

Curtin University of Technology

School of Psychology

An Investigation of Positive and Negative Perfectionism

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This thesis is presented for the Degree of

Doctor of Philosophy

of

Curtin University of Technology

August 2005

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Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

Signature:

Date:

ACKNOWLEDGEMENTS

There are several people who I would like to thank who have been crucial in the completion of this project. First, my sincerest thanks to my supervisors, Murray Dyck and Jan Piek. They both offered me a great deal of support, encouragement, excellent feedback and fantastic models of researchers and supervisors. Thank you particularly to Jan for being so quick in reading the many drafts in the last 6 months of the thesis, and for reading so many drafts! Thank you to Bob Kane who gave advice in the final stages of the thesis. Thanks to Ali Marsh for reading one chapter of the thesis, to Clare Pollock reading the final draft of the thesis and giving very valuable feedback, and to Nick Barrett for statistical advice. Thank you so much to Clare Rees for reading drafts and giving excellent feedback and enormous support throughout my PhD.

I also wanted to thank the School of Psychology and Division of Health Sciences, Curtin University of Technology, for granting me doctoral leave from my position to enable me time to complete the thesis. Without this support I would not have been able to complete within the time period I have. I am very grateful for this support and for the Head of the School of Psychology at the time of writing the thesis, Leigh Smith, for allowing this leave to occur.

Finally, I want to sincerely thank all of my family and friends, without your support and love this would not have been possible, especially to Mum and Dad for having always supported my academic endeavors every step of the way, thank you!

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Abstract

Perfectionism has long been recognized as a factor that is central to understanding psychological disorders, as it is significantly higher in the majority of psychological disorders compared to the general population. The construct of perfectionism was examined in this research by exploring differences between positive and negative perfectionism. The literature to date has focused almost exclusively on perfectionism as a maladaptive construct, with little research examining if perfectionism can be a positive factor. The implication of the study was to determine if some factors identified may be potentially important in future treatments targeted towards perfectionism, as there is some evidence to suggest that perfectionism may predict poorer response to standard cognitive behavioural treatment.

This research compared three different groups; (i) a clinical group with diagnoses of anxiety and depression (n = 40); (ii) a group of athletes (n = 111) and (iii) a student control group (n = 101). The research consisted of 5 studies. In Study 1, evidence was found for the validity, consistency of factor structure and internal consistency of the Positive and Negative Perfectionism Subscale (PANPS; Terry-Short, Owens, Slade, & Dewey, 1995). In Study 2, clinical participants with a range of diagnoses were found to have significantly higher overall perfectionism and negative perfectionism compared to athletes and controls. Rigidity predicted higher positive perfectionism. Dichotomous thinking accounted for a large proportion of variance in negative perfectionism, and was argued to be an important factor distinguishing between positive and negative

perfectionism. In Study 3, positive perfectionism was found to relate to faster performance time in athletes competing in triathlons, and negative perfectionism was not found to impede sporting performance. The Big Five personality domains were investigated in Study 4, and Agreeableness was found to be a significant predictor of negative perfectionism in the clinical group. In comparing clinical and athlete groups, athletes had significantly lower Neuroticism, and higher Extraversion and Conscientiousness. Study 5 was a clinical descriptive study that examined motivation to change and cognitions about failure in a select sample of clinical participants with extreme high scores on negative perfectionism and athletes with extreme low scores. The clinical participants reported many negative consequences, yet despite this recognition, the majority reported they did not wish to change perfectionism. Also, as the level of negative perfectionism increased, the degree of diagnostic comorbidity increased. It was concluded that it may be more useful to distinguish between positive achievement striving and negative perfectionism rather than positive and negative perfectionism. Clinical implications were outlined which included targeting dichotomous thinking and resistance to change in the development of treatments for perfectionism.

CHAPTER 1

Literature Review

1.1 Introduction

The concept of perfectionism has long been recognised as an important factor underlying psychopathology. A large wealth of literature has indicated that perfectionism is higher in individuals with diagnoses of anxiety disorders, depression and eating disorders compared to healthy controls (Shafran & Mansell, 2001). Recently some authors have argued that perfectionism may not always be linked with psychopathology, but may also be associated with positive outcomes (Terry-Short et al., 1995). While various studies have determined differences in positive and negative aspects of perfectionism, there is a paucity of literature that has been directed towards explaining the differential outcomes of perfectionism.

This research program investigated the construct of positive and negative perfectionism to gain a greater understanding of why for some individuals, (e.g., athletes), perfectionism results in positive outcomes, whereas for others, (e.g., clinical groups), perfectionism results in negative outcomes. There are five studies reported that aimed to investigate various questions about positive and negative perfectionism. These include the validity of measures of positive and negative perfectionism, comparisons of rigidity and dichotomous thinking between groups high and low in negative perfectionism, the impact of positive and negative perfectionism on sporting performance, personality traits associated with high and low negative perfectionism, and motivation to change perfectionism. The primary aim of the research program was to further understand positive and negative perfectionism. Understanding positive perfectionism has potential application in areas such as sports psychology in improving performance. Furthermore, understanding more about the construct of negative perfectionism is important in attempts to treat perfectionism, which is an important maintaining factor of many psychological disorders.

1.2 Definitions and historical conceptualisations of perfectionism

Perfectionism has been recognised for over a century. However, despite this, for many years it was simply described as a construct by clinicians rather than receiving the

scrutiny of empirical investigation. The early clinical descriptions of perfectionism have provided useful accounts of the various characteristics that comprise the phenomenon. The majority of early definitions overwhelmingly viewed perfectionism as a dysfunctional characteristic. Early philosophers and therapists noted perfectionism as an important aspect of human behaviour. The first person to write about perfectionism was Janet (1898) who saw perfectionists as having “idees fixes” (fixed ideas). Therefore, rigidity was one of the first characteristics described in regards to perfectionism. Other early writers who recognised the importance of perfectionism included Epictetus (1899) and Dubois (1907) (cited in Ellis, 2002). Alfred Adler (1926, 1927) also pointed out the importance of perfectionism in neurosis. In his later works, Adler (1956) suggested that striving for perfection was a basic part of the human response to feelings of inferiority and inadequacy. Freud (1929/1965) viewed perfectionism as a common symptom of neurosis, particularly obsessional neurosis. He stated that perfectionism resulted from a harsh and punitive superego that demanded superior conduct and achievement in all areas of life. Freud also believed perfectionism was an aspect of narcissism (Slade & Owens, 1998). Thus, early writers viewed perfectionism as a part of personality.

Horney (1939) was a later psychoanalyst who argued that neurosis was the result of protective habits, and one of the main protective habits was perfectionism. She later described perfectionism as “the tyranny of the shoulds” (Horney, 1950). Horney argued that perfectionists try to fit an idealised self-image, which then leads to low self-esteem. Other psychoanalysts at the time also wrote about perfectionism, viewing it as a variant of obsessive-compulsive behaviour (Branfman & Bergler, 1955). Other early descriptions viewed perfectionism as a fundamental aspect of “anankastic depression” (Lion, 1942). Interestingly, Lion described many aspects of perfectionism in his description including meticulousness, morbid doubts and rigidity of thoughts. These descriptions were early precursors of anankastic and obsessive-compulsive personality disorder. Other early writers also noted that perfectionism was a major factor in the development of medical problems including hypertension (Rennie, 1939) and gastrointestinal complaints (Conn, 1947).

The first cognitive-behavioural theorist to describe perfectionism was Albert Ellis. He defined perfectionism as one of the 12 basic irrational ideas that lead to psychological distress, describing 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” (Ellis, 1958, p. 41)

Ellis (1957) also described perfectionists as people for whom “...the main goal and purpose of life is achievement and success; incompetence in anything whatsoever is an indication that a person is inadequate or valueless” (p. 89). In his first text on Rational-Emotive Behaviour Therapy, Ellis (1962) again defined perfectionism as one of the main irrational ideas causing emotional problems. He stated that perfectionism is “...the idea that there is invariably a right, precise, and perfect solution to human problems and that it is catastrophic if this perfect solution is not found” (pp. 86-87).

Missildine (1963) proposed a similar description of perfectionism to Ellis, stating that perfectionists only feel worthwhile when they are achieving and competent in all areas of life. Missildine also argued that dissatisfaction with self and low self-esteem were key characteristics of perfectionism. Hollender (1978) argued that perfectionism was a “neglected personality trait”. He described the perfectionist as being someone who;

“...demands a certain level of performance of himself...[and]...cannot accept or be content with anything short of perfection...he looks so intently for defects or flaws that he lives his life as though he were an inspector at the end of a production line...not only that, but no matter how well he does, he seldom performs to his complete satisfaction” (Hollender, 1965, pp. 94-95)

These early clinical definitions overwhelmingly viewed perfectionism as a negative trait associated with psychopathology and dysfunction. However, taking a different view, the first author to distinguish between different types of perfectionism was Hamachek (1978). He argued that there are two types of perfectionists; normal and neurotic. Hamachek defined normal perfectionists as those who get a sense of pleasure from reaching their goals, but neurotic perfectionists as never satisfied with their performance. Furthermore, he argued that neurotic perfectionists usually could not meet their personal standards for performance, and that this severely reduces their sense of self-esteem.

Burns (1980a) also distinguished between types of perfectionists writing;

“I want to make clear what I mean by perfectionism. I do *not* mean the healthy pursuit of excellence by men and women who take genuine pleasure in striving to meet high standards...the perfectionists I am talking about are those whose standards are high beyond reach or reason, people who strain unremittingly toward impossible goals and who measure their own worth entirely in terms of productivity and accomplishment” (p. 34).

Burns thus viewed perfectionists as holding unreasonably high standards that they rigidly adhered to, and their self-esteem being tied to whether they could achieve these standards. Burns (1980b) also included a chapter in one of the first cognitive-behavioural self-help manuals for depression entitled “ways to overcome perfectionism”. Thus, perfectionism was seen as an important factor in the maintenance of depression.

Similarly, Pacht (1984) described perfectionism as being a state where a fear of making mistakes is central. He stated that “...perfectionism per se does not exist in reality, but it is the striving for that nonexistent perfection that keeps people in turmoil and is associated with a significant number of psychological problems” (p. 386). Pacht described an overwhelmingly negative view of perfectionism. He reported it was a widespread, debilitating problem that can be linked to a range of problems including Munchausen syndrome, irritable bowel syndrome, depression, anorexia, obsessive compulsive personality disorder, abdominal pain, writer’s block, ulcerative colitis, paranoia and Type A behaviour.

Each of these early descriptions of perfectionism acknowledge similar components; striving to achieve high, usually unattainable standards, a fear of making errors, and concomitant poor self-esteem when high personal standards are not achieved. The definition of overall or general perfectionism that will be used in this research is the following;

Perfectionism is the setting of excessively high standards, which is accompanied by the tendency to make overly critical self-evaluations about performance of tasks (Frost, Marten, Lahart, & Rosenblate, 1990).

1.3 Aetiology of perfectionism

The aetiology of perfectionism is something that has been discussed since the phenomena was first recognised and conceptualised. The major factor that has been suggested as a causal factor in the development of perfectionism is the effect of parenting styles. Burns (1980a) suggested that perfectionism might develop because of critical parenting. He argued that because children's self-esteem can be dependent on parental approval, children might come to fear making mistakes if they are criticised or punished for non-perfect performance. Barrow and Moore (1983) also theorised that parenting influences are a major factor in the development of perfectionism. They stated that there are four types of experiences that can lead to perfectionism; (i) parents being critical and demanding, (ii) parents having expectations that are excessively high, (iii) parental reinforcement being inconsistent or absent and (iv) parents acting as role models for perfectionistic beliefs and behaviour. Pacht (1984) also maintained that parental influences are of importance. He argued that perfectionism may develop when individuals are raised in a family where non-perfect performance is met with either direct or indirect criticism, and the child internalises this critical way of evaluating their own performance.

Frost and associates (1990) have also maintained the notion that harsh parenting can lead to the development of perfectionism. Implicit in Frost and colleagues' Multidimensional Perfectionism Scale (MPS-F) is their aetiological view about perfectionism, as reflected in the two subscales; "Parental Expectations" and "Parental Criticism". Frost, Lahart, and Rosenblate (1991) investigated daughters and their parents, and found that mother's, but not father's, ratings of criticism were significantly associated with perfectionism. They concluded that perfectionism has its aetiology in childhood where parents are demanding towards the child and also perfectionistic themselves. Frost et al. (1991) pointed to the obvious role of modelling of behaviour, which they argued may particularly occur between mothers and daughters. They suggested that parents who are perfectionistic do not reinforce their child in a normal way for achievements; instead they continually urge the child to try and do better whilst withholding their positive reinforcement and praise. Vieth and Trull (1999) also investigated the link between parental and child perfectionism, and found the same significant correlation between perfectionism in mothers and daughters, but not in fathers and daughters. In contrast, Flett, Hewitt, and Singer (1995) found a significant correlation between the Multidimensional Perfectionism

Scale (MPS-H; Hewitt & Flett, 1991a) *socially-prescribed* perfectionism subscale and authoritarian parenting styles in men but not in women. Rice, Ashby, and Preusser (1996) found that both males and females high on maladaptive perfectionism described their parents as being more critical and demanding than those with higher adaptive perfectionism.

In a further investigation into the role of parenting in the aetiology of perfectionism, Kawamura, Frost, and Harmatz (2002) investigated the link between adaptive and maladaptive perfectionism, and parental styles in a sample of 337 undergraduate university students. They used the MPS-F (Frost et al., 1990) to measure perfectionism and the Parental Harshness Scale (Frost et al., 1990), which has items relating to the extent to which parents are perceived as being strict, demanding and critical. They found that harsh and authoritarian parenting styles were related to maladaptive perfectionism as measured on the Concern over Mistakes and Doubts about Actions subscale of the MPS-F, but not adaptive perfectionism as measured on the Personal Standards subscale, in both men and women. Kawamura and colleagues argued that once perfectionism is modelled by parents and learned in childhood, perfectionistic behaviour might then be maintained by factors such as unrealistic role models in popular culture (i.e., people who achieve extremely highly) and also the emphasis that schooling places on achievement. One issue, however, with these studies investigating the role of parenting is they are limited by relying on retrospective reports of parenting, and this may be subject to bias in recall.

While the majority of studies have focused on parental factors, which can be seen as environmental influences, there has been one recent study that has investigated the role of genetic influences generally on the aetiology of perfectionism. Tozzi et al. (2004) used the MPS-F (Frost et al., 1990) as a measure of perfectionism with 1022 monozygotic and dizygotic female twins in a path analysis to determine the influence of genetic factors. They claimed that perfectionism as measured in their study by three subscales of the MPS-F is moderately heritable. Tozzi and colleagues stated that the subscales Personal Standards and Concern over Mistakes shared some common genetic effects, and that the Doubts about Actions and Concern over Mistakes subscales shared some common environmental effects. They also claimed that genetic factors appear to contribute more strongly towards Personal Standards than the other two subscales.

There has also been some genetic research with families of individuals with anorexia nervosa and bulimia nervosa that suggests that perfectionism is at least partially genetically determined. Lilenfeld et al. (1998) found that the likelihood of obsessive-compulsive personality disorder (OCPD), of which perfectionism is a main component, was increased among relatives of anorexic probands, even when some of the patients themselves did not have OCPD. Furthermore, perfectionism was found to be one of five personality traits that were the strongest vulnerability factors for the development of anorexia nervosa (Lilenfeld et al., 2001). Female relatives of bulimics have also been found to have elevated perfectionism, regardless of whether the relatives themselves had an eating disorder (Lilenfeld et al., 2000). Woodside et al. (2002) compared parents of probands with eating disorders and age-band matched healthy controls. They found that mothers of probands showed elevated levels of perfectionism. An explanation of these findings may be that perfectionism is environmentally transmitted through modelling, or alternatively is a genetically mediated personality trait (Woodside et al.). While there has been some research investigating the genetic basis of perfectionism in eating disorders, further research needs to examine this issue in other disorders including anxiety disorders and depression, to more clearly determine the role of genetics in the development of perfectionism.

This biological approach is an interesting development in investigating the aetiology of perfectionism and it would be useful to incorporate the role of genetic influences in models of the development of perfectionism. One explanation of biological findings such as those described is that the shared genetic vulnerability to perfectionism might lie in biological vulnerability to negative affect. It is well known that individuals who suffer from anxiety and depression have a genetic vulnerability to negative affect (Barlow, 2002). Therefore, this biological vulnerability towards negative affect may be underlying perfectionism as well, and/or is highly correlated with perfectionism.

There has only been one model proposed to date to account for the aetiology of perfectionism. This has been developed based on the research described into parenting factors. Flett, Hewitt, Oliver, and Macdonald (2002) proposed a developmental model to follow their idea of there being three types of perfectionism; *self-oriented* perfectionism, *other-oriented* perfectionism and *socially prescribed* perfectionism, as shown in Figure 1.

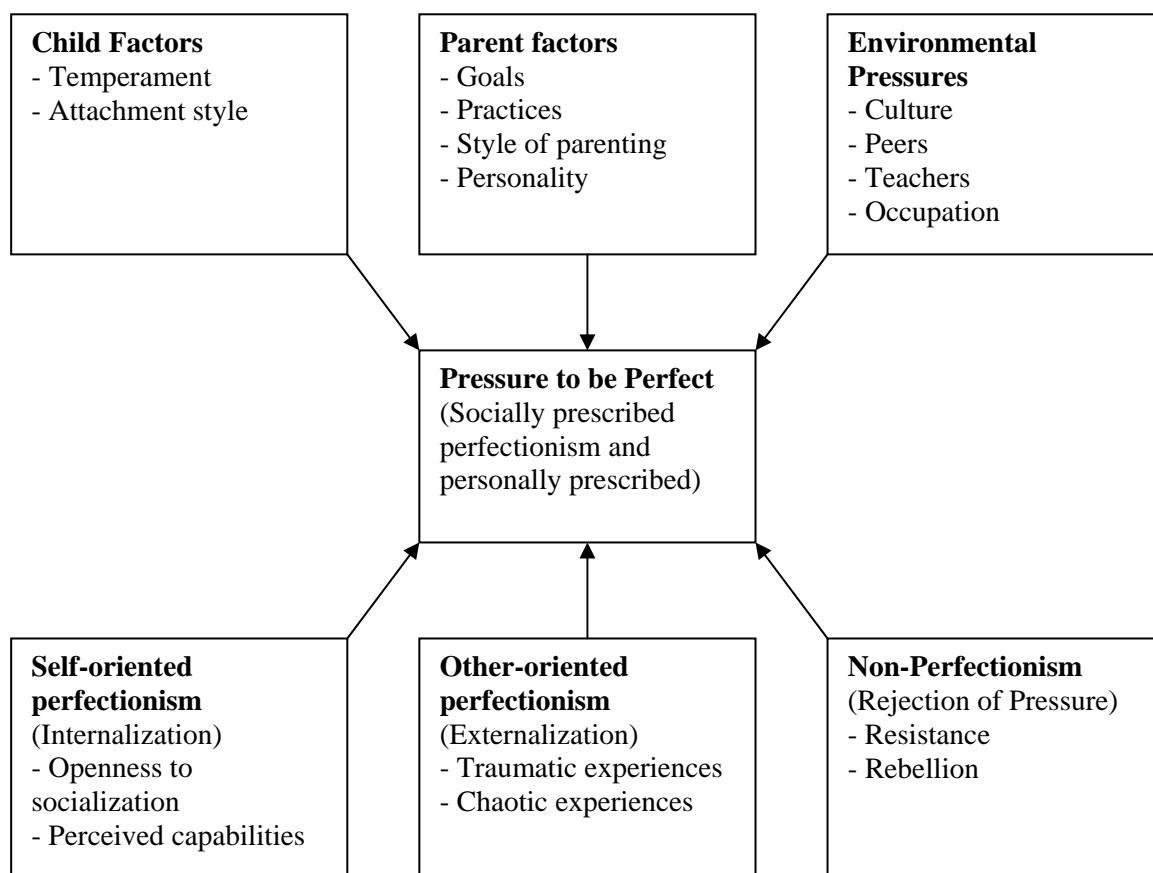


Figure 1. Preliminary model of the development of perfectionism, reproduced from Flett et al. (2002).

