the intervention group (Zołnierczyk-Zred). In healthcare organisations, Siu, Cooper, and Phillips (2014) have recently conducted an intervention on enhancing work-related well-being (e.g., job satisfaction, physical and psychological symptoms) and reducing burnout in health care workers. After taking part in a two-day training course in stress management, it was found that the health care workers demonstrated an improvement work-related well-being and a reduction in burnout. Given that previous studies have been successful in reducing burnout in workers, sport psychologists and practitioners may wish to replicate (or customise) the aforementioned interventions and evaluate their effects on reducing emotional exhaustion in deaf and hearing athletes reporting high socially prescribed perfectionism (and self-oriented perfectionism).

Although future research is needed to clarify the type of self-regulation strategies employed by athletes reporting high levels of self-oriented and socially prescribed perfectionism, the initial evidence presented in Chapter Four suggests that athletes characterised by this perfectionism subtype may benefit from interventions concerning approaches to self-regulation. Effectiveness of interventions designed to facilitate healthy self-regulation strategies in athletes have been established. In an elite curling team, Collins and Durand-Bush (2010) reported that both the coach and athletes increased cohesion and performance from pre- to post-self-regulation intervention. Beauchamp, Halliwell, Fournier, and Koestner (1996) also conducted a 14-week cognitive-behavioural teaching programme that targeted changes in motivation, preparation, and putting performance in novice golfers who were assigned to three

introductory golf classes: cognitive-behavioural, physical skills training, and control groups. The cognitive-behavioural intervention included four phases, namely a sport analysis phase (e.g., technique, sport equipment), an individual assessment phase in relaxation training, stress management, self-regulation, mental rehearsal, concentration, energy control, and positive thought, and then a motivation phase (e.g., goal-setting and mental skills training for pre-performance routines in golf putting task). The final phase integrated mental skills and evaluation (e.g., self-monitoring of the pre-putt routines) (Beauchamp et al., 1996). The novice golfers in the physical skills group were primarily taught in physical skills golf putting, whilst the novice golfers in control group were given no instruction in golf putting. Beauchamp et al. found that self-determined motivation, preparation, and putting performance were significantly improved in the golfers who received the cognitive-behavioural programme.

Given the effectiveness of previous self-regulation interventions, it may be possible to equip athletes scoring high in self-oriented perfectionism with strategies to manage the negative thoughts and feelings, as well as reinforce the more positive strategies that emerged in Chapter Four. For example, positive self-talk should be reinforced, as this has been associated with better performance compared to athletes using negative self-talk (Van Raalte, Brewer, Lewis, Linder, Wildman, & Kozimor, 1995). Progressive muscle relaxation and breathing techniques could also be taught to the athletes because these two relaxation strategies have significant positive correlations with sports performance (Parnabas, Mahamood, Parnabas, & Abdullah, 2014), including subsequent feelings of self-worth. Although using imagery will enable athletes to imagine performance errors, if used correctly, could also be beneficial as athletes can visualise the skills learnt from training to competition and recap past

performances, helping to avoid making mistakes in the future (see Cumming & Williams, 2013, for a review).

Regarding goal-setting, athletes should continue to strive towards challenging goals, and adopt the SMART principles of goals (Specific, Measurable, Achievable, Relevant, and Time-Bound) to encourage and enhance confidence (especially in response to failure and performance errors), whilst also allowing the athlete to retain control over their achievement standards and be more flexible in adjusting their goals (Bull, 1997; McCarthy, Jones, Harwood, & Davenport, 2010). As for self-monitoring skills, research found that self-monitoring enhanced dart-throwing skill, self-efficacy, and self-reaction beliefs (Zimmerman & Kitsantas, 1996) because this skill involves personal reflections focused on how to improve and achieved desired standards (rather than how to avoid failure and performance errors). Examples of how a particular of self-regulation strategy could be applied by athletes scoring high self-oriented and socially prescribed perfectionism are provided in Table 5.1.

Table 5.1

Examples of Self-Regulation Strategies for Mixed Perfectionists

Self-regulation strategies	Examples
Goal-Setting Skills	To focus on process goals or develop SMART (Specific, Measurable, Achievable, Relevant, and Time-Bound) principles of goals
Self-Monitoring Skills	To focus on the areas of improvement (rather than considered as total failures which cannot be improved upon), record the performance strengths and weaknesses using video or diary rather than relying on coaches, as the feedback from others can be negative
Self-Talk	To change from negative self-talk (e.g., “I cannot achieve high standards of perfection”; “I am worthless if I fail”) to positive self-talk (e.g., “I can achieve high standards of perfection”; “I may not have achieved perfection this time, but I am improving my performance and progressing”)
Relaxation	To use progressive muscle relaxation or breathing techniques
Imagery	To create a mental picture of how to achieve challenging, but realistic standards. Use imagery to develop positive reactions/less negative reactions to performance errors and mistakes

General Limitations and General Recommendations for Future Research

A number of limitations of each empirical study were addressed in Chapters Two, Three, and Four. Likewise, throughout the current chapter, the conceptual and methodological limitations of the research presented in this thesis have been discussed in detail. Hence, in this section, a number of additional limitations are considered with some recommendations for future research on perfectionism in hearing and deaf athletes.