Flett et al. (2002) argue there are three areas that are risk factors for the development of perfectionism, including parental, environmental and self-factors. First, in regards to parental factors, they state that perfectionism will develop when a child experiences parents who are authoritarian, demand high performance in achievement settings, and parents who have their own perfectionistic goals and high standards. Flett and colleagues argue that modelling occurs from perfectionistic parents, which is similar to the body of research reviewed. Second, in regards to child factors, they state that children who are more open to socialisation and influence from others are likely to develop perfectionism. Other child factors include temperament, and they suggest that a perfectionist's temperament includes high levels of emotionality and persistence. It is surprising,

however, that Flett et al. do not include the influence of genetic vulnerability towards general negative affect in child factors. Third, in regards to environmental factors, they argue that society puts pressures on individuals to achieve in educational settings and work, which creates a competitive environment that results in frequent social comparison.

Flett and associates (2002) argue that once the pressure to be perfect exists, seen by the factors in the top half of Figure 1, whether perfectionism develops and how it develops depends on factors outlined in the lower half of the figure. They state that some people will develop *self-oriented* perfectionism, while others will develop *other-oriented* perfectionism (or both), as a response to pressures. Flett et al. also maintain that for some people who experience pressure from parents, self, and environment, perfectionism will not develop because they rebel against this pressure, for example, by wanting to be very different from a perfectionistic parent.

This model is encouraging because it attempts to account for the aetiology of perfectionism. However, as the authors note "...we must reiterate that work in this area is in its initial stages" (Flett et al., 2002, p. 125). Except for the factors on modelling and parenting which have some research basis, the other factors that they describe in their model do not have a large research base behind them, and the model has not yet been tested to account for its utility. Currently the model is not a comprehensive model of perfectionism as it only focuses on aetiological factors and not maintaining factors.

There are many issues that still remain to be answered in regards to the aetiology of perfectionism. One of the major problems with the research area is that it is correlational and is inferring the nature of past relationships between parenting and current factors in perfectionism. Using a correlational design, it is impossible to infer if styles of parenting cause different aspects of perfectionism. The only way this could accurately be examined would be from a longitudinal perspective, where children were followed over time. For example, measures of parenting or observation of parenting styles could be taken and then over time measures of perfectionism given repeatedly to determine if different parenting styles result in perfectionism. A further issue in the research is the almost exclusive focus on the factor of parenting, where other areas that may be useful to examine, such as the role of a general biological predisposition towards negative affect have not been thoroughly investigated.

1.4 Approaches to understanding perfectionism

Approaches to understanding perfectionism have largely been driven by questionnaires devised to measure the construct. There have been several measures of perfectionism that have been developed to date, that will be reviewed in chronological order. The relative strength of these measures will be discussed in terms of their reliability, which will be judged to be acceptable if Cronbach's alpha exceeds .70, and their construct validity in terms of accuracy in measuring the construct that the authors are proposing to measure.

1.4.1 Early perfectionism scales

1.4.1.1 The Dysfunctional Attitudes Scale (DAS)

The Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978) is a 40-item measure of self-defeating cognitions associated with anxiety and depression. While the DAS is not a specific measure of perfectionism, items on the scale have been used as a measure of perfectionism. Factor analyses of the DAS have reported mixed results (Brown & Beck, 2002). Beck, Brown, Steer, and Weissman (1991) reported nine factors from a sample of over 2000 patients, one of which they named Success-Perfectionism. Similar factors to the Beck et al. (1991) study have also been found in student samples (Dyck, 1992), and other studies have also replicated the Success-Perfectionism factor (Power, Duggan, Lee, & Murray, 1994). Other authors have also named a perfectionism factor on the DAS, for example, Imber et al. (1990) found that 15 items of the DAS loaded on perfectionism. The internal consistency of these 15 perfectionism items has been found to be high (e.g., alpha = .91; Dunkley, Sanislow, Grilo, & McGlashan, 2004).

1.4.1.2 The Burns Perfectionism Scale (BPS)

The Burns Perfectionism Scale (BPS; Burns, 1980a) was the first specific measure of perfectionism to be developed. It is a 10-item scale that was developed from the DAS (Weissman & Beck, 1978). The BPS has evidence of modest test-retest reliability ranging from low, $r = .63$ (Hewitt & Dyck, 1986) to acceptable, $r = .74$ (Broday & Sedlacek, 1988). There is also evidence the BPS has acceptable internal consistency (alpha = .70) (Hewitt & Dyck, 1986). Research has also shown the acceptable convergent and discriminant validity of the scale (Hewitt, Mittelstaedt, & Wollert, 1989). The weaknesses of the BPS include only focusing on the pathological aspects of

perfectionism, few clinical studies using the scale, and modest rather than good reliability (Enns & Cox, 2002).

1.4.1.3 The Setting Conditions for Anorexia Nervosa Scale (SCANS)

The Setting Conditions for Anorexia Nervosa Scale (SCANS; Slade & Dewey, 1986) is based on the theoretical idea that both perfectionism and general dissatisfaction are “setting conditions” that can lead to anorexia nervosa (Slade, 1982). The SCANS was developed as a screening tool to identify those at risk of developing anorexia nervosa, and has two factors; perfectionism and dissatisfaction. The SCANS perfectionism scale has been found to be elevated in patients with eating disorders compared to controls (Slade & Dewey, 1986; Slade, Dewey, Kiemle, & Newton, 1990). The subscale has shown poor internal consistency ranging from alpha = .65 (Slade et al.) to alpha = .66 (Slade & Dewey, 1986). Due to the poor internal consistency of the SCANS, it is not a good measure of perfectionism. Enns and Cox (2002) argue that the predictive validity of the scale and normative data needs to be established before the use of the SCANS could be recommended.

1.4.2 Multidimensional Perfectionism Scales

One of the main approaches to perfectionism that has been proposed, is that it is a complex, multidimensional construct. The main research into perfectionism started after the development of two multidimensional measures by separate research groups. Frost and colleagues developed the first, a 35-item measure of perfectionism, the Multidimensional Perfectionism Scale (MPS-F; Frost et al., 1990). Another measure was published the following year also named the Multidimensional Perfectionism Scale (MPS-H; Hewitt & Flett, 1991a), which consists of 45-items. Both measures are tied to the researchers’ theoretical notions of which factors they see as being central to the definition of perfectionism.

1.4.2.1 MPS-F

The MPS-F (Frost et al., 1990) was developed through the researchers deriving theoretically based items that were hypothesised to be related to perfectionism. In addition to theoretically derived items, other items were also taken from earlier existing measures of perfectionism (e.g., BPS; Burns, 1980a). Items were also derived from measures of psychopathology that have items relating to perfectionism, including

measures of eating disorders (Garner, Olmstead, & Polivy, 1983) and obsessive-compulsive disorder (OCD) (Rachman & Hodgson, 1980). The MPS-F consisted of 67 original items that were later reduced down to 35 items based on a reliability and factor analysis in a sample of 232 undergraduate students. Frost and colleagues found a 6-factor solution with the dimensions of; (i) Concern over Mistakes, (ii) Personal Standards, (iii) Parental Expectations, (iv) Parental Criticism, (v) Doubts about Actions and (vi) Organisation. The dimension of Concern over Mistakes includes items relating to reacting negatively to making mistakes and perceiving mistakes as failures. The Personal Standards items relate to setting high standards and goals for achievement. Parental Expectations items relate to parents having set high standards for the individual in their childhood. Parental Criticism items relate to parents criticising or punishing the individual when they made mistakes as a child. The Doubts about Actions subscale has items that measure doubting one's performance, and not feeling that things are "quite right", which were mainly taken from the Maudsley Obsessional Compulsive Inventory (MOCI; Hodgson & Rachman, 1977). The final scale, Organisation, has items relating to being a very organised and neat person. The six subscales were found to be highly correlated with each other but the Organisation subscale showed the weakest pattern of intercorrelation with other subscales and the total, and also it was correlated with only one other perfectionism measure that the MPS-F was compared against. Therefore, the Organisation subscale is not included when deriving a total perfectionism score, and it was concluded by Frost et al. that organisation is not "...a core component of perfectionism" (p. 465).

Recent studies have suggested that instead of a six-factor solution, the MPS-F (Frost et al., 1990) is better considered as having three factors that are intercorrelated (Purdon, Antony, & Swinson, 1999; Stober, 1998). These main factors are; (i) Personal Standards, (ii) Concern over Mistakes and Doubts, and (iii) Parental Expectations and Criticisms. Thus, some of the core components of perfectionism proposed by Frost and colleagues involve setting high standards and concern over mistakes. This defines perfectionism as primarily a self-focused construct and is very similar to the early definitions of perfectionism as described by various authors (Burns, 1980b; Hamachek, 1978; Hollender, 1965; Pacht, 1984). The MPS-F has been very widely used as a measure of perfectionism in both clinical and non-clinical samples (Frost & DiBartolo, 2002).

The reliability of the MPS-F (Frost et al., 1990) is good, with internal consistency of the six subscales ranging from .77 to .93 (Frost et al.). The scale has also been shown to have good construct validity, having a strong correlation ($r = .84$) with perfectionism measures such as the BPS (Burns, 1980a). However, it must be noted this high correlation may be due to some of the items from the MPS-F being taken from the BPS (Frost et al.). In a review of the MPS-F, Enns and Cox (2002) concluded that there is "...compelling evidence of the construct, concurrent, and discriminant validity of the Frost MPS" (p. 42).

However, there have been some criticisms of the MPS-F (Frost et al., 1990). One criticism has been that the subscales of Parental Expectations and Parental Criticism confound possible aetiological factors for perfectionism with the measurement of the construct. Rheaume, Freeston and colleagues (2000) argue these "...developmental aspects of perfectionism makes it difficult to interpret results and understand perfectionism itself" (p. 120). Also, there have been criticisms of other subscales on the MPS-F, which overlap with measures of psychopathology, such as the Doubts about Actions subscale, which consists of items mostly from a scale of OCD symptoms, the MOCI (Hodgson & Rachman, 1977). The rationale for including items from these measures appears to be that some symptoms of problems such as OCD overlap with characteristics of perfectionism. However, it has been argued that the Doubts about Actions subscale reflects checking symptoms of OCD, rather than necessarily perfectionism (Shafran & Mansell, 2001).

1.4.2.2 MPS-H

The other main measure of perfectionism is the MPS-H developed by Hewitt and Flett (1991a). Hewitt and Flett have a different theoretical view from Frost et al. (1990). Rather than perceiving perfectionism as only a self focused construct, Hewitt and Flett conceptualise it as also having interpersonal components of 'social' and 'other' orientation. Their 45 item scale is divided into three subscales; (i) *self-oriented* perfectionism, (ii) *other-oriented* perfectionism and (iii) *socially prescribed* perfectionism. The *self-oriented* perfectionism items relate to setting high standards for achievement and self-criticism for not meeting standards. This subscale is very similar to the subscales of Personal Standards and Concern over Mistakes on the MPS-F (Frost et al., 1990). The *other-oriented* perfectionism scale includes items that relate to having high standards for other people that are unrealistic and requiring perfection from others.

The *socially-prescribed* perfectionism subscale items are related to perceiving that other people hold unrealistically high standards for the individual, and expect the individual to be perfect. Hence, it can be seen that while both Frost and colleagues and Hewitt and Flett are defining perfectionism as a multidimensional construct, they have different views on the core nature of perfectionism. While Frost and colleagues regard perfectionism as more of a self-focused construct, Hewitt and Flett regard perfectionism as not only self-focused but also oriented towards other people. The internal consistency of the MPS-H has been shown to be good, with Cronbach's alpha for other-oriented perfectionism = .82, self-oriented perfectionism = .86, and socially prescribed perfectionism = .87 (Hewitt & Flett, 1991a). Convergent and discriminant validity has been demonstrated in a number of studies, and it has been shown to have predictive validity in a wide range of psychiatric diagnoses (Enns & Cox, 2002).

1.4.2.3 Debate over self-oriented versus other-oriented perfectionism

While the MPS-H (Hewitt & Flett, 1991a) has also been very widely used in numerous studies with both clinical and non clinical samples, the author's extension of the construct of perfectionism as going beyond a self-focused trait has received criticism. Shafran and Mansell (2001) have argued that whilst *socially-prescribed* and *other-oriented* perfectionism might be related to perfectionism, they are not a necessary part of the original construct, which is seen as self-focused. The argument of Shafran and Mansell appears to make intuitive sense as the MPS-H is focusing a great deal on the individual's perceptions of what others think of their mistakes rather than on their self-evaluation and self-criticism. Shafran, Cooper, and Fairburn (2002) have further argued that the dimensions of *socially-prescribed* and *other-oriented* perfectionism "...do not assess perfectionism per se, but assess related constructs" (p. 776). Earlier clinical studies describe perfectionism as a self-focused personality trait. The stance of perfectionism as being self-focused also fits with theoretical accounts of it being a maintaining factor for various psychological disorders. This includes eating disorders (Fairburn, Cooper, & Shafran, 2003) and OCD (Obsessive Compulsive Cognitions Working Group, 1997), where the essential nature of self-criticism for not meeting high standards is emphasised. These theoretical accounts do not consider other or socially prescribed perfectionism as central. Shafran, Cooper, and Fairburn (2003) also point out that standard cognitive behavioural theories for a range of axis I disorders such as bulimia nervosa, panic disorder, social phobia and post-traumatic stress disorder, focus on identifying specific

self-focused maintaining mechanisms. They argue that these theories have led to effective treatments being derived that have not required interpersonal aspects to be a central feature (e.g., Barlow, Raffa, & Cohen, 2002; Foa, Keane, & Friedman, 2000; Heimberg et al., 1998; Wilson & Fairburn, 2002).

Shafran and colleagues (2003) make a case that the widespread use of the two multidimensional scales of perfectionism has led to acceptance of perfectionism being a multidimensional construct rather than remaining a theoretically or clinically based construct. Consequently, they maintain that perfectionism should be studied from a self-oriented perspective, as this is consistent with the earlier view of perfectionism as a unidimensional, self-oriented phenomenon. This view has led to contention by Hewitt, Flett, Besser, Sherry, and McGee (2003) who purport that perfectionism should indeed be considered from a multidimensional perspective and cite support for this notion based on the findings of studies using their MPS-H scale (Hewitt & Flett, 1991a). For example, Hewitt et al. cite evidence that the *socially-prescribed* perfectionism scale is elevated in a variety of clinical disorders. Hewitt and colleagues also correctly point out that Frost and colleagues (1990) also conceptualise perfectionism from a multidimensional perspective rather than unidimensional. This is despite Frost and colleagues' account considering multidimensional aspects such as parental influences rather than socially prescribed aspects. In response to this criticism, Shafran et al. (2003) argued that their conceptualisation of clinical perfectionism was made from a clinical perspective, where as reviewed, theories and treatments have not focused on other oriented factors. Shafran et al. (2003) claim "...a focus on the specific [self-oriented] mechanisms maintaining clinical perfectionism is more likely to permit psychopathology to be successfully treated" (p. 1218).

In summary, it appears that while there has been considerable recent debate in the literature as to whether perfectionism should be considered as only a self-oriented construct versus a broader construct incorporating interpersonal factors, there is some consistency across the research about what are the main characteristics. There appears to be consensus that perfectionism involves self-oriented aspects including setting excessively high standards, engaging in self-criticism when standards are not met, concern over mistakes and a biased evaluation of standards. The debate over whether the definition of perfectionism should include interpersonal aspects in addition to self-

oriented aspects continues. However, the stance of Shafran et al. (2002, 2003) appears to be logical in that the self-focused conceptualisation of perfectionism not only fits with historical definitions, but also with cognitive behavioural theories for axis I disorders. These theories largely focus on the individual's self view due to the theoretical stance underpinning cognitive-behavioural theory that an individual's thoughts in relation to self are a central area to change in psychological treatment (Beck, 1976).

1.4.3 Models of perfectionism

One of the criticisms of research into perfectionism has been that it is driven largely by measurement rather than by models. Shafran et al. (2002) have criticised this approach as follows;

“The widespread use of these two multidimensional measures [MPS] has led to the acceptance of perfectionism as a multidimensional construct. We suggest that this has resulted in the concept being too readily equated with its method of measurement. Rather than remaining an independently theoretically and clinically-based construct, ‘perfectionism’ is now usually equated with the scores on either two of the multidimensional self-report instruments designed to assess it” (p. 776).

Essentially, Shafran and colleagues are stating that the research area has placed too little emphasis on developing models of perfectionism and that the definition of perfectionism has become too linked to measurements rather than models. This argument seems accurate when models of perfectionism are reviewed, as there are very few specific models of perfectionism that have been developed to date.

Hewitt et al. (2003) state that self-regulation theories and models were not developed specifically to understand perfectionism; however components of early self-regulation theories include characteristics of perfectionism. The self-regulation model of Kanfer and Hagerman (1981) suggests that one of the reasons that some individuals suffer from depression is that they pursue unrealistically high standards and engage in self-criticism when the standards are not met. Carver and Scheier's (1986) self-regulation model also focuses on general reasons why some individuals suffer from adjustment issues, and suggest that striving for standards may continue to occur in some individuals even when abandoning such high goals would be adaptive for the person. While self-regulation

models clearly include aspects of perfectionism, these models are not directly aimed at understanding perfectionism, or the processes by which perfectionism may be maintained.

1.4.3.1 A cognitive-behavioural model of perfectionism

One well-developed model that has been proposed is by Shafran et al. (2002), who have developed a cognitive-behavioural account of perfectionism. This model appears to account for many of the factors that were outlined in early descriptions of perfectionism. It also appears to be a useful model as it focuses on the factors that *maintain* perfectionism. Therefore, the model has a clear link to developing potential treatments that focus on changing maintaining factors. Furthermore, as described, cognitive-behavioural treatments have consistently been found to be effective for a very wide range of clinical disorders. Thus, it makes sense to explore the usefulness of a cognitive-behavioural model as it may potentially lead to useful cognitive behavioural treatments for perfectionism.

Consistent with the view of perfectionism as being a self-focused trait, Shafran et al. have developed another definition of perfectionism, that they term “clinical perfectionism”. Shafran and colleagues (2002) use the term clinical perfectionism to refer to what they view as pathological perfectionism. They define clinical perfectionism as “...the overdependence of self-evaluation on the determined pursuit of personally demanding, self-imposed, standards in at least one highly salient domain, despite adverse consequences” (p. 778). Their model focuses on the maintaining factors of perfectionism and can be seen in Figure 2.

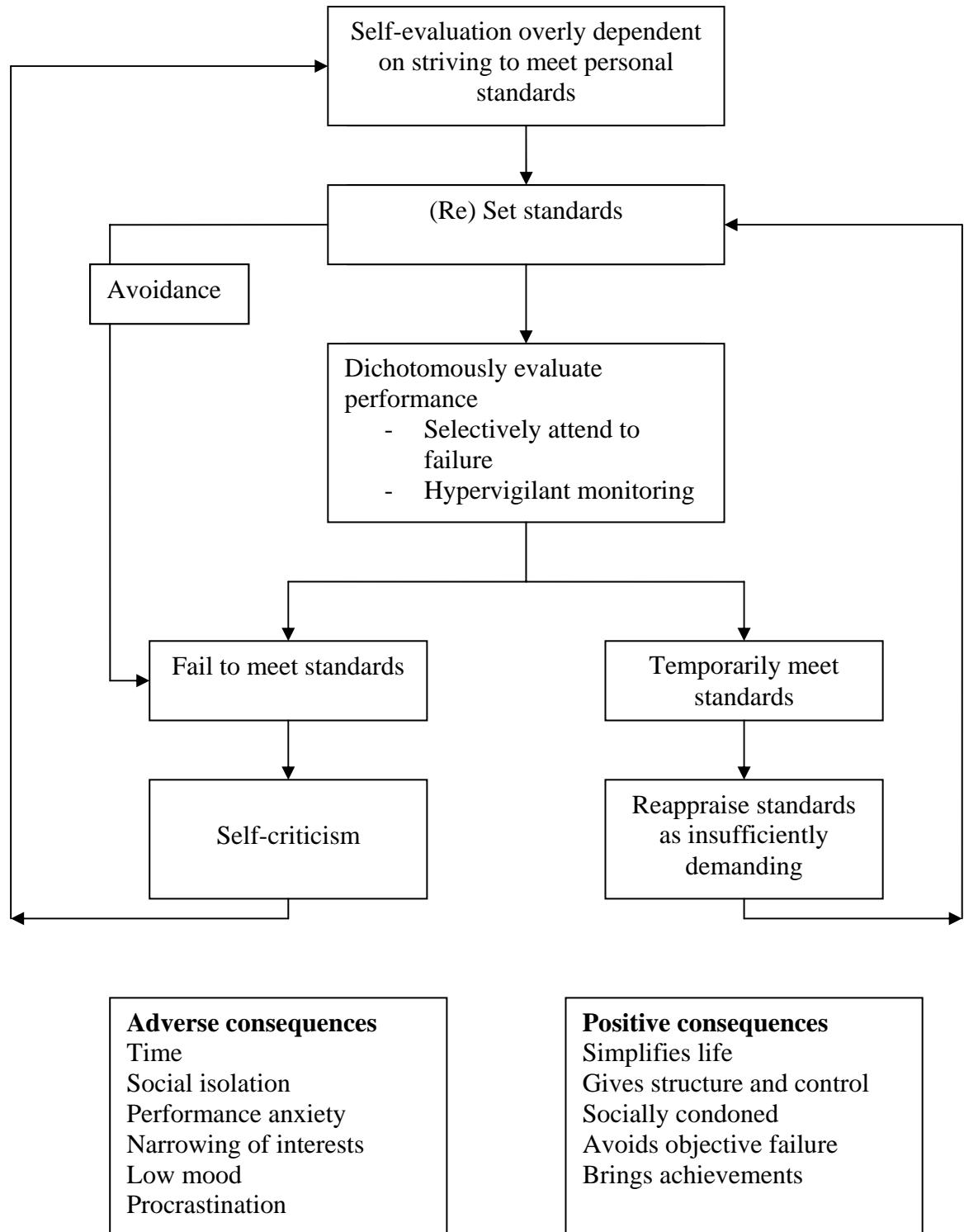


Figure 2. A cognitive-behavioural model of the maintenance of perfectionism, reproduced from Shafran et al. (2002)

Shafran and colleagues describe that the core problem in perfectionism is “the morbid fear of failure and relentless pursuit of success” (p. 779). They state that perceived failure leads to self-criticism and maintains a negative self-view. This can serve to strengthen the dependence of the perfectionist’s self-view on achievement of goals. Hence, as seen in Figure 2, self-evaluation is overly dependent on striving to meet personal goals which leads these individuals to set high standards, which is the start of the chain in the maintenance of perfectionism. Once the individual has set high standards, Shafran et al. state that they evaluate their performance in a dichotomous manner, judging it as either all good or all bad. Shafran and colleagues state that perfectionistic people “internally operationalise their standards in the form of rules” (p. 781). They propose that the individual with clinical perfectionism continuously and strictly evaluates their personal standards. This takes the form of dichotomous thinking, and by trying to keep to these strict rules, guilt and self-criticism follows when a rule is broken. Dichotomous thinking is also referred to as “all-or-nothing thinking”, and involves seeing things in black and white categories. It is one of the cognitive distortions that Beck (1976) first proposed as important in the maintenance of depression. Dichotomous thinking has been defined as the tendency of individuals to “place all experiences in one of two opposite categories” (Beck, Rush, Shaw, & Emery, 1979, p. 14). This is opposed to an individual being able to view things on a continuum. Examples of dichotomous thinking include when a straight A student gets a B on an exam and then concludes “I’m a *complete* failure” (Burns, 1980b), or when an individual who is dieting eats one chocolate biscuit and thinks “that’s it, I have blown my *whole* diet now with this one biscuit, therefore I might as well eat the whole packet”.

Shafran and associates (2002) clearly see dichotomous thinking as a central maintaining factor of perfectionism, as is evident by examining their model in Figure 2, where dichotomous thinking is in the central position of the model. It is through dichotomous thinking that decisions are made by the individual as to whether they believe they have successfully met their standard or not. This highlights that dichotomous thinking deserves further study, however to date no studies have empirically investigated the link between dichotomous thinking and perfectionism, instead there have only been descriptions that dichotomous thinking may play a major role.

Once the perfectionist has evaluated their performance in a dichotomous way, according to Shafran et al.'s (2002) model, they will then appraise their self as either having met or not met a standard. First, in regards to not meeting their standard, Shafran and associates propose that individuals with clinical perfectionism evaluate performance in a biased way, through the use of thinking errors including selective attention to failure and discounting of success. Their model proposes that perfectionistic individuals engage in hypervigilant monitoring for times when they have not met their high standard. Shafran et al. suggest that these information-processing biases increase the likelihood that people will fail to meet their standards as they focus on mistakes rather than success in a situation. Shafran and colleagues also suggest that these biases result in activities such as checking behaviour, for example re-reading work over and over and procrastination to delay beginning a task they feel must be done very well. They suggest these processes also then serve to further maintain the cycle of perfectionism. Shafran and associates suggest that it is not uncommon for people with clinical perfectionism to occasionally meet their high standards. They posit that this can have the effect of temporarily improving self-evaluation, or even avoid negative self-evaluation and can intermittently reinforce the pursuit of high standards. However, once the standard is met, the standards are then re-appraised as being insufficiently demanding, and thus standards are re-set even higher. Shafran et al. state that this results in it being even more likely that failure will occur and self-criticism will thus be maintained. Hence, it can be seen that the maintenance of perfectionism according to this model is a vicious cycle.

Shafran and colleagues (2002) propose that there are both positive and negative consequences of perfectionism. Positive aspects include praise from others when high standards are met. They suggest that society serves to maintain some aspects of perfectionism, as people who try and attain high standards are frequently praised, and may indeed do very well. Other benefits of perfectionism are listed including simplifying life, and a sense of structure and control that may serve to maintain perfectionism. Shafran et al. propose that these positive results of perfectionism might serve to outweigh the negative consequences. They list negative consequences including performance anxiety, narrowing of interests, social isolation, exhaustion, low mood and a pervasive sense of failure.

In a summary of their model, Shafran and colleagues (2002) state that;

“...clinical perfectionism is maintained by the setting of dichotomous standards, evaluating the striving and attainment of performance in a biased way, self-criticism if the standards are not met in the salient domain and, if standards are met, re-appraising them as insufficiently demanding” (p.787).

This model is currently being tested, including its clinical utility with eating disorders (Shafran et al). One recent study found support for aspects of the model through a qualitative study of individuals with clinical perfectionism (Riley & Shafran, 2005). This study interviewed 15 participants with clinical perfectionism, and themes arising from the semi-structured qualitative interviews were rated independently to ensure unbiased theme analysis. They found that all participants with clinical perfectionism reported features of; “(i) self-imposed dysfunctional standards; (ii) continual striving; (iii) striving in spite of adverse consequences” (Riley & Shafran, p. 371). Riley and Shafran argued that the reporting of these areas confirmed Shafran et al.’s model. Indeed, particular themes reported such as self-critical reaction to failure, rules, rigidity, and avoidance amongst other themes appear to fit the model well. Of course, further research is required to provide quantitative evidence for the model. Nevertheless, this model appears to be a well developed model of perfectionism. This model will be used as a model of “general” perfectionism in this research.

1.5 Positive and negative perfectionism

Perfectionism has been recognized as being not necessarily only a negative factor, but something that could be a positive or useful factor. Hamachek (1978) was the first to make a distinction between types of perfectionism. He stated that;

“On the one hand, there are people who are able to take on a task and set out to do their best without worrying unduly about whether they’re absolutely perfect. On the other hand, there are others who assume a task of equal proportions but who stew endlessly in emotional juices of their own brewing about whether they’re doing it just right” (p. 27)

Hamachek labelled these two types of perfectionists as “normal perfectionists” and “neurotic perfectionists” which he defined as;

“Normal perfectionists...are those who derive a very real sense of pleasure from the labours of painstaking effort and who feel free to be less precise as the situation permits...neurotic perfectionists...are the sort of people whose efforts, even their best ones, never seem quite good enough, at least in their own eyes. It always seems to these persons that they could, and should, do better” (p. 27).

Frost, Heimberg, Holt, Mattia, and Neubauer (1993) also made a distinction between types of perfectionism, when they distinguished between “positive achievement striving” and “maladaptive evaluation concerns”. Frost and Henderson (1991) stated that on the MPS-F (Frost et al., 1990) “Personal Standards seems to reflect the more positive aspects of perfectionism, Concern over Mistakes reflects the more negative ones” (pp. 324-325). Indeed, Personal Standards has been found to be related to positive, but not negative affect (Frost et al., 1990; 1993). Frost and colleagues (1990) also stated that Concern over Mistakes and Doubts about Actions were the scales on the MPS-F that are associated with maladaptive perfectionism and are correlated with psychopathology.

Similarly, others have drawn a distinction between “positive and negative” perfectionism (Slade & Owens, 1998; Terry-Short et al., 1995) or “functional and dysfunctional” perfectionism (Rheaume, Freeston et al., 2000). Terry-Short and colleagues argued that the emphasis of most studies has been on aspects of perfectionism associated with pathology, which does little to differentiate pathological or neurotic perfectionism from “healthy” perfectionism. Furthermore, Rheaume, Freeston and colleagues argue that Concern over Mistakes on the MPS-F (Frost et al., 1990) would be the only scale amongst general perfectionism measures to discriminate between “sound” and dysfunctional perfectionism. Some measures of perfectionism such as the MPS-H (Hewitt & Flett, 1991a) have failed to consider in scale construction whether all components of perfectionism are negative, or whether some components may be positive. In this way, the construction of these scales has been influenced by early definitions of perfectionism as being a negative factor. It could be argued that perfectionism scales have been biased towards operationally defining the construct of perfectionism in a way that causes it to be associated with dysfunction, for example by drawing items from scales of psychopathology. Therefore, research attention needs to be drawn to whether

perfectionism is only a dysfunctional characteristic, or whether it may also be a functional characteristic.

The reasoning behind comparing positive and negative perfectionism is that it may be possible that an individual has perfectionist traits yet can use these in a positive way to help achieve success rather than in a negative way that is associated with psychological distress. As Burns (1980a) has stated, without the healthy pursuit of excellence "...life would seem shallow and true accomplishments would be rare" (p. 34). Lundh (2004) has similarly argued for a distinction between positive and negative perfectionism, stating;

"There need be nothing negative or dysfunctional about the striving for perfection – on the contrary, such strivings for perfection represent an important part of healthy human functioning, and a source of many great human accomplishments in various areas (research, art, literature, sport, etc.)" (p. 256)

Perfectionism is something that has not only been investigated in relation to distress and psychological disorders, but also a number of studies have investigated perfectionism in athletes. These studies suggest that different aspects of perfectionism are related with more positive outcomes, for example High Standards relating to self-confidence, than others, for example Concern over Mistakes relating to anxiety. Potentially, various groups may be useful to examine in regards to positive aspects of perfectionism, for example academically gifted children. Indeed, there is a body of research that has examined perfectionism in gifted children (Accordino, Accordino, & Slaney, 2000; Parker, 1997; Parker & Mills, 1996). However, many studies examining positive perfectionism in adults have examined either student or athlete samples, thus one of the main groups that will be focused on in this research is athletes.

In the model of clinical perfectionism of Shafran and colleagues (2002), they propose there are adverse (negative) consequences of clinical perfectionism and positive consequences. However, the model does not elaborate in detail specifically about positive and negative aspects of perfectionism, as it is focused on the maintenance of negative (clinical) aspects of perfectionism. There is only one model of positive and negative perfectionism that has been proposed, which is a dual process model by Slade and Owens (1998). Slade and Owens (1998) developed a dual process model of perfectionism based on behavioural reinforcement theory to account for positive and negative perfectionism. This model was further developing the ideas put forward by

Terry-Short and colleagues (1995). Terry-Short et al. argued that perfectionism could be viewed from a radical behavioural perspective based on the function that the perfectionistic behaviour was aiming to achieve. From a behavioural perspective the consequences of behaviour are more important than the form of the behaviour itself. This idea is stemming from the behavioural theories of Skinner (1968). Skinner stated that behaviour is associated with different emotional responses depending on whether it is met with either positive or negative reinforcement. Terry-Short and colleagues defined positive perfectionism as the motivation to achieve a goal so that a favourable or positive outcome can be obtained. Negative perfectionism was defined as the motivation to achieve a goal so that negative or adverse consequences can be avoided. Slade and Owens (1998) further reinforce this notion stating that;

“Positive perfectionism refers to cognitions and behaviours that are directed towards the achievement of certain high-level goals to obtain positive consequences...that is...driven by positive reinforcement and a desire for success” (p. 378).

Slade and Owens define negative perfectionism on the other hand as;

“...cognitions and behaviours that are directed towards the achievement of certain high-level goals to avoid or escape from negative consequences...that is...driven by negative reinforcement and fear of failure” (p. 378).

Therefore, positive perfectionists are driven by approach behaviour to pursue success or excellence, and experience pleasure when they succeed, whereas negative perfectionists are driven by escape behaviour to avoid failure or imperfection, and are never satisfied with achieving their goals due to fear of future failure. This definition of positive and negative perfectionism will be used throughout the current research.

Slade and Owens (1998) suggest aetiological factors for the development of positive and negative perfectionism. They stated that positive perfectionism may have its roots in modelling history in childhood, where children learn through modelling from a positive perfectionist. Slade and Owens suggest that negative perfectionism, however, may stem from a history of either a complete absence of reinforcement, or of all reinforcement being conditional on good performance.

Enns, Cox and Clara (2002) investigated the relationship between parenting experiences and adaptive and maladaptive perfectionism. Maladaptive perfectionism was measured

as a composite of scores on the Concern over Mistakes and Doubts about Actions subscales of the MPS-F (Frost et al., 1990) plus the *socially-prescribed* perfectionism scale on the MPS-H (Hewitt & Flett, 1991a). Adaptive perfectionism was measured as a composite of scores on the Personal Standards and Organization subscale of the MPS-F and the *self-oriented* and *other-oriented* perfectionism scales of the MPS-H. There needs to be some caution when interpreting the results of this study as the inclusion of other-oriented perfectionism under adaptive perfectionism does not fit the classification which other researchers have used, thus there may be problems comparing the results of this study to others already reviewed. Nevertheless, Enns and colleagues reported interesting results. Using a structural equation modeling approach with 261 University students they found that harsh parenting was correlated with maladaptive perfectionism and depression. They also reported that perfectionistic parenting is associated with adaptive perfectionism, and less depression. Enns et al. concluded that the findings supported the validity of making a dichotomy between adaptive and maladaptive perfectionism. These results suggest that harsh parenting may be an important factor that is associated with the development of maladaptive perfectionism, whereas being a perfectionistic parent may be associated with developing adaptive perfectionism, which may occur through processes such as modelling. This study lends some support to the utility of the model of Slade and Owens (1998).