Perfectionism dimensions. The present thesis mainly focused on self-oriented and socially prescribed perfectionism, with other-oriented perfectionism being excluded. In view of the limited research examining other-oriented perfectionism in sport, future research is needed to understand whether the correlates of other-oriented perfectionism are different from self-oriented and socially prescribed perfectionism in deaf and hearing athletes. While it was argued in Chapter One that other-oriented perfectionism has implications for interpersonal functioning, it is possible that poor interpersonal functioning may subsequently undermine athletes' health. For example, Stoeber (2014a) has recently examined the unique relationships of other-oriented perfectionism in non-sporting samples using Hewitt and Flett's (1991, 2004) Multidimensional Perfectionism Scales. According to Stoeber's findings, other-oriented perfectionism had significant positive relationships with aggressive and self-deprecating humour, callous and uncaring traits, individualistic and competitive orientations, self-interest, and interpersonal self-evaluations (i.e., feeling superior to others). Other-oriented perfectionism also had significant negative relationships with affiliative humour, prosocial orientation, and other-interests (Stoeber, 2014a). It seems reasonable to predict that this constellation of negative interpersonal correlations would promote ill health, albeit this proposal awaits confirmation in the sport setting.

A further limitation concerns the qualitative study (Chapter Four) which only targeted participants classified as mixed perfectionists according to the 2 x 2 model (Gaudreau & Verner-Filion, 2012). Further research in this area is needed to understand why and how pure self-oriented and pure socially prescribed perfectionism affect individuals' health and whether individuals with these pure forms of perfectionism differ in terms of their self-regulation strategies compared to mixed perfectionists.

Research design. In the current thesis, both quantitative (see Chapters Two and Three) and qualitative (see Chapter Four) approaches were employed, specifically with a focus on cross-sectional, longitudinal, and semi-structured interview designs. However, these methods cannot be used to establish causal relationships because correlations/regressions do not imply causation. To establish causation, researchers may wish to adopt an experimental research design to manipulate athletes' feelings of stress or exhaustion, though this may raise ethical concerns. Researchers may also wish to extend the qualitative study presented in Chapter Four, and examine the thoughts, feelings, and self-regulation strategies of mixed perfectionists after success and failure.

Validity of the multidimensional perfectionism scales. Two different psychometric scales were used to measure self-oriented and socially prescribed perfectionism dimensions in the first and second studies (Chapters Two and Three). The first study (Chapter Two) utilised Hewitt and Flett's (1991, 2004) Multidimensional Perfectionism Scale (MPS), which is a non-domain-specific perfectionism scale. However, because Dunn, Causgrove Dunn, and McDonald (2012) emphasised the importance of a domain-specific measure of perfectionism, the second study (Chapter Three) employed the Performance Perfectionism Scale for Sport (PPS-S; Hill, Appleton, & Mallinson, 2016). Although both measures capture athletes self-

oriented and socially prescribed perfectionism, direct comparison between the findings from studies one and two (Chapters Two and Three) are somewhat limited by the use of two different measures. Moreover, despite the fact that the reliabilities for the self-oriented and socially prescribed perfectionism dimensions were acceptable in studies one and two (Chapters Two and Three), it is crucial to carry out factor analysis to explore and confirm that both scales are appropriate to employ with deaf athletes. Investigating the factor structure of Hewitt and Flett's MPS and Hill et al.'s PPS-S can provide valuable information from a measurement perspective, especially testing for measurement invariance across hearing and deaf athletes, which can strengthen future comparisons on the correlates and mediators of the perfectionism dimensions across the two groups.

Participants. The research presented in the current thesis aimed to compare hearing with deaf athletes. For deaf athletes, variability in the levels of hearing loss and how this may have influenced the findings was not considered. It is important that future perfectionism research considers the influence of hearing loss variability because the greater the hearing loss, the harder it is for the deaf individuals to strive to ameliorate problems with language and communication barriers in the work environment, which may contribute to greater levels of stress (Luft, 2000). Higher stress may help to reveal the vulnerable nature of self-oriented perfectionism to a greater extent in those individuals with a severe hearing loss.

With regards to the demographic background of the participants across the three empirical studies (Chapters Two to Four), there were various percentages of competitive levels in both hearing and deaf athletes. The athletes' competitive levels may have implications for the potential effects of perfectionism, as Rasquinha, Dunn, and

Causgrove Dunn (2014) confirmed that higher competitive sport levels are associated with higher levels of perfectionism in sport. Thus, researchers may wish to consider extending the research reported in the current thesis to deaf participants with various levels of hearing loss, as well to determine the effects of playing standards. They may also wish to consider examining perfectionism and psychological health in athletes with other types of disabilities (e.g., physical impairment or visual impairment). This will deepen the knowledge base of perfectionism across a wider spectrum of athletes.