1.5.1 Positive and negative perfectionism in athletes

One of the main groups that have been investigated in regards to positive perfectionism is athletes. It is not surprising that perfectionism is something that has been investigated in athletes as the sporting community often describes elite athletes as being perfectionistic (Dunn, Dunn, & Syrotuik, 2002), as does the general community. Sport psychologists have theorised that perfectionism may be a key characteristic of successful elite athletes (Hardy, Jones, & Gould, 1996; Henschen, 2000). The majority of studies with athletes and perfectionism have used the MPS-F (Frost et al., 1990). This has been an advantage of the area, as results are able to be easily compared across studies as the same measure has been used. The first study to investigate positive and negative perfectionism in athletes was by Frost and Henderson (1991). They used the MPS-F in a sample of 40 female undergraduate students who were competing in a range of university sports including softball, tennis, lacrosse, crew and track. They found that athletes scoring high on Personal Standards were more likely to report positive thoughts about sport and more

dreams of perfection in the 24 hours prior to competition. However, athletes who scored high on Concern over Mistakes reported more anxiety, less self-confidence, a failure orientation towards sport, more negative thinking in the 24 hours prior to competition and reacted negatively to mistakes in their athletic performance. Frost and Henderson suggested that the tendency to focus on mistakes may cause perfectionistic athletes to perform poorly after making a mistake. They explained this could be due to distraction from self-critical thoughts about the task, which could then make their performance suffer. They cite evidence for this from one study that found skill in badminton was negatively correlated with difficulty recovering from mistakes (Meyers et al., 1979). However, as Frost and Henderson point out, there have been no studies that have examined performance before and after a mistake to examine if aspects of perfectionism, such as Concern over Mistakes, actually affect performance. It is interesting to note, however, that Frost and Henderson found no relationship between any of the MPS-F subscales and the coaches' ratings of the participants sporting ability.

Similar findings were reported by Coen and Ogles (1993) who found the Concern over Mistakes dimension of perfectionism on the MPS-F to distinguish between obligatory and nonobligatory runners. Obligatory runners are defined as individuals who are likely to train more intensively, run despite injury and have feelings of anxiety when they are not running compared to nonobligatory runners (Coen & Ogles, 1993; Pasmna & Thompson, 1988). It was found that obligatory runners scored higher on Concern over Mistakes and also Doubts about Actions than the nonobligatory runners. They found that the major concern of obligatory runners was over making mistakes, and that these runners had higher Doubts about Actions and trait anxiety scores than the nonobligatory runners. Similarly, Gould, Tuffey, Udry, & Loehr (1996) showed that negative perfectionism discriminated between young tennis players who burned-out of tennis competition versus those who remained competitive. This was because the burnt-out players scored higher on Concern over Mistakes, Parental Criticism, Parental Expectations and lower on Personal Standards, compared to tennis players who were still competitive.

Hall, Kerr, and Matthews (1998) investigated perfectionism in 119 high school students who were competing in cross-country running. They found Concern over Mistakes and Doubts about Actions (negative perfectionism) on the MPS-F (Frost et al., 1990) predicted higher performance anxiety in relation to sport, whereas Personal Standards

(positive perfectionism) predicted higher self-confidence. Hall et al. concluded that negative perfectionism "...will encourage a preoccupation with self definition, and contribute to maladaptive performance-related cognitions, elevated levels of cognitive anxiety, and reduced confidence" (p. 213). Despite concluding that negative perfectionism will have a debilitating effect on athletes, Hall and colleagues did not investigate if people who score high on negative perfectionism have poorer performance compared to those with lower levels of negative perfectionism.

Koivula, Hassmen, and Fallby (2002) investigated perfectionism in 178 elite Swedish Olympic athletes who participated in a range of summer and winter Olympic sports, and had either already competed in an Olympics or were amongst the team chosen for future Olympics. They administered the MPS-F (Frost et al., 1990) to measure perfectionism. To measure competitive anxiety and self-confidence they used the Competitive State Anxiety Inventory-2 (CSAI-2; Martens, Vealey, & Burton, 1990) which is a sport-specific measure of self-confidence, cognitive state anxiety and somatic state anxiety in relation to sport. Koivula and colleagues found that athletes who scored high on Personal Standards, but low on Concern over Mistakes and Doubts about Actions (positive perfectionists) exhibited high self-confidence, low levels of cognitive anxiety and low levels of somatic anxiety in relation to sport. The reverse was true however for negative perfectionists, who scored high on Personal Standards, but also high on Concern over Mistakes and Doubts about Actions, where they showed low sport-related self-confidence, and high cognitive and somatic anxiety in relation to sport. They concluded these heightened levels of anxiety due to negative perfectionism "...could of course be detrimental to their sport performance" (p. 865). Gould, Dieffenbach, and Moffett (2002) also investigated perfectionism using the MPS-F, in a sample of 10 Olympic champions from a range of sports (e.g., swimming, skiing, track and field), who were very successful having won an average of 3 Olympic medals each. These elite athletes scored high on Personal Standards, but low on Concern over Mistakes.

One area that was not examined in these studies was the relationship between actual sporting performance and perfectionism. This is probably because most studies have used a combined sample of athletes involved in a range of sports that do not have comparable performance outcomes (e.g., tennis vs track and field). It is important to determine the nature of the relationship between performance and perfectionism,

including dimensions of perfectionism such as Concern over Mistakes and Personal Standards. If performance is found to vary as a function of perfectionism, then this may help inform applied sport psychologists in ways to improve performance in elite athletes. For example, applications could include enhancing existing dimensions of perfectionism that help performance, and changing dimensions of perfectionism that might hinder performance.

1.5.2 Positive and negative perfectionism in mixed samples

Studies that have examined positive and negative perfectionism in clinical and general samples have used a range of different methods of measurement. To examine differences in positive and negative perfectionism Terry-Short and colleagues (1995) compared a group of 15 depressed individuals, 21 eating disordered individuals, 20 athletes (track and field) and 225 controls. They developed a 40 item questionnaire the Positive and Negative Perfectionism Scale (PANPS) which was based on eating disorder measures such as the Eating Disorders Inventory (EDI; Garner et al., 1983) the MPS-H (Hewitt & Flett, 1991a) and other perfectionism questionnaires such as the Burns Perfectionism Scale (BPS; Burns, 1980a). The PANPS has been found to have good internal consistency, with Cronbach's alpha ranging from .83 to .88 (Haase, Prapavessis & Owens, 1999; 2002). Terry-Short et al. argued that it was necessary to divide the PANPS into negative and positive sections, as previous measures were primarily negative, but also contained some items that were ambiguous as to whether they were negative or positive items. The scale also originally comprised another two sections "Personal" and "Social" perfectionism, which is a distinction that has been used in perfectionism scales such as the MPS-H (Hewitt & Flett, 1991a). However, Terry-Short et al. reported a clear two-factor solution that divided the scale into positive and negative items. Hewitt and Flett's distinction between *self-oriented* and *socially prescribed* perfectionism was found to be accounted for within the positive and negative factors. An example of a positive perfectionism item was "producing a perfect performance is a reward in its own right", and an example of a negative perfectionism item was "if I make a mistake I feel that the whole thing is ruined". It was found that the athletes scored highest on positive perfectionism and the eating disorders group scored the highest on negative perfectionism. They also found that the depressed group scored significantly higher on negative perfectionism than the controls or athletes, however not as high as the eating disordered group. On scores of overall perfectionism, they found that the clinical groups

and athletes had higher scores than controls, and the clinical groups had higher scores than any of the other groups.

Two other studies have also utilized the PANPS (Terry-Short et al., 1995). Haase et al. (1999) found a relationship between scores on the Negative Perfectionism scale of the PANPS and disturbed eating attitudes in a sample of athletes, who were competing in lightweight rowing. It is interesting to note that they found no relationship between positive perfectionism on the PANPS and disturbed eating attitudes. This may suggest that the distinction between positive and negative perfectionism has some face validity, in terms of its correlation with negative states such as disordered eating beliefs. A further study by Haase et al. (2002) found a moderate positive correlation between negative perfectionism on the PANPS and Social Physique Anxiety in a sample of elite Australian athletes in a range of sports who were training at the Australian Institute of Sport. Social Physique Anxiety has been defined as the anxiety that an individual experiences when they believe that their body shape is being viewed in a negative way by others (Hart, Leary, & Rejeski, 1989). Haase et al. (2002) found no relationship between positive perfectionism and Social Physique Anxiety. This provides further evidence as to the differential relationships between positive and negative perfectionism and negative states.

The validity of the PANPS scale is yet to be examined. Although Terry-Short et al. (1995) reported that they included the SCANS (Slade & Dewey, 1986) to examine validity, they did not report on the correlation of the PANPS to the SCANS. It is important to determine the validity of the PANPS as a measure of overall perfectionism, and also positive and negative perfectionism. This could be done, for example by correlating the PANPS with the aspects of the MPS-F (Frost et al., 1990) that have been proposed to relate to positive perfectionism (Personal Standards subscale) and negative perfectionism (Concern over Mistakes and Doubts about Actions subscales). This is important because if research into positive and negative perfectionism is to be further developed, it needs to be determined that assessment measures are reliably measuring these constructs.

Davis (1997) also studied what they termed “normal” and “neurotic” perfectionism in a sample of 123 patients with anorexia and bulimia. They reported that when both normal and neurotic perfectionism was elevated, body image disturbance was elevated. As

Shafran and Mansell (2001) point out however, Davis concluded that the relationship between symptoms of eating disorders and perfectionism is complex and that it may be misleading to make simple interpretations of the nature of the relationship between perfectionism and eating disorder symptoms.

Rheaume, Freeston and colleagues (2000) also considered it important to distinguish between what they termed “functional” and “dysfunctional” perfectionism. They used a 64 item Perfectionism Questionnaire (PQ; Rheaume, Freeston, & Ladouceur, 1995) that was developed with 800 University students, and has evidence of construct validity, and good internal consistency (Rheaume, Freeston et al.). The scale is divided into three subscales; (1) perfectionistic tendencies, (2) domains affected by perfectionistic behaviour and (3) negative consequences of perfectionism. The internal consistency of the PQ is good, with Cronbach’s alpha = .82 for perfectionistic tendencies, alpha = .88 for domains affected by perfectionistic behaviour and alpha = .96 for negative consequences of perfectionism (Rheaume, Freeston et al.). It has also been reported that the scale has good construct validity (Rheaume, Freeston et al.). Rheaume, Freeston and colleagues used the scale with undergraduate university students, and divided the groups into functional perfectionists, who reported strong perfectionistic tendencies but few negative consequences, and dysfunctional perfectionists who reported strong perfectionist tendencies, but also a high level of negative consequences associated with these tendencies. In addition, problem-solving tasks such as probabilistic inference tasks and anagrams tasks were also used. The dysfunctional perfectionist group was found to take longer to complete the problem-solving tasks than the functional perfectionists. However, the functional perfectionists reported being significantly more preoccupied with problem solving than by concern over performance of tasks. On the basis of these results, Rheaume, Freeston et al. concluded that functional perfectionists are showing evidence of facilitating the reaching of one’s goals, whereas the dysfunctional perfectionists were paying too much attention to level of precision while doing the task. Not only were the dysfunctional perfectionist group slowed down on their tasks, they also had a significantly higher score on the Padua Inventory (Sanavio, 1988) which is a measure of OCD symptomatology. These results again suggest the link between dysfunctional perfectionism and psychopathology.

Positive and negative perfectionism has also been investigated using other perfectionism scales that were not specifically designed to make the distinction between positive and negative perfectionism. As already reviewed, Frost's measure the MPS-F (Frost et al., 1990) has two subscales that map onto this, the Personal Standards subscale being positive and the Concern over Mistakes and Doubts about Actions subscales being negative. In a study utilizing the MPS-F and the MPS-H (Hewitt & Flett, 1991a), Frost and colleagues (1993) investigated a large sample of over 500 college students. They found a clear two-factor solution, which consisted of the factors Maladaptive Evaluation Concerns and Positive Achievement Strivings. They also administered the PANAS (Watson, Clark, & Tellegen, 1988) to measure positive and negative affect, and the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erlbaugh, 1961). Frost et al. (1993) reported that the MPS-F total perfectionism score, Concern over Mistakes, Parental Criticism, Doubts about Actions, and *socially-prescribed* perfectionism was correlated with negative affect and the BDI. In contrast, Personal Standards, Organisation and *self-oriented* perfectionism was correlated with positive affect. They concluded that Personal Standards and Organisation "...may reflect the positive features of perfectionism" (p. 125), which is also consistent with findings from the development of the MPS-F (Frost et al. 1990). Thus, Frost et al. (1993) clearly argued for two aspects of perfectionism being maladaptive evaluation concerns and positive achievement striving.

Bieling and Smith (2001) investigated 198 University students' reactions to their mid-semester examinations. They classified 'adaptive' and 'maladaptive' perfectionism through an algorithm based on Purdon and colleagues (1999) work, for the MPS-H (Hewitt & Flett, 1991a) and MPS-F (Frost et al., 1990). The results suggested that both positive and negative perfectionism were associated with setting a higher standard for the exam, and both were associated with the students feeling they had not reached their goals. However, while both positive and negative perfectionism was associated with negative emotions, positive perfectionism was associated uniquely with positive emotions. Bieling and Smith also found that while positive perfectionism was correlated with anxiety and depression, these correlations were small ($r = .15-.16$) compared to negative perfectionism, which had much stronger correlations with anxiety and depression ($r = .43-.44$). They concluded that the distinction between positive and negative perfectionism

appeared to have some validity, despite some intercorrelation between the two types of perfectionism.

In a further study, Bieling, Israeli, and Antony (2004) investigated positive and negative perfectionism in 198 students by administering the MPS-F (Frost et al., 1990) and MPS-H (Hewitt & Flett, 1991a). They reported on the basis of Confirmatory Factor Analysis that there was a two factor solution of Maladaptive Evaluation Concerns and Positive Striving. Bieling, Israeli et al. reported this was a better fit than a model of unitary perfectionism. They also measured psychological distress through the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995). Bieling, Israeli and colleagues combined the two perfectionism measures to create what they termed a “Maladaptive Evaluative Concerns” measure and a “Positive Striving” measure. They found that both of these were correlated significantly with the DASS, although the Maladaptive Evaluative Concerns measure showed a stronger correlation. This provides some further evidence to previous findings (Bieling & Smith, 2001) of small but significant correlations between positive perfectionism and psychological distress. However, in a regression analysis they found that only Maladaptive Evaluation Concerns predicted DASS scores. They also found a significant degree of overlap between Maladaptive Evaluation Concerns and Positive Striving ($r = .45$). The authors argued this was evidence that “...these two forms of perfectionism were not independent of one another” (p. 1382).

Rice and Dellwo (2002) examined a sample of 312 University students on adaptive and maladaptive perfectionism. They administered the MPS-F (Frost et al., 1990) and used cluster analysis to derive three clusters of students; adaptive perfectionists, maladaptive perfectionists, and non-perfectionists. Rice and Dellwo reported that both the adaptive and maladaptive perfectionists had high scores on Personal Standards and Parental Expectations subscales on the MPS-F. The maladaptive group also reported higher scores on Parental Criticism, Doubts about Actions and Concern over Mistakes than the other groups. Rice and Dellwo also reported that the maladaptive perfectionists had the poorest adjustment of all groups; whereas adaptive perfectionists and non-perfectionists had equivalent scores on measures of adjustment.

Enns, Cox, Sareen, and Freeman (2001) used both the MPS-F (Frost et al., 1990) and the MPS-H (Hewitt & Flett, 1991a) to measure adaptive and maladaptive perfectionism in a longitudinal study of medical students over a 6 month period. They determined adaptive perfectionism scores by adding standardized (Z-transformed) scores on the *self-oriented* perfectionism scale of the MPS-H and the Personal Standards scale of the MPS-F. Maladaptive perfectionism scores were calculated by adding the standardized scores from the *socially prescribed* perfectionism scale on the MPS-H with the Concern over Mistakes and Doubts about Actions scales of the MPS-F. Enns and colleagues reported that adaptive perfectionism was positively correlated with academic performance at baseline, and was predictive of dissatisfaction with academic performance at 6 months. However, maladaptive perfectionism was found to significantly relate to baseline symptoms of distress and was predictive of symptoms of depression on a shortened version of the Beck Depression Inventory (Beck & Beck, 1972) and hopelessness as measured on the Beck Hopelessness Scale (Beck, Weissman, Lester, & Trexler, 1974) at 6 months.

Periasamy and Ashby (2002) used the Almost Perfect Scale-Revised (APS-R; Slaney, Rice, Mobley, Trippi, & Ashby, 2001). The APS-R has six subscales which were designed to measure adaptive and maladaptive aspects of perfectionism. However, the subscales which are classified, for example, “standards and order” or “interpersonal and counseling relationship scale”, do not fit as well with other existing measures either of overall perfectionism or positive and negative perfectionism. For example, even different measures of positive and negative perfectionism such as the PANPS (Terry-Short et al., 1995) and the Perfectionism Questionnaire (Rheaume et al., 1995) have similar ways of classifying perfectionism with each other and also with measures of overall perfectionism such as the MPS-F (Frost et al., 1990), thus could be considered to be measuring mostly equivalent constructs of positive and negative perfectionism. Consequently, results utilizing the APS-R may need to be interpreted with caution due to the questionable construct validity of their measure of adaptive and maladaptive perfectionism. Nevertheless, Periasmy and Ashby reported that maladaptive perfectionists had significantly higher external locus of control than adaptive perfectionists, but no difference on internal locus of control. Ashby and Rice (2002) also used the APS-R in a structural equation modelling approach. They reported that adaptive perfectionism as measured by the Standards and Order subscales of the APS-R was positively associated

with self-esteem, whereas maladaptive perfectionism, as measured by the Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978) was negatively associated with self-esteem.

Therefore, numerous studies have argued for the necessity to distinguish between positive and negative consequences of perfectionism. The studies reviewed have indicated that positive and negative perfectionism can be classified in samples of athletes (Coen & Ogles, 1993; Frost & Henderson, 1991; Gould et al., 1996, 2002; Haase et al., 1999, 2002; Hall et al., 1998; Koivula et al., 2002; Terry-Short et al., 1995), students (Bieling, Israeli et al., 2002; Bieling & Smith, 2001; Enns et al., 2001; Frost et al., 1993; Periasamy & Ashby, 2002; Rheume, Freeston et al., 2000; Rice & Dellwo, 2002) and clinical groups (Davis, 1997; Terry-Short et al., 1995). Clearly the literature supports the approach of investigating positive and negative perfectionism, and this deserves further attention particularly as it has been little studied in clinical groups compared to athletes and students.

1.6 Personality theories and perfectionism

Perfectionism has generally been viewed as a long-standing personality trait that precedes the development of psychological disorders (Blatt, 1995), but also as a trait that may be modified with intervention (Antony & Swinson, 1998). Freud (1929/1965) argued that perfectionism was a major aspect of neurosis. Adler (1956) also saw perfectionism as strongly linked to the personality trait of Neuroticism. A few studies have investigated the relationship of perfectionism to early models of personality, such as Eysenck's (1970) model. Neuroticism is one personality trait that was included in Eysenck's model of personality and is one of the subscales of the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975). Hewitt, Flett, and Blankstein (1991) administered the EPQ (Eysenck & Eysenck, 1975) and the MPS-H (Hewitt & Flett, 1991a) to a sample of college students and psychiatric patients. They found a significant positive correlation between *self-oriented* perfectionism and Neuroticism in female students and patients, but not for males. Hewitt et al. (1991) also found a significant positive correlation between Neuroticism and *socially-prescribed* perfectionism in all participants. Finally, they also found a small positive relationship between *other-oriented* perfectionism and Psychoticism. Magnusson, Nias and White (1996) also found a significant relationship between perfectionism and Neuroticism in a sample of nurses. They administered the

EPQ and the MPS-F (Frost et al., 1990), and found a significant positive relationship between Neuroticism and the subscales of Doubts about Actions, Concern over Mistakes and Parental Expectations. They also found a significant negative relationship between Neuroticism and Doubts about Actions and Concern over Mistakes. Contrary to the findings of these two studies, Slade, Newton, Butler, and Murphy (1991) found no significant relationship between the perfectionism subscale of the SCANS (Slade & Dewey, 1986) and Neuroticism on the EPQ. The only significant result that Slade et al. found was a negative correlation between perfectionism and Psychoticism.

Models of normal personality structure have developed since early models such as Eysenck's, and one of the most widely accepted is the five-factor model developed by Costa and McCrae (1992). The five-factor model of personality is a trait theory of personality that has identified five broad domains (Costa & McCrae). These domains are Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness. Each of the five factors is composed of six specific facets. For example, Neuroticism is composed of the facets of anxiety, angry hostility, depression, self-consciousness, impulsiveness, and vulnerability (Costa & McCrae, 1992). Antony and Swinson (1998) have outlined definitions of the five personality factors. They state that Neuroticism refers to the extent to which people are anxious and insecure versus being calm and secure. Extraversion is the extent to which people are sociable versus quiet and reserved. Openness to Experience is the extent to which people are imaginative and curious versus being conventional. Agreeableness is the extent to which people are easy to get along with, good natured and trusting versus being suspicious, rude or irritable. Conscientiousness is the degree to which people are reliable, organized and meticulous versus being careless and unreliable. These five domains consist of specific facets that are measured through the NEO-PI-R (Costa & McCrae) which is a 240 item measure of normal personality. The Big Five model of personality has been developed from many factor analyses of personality measures with a wide range of samples (e.g., McCrae & Costa, 1987; Watson, Clark, & Harkness, 1994). Despite some differences in views about what characterizes the five factors (Goldberg, 1993; McAdams, 1992), the Big Five factor model of personality proposed by Costa and McCrae (1985) has been widely accepted as a valid model of normal personality (Hill, McIntire, & Bacharach, 1997). Various authors have argued that it is a coherent model that is very consistent in its findings of five factors underlying normal personality (Costa & Widiger, 1994;

Digman, 1990, 1994, 1996). Given the degree of consensus about its validity it makes sense for research to utilize the Big Five model of personality when investigating questions regarding normal personality.

Researchers have theorized that perfectionism is a personality trait that may be understood through the five-factor model (Antony & Swinson, 1998). It is interesting to note that models of normal personality such as the five-factor model have been increasingly used to help inform understanding of a range of clinical disorders (Saulsman & Page, 2004). Thus, using the five-factor model of personality to understand perfectionism might also help to inform our understanding of the relationship between perfectionism and psychopathology.

Neuroticism as defined by the five-factor model of personality has been found to be related to perfectionism. Stumpf and Parker (2000) investigated the relationship between the MPS-F (Frost et al., 1990) and the NEO-FFI (Costa & McCrae, 1992), which is a 60 item shortened version of the NEO-PI-R. They used a mixed sample of 10-12 year old students and college students. This is a major weakness of the study as they combined scores between the groups, even though the groups were very different in terms of age and developmental level. Therefore the results need to be considered with caution. The results indicated Neuroticism had positive associations with Concern over Mistakes ($r = .30$) and Doubts about Actions ($r = .42$). They also found a positive association ($r = .28$) between Neuroticism and the MPS-H (Hewitt & Flett, 1991a) subscale of *socially-prescribed* perfectionism (Hill et al., 1997). Zuroff (1994) used DAS (Weissman & Beck, 1978) items to measure perfectionism in students, and Neuroticism was found to have a moderate positive correlation with perfectionism in men ($r = .51$) and women ($r = .63$). Very similar results in a student sample also using DAS perfectionism items were found by Dunkley, Blankstein and Flett (1997), where Neuroticism was positively correlated with perfectionism, as measured by the DAS, in men ($r = .56$) and women ($r = .61$). A moderate correlation ($r = .56$) between DAS perfectionism items and Neuroticism has also been found in a mixed diagnosis clinical sample (Dunkley et al., 2004).

Another Big Five personality trait that has been proposed to be associated with perfectionism is Conscientiousness. It has been argued that perfectionism is related to

higher Conscientiousness, and the particular facets of achievement striving, competence and order in this personality domain (Slade & Owens, 1998). This suggestion makes intuitive sense as Conscientiousness refers to the degree to which an individual is organized, reliable and careful, which is similar to some characteristics of perfectionism (Costa & McCrae, 1992). Using the NEO-PI-R (Costa & McCrae) to measure Conscientiousness, several studies have found a relationship between Conscientiousness and perfectionism. Using the MPS-H (Hewitt & Flett, 1991a), Hill and colleagues (1997) found a moderate positive relationship between Conscientiousness and *self-oriented* perfectionism ($r = .59$) and a smaller although significant positive association with *other-oriented* perfectionism ($r = .16$). Stumpf and Parker (2000) found significant positive correlations between Conscientiousness and the MPS-F (Frost et al., 1990) subscales of Personal Standards ($r = .36$) and Order ($r = .54$). Studies using the DAS (Weissman & Beck, 1978) as a measure of perfectionism have found mixed results. While Dunkley and colleagues (2004) found a significant positive association ($r = .22$) between perfectionism items on the DAS and Conscientiousness, Zuroff (1994) found no significant relationship. Interestingly, the reverse of these studies has also been found with negative relationships between DAS perfectionism and Conscientiousness being shown in both men ($r = -.26$) and women ($r = -.31$) (Dunkley et al., 1997).

Extraversion is another Big Five personality trait measured on the NEO-PI-R (Costa & McCrae, 1992) and refers to the degree to which an individual is sociable, outgoing and active (Costa & McCrae). It has been found in a range of studies to be negatively related to perfectionism. This negative relationship has been found using DAS (Weissman & Beck, 1979) perfectionism items. Significant negative correlations have been found ranging from $r = -.25$ to $r = -.33$ (Dunkley et al., 1997; 2004). A significant negative association ($r = -.15$) has also been found between Extraversion and *socially-prescribed* perfectionism (Hill et al., 1997) on the MPS-H (Hewitt & Flett, 1991a). Despite these findings, other studies have found no significant relationship between Extraversion and perfectionism (Stumpf & Parker, 2000; Zuroff, 1994). Indeed, the relationship between Extraversion and perfectionism does not appear to be as strong as the relationships between perfectionism and the personality traits of Neuroticism and Conscientiousness.

There appears to be no relationship between another Big Five personality trait, Openness to Experience, and perfectionism. Openness to Experience measures the extent to which

people are creative and imaginative (Costa & McCrae, 1992). All studies reviewed that have used the NEO-PI-R (Costa & McCrae) and various measures of perfectionism have found no relationship between Openness to Experience and perfectionism (Dunkley et al., 1997; 2004; Hill et al., 1997; Stumpf & Parker, 2000; Zuroff, 1994).

The final Big Five personality domain is Agreeableness. Individuals who score highly on Agreeableness are good natured and trusting versus low scorers who are seen as being rude, irritable and suspicious (Costa & McCrae, 1992). Agreeableness has been found to be negatively related to perfectionism. A significant negative relationship between NEO-PI-R (Costa & McCrae) Agreeableness and DAS (Weissman & Beck, 1978) perfectionism items has been found ranging from $r = -.28$ (Zuroff, 1994) to $r = -.34$ (Dunkley et al., 2004). The negative relationship between Agreeableness and perfectionism has also been found in samples of women ($r = -.39$) but not men (Dunkley et al., 1997). Agreeableness has also been found to be negatively related to the MPS-H (Hewitt & Flett, 1991a) subscales of *other-oriented* perfectionism ($r = -.31$) and *socially-prescribed* perfectionism ($r = -.17$) (Hill et al., 1997). However, the one study that has utilized the MPS-F (Frost et al., 1990) to measure perfectionism in relation to NEO-PI-R personality traits found no relationship between any of the MPS-F subscales and Agreeableness (Stumpf & Parker, 2000).

In summary, the results of the studies to date suggest that the personality factors of Neuroticism and Conscientiousness are positively related to perfectionism, and the factors of Extraversion and Agreeableness are negatively related to perfectionism. However, further research is required, particularly into which aspects of positive and negative perfectionism might be related to the various personality domains. This is because the majority of studies have used perfectionism items from the DAS (Weissman & Beck, 1978) which is not used widely as a measure of perfectionism compared to other measures such as the MPS-F (Frost et al., 1990) and MPS-H (Hewitt & Flett, 1991a). Also, it is unclear which parts of the DAS may relate to positive or negative perfectionism. Dunkley et al. (2004) have stated the DAS "...more closely resembles the primarily maladaptive, self-critical aspects of the perfectionism construct" (p. 1398). Although some researchers have stated that it primarily measures negative perfectionism, it is unclear to what degree it relates to positive or negative perfectionism and thus makes results of studies using the DAS difficult to interpret. Furthermore, the only study that

has utilized the MPS-F (Frost et al., 1990) had difficulties due to a collapsed sample of widely different ages as reviewed (Stumpf & Parker, 2000) which also makes results difficult to interpret. To date, no studies have utilized specific measures of positive and negative perfectionism that are available, such as the PANPS (Terry-Short et al., 1995), which clearly divide positive and negative perfectionism. Thus, research should examine correlations between the NEO-PI-R and scales such as the PANPS to determine which personality domains may be related to positive and negative perfectionism. Understanding which domains are related to the different aspects of perfectionism will help to further clarify the nature of differences between positive and negative perfectionism.

1.7 The link between perfectionism and psychopathology

Given the early descriptions of perfectionism, and its association with neurosis, it would be expected to be elevated in most clinical disorders. Indeed, perfectionism has consistently been found to be associated with psychopathology and distress. This relationship has been studied in both clinical and nonclinical samples. Shafran and Mansell (2001) have provided an excellent review of the link between psychopathology and perfectionism.

1.7.1 Depression and suicide ideation

Depressive symptoms in nonclinical samples have been associated with both *socially-prescribed* perfectionism (Flett, Hewitt, Blankstein, & O'Brien, 1991; Wyatt & Gilbert, 1998) and *self-oriented* perfectionism (Hewitt & Flett, 1991a) on the MPS-H. *Socially-prescribed* perfectionism has also been found to interact with low-self efficacy in predicting higher depressive and psychosomatic symptoms (Martin, Flett, Hewitt, Krames, & Szanto, 1996). Low-self esteem is also a factor that has been investigated in relation to perfectionism, and low self-esteem is related to depression (Fennell, 1997). Low self esteem has been found to be correlated with socially prescribed perfectionism (Flett et al., 1991), and self-esteem has been found to mediate the relationship between perfectionism and depression in students (Preusser, Rice, & Ashby, 1994).

Perfectionism is also related to clinical depression, with *self-oriented* perfectionism being elevated compared to controls (Hewitt & Flett, 1991b; Hewitt et al., 1996). In a study of depressed individuals in an inpatient psychiatric unit, *self-oriented* perfectionism was found to predict depression (Hewitt & Flett, 1993). In a longitudinal study, *socially-prescribed* perfectionism was found to predict an increase in depressive symptoms over a 4-month period (Hewitt, Flett, & Ediger, 1996).

Higher scores on the total perfectionism score on the MPS-F have been related to higher levels of suicidal ideation in university students (Hamilton & Schweitzer, 2000). In a sample of adolescents who attempted suicide, *socially-prescribed* perfectionism was found to be associated with their degree of hopelessness (Donaldson, Spirito, & Farnett, 2000).

1.7.2 Anxiety Disorders

Perfectionism has been extensively studied in relation to anxiety disorders. Investigators have consistently found perfectionism to be significantly higher in individuals with anxiety disorders compared to controls. One recent study has also examined the relationship between the number of comorbid anxiety disorders and perfectionism (Bieling, Summerfeldt, Israeli, & Antony, 2004). Results indicated patients with anxiety disorders who had higher scores on perfectionism on both the MPS-F (Frost et al., 1990) and MPS-H (Hewitt & Flett, 1991a), and in particular higher Concern over Mistakes, had a greater number of anxiety disorder diagnoses. It is important to note that although elevated perfectionism is seen at a similar level across anxiety disorders, there is some evidence that *socially-prescribed* perfectionism may be slightly higher in social phobia (Shafran & Mansell, 2001).

1.7.2.1 General anxiety and health related distress

Perfectionism has been related to general symptoms of anxiety in nonclinical samples (Minarik & Ahrens, 1996) and in mixed groups of psychiatric patients (Hewitt & Flett, 1991b, 1993). It has also been linked to high levels of trait anxiety (Flett, Hewitt, Endler, & Tassone, 1994-1995; Juster et al., 1996) and shown to have a positive correlation with worry (Frost & Roberts, 1997 cited in Frost & DiBartolo, 2002; Stober & Joorman, 2001). Individuals scoring high on Concern over Mistakes compared to those scoring low on Concern over Mistakes on the MPS-F (Frost et al., 1990) react with higher anxiety and

negative affect to evaluative threats (Frost & Marten, 1990; Frost, Turcotte, Heimberg, & Mattia, 1995). In addition, university students who are high on the Concern over Mistakes subscale of the MPS-F have been shown to have higher public speaking anxiety than those low on Concern over Mistakes (DiBartolo, Dixon, Almodovar, & Frost, 2001). Higher overall perfectionism on the MPS-F has also been linked to music performance anxiety (Kenny, Davis, & Oates, 2004). *Socially-prescribed* and *self-oriented* perfectionism on the MPS-H (Hewitt & Flett, 1991a) has been found to be related to higher performance anxiety in professional performing artists (Mor, Day, Flett, & Hewitt, 1995). Onwuegbuzie and Daley (1996) found a positive relationship between Concern over Mistakes and Doubts about Actions on the MPS-F and statistics anxiety. Perfectionism as measured by the MPS-F has also been found to be related to tinnitus distress (Andersson, Airikka, Buhrmann, & Kaldo, 2005) and chronic fatigue (Magnusson et al., 1996).

1.7.2.2 Social phobia

Social anxiety has been strongly linked to perfectionism, and theories of social phobia have focused on the idea that perfectionistic beliefs prime people to expect negative events in social situations, which results in social anxiety (Heimberg, Juster, Hope, & Mattia, 1995). Social anxiety has been found to have a strong correlation with *socially-prescribed* perfectionism on the MPS-H (Blankstein, Flett, Hewitt & Eng, 1993; Saboonchi & Lundh, 1997) and with Concerns over Mistakes and Doubts about Actions on the MPS-F (Saboonchi & Lundh). *Socially-prescribed* perfectionism has been related to individuals believing they have poor social skills (Flett, Hewitt, & DeRosa, 1996) and more negative social interactions (Flett, Hewitt, Garshowitz, & Thomas, 1997). Furthermore, individuals with a diagnosis of social phobia have been shown to have elevated perfectionism on the MPS-F (Lundh & Ost, 2001) and also higher *self-oriented* (Juster et al., 1996; Saboonchi, Lundh, & Ost, 1999) and *socially-prescribed* perfectionism (Antony, Purdon, Huta, & Swinson, 1998).

1.7.2.3 Obsessive-compulsive disorder

Obsessive-compulsive disorder has also been linked very closely with perfectionism for the past 100 years (Frost, Novara, & Rheume, 2002). Perfectionism has been considered to be a risk factor for the development of OCD (OCCWG, 1997) and to be a factor that might interfere with OCD patients' ability to engage in treatment (Frost et al., 2002).

Overall levels of perfectionism as measured by the MPS-F have been found to be highly related to subclinical symptoms of OCD (Frost et al., 1990; Frost, Steketee, Cohn, & Greiss, 1994). OCD patients have also shown higher *socially-prescribed* perfectionism (Antony et al., 1998). They have also been shown to have higher overall perfectionism and Concern over Mistakes and Doubts about Actions than controls (Frost & Steketee, 1997). In a measure of functional and dysfunctional perfectionism, perfectionism has been found to relate to subclinical OCD symptoms (Rheaume et al., 1995 cited in Shafran & Mansell, 2001). Furthermore, perfectionism has been found to predict unique variance in explaining subclinical OCD symptoms independent of perceived responsibility (Rheaume, Freeston et al., 2000; Rheaume, Ladouceur, & Freeston, 2000). Responsibility is an important construct in OCD, as it has been theorized to explain cognitive aspects of the disorder, where patients take excessive responsibility for feared outcomes (Salkovskis, 1985). It has also been found that individuals with higher perfectionism reported higher feelings of perceived responsibility than those with moderate perfectionism (Bouchard, Rheaume, & Ladouceur, 1999).

1.7.2.4 Panic Disorder with and without Agoraphobia

Patients with panic disorder show higher *self-oriented* perfectionism (Antony et al., 1998) and *socially-prescribed* perfectionism (Frost & Steketee, 1997; Saboonchi et al., 1999) than controls. Furthermore, the total perfectionism score on the MPS-F has been shown to be significantly related to symptoms of Agoraphobia in patients with diagnoses of Panic Disorder with Agoraphobia (Iketani et al., 2002a).

1.7.3 Eating disorders

Another area that has also been extensively studied in relation to perfectionism is eating disorders. Perfectionism has long been theorized as a central factor and even necessary condition for the development of eating disorders (Fairburn, 1997; Slade, 1982). Recently, perfectionism has been construed as a “transdiagnostic” issue that is a common maintaining factor of all eating disorders (Fairburn et al., 2003). Negative body image has been shown to be related to neurotic perfectionism (Davis, 1997). Subclinical eating disorder symptomatology in university students has been associated with both *self-oriented* and *socially-prescribed* perfectionism on the MPS-H (Hewitt, Flett, & Ediger, 1995) and with Concerns over Mistakes and Doubts about Actions on the MPS-F (Minarik & Aherns, 1996). Perfectionism has also been shown to be related to disordered

eating in students when they also have elevated anxiety (Davis, Claridge, & Fox, 2000). Furthermore, perfectionism has been found to predict subclinical bulimic symptoms, and self-esteem was shown to be a mediator of this relationship (Vohs, Bardone, Joiner, & Abramson, 1999). It has also been shown to be a risk factor for disordered eating attitudes amongst female university students involved in athletics, but not males (Hopkinson & Lock, 2004).