The methodology adopted in study three (Chapter Four) is also important because it helps inform recommendations for future research with deaf athletes. In study three (Chapter Four), a variety of communication and interview protocols were employed by the deaf athletes in study three (Chapter Four), and researchers should look to replicate this approach in future research with deaf athletes to ensure the interview process proceeds effectively. Deaf athletes tend to have various communication strategies in accordance with the environmental settings and the characteristics of the interlocutors (Silvestre, Ramspott, & Pareto, 2007), and this will determine their preferred method of communication. It was clear when undertaking study three (Chapter Four) that some deaf athletes preferred to communicate using speech with the help of hearing aids and/or cochlear implants, or via lip-reading, or assistive devices (e.g., captioning), whilst others use either speech or sign-language, or both, with or without the help of a sign-language interpreter. It is vital to ensure quality data is collected, that the researcher determine the most appropriate (and preferred) method with each individual deaf athlete before the interviews. When deaf individuals are not consulted, it can lead to difficulties in them understanding the questions and, in turn, their responses. This

can subsequently lead to longer interviews due to the necessity of verifying meanings and/or solving misunderstandings of the questions (Silvestre et al., 2006).

It is also important that researchers consider the strengths and weaknesses of the range of methodologies associated with conducting interviews with deaf athletes. Although several interview protocols (e.g., voice recorder, video recorder, laptop or desktop-based computer, flip charts, and online communication tools such as messaging via Skype) and social supports (e.g., a sign-language interpreter, a hand-writing or electronic note-taker, and a lip-speaker) can be chosen (and were employed in study three) to overcome their language and communication barriers, not all equipment and support is applicable to all deaf interviewees. Moreover, some approaches may limit the overall interview experience. For example, using online communication tools (e.g., Skype) can enable the interviewer and interviewee to communicate with each other without travelling to the venue, however, the limitation of this method is that without face to face observation, it is difficult to discern emotions, facial expressions, or body language, all essential components of the overall qualitative interview.

As the research presented in this thesis was conducted by a deaf individual, it is also possible to offer recommendations for other deaf researchers who are considering undertaking qualitative (or quantitative) research with deaf athletes. During the collection of data for study three (Chapter Four), the researcher kept a reflective journal, considered a useful tool to record new ideas and insights (Kim, 2012) involved with conducting the research. Specifically, the researcher reflected on each qualitative interview conducted with every deaf athlete in order to identify best practice and forward recommendations for interviewing deaf athletes in future sport psychology research. Personal thoughts and opinions regarding the most and least effective

communication skills and interview protocols for interviewing deaf athletes were written in the journal after every interview. These recommendations include:

- Reflecting on the interview venues acoustics can affect whether the deaf interviewees hear the sounds (particularly those interviewees with profound hearing loss)
- Selecting the appropriate interview protocols (e.g., voice recorder, video recorder, laptop or desktop-based computer, flip charts, and online communication tools such as messaging via Skype) according to the communication skills and the levels of hearing loss among the deaf interviewees. For example, for a deaf interviewee with mild hearing loss who is able to speak clearly, it may be more appropriate to use a voice recorder to record the conversations, whereas this would not be appropriate for an interviewee with profound hearing loss
- Choosing the appropriate social support (e.g., a sign-language interpreter, a hand-writing or electronic note-taker, and a lip-speaker) because some deaf interviewees prefer to use sign-language, whilst other deaf interviewees prefer speaking
- Soliciting viewpoints and recommendations from the deaf interviewees regarding enhancing the quality of interviews in future research so that qualitative researchers can ensure effective interviews with deaf athletes with various communication strategies

Summary

The overarching aim of the current thesis was to examine, for the first time, the relationship between two broad dimensions of perfectionism with key indicators or well-being and ill-being in athletes with and without hearing impairment. This was

achieved by presenting two quantitative studies and one qualitative study that focused on self-oriented and socially prescribed perfectionism. The major findings have contributed to the perfectionism literature, particularly to promoting an understanding of how perfectionism functions in the deaf athletic population and the implications for their health and well-being. These findings support for the idea that socially prescribed perfectionism is maladaptive for both deaf and hearing athletes, and may undermine their psychological health. Conversely, self-oriented perfectionism was, overall, negative associated with indicators of ill-being in hearing and deaf athletes, albeit these findings were interpreted in light of the vulnerability hypothesis regarding this perfectionism dimension. No major differences were found between deaf and hearing athletes in the first two studies (Chapters Two and Three), and minor differences were reported regarding the self-regulation strategies (i.e., relaxation and self-monitoring skills) reported by hearing and deaf athletes in study three (Chapter Four). In conclusion, the findings provide initial evidence that the targeted perfectionism dimensions may hold implications for the health and well-being and hearing and deaf athletes.

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