In clinical eating disorder samples, *self-oriented* perfectionism has been found to be elevated in anorexia nervosa (Bastiani, Rao, Weltzin, & Kaye, 1995; Halmi et al., 2000; Srinivasagam et al., 1995) and mixed eating disorders (Davis et al., 2000) on the MPS-F. Perfectionism as measured by the SCANS, which is a screening tool for eating disorders, has also been found to be elevated in patients with anorexia nervosa compared to controls (Slade & Dewey, 1986). Further, it has been demonstrated to be a risk factor for the development of binge eating disorder (Fairburn et al., 1998), anorexia (Fairburn et al., 1998; Fairburn, Cooper, Doll, & Welch, 1999) and bulimia (Fairburn et al., 1998; Joiner, Heatherton, Rudd, & Schmidt, 1997). A factor also of importance is that perfectionism has been shown to persist long after successful recovery from anorexia nervosa (Srinivasagam et al., 1995).

1.7.4 Personality Disorders

Rigidity in cognitions, behaviour, and interpersonal functioning is one of the hallmarks of personality disorders (DSM-IV; APA, 1994). Indeed, there are many similarities between descriptions of perfectionism, and that of Obsessive-Compulsive Personality Disorder (OCPD). The DSM-IV diagnostic criteria for OCPD include “perfectionism that interferes with task completion”, and “rigidity or stubbornness”, amongst other criteria. Consequently, there is definite overlap between the construct of perfectionism and diagnostic criteria for OCPD. Despite this, while individuals who are perfectionistic may meet a diagnosis of OCPD, there are some differences between OCPD and perfectionism. For example, Shafran et al. (2002) draw attention to the fact that many people with OCPD meet a diagnosis because of other diagnostic criteria such as rigidity about morals, hoarding, or a miserly spending style, which are not within the construct of perfectionism. It is also possible that an individual with a diagnosis of OCPD may not be perfectionistic (Shafran et al.). While perfectionism can be distinct from OCPD, the suggestion of

overlap, and other suggestions of rigidity indicate that a useful area of research would be to investigate the relationship between personality pathology and perfectionism. There have been few studies that have examined perfectionism in personality disorders. Hewitt, Flett, and Turnbull (1994) investigated perfectionism using the MPS-H (Hewitt & Flett, 1991a) in a sample of 13 inpatients diagnosed with Borderline Personality Disorder (BPD). They found that the BPD patients had significantly higher *socially-prescribed* perfectionism than healthy controls and schizophrenic patients. Iketani and colleagues (2002b) also investigated personality pathology and perfectionism. They found that Avoidant and Obsessive-Compulsive Personality Disorders were significant indicators of perfectionism on the MPS-F (Frost et al., 1990). Perfectionism in personality disorders requires further investigation however, as the study by Iketani et al. used an unpublished adapted Japanese version of the Structured Clinical Interview for DSM-III-R (SCID-II; Spitzer, Williams, & Gibbon, 1987) to diagnose personality disorders. Consequently, the psychometric properties and accuracy of this adapted diagnostic tool are unknown, and also the diagnostic categories which it would produce, are no longer the categories in use, as the DSM-IV (APA, 1994) is the tool currently widely used to classify personality disorders. Recently, McCown and Carlson (2004) investigated perfectionism using the MPS-H in individuals who were in treatment for cocaine addiction and met either a diagnosis of Narcissistic Personality Disorder (NPD), Antisocial Personality Disorder (APD) or a mood disorder. They reported that the patients with NPD had significantly higher *socially-prescribed* perfectionism than those with a diagnosis of APD or mood disorder. McCown and Carlson also found both the NPD group and APD group had significantly lower *self-oriented* perfectionism than the mood disorder group. Finally, the NPD group had significantly higher *other-oriented* perfectionism than the clients with mood disorder. There are, however, numerous personality disorder diagnoses that have not been investigated in relation to perfectionism. Clearly, more research is needed into the relationship between perfectionism and personality disorders.

1.7.5 Summary of perfectionism and psychopathology

Perfectionism appears to be elevated across the majority of disorders, where there is consistent evidence that individuals with a range of anxiety disorders, depression and eating disorders have higher perfectionism than healthy controls. There is emerging evidence of higher perfectionism in personality disorders however this link has not been established as well as the link with other disorders such as anxiety, depression and eating

disorders. Also, there have been no studies to date that have examined the role of perfectionism in posttraumatic stress disorder or generalized anxiety disorder (Frost & DiBartolo, 2002). Levels of perfectionism in these other diagnoses warrant investigation to determine if there are any differences in levels of perfectionism across disorders. It would be expected that perfectionism should be elevated in these other anxiety disorders that have not yet been examined, however this requires further examination.

1.8 Psychological treatment, rigidity, motivation to change, and perfectionism

The treatment of perfectionism is a very important area to further develop. First, as it has been outlined, it has been found to consistently co-occur with many psychological disorders including anxiety, depression and eating disorders, and is associated with subclinical distress. Furthermore, perfectionism is a common factor that has been theorized to be an important maintaining factor in many disorders. For example, perfectionism is included in many cognitive-behavioural models that explain various anxiety disorders (Barlow, 2002). Recently, perfectionism has also been construed as a “transdiagnostic” mechanism that underlies many problems, not just specific diagnostic categories (Fairburn et al., 2003). Fairburn and colleagues (2003) have proposed that perfectionism is a mechanism that is transdiagnostic across eating disorder categories, that is, it may be a common mechanism underlying a range of eating disorder pathology, not tied to one particular category of eating disorder. This approach has led to the current trial in progress of transdiagnostic treatment of eating disorders, where existing cognitive-behavioural treatments for eating disorders have been modified to treat patients with a range of eating disorders symptomatology, not just one specific diagnostic category (Fairburn, 2005). One module of this treatment involves treating clinical perfectionism, which is utilized when it is determined through formulation that one of the major maintaining factors for the individual’s eating disorder symptoms is clinical perfectionism (Fairburn, 2005). Perfectionism may be thought of as a factor not just common across eating disorders but also across most diagnostic categories. If perfectionism is indeed a common maintaining factor for numerous disorders, it should be determined if treating perfectionism could help to increase rates of success for standard psychological treatments for various disorders.

1.8.1 Poor treatment response to standard psychological treatment and rigidity of perfectionists

One important reason to develop treatments for perfectionism is that it has been shown to interfere with the effects of psychological treatment. The National Institute of Mental Health Treatment of Depression Collaborative Research Program (TDCRP) compared the efficacy of medication versus brief 16-week psychotherapy consisting of either interpersonal or cognitive-behavioural therapy in 239 patients with a diagnosis of major depression (Elkin et al., 1989). It was found that perfectionism, as measured by the Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978), predicted poorer response in all groups post treatment (Blatt, Quinlan, Pilknois, & Shea, 1995) and at the 18-month follow up (Blatt, Zuroff, Bondi, Sanislow, & Pilkonis, 1998). In addition, it was found that the mediator of poorer outcome in response to treatment in the perfectionistic patients was their failure to develop a strong therapeutic alliance (Zuroff et al., 2000). McCown and Carlson (2004) found that *other-oriented* perfectionism on the MPS-H (Hewitt & Flett, 1991a) was a predictor of self-termination from abstinence based treatment in individuals who were abusing cocaine and had a diagnosis of Narcissistic Personality Disorder. Despite these studies finding perfectionism interfered with treatment outcome, one study using the perfectionism subscale of the EDI (Garner et al., 1983) found it did not predict treatment outcome for women with bulimia nervosa who received 12 weeks of CBT (Mussell et al., 2000).

Shafran and Mansell (2001) argued that one of the main reasons that might explain poor treatment response is the rigidity of thoughts and beliefs in perfectionists, which interferes with their treatment progress. It has been suggested that one of the key characteristics of perfectionistic individuals is that they are inflexible and unable to adjust to situations in their surroundings (Ferrari & Mautz, 1997). Indeed, Shafran and Mansell (2001) state that "...it is difficult to think of a flexible perfectionist" (p. 896), indicating that rigidity and perfectionism are characteristics that are highly correlated. Ellis (2002) has also stated this in a blunt way; "...perfectionists are more rigid and persistent in their irrational beliefs than what I call the 'nice neurotics'" (p. 228).

Rigidity has been defined as "...the tendency to persevere and resist the acquisition of new behavior patterns by holding onto previous and nonadaptive styles of performance" (Schaie & Parham, 1975, p. 1). In a study investigating rigidity and perfectionism,

Ferrari and Mautz (1997) demonstrated a moderate negative correlation between attitude flexibility, which is one part of the Test of Behavioural Rigidity (Schaie & Parham) and *self-oriented* perfectionism as measured by the MPS-H (Hewitt & Flett, 1991a). They also found that rigidity was a significant predictor of perfectionism. This indicates that one factor associated with perfectionism is the tendency towards rigidity in cognitions and behaviour. It is important to investigate rigidity because as Ferrari and Mautz state, individuals who are perfectionistic may be inflexible to psychological treatment. Shafran and Mansell (2001) also point to the central role of rigidity stating that "...rigidity is an essential component of dysfunctional perfectionism" but also that it is "...a neglected component of perfectionism" (p. 896). A recent qualitative analysis of clinical perfectionism discovered that one theme reported by participants was rigidity (Riley & Shafran, 2005). As Shafran and Mansell have argued, however, there is very little research addressing rigidity in perfectionism, consequently, rigidity is a factor that deserves more attention to help understand the construct of perfectionism.

1.8.2 Treatments for perfectionism

There is little research that has taken place on the treatment of perfectionism (Flett & Hewitt, 2002), when perfectionism is considered as a negative factor associated with maintaining psychological distress. One approach to the treatment of perfectionism has been from a psychodynamic perspective. Blatt et al. (1995) argue that because perfectionism is a personality trait, this necessitates a longer-time frame of therapy, such as a psychodynamic approach, rather than short-term treatments. Fredtoft, Poulsen, Bauer, and Malm (1996) described a group object-relations approach to treating perfectionism in university students. Unfortunately they did not clearly define specific therapeutic techniques, and presented no data on the effectiveness of the approach. The only other report of a psychodynamic approach was by Sorotzkin (1998) who reported treating perfectionism in religious adolescents. However, again this was a descriptive study where therapeutic techniques were poorly defined, and no data was presented. Therefore, there is no empirical support for the use of psychodynamic treatment to reduce perfectionism.

The largest research area into treatment of perfectionism has been from a cognitive-behavioural perspective. Cognitive-behavioural treatment for perfectionism is a scarcely researched area compared to the wealth of literature showing cognitive behaviour therapy

(CBT) approaches are effective for a range of anxiety disorders and depression (for a review see Nathan and Gorman, 2002). However, there have been some preliminary reports of data on effectiveness of CBT for perfectionism. Furthermore, treating perfectionism from a cognitive-behavioural perspective makes intuitive sense, as the major impact on behaviour in perfectionism appears to be due to perfectionistic beliefs and thoughts (such as dichotomous thinking), and CBT focuses on changing cognitions.

Burns (1980b) was the first to suggest cognitive-behavioural techniques for the treatment of perfectionism, with a section in his self-guide for depression on strategies to overcome perfectionism. Antony and Swinson (1998) developed an excellent self-help manual devoted entirely to changing perfectionism. This includes strategies on how to change perfectionistic thoughts and behaviours through cognitive therapy and graded exposure tasks. This treatment has unfortunately not been evaluated. Barrow and Moore (1983) also reported ideas on how to use cognitive-behavioural techniques for perfectionism in a group context, however reported no data on effectiveness. There have only been three studies without control groups, which have investigated the utility of cognitive-behavioural treatment of perfectionism.

Ferguson and Rodway (1994) investigated the cognitive-behavioural treatment of perfectionism in a social work setting using an ABA design for 9 clients, who received treatment on an individual basis. They reported that most clients who were identified as being high on perfectionism as measured by the Burns Perfectionism Scale (Burns, 1980a) received benefit from the treatment. However, the results had a high degree of variability from baseline to follow up and also the exact length of treatment was not specified.

Di Bartolo and colleagues (2001) investigated cognitive-behavioural treatment for perfectionism and compared 60 undergraduate females using brief cognitive restructuring versus distraction for an upcoming experimentally induced situation of public speaking. They compared subjects who were high on Concern over Mistakes on the MPS-F (Frost et al., 1990), versus those who were low on this subscale. In this way, they were essentially comparing those who may be considered to be high on negative perfectionism versus those who might be considered to be low on negative perfectionism. It was found that those high on Concern over Mistakes were significantly more distressed about the

task. However, cognitive restructuring was effective in reducing anxiety for both those high and low on Concern over Mistakes, compared to those who received the control condition of distraction. This can be considered to be a preliminary study that provides some evidence of effectiveness of cognitive-behavioural treatment in reducing anxiety associated with concern over mistakes in perfectionism. Nevertheless, further research is required, as several factors make the results difficult to generalize. First, it was not a realistic setting, as the students received 8 minutes of cognitive therapy, and thus is hard to compare to standard cognitive-behavioural treatment that may last for example, approximately 10 sessions of 1-hour duration each session. Also, the sample was students with sub-clinical distress rather than a clinical sample. Consequently, further research is required on what components treatment for perfectionism should include and to trial treatment with a controlled design in a clinical sample.

Shafran, Lee, and Fairburn (2004) have recently reported a case study of the cognitive-behavioural treatment of clinical perfectionism in a female with binge eating disorder. Shafran and colleagues reported that the treatment involved collaborative formulation of clinical perfectionism as a problem, broadening self-evaluation, behavioural experiments, and other cognitive-behavioural methods to change areas maintaining the clinical perfectionism. Treatment consisted of eight regular one-hour face-to-face therapy sessions, followed by two telephone sessions. Assessment was conducted at pre and post treatment, plus at 2 and 5-month follow-up. The client's number of bulimic episodes was found to markedly decrease and reduction on symptoms of binge eating disorder was maintained at follow-up. Beck Depression Inventory scores (Beck et al., 1961) also reduced and this was maintained at follow-up, although it must be noted that the score was in a mild range of depression pre-treatment. Shafran et al. also reported that scores on the clinical perfectionism scale (Fairburn, unpublished cited in Shafran et al.) reduced after treatment. However, because this scale is currently being validated and therefore is not yet published, it is difficult to interpret the validity of this outcome. Also, alternative explanations for the effect such as the passage of time or other extraneous variables cannot be ruled out (Shafran et al.). Although this is only a preliminary case study, it does provide some support for the utility of further developing and evaluating cognitive-behavioural treatments aimed at reducing perfectionism as this preliminary evidence suggests this can reduce psychological distress.

It is important to note when considering the argument for treatment of perfectionism, that perfectionism is not a diagnosis (Shafran et al., 2004). One of the strongest arguments for needing to treat perfectionism, however, is that it is a maintaining factor for numerous psychological disorders (Shafran et al.). Nevertheless, further research showing how perfectionism is a maintaining factor for various disorders is required. Shafran et al. have also critiqued the literature examining treatment of perfectionism stating;

“There are few existing descriptions of cognitive-behavioural interventions for perfectionism. Those that do exist do not focus on clinical perfectionism and do not address the relationship between Axis I psychopathology and perfectionism, which is a limitation since clinical perfectionism is not itself a psychological disorder” (p. 354).

Consequently, future research needs to not only address the development of cognitive-behavioural treatments for perfectionism, but to focus on the interaction between perfectionism and psychological disorders to examine if reducing perfectionism can reduce severity of symptoms in these disorders.

1.8.3 Motivation to change perfectionism

One reason why individuals who are highly perfectionistic are difficult to treat might be that they value their perfectionism, and do not want to change this trait as it provides benefits. For example, perfectionism can help to achieve success at times, or others may comment positively about success related to meeting a high standard. Lundh (2004) has also pointed to this fact in approaching treatment of perfectionism, stating;

“...addressing the patients’ perfectionism as a problem may be met with resistance, because perfectionists often perceive their perfectionistic strivings as being associated with various benefits and rewards (higher achievements at school and work, more positive responses from significant others etc.)” (p. 264-265).

In this way, perfectionism may be a factor which is ego-syntonic rather than ego-dystonic. There has been no research to date of which the author is aware that has examined the role of insight into perfectionism and motivation to change perfectionism. That is, do people have insight into their perfectionistic traits, and do they have motivation to change their perfectionistic traits? Understanding whether individuals have insight into their perfectionism and whether they want to change it is very important in developing treatments for perfectionism. This is because most psychological treatments have as an underlying major assumption that the individual has at least some desire to

change the behaviour for which they are receiving treatment. Furthermore, Shafran et al. (2002) in their model of clinical perfectionism highlight there are both positive and adverse consequences of perfectionism, therefore it makes sense to explore the impact of there being positive consequences for an individual that may impact on their motivation to change.

Motivation to change has often been associated with motivational interviewing, which has been proposed as an effective technique for overcoming resistance to change (Miller & Rollnick, 2002). Motivation to change has also recently been applied in the area of eating disorders, where motivational interviews have been used to identify motivation to change as a way of enhancing treatment effectiveness (Gellar, Cockell, & Drab, 2001; Geller & Drab, 1999), although there are some mixed results to date as to its effectiveness. Wilson and Schlam (2004) provide an excellent critical review of motivational interviewing in eating disorders, for example in suggesting motivational interviewing has a large overlap with current existing CBT techniques.

Motivation to change has been used with eating disorders such as anorexia nervosa because individuals often have a resistance to change their behaviour. This is because they perceive benefits as a result of their eating disorder, for example, in giving them a sense of control. Conceptually, there is overlap in the area of eating disorders, where individuals have high levels of negative perfectionism as reviewed, thus examining motivation in relation to perfectionism makes intuitive sense. The importance of addressing motivation to change in perfectionism has been recognized by Antony and Swinson (1998) who include a section on assessing the helpful and unhelpful effects of perfectionistic standards in their self-help manual. This is similar to assessing pros and cons for change which is one part of motivational interviewing, although they do not take a specific motivational interviewing approach. Barrow and Moore (1983) also reported the importance of motivation to change in their description of group treatment for perfectionism, stating “we...think it is useful to have participants think about forces that resist change” (p. 614). But they only stated this opinion and reported no data in regards to motivation to change. To date no studies have examined the relationship of motivation to change and perfectionism. This is important to understand, as if treatments are developed for perfectionism, we need to know if individuals are likely to want to engage in change.

1.9 Summary of literature, aims and rationale

Perfectionism is a construct that has long been described in the literature. Most researchers have agreed that a major part of perfectionism involves setting very high personal standards and self-criticism if these standards are not met. The research area of perfectionism started to develop rapidly after two of the most widely used measures of perfectionism were developed in the early 1990's (MPS-F; Frost et al., 1990; MPS-H; Hewitt & Flett, 1991a). Some researchers have criticised the area as being too driven by measurements rather than theory and models (Shafran et al., 2002). This has led to the development of a model of clinical perfectionism, which focuses on maintaining factors of perfectionism, such as dichotomous thinking (Shafran et al.). Another model of perfectionism developed to date is an aetiological model (Flett et al., 2002). This model fits well with the literature showing perfectionism develops from the effects of modelling and reinforcement by parents.

There has been a wealth of literature demonstrating that perfectionism is related to subclinical distress, and is elevated in a range of clinical disorders compared to controls. However, some researchers have recognised that perfectionism might at times be a positive factor, rather than always a negative factor. This has been found, for example, in athletes, who have extremely high personal standards but low concern over making mistakes (Gould et al., 2002). Studies of positive perfectionism have found it is correlated with lower distress and higher confidence. Conversely, negative perfectionism has been found to be associated with higher distress and lower confidence. Slade and Owens (1998), in their model of positive and negative perfectionism, suggested that positive perfectionism develops from modelling parents, while negative perfectionism can develop from punishment due to not meeting high expectations imposed by a parent. Despite the increase in the research area of perfectionism, there are still many questions that remain to be answered, particularly in understanding differences between the two proposed types of perfectionism; positive and negative.

The overall aim of this project is to better understand the construct of perfectionism. Despite the recent increase in the study of positive and negative perfectionism, little research has examined what accounts for the differences between positive and negative perfectionism. Constructs that are theoretically and clinically related to perfectionism include rigidity, dichotomous thinking, personality and motivation to change. These

require further investigation to determine if they could explain differences between positive and negative perfectionism. If constructs theoretically and clinically related to perfectionism were examined in positive and negative perfectionists, this may help to explain why some individuals can use perfectionism in an adaptive way (e.g., athletes) without becoming distressed, whereas in others, perfectionistic traits are associated with distress, as in clinical groups. While authors have theorized what might be the reasons behind differences between positive and negative perfectionism, such as positive perfectionists not engaging in self-criticism over mistakes (Frost & Henderson, 1991), few studies have empirically examined factors by which positive and negative perfectionists may differ. This is very important, as examining the factors that determine perfectionism as either functional or dysfunctional will help to further understand the overall construct. Moreover, considering positive aspects of perfectionism is consistent with the approach of examining issues from a positive psychology perspective (Seligman & Csikszentmihalyi, 2000). In this approach, examining negative psychological issues from an adaptive framework may help to further understanding of negative aspects of perfectionism. Implications of further understanding positive perfectionism could include, for example, improving performance in elite athletes, and for negative perfectionism, informing ways to relieve distress.

To further understand the construct of perfectionism, positive and negative perfectionism was closely examined in a series of five studies involving three groups; individuals with anxiety and depression (clinical group), an athlete group and a control group. The rationale for comparing the clinical and athlete group was to compare individuals who are all high in perfectionism, but one group having primarily negative consequences of perfectionism (clinical group) while the other having primarily positive consequences (athlete group). Potentially, various groups of individuals could have been chosen who may be high in positive aspects of perfectionism (e.g., gifted students, talented musicians), however athletes were chosen as a substantial amount of literature has examined perfectionism in athletes. It was also aimed to have a control group who may have neither high nor low perfectionism, and a university student population was chosen as the control group. The five studies in the research program are linked together by the overall aim of trying to understand differences in positive and negative perfectionism by examining differences between groups on related constructs. The rationale and aims for

each study are presented here, however, the specific hypotheses for each study will be presented in the separate study chapters to follow.

1.9.1 Rationale for study 1: Determining the construct validity of the Positive and Negative Perfectionism Scale

One way of measuring positive and negative perfectionism has been to utilize subscales of the MPS-F (Frost et al., 1990) and the MPS-H (Hewitt & Flett, 1991a) that are thought to reflect the different aspects of positive and negative perfectionism (Bieling & Smith, 2001; Bieling, Israeli et al., 2004; Enns et al., 2002; Rice & Dellwo, 2002). These studies have classified positive and negative perfectionism based on combining different subscales of the measures. For example, positive perfectionism has been classified based on the sum of scores on the *self-oriented* perfectionism subscale of the MPS-H plus the Personal Standards subscale of the MPS-F, and negative perfectionism has been classified as the sum of the *socially-prescribed* perfectionism subscale of the MPS-H plus the Concern over Mistakes and Doubts about Actions subscales of the MPS-F (Enns et al., 2001).

There are two questionnaires that have been specifically designed with the purpose of measuring positive and negative perfectionism. The first is the Perfectionism Questionnaire (PQ; Rheume et al., 1995), which is a 64-item questionnaire divided into three subscales; perfectionistic tendencies (10 items), domains affected by perfectionistic behaviour (30 items), and negative consequences of perfectionism (24 items). The overall scale has satisfactory internal consistency (Rheume, Freeston et al., 2000). The score for the PQ is derived by multiplying the perfectionistic tendencies score with the negative consequences score. Positive perfectionists are defined as those who score high on perfectionistic tendencies, but low on negative consequences of perfectionism. Negative perfectionists are defined as those who score high on perfectionistic tendencies and also high on negative consequences of perfectionism.

The second questionnaire that has been created to specifically distinguish between positive and negative perfectionism is the Positive and Negative Perfectionism Scale (PANPS; Terry-Short et al., 1995). The PANPS divides items with perfectionism either being associated with positive or negative outcomes. The PANPS was chosen as the measure of positive and negative perfectionism in this research rather than the PQ

(Rheaume et al., 1995) due to several reasons. First, the PANPS is a shorter scale (40 items) than the PQ (64 items) and a shorter measure was important due to the amount of questionnaire items that participants were required to complete. Second, the PANPS conceptually has items that relate to both positive and negative perfectionism, as it has both a positive perfectionism scale (20 items) and a negative perfectionism scale (20 items). This is in contrast to the PQ where positive perfectionism is instead viewed as the absence of negative consequences, rather than directly assessing positive consequences as in the PANPS. Thus, the PANPS was selected for theoretical reasons, as it appeared to have items directly assessing positive consequences of perfectionism whereas the PQ does not. It could be argued that an *absence* of negative consequences is not conceptually the same as the *presence* of positive consequences. If both positive and negative perfectionism are to be examined, then it was considered important to utilize a measure examining *both* positive and negative consequences. To date, the PANPS has not been compared to other widely used measures of perfectionism (e.g., Multidimensional Perfectionism Scales) to determine the construct validity of the scale.

Aim: The aim is to determine the construct validity of the PANPS (Terry-Short et al., 1995). Subscales of the MPS-F (Frost et al., 1990) that have been used to indicate positive and negative perfectionism were correlated with the positive and negative perfectionism subscales of the PANPS to determine if the PANPS is a valid measure of positive and negative perfectionism. It was important to determine the validity of the PANPS as it was used as the measure of positive and negative perfectionism in studies 2-5.

1.9.2 Rationale for study 2: Positive and negative perfectionism, rigidity and dichotomous thinking: A comparison between athlete and clinical groups

Examining positive and negative perfectionism in different comparison groups who are hypothesized to be high or low positive and negative perfectionists is a useful methodology, as it may help to inform the nature of differences in perfectionism. That is, why it is helpful for some people, while unhelpful for others. The study by Terry-Short et al. (1995) is the only one to date that has attempted to compare positive and negative perfectionism between a clinical group and athletes. Consequently, further research using similar comparisons groups would be useful to determine the nature of differences between groups. Also, while Terry-Short and colleagues compared positive and negative

perfectionism across groups of athletes, a clinical group and controls, their study only included people with depression and eating disorders, rather than a wide range of disorders including anxiety disorders. Furthermore, other diagnoses including Generalised Anxiety Disorder and Post-Traumatic Stress Disorder have not yet been included in studies investigating perfectionism. It is important to know levels of perfectionism in a mixed clinical group, as a mixed group is representative of what would be seen in a clinical setting. This has the advantage of general conclusions that are able to be drawn about a wide range of psychological disorders rather than specific diagnostic groups. This approach also fits with the conceptualisation of perfectionism as being a “transdiagnostic” process (Fairburn et al., 2003) that is common across many disorders, not tied to one particularly diagnostic category. Recently a transdiagnostic approach to CBT has been proposed (Harvey, Watkins, Mansell, & Shafran, 2004) which examines several underlying processes, for example, in memory and cognition amongst others, which are similar across disorders and diagnostic categories.

Furthermore, while research has found differences between positive and negative perfectionism on measures such as distress, adjustment and confidence (Bieling & Smith, 2001; Enns et al., 2001; Frost & Henderson, 1991; Hall et al., 1998; Koivula et al., 2002; Rice & Dellwo, 2002), no research has examined theoretically and clinically related constructs by which groups may differ, such as cognitive constructs like dichotomous thinking. If differences can be found between groups of positive and negative perfectionists on constructs related to perfectionism, this might help to explain differences in the types of perfectionism. Recent models of perfectionism have emphasised the important role of dichotomous thinking in its maintenance (Shafran et al., 2002), yet no studies to date have examined the relationship between dichotomous thinking and perfectionism. In addition, while rigidity has been studied generally in relation to perfectionism (Ferrari & Mautz, 1997), no studies to date have examined the relationship between rigidity and positive and negative perfectionism, to determine if this might be one explanatory factor accounting for differences in the construct.

Aim: To compare overall levels of perfectionism, positive and negative perfectionism, rigidity and dichotomous thinking across three different groups; clinical participants, athletes and student controls. Group differences between scores on the variables were determined, and predictors of positive and negative perfectionism examined.

1.9.3 Rationale for study 3: The effect of positive and negative perfectionism on athletic performance

Perfectionism has been studied in athletes and suggested to possibly have an impact on sporting performance (Gould et al., 2002; Hall et al., 1998; Koivula et al., 2002). However, no studies to date have examined the impact of positive and negative perfectionism on sporting performance times. This is important from an applied sports psychology perspective; if positive and negative perfectionism is found to impact on sporting performance, then this could be targeted in intervention with athletes.

Aim: To examine the relationship of positive and negative perfectionism to athletic performance. A sample of athletes competing in the sport of triathlon was examined on the relationship between positive and negative perfectionism and performance time in triathlon races.

1.9.4 Rationale for study 4: The relationship of NEO-PI-R personality traits to positive and negative perfectionism

Personality is also something that has been examined in relation to perfectionism, yet only one study to date has examined this specifically related to positive and negative perfectionism, and no studies have used a specific measure of positive and negative perfectionism. It is important to determine if there are differences in personality traits between positive and negative perfectionism, as this may help to explain some of the differences between the types of perfectionism.

Aim: Investigate the nature of differences between positive and negative perfectionists on personality. A group of 20 clinical participants who scored highest on negative perfectionism were compared to a group of 20 athletes who scored lowest on negative perfectionism on a measure of normal personality, the NEO-PI-R (Costa & McCrae, 1992).

1.9.5 Rationale for study 5: A clinical investigation of motivation to change and cognition about failure in perfectionism

The predominant methodology used in studies reviewed has been quantitative. The four quantitative studies in this research were supplemented with a descriptive study in order to provide a rich understanding of cognitions in regards to perfectionism. Recent approaches to perfectionism have highlighted the usefulness of qualitative research in understanding the construct (Riley & Shafran, 2005). A structured clinical interview was used to explore areas such as motivation to change that could provide clinically useful information for potential application in treating perfectionism. While motivation to change seems logically to be a factor that might be important in understanding perfectionism, no studies to date have examined the role of motivation to change and whether individuals have insight into their perfectionistic behaviour. Also, the interview asked participants about their cognitions about a failure situation, to determine if participants who are high and low on negative perfectionism deal with failure situations in a different way.

Aim: Investigate the nature of differences between individuals who score high and low on negative perfectionism on motivation to change and cognitions about failure.

A group of 10 clinical participants who scored highest on negative perfectionism, and a group of 10 athletes who scored lowest on negative perfectionism were interviewed.

CHAPTER 2

Study 1

Determining the validity of the Positive and Negative Perfectionism Scale

2.1 Introduction

Perfectionism is a construct that has long been recognized as a negative factor associated with psychopathology, however researchers in recent years have also acknowledged that perfectionism can have positive consequences. Slade and Owens (1998) have suggested there are two basic forms of perfectionism; positive and negative. They define positive perfectionism as “cognitions and behaviours that are directed toward the achievement of certain high-level goals to obtain positive consequences”, and negative perfectionism as “cognitions and behaviours that are directed toward the achievement of certain high-level goals to avoid or to escape from negative consequences” (p. 378).

The Positive and Negative Perfectionism Scale (PANPS) was initially derived from a range of measures including eating disorder scales and other perfectionism scales in a sample of clinical patients with eating disorders and depression, athletes and controls (Terry-Short et al., 1995). One issue is that when the scale was developed, Terry-Short and colleagues failed to comprehensively report on the reliability and validity of the PANPS. However, they did report on the results of a factor analysis, which they stated divided the total PANPS scale clearly into two factors; positive and negative perfectionism. Terry-Short et al. used the Setting Conditions for Anorexia Nervosa Scale (SCANS; Slade & Dewey, 1986), which has a perfectionism subscale to measure the validity of the PANPS, but did not report on the correlation between the PANPS and the SCANS. Instead, Terry-Short and colleagues stated the construct validity of the scale was demonstrated by PANPS scores identifying 86% of the diagnosed eating disordered group who were diagnosed through clinical interview. Furthermore, they determined that the cut-off point for individuals at risk of an eating disorder was a score of 69 or above on the Negative Perfectionism subscale. Despite these reports, construct validity with other measures of perfectionism was not reported, and the internal consistency of the scale was not examined. The internal consistency and the factor structure of the PANPS were

examined in two later studies. Haase et al. (1999) investigated positive and negative perfectionism using the PANPS (Terry-Short et al., 1995) in a sample of 496 national level competitive rowers from Australia and New Zealand. They examined the factor structure of the PANPS, and found that 36 of the 40 items grouped into two factors representing the positive perfectionism scale (18 items) and negative perfectionism scale (18 items). These two factors accounted for 31% of the variance in responses (Haase et al., 1999). This is consistent with the findings of Terry-Short and colleagues who found the same factors and degree of variance explained. In terms of internal consistency, Haase et al. (1999) reported that Cronbach's alpha for the positive perfectionism scale was .83, while it was .88 for the negative perfectionism scale, indicating good internal consistency. They also found that Social Physique Anxiety had a moderate positive correlation with negative perfectionism (.41), but no significant relationship with positive perfectionism.

Haase et al. (2002) investigated positive and negative perfectionism further using the PANPS (Terry-Short et al., 1995) in a sample of 316 elite athletes from the Australian Institute of Sport who were involved in a number of different sports (e.g., soccer, diving, hockey). They also investigated the factor structure of the PANPS and reported that two factors representing positive (16 items) and negative (11 items) perfectionism were found. However, Haase and colleagues (2002) reported that they re-computed the scales with the reduced items from the factor analysis and the same results were found, thus they retained the full scale. They found that the internal consistency in this study was also good, being .84 for positive perfectionism and .83 for negative perfectionism. Haase et al. (2002) also found that there was a moderate positive correlation between disturbed eating attitudes and negative perfectionism (.39) but a smaller correlation with positive perfectionism (.13).

In the three studies that have utilized the PANPS (Haase et al., 1999, 2002; Terry-Short et al., 1995), the factor structure has been well established, and consistently found to have two factors of positive and negative perfectionism. Furthermore, the internal consistency in two studies has been found to be at a good level for both positive and negative perfectionism. While these studies have reported on correlations between measures of eating disorder attitudes, physique anxiety and the PANPS, no studies to date have reported the correlation with other measures of perfectionism. One of the most important

issues to determine is the validity of the PANPS. It needs to be determined whether the scale is accurately measuring positive and negative perfectionism, and also overall perfectionism. One way to achieve this would be to determine convergent validity by examining correlations between the positive and negative perfectionism scales with well established measures of perfectionism such as the MPS-F (Frost et al., 1990). Although the MPS-F was not developed specifically to distinguish between positive and negative perfectionism, subscales of this measure have been used extensively to determine positive and negative aspects of perfectionism. The subscale of Personal Standards on the MPS-F has been used to indicate positive perfectionism, while the subscales of Concern over Mistakes and Doubts about Actions have been used to indicate negative perfectionism in a range of studies with both athletes and students (Bieling & Smith, 2001; Bieling, Israeli et al., 2004; Coen & Ogles, 1993; Enns et al., 2001; Frost & Henderson, 1991; Gould et al., 1996, 2002; Hall et al., 1998; Koivula et al., 2002; Rice & Dellwo, 2002). If the PANPS has good construct validity, then the positive perfectionism subscale should be significantly correlated with the Personal Standards subscale of the MPS-F and the negative perfectionism subscale should be significantly correlated with the Concern over Mistakes and Doubts about Actions subscales of the MPS-F.

Another indicator of validity for the PANPS scale would be for the negative perfectionism subscale to be correlated to a greater magnitude with Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996) scores than the positive perfectionism subscale. This is because in the two studies with athletes using the PANPS, positive perfectionism was not significantly related to either negative state of disturbed eating attitudes (Haase et al., 1999) or social physique anxiety (Haase et al., 2002). Frost et al. (1990) also found that the Personal Standards subscale of the MPS-F was correlated less ($r = .21$) with the depression subscale of the Brief Symptom Inventory (Derogatis & Melisaratos, 1983) than Concern over Mistakes ($r = .39$) and Doubts about Actions ($r = .54$) in a sample of students. This similar relationship has also been found in a sample of 185 students where short form BDI (Beck & Beck, 1972) scores were correlated to a greater magnitude with a combined Concern over Mistakes and Doubts about Actions measure ($r = .34$) than Personal Standards ($r = .09$) (Stober & Joormann, 2001). Similarly, in another study using the BDI (Beck et al., 1961), depression was correlated to a higher degree with Concern over Mistakes ($r = .24$) and Doubts about Actions ($r = .37$)

than Personal Standards ($r = .09$) in a sample of 61 patients with social phobia (Juster et al., 1996).

The primary aim of this study was to examine the convergent validity of the PANPS (Terry-Short et al., 1995). This is crucial, because if research into positive and negative perfectionism is to develop, it must be determined that measures specifically designed to assess these constructs are valid in measuring positive and negative perfectionism, and overall perfectionism. Furthermore, the study also aimed to examine if the good internal consistency of the PANPS could be replicated in a sample of mixed participants from a range of groups (athletes, clinicals, and controls). This is because the internal consistency of the PANPS has only been reported in athlete samples (Haase et al., 1999; 2002). In a similar manner, the 2-factor solution for the PANPS scale, which has been found and reported to relate to the factors of positive and negative perfectionism (Haase et al., 1999, 2001; Terry-Short et al.), was investigated to determine if this could be replicated. The original six-factor solution for the MPS-F proposed by Frost et al. (1990) was also investigated to assess if the six-factor solution was a valid way to distinguish between the MPS-F subscales in the sample. Finally, a related aim was to examine if either an oblique or an orthogonal solution would be a better fit for the factor structure of the MPS-F and the PANPS. If an oblique solution proved to be a better fit, this would provide evidence for the multidimensional nature of the perfectionism scales, consisting of correlated factors. If an orthogonal solution proved to be the best fit of the data, this would suggest evidence for the unidimensional nature of these measures of perfectionism.

The hypotheses for the study were;

H1. There will be a strong correlation, with $r > .60$, between the PANPS and the MPS-F on overall scores of perfectionism.

H2

a) There will be a strong correlation, with $r > .60$, between the Personal Standards subscale of the MPS-F and the positive perfectionism subscale of the PANPS

b) There will be a strong correlation, with $r > .60$, between the Concern over Mistakes and Doubts about Actions subscales of the MPS-F and the negative perfectionism subscale of the PANPS.

H3. In the clinical group the BDI-II score will be correlated to a greater magnitude with the negative perfectionism subscale than the positive perfectionism subscale of the PANPS.

H4. The positive perfectionism subscale, negative perfectionism subscale and overall PANPS score will demonstrate a good level of internal consistency, where Cronbach's alpha exceeds at least 0.70 for each of the scales.

H5. A Confirmatory Factor Analysis will confirm an oblique 2-factor structure for the PANPS scale, consisting of a positive perfectionism factor and negative perfectionism factor. This factor solution will be a better fit of the PANPS than a 1-factor solution and an orthogonal 2-factor solution.

H6. A Confirmatory Factor Analysis will confirm an oblique 6-factor structure for the MPS-F. It will be a better fit of the data than an orthogonal 6-factor solution, or an oblique 1 factor solution.

2.2 Method

2.2.1 Participants

There were a total of 252 participants. A sample of 111 athletes, 40 clinical participants and 101 student controls. The demographic details are outlined in Table 1.

Table 1

Demographic characteristics of the athlete, control and clinical participants

	Athlete <i>n</i> = 111	Clinical <i>n</i> = 40	Control <i>n</i> = 101
Age	38.9 (SD = 9.6)	39.2 (SD = 13.2)	26 (SD = 7.2)
Gender			
Males	66%	28%	24%
Females	34%	72%	76%
Highest educational attainment			
Year 10	6%	15%	-
Year 12	22%	53%	-
University degree	78%	32%	-
Current year of university			
1 st year	-	-	3%
2 nd year	-	-	17%
3 rd year	-	-	26%
4 th year	-	-	54%
Work			
No paid work	10%	43%	22%
Part-time work	12%	40%	71%
Full-time work	78%	17%	7%
Relationship			
Single	24%	53%	65%
Defacto or married	76%	47%	35%

2.2.1.1 Athlete participants

The athletes were from the sport of triathlon which is one event performed by an individual consisting of a swim, bicycle, then running length. It can be seen from Table 1 that there were more males than females in the athlete group. Table 1 also indicates the athletes had a high degree of education with 78% of the sample possessing a university degree.

2.2.1.2 Student (control) participants

The students were undergraduate psychology students from Curtin University of Technology. Table 1 shows there were more females than males in the sample, and most were in their later years of study. It can also be seen from Table 1 that the students were younger than the athlete and clinical participants.

2.2.1.3 Clinical participants

Table 1 indicates that there were more females than males in the clinical sample, and they had a lower level of educational attainment than the athlete sample, with around 30% of the sample possessing a university degree. The clinical participants were recruited from the Curtin University of Technology Psychology Clinic. The clinic is operated as a postgraduate training clinic where Clinical Psychology students either completing their Masters or Clinical PhD degrees complete supervised placements. The participants were recruited at different stages during their treatment at the clinic. The stage of psychological treatment at the time of completion of the questionnaires can be seen in Table 2, which also includes the range of sessions completed.

Table 2

Stage of psychological treatment when questionnaires completed

Stage	Percentage
Assessment only	23%
Currently in group therapy	47%
Currently completing 10 week OCD group	(22.5%)
Currently completing 8 week GAD group	(15%)
Currently completing 8 week CBT group	(10%)
Currently in individual therapy	30%
1-5 sessions	(7.5%)
5-10 sessions	(15%)
10-15 sessions	(2.5%)
15-20 sessions	(5%)

It can be seen that the largest majority of the clinical group were currently doing group treatment. The OCD group were receiving standard exposure and response prevention, and cognitive therapy for OCD. The GAD group was an 8 week mindfulness group. The CBT group was a standard CBT group for the treatment of mixed anxiety and depressive disorders.

Axis I diagnoses were determined by administering the Structured Clinical Interview for DSM-IV axis I disorders (SCID-I/P, Version 2.0/Patient Form; First, Spitzer, Gibbon, & Williams, 1996). Axis II diagnoses were determined by administering the Structured Clinical Interview for DSM-IV Personality Disorders – (SCID-II, Version 2.0; First, Spitzer, Gibbon, Williams, & Lorna, 1994). Trained postgraduate clinical psychology students who were supervised by registered Clinical Psychologists administered the interviews. All assessment interviews were videotaped and diagnoses were discussed in supervision to ensure accuracy of diagnosis. The primary diagnoses of the sample can be seen in Table 3. It can be seen from this table that 75% of the sample had a primary diagnosis of an anxiety disorder, while 25% had a primary diagnosis of either major depression or dysthymia.

Table 3

Primary diagnoses in the clinical sample, n = 40

Diagnosis	No. of diagnoses	Percentage
Obsessive-Compulsive Disorder (OCD)	15	37.5%
Generalised Anxiety Disorder (GAD)	8	20%
Major Depression	8	20%
Social Phobia	4	10%
Panic disorder with & without agoraphobia	2	5%
Dysthymia	2	5%
Post-traumatic Stress Disorder (PTSD)	1	2.5%

Note: No. = Number

The total diagnoses for all participants in the clinical group can be seen in Table 4 (note: because there were multiple diagnoses per participant, the percentages add to more than 100%). The mean number of axis I diagnoses was 1.7 per participant. The mean number of axis II diagnoses was 1.3. The total average number of diagnoses (including both axis I and II) was 2.5 per participant. Sixty three percent of the sample was diagnosed with two or more disorders, 33% had three or more disorders, 20% had four or more disorders and 13% had five or more disorders.

Table 4

Total axis I and axis II diagnoses in clinical group, n = 40

Diagnoses	Total number of diagnoses	Total mean
Axis I diagnoses		
Depression	19	47.5%
OCD	15	37.5%
GAD	11	27.5%
Social phobia	11	27.5%
Panic disorder with and without agoraphobia	5	12.5%
Dysthymia	4	10%
PTSD	2	5%
Alcohol dependence	2	5%
Axis II diagnoses		
Obsessive-compulsive PD	12	30%
Paranoid PD	5	12.5%
Avoidant PD	4	10%
Dependent PD	3	7.5%
Borderline PD	3	7.5%
Narcissistic PD	2	5%
Schizoid PD	1	2.5%

Note: PD = Personality Disorder

2.2.2 Measures

Demographic questionnaire

All participants answered standard questions about demographics, see Appendix A for a copy of the questions.

The Multidimensional Perfectionism Scale (MPS-F; Frost et al., 1990)

The MPS-F is a 35 item self-report measure of perfectionism that has been used extensively to measure perfectionism in both non-clinical and clinical samples. The MPS-F had 67 original items that were derived both theoretically and from existing measures of perfectionism and psychopathology, which were reduced down to 35 items through reliability and factor analysis in a sample of over 200 undergraduate students. The MPS-F has six subscales; (i) Concern over Mistakes, (ii) Personal Standards, (iii) Parental Expectations, (iv) Parental Criticism, (v) Doubts about Actions and (vi) Organization. This six-factor, orthogonal solution was found to account for 64.5% of the variance (Frost et al.). The subscale of Organization is excluded when deriving the total perfectionism score, which is a sum of the other five scales. The questionnaire is answered on a five point scale ranging from strongly disagree to strongly agree. The scores can range from 35-145. Higher scores indicate a higher degree of perfectionism. An example of an item is “It is important to me that I be thoroughly competent in everything I do”.

The MPS-F has been reported to have good reliability and validity. The internal consistency of the six subscales ranges from .77 to .93 (Frost et al., 1990). The alpha values for the three subscales that were used to investigate construct validity in this study were; Personal Standards, alpha = .83, Concern over Mistakes, alpha = .88, and Doubts about Actions, alpha = .77 (Frost et al.). The internal consistency of the overall scale is also very good (alpha = .90; Frost et al.). The MPS-F has also been shown to have good construct validity having a strong correlation with other perfectionism measures. See Appendix D for a copy of the MPS-F.

The Positive and Negative Perfectionism Scale (PANPS; Terry-Short et al., 1995)

The PANPS is a 40 item self-report measure designed to measure positive and negative perfectionism. It was developed with a sample of 281 participants, including individuals with eating disorders, depression, athletes and controls. The PANPS items were derived from a range of scales including eating disorder scales (EDI; Garner et al., 1983; SCANS; Slade & Dewey, 1986), the BPS (Burns, 1980), the MPS-H (Hewitt & Flett, 1991a) and the Neurotic Perfectionism Questionnaire (NPQ; Mitzman, Slade, & Dewey, 1994). The scale has been found to have a consistent factor solution comprised of two factors;

positive and negative perfectionism (Haase et al., 1999, 2002; Terry-Short et al., 1995). The PANPS has also been found to have good internal consistency, ranging from .83 - .88 (Haase et al., 1999, 2002).

The questionnaire is answered on a five point scale ranging from strongly disagree to strongly agree. There are 20 items on the positive perfectionism subscale and 20 items on the negative perfectionism subscale. The scores can range from 20-100 on both the negative perfectionism and positive perfectionism subscales, and the total perfectionism score can range from 40-200. Higher scores indicate a higher degree of perfectionism. An example of a positive perfectionism item is; “I like the challenge of setting very high standards for myself” and an example of a negative perfectionism item is; “When I achieve my goals I feel dissatisfied”. See Appendix E for a copy of the PANPS.

Structured Clinical Interview for DSM-IV axis I disorders (SCID-I/P, Version 2.0; First et al., 1996) and Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II, Version 2.0; First et al., 1994)

The SCID I/P (First et al., 1996) was used to assess which axis I DSM-IV diagnoses the clinical participants met. The SCID-II (First et al., 1994) was used to assess which axis II DSM-IV diagnoses were met. The SCID interviews are comprehensive diagnostic interviews designed to assess DSM-IV (APA, 1994) diagnostic criteria. They are widely used as diagnostic measure and the SCID-I/P has moderate reliability, with median test-retest reliability of .69, and interrater reliability of .68 (Zanarini et al., 2000). Copies of the SCID interviews have not reproduced in an appendix as they are very widely used and well known structured diagnostic interviews.

Beck Depression Inventory- Second Edition (BDI-II; Beck et al., 1996)

The BDI-II was used to assess depression in the clinical sample. It is a 21-item self-report inventory that has been widely used in research and clinical settings to assess depression (Beck et al., 1996). The scale has good internal consistency (alpha = .92) and test-retest reliability (.93) (Beck et al.). The BDI-II has content validity due to the high degree of consistency with DSM-IV depressive symptoms (Beck et al.). The BDI-II is answered on a four point Likert scale ranging from 0 to 3. The maximum score is 63. Scores between 0-13 indicate a normal range, 14-19 mild depression, 20-28 moderate

depression and above 29 severe depression. A copy of the BDI-II has not been included in an appendix as it is a very widely used and well known measure of depression.

2.2.3 Procedure

It is first important to note that this research program was approved by the Curtin University of Technology Ethics Committee. This included approval for all studies, thus will not be reported again. The data collection described in this study was the same for Study 2 and 3 so will also not be repeated later. This is because the data for all three studies was collected at the same time. That is, the same participants were used for studies 1-3. The athletes were recruited from a mail out to all Perth metropolitan members of the Triathlon Association of Western Australia. The mailing list consisted of 460 members, so 111 responses gave a response rate of 24%. Students were recruited at the start of Curtin University undergraduate psychology lectures and returned questionnaires to an anonymous box in the School of Psychology, Curtin University. The clinical sample were invited to participate through their therapists at the Curtin University School of Psychology Clinic, and returned completed questionnaires to their therapists. All participants were administered an information and consent form (see Appendix B).

2.3 Results and Discussion

2.3.1 Data screening

Prior to analysis, the data were screened for each of the three groups independently, following the recommendations of Tabachnick and Fidell (2001). Screening was conducted for errors in data entry and normality.

Clinical group data screen

The frequencies for the total scores and each of the subscales of the PANPS (Terry-Short et al., 1995) and MPS-F (Frost et al., 1990) were examined. All scores were within the expected ranges of the scale, so there was no obvious error in data entry. The total PANPS score showed a normal distribution when examined using histograms and stem and leaf plots and no outliers were detected on a boxplot. The positive perfectionism subscale of the PANPS exhibited a normal distribution on a histogram and a stem and leaf plot. There were four outliers detected, one scoring very high on positive perfectionism,

and three scoring very low on positive perfectionism. The negative perfectionism subscale of the PANPS also exhibited a normal distribution on a histogram and stem and leaf plot, and no outliers were detected when a boxplot was examined. The total MPS-F score exhibited a normal distribution on a histogram, and no outliers were detected on a boxplot. In examining the distribution of MPS-F subscales, histograms indicated that the subscales of Concern over Mistakes, Personal Standards, Parental Expectations, and Doubts about Actions all had normal distributions. The subscale of Parental Criticism showed a skewed distribution towards lower scores. The subscale of Organization also showed a skewed distribution, but it was towards higher scores. There were two outliers detected on the subscale of Parental Expectations, with very high scores.

Athlete group data screen

Examination of frequencies indicated there were no errors in data entry for the measures. The PANPS (Terry-Short et al., 1995) total score, and the PANPS positive and negative perfectionism subscales all had a normal distribution when histograms and stem and leaf plots were examined. There were no outliers detected on the total PANPS score, but on examination of boxplots, there was one outlier on positive perfectionism with a very low score, and three outliers on negative perfectionism with very high scores. The MPS-F (Frost et al., 1990) also exhibited a normal distribution, and there were two outliers with very high scores. The subscales on the MPS-F of Personal Standards, Doubts about Actions, and Organisation all exhibited normal distributions. The subscales of Parental Expectations, Parental Criticism, and Concern over Mistakes all had skewed distributions that were skewed towards lower scores. There were three outliers detected via boxplots on Concern over Mistakes with high scores. Two outliers were detected on Parental Expectations with high scores, and two outliers on Parental Criticism also with high scores. Finally, there were three outliers on Doubts about Actions with high scores.

Control group data screen

There were no errors in data entry detected through examining frequencies of the measures. The total PANPS (Terry-Short et al., 1995) score had a normal distribution on a histogram, but there were three outliers found on a boxplot, one with a high score and two with low scores. Positive perfectionism had a skewed distribution towards high scores and three outliers were detected, two with low positive perfectionism scores and one with a high score. Negative perfectionism had a normal distribution, and there were

no outliers. The MPS-F (Frost et al., 1990) total score had a normal distribution but there were five outliers with high scores and one outlier with a low score. Concern over Mistakes showed a skewed distribution towards low scores, and there were four outliers with high scores. Personal Standards, Parental Expectations, and Doubts about Actions all had normal distributions with no outliers. Parental Criticism had a skewed distribution towards low scores, and 4 outliers had high scores. Organization had a normal distribution, but 3 outliers on this had very low scores.

Procedure to account for outliers

It was recognized that outliers and skewed distributions could have serious consequences, for example, they may seriously inflate the magnitude of correlations. To determine the impact of outliers, all outliers including both univariate outliers on both the total and each subscale score for the PANPS (Terry-Short et al., 1995) and MPS-F (Frost et al., 1990) and multivariate outliers across subscales were removed. This removal resulted in 6 clinical participants, 9 athletes and 15 students being removed. The data were then analysed with the outliers removed. However, removal of outliers made no major difference to results. This was in terms of the significance of findings as all findings had the same significance levels. There were also no differences in the relative magnitude of correlations. For example, a representative change in the degree of correlation with outliers removed was from $r = .30$ to $r = .28$. Due to this finding, it was decided to retain outliers in the sample.

It was also considered whether to perform logarithmic transformation on some of the variables that exhibited skewed distributions. However, it was decided not to transform variables. This was due to several reasons. First, as described, the removal of outliers did not change any of the direction or significance of results. Second, Tabachnick and Fidell (2001) argue, "...if all variables are skewed to about the same moderate extent, improvements of analysis with transformation are often marginal" (p. 81). This is true of the majority of the subscales and total scores in this study, which were similarly skewed. Furthermore, transforming variables would have made it difficult to compare results from this study to the literature, which has not transformed perfectionism questionnaire scores. Thus, if scores were transformed the results would have been less meaningful in the context of the literature.

2.3.2 Mean PANPS and MPS-F scores

The mean scores for each group on the total scores and subscales of the PANPS (Terry-Short et al., 1995) and MPS-F (Frost et al., 1990) are presented in Table 5. The range of BDI-II (Beck et al., 1996) scores in the clinical group was 1-53. The mean BDI-II score indicated that on average there was a mild level of depression in the clinical group.

Table 5

Mean (and standard deviations) of PANPS, MPS-F and BDI-II scores in clinical, athlete and control groups

Measure	Clinical (n = 40)		Athlete (n = 111)		Control (n = 101)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
PANPS total	132.78	(23.40)	122.65	(16.82)	127.38	(17.98)
PANPS positive	70.20	(10.19)	74.41	(9.15)	74.35	(10.19)
PANPS negative	62.57	(16.63)	48.24	(10.93)	53.02	(13.16)
MPS total	82.35	(20.35)	70.70	(13.04)	74.87	(17.82)
MPS - CM	24.35	(8.52)	19.36	(5.00)	20.46	(6.87)
MPS - PS	23.00	(5.59)	23.74	(4.26)	23.04	(5.46)
MPS - PE	12.12	(4.31)	11.00	(3.44)	12.59	(4.85)
MPS - PC	9.85	(3.99)	7.34	(2.73)	8.20	(3.93)
MPS - D	13.02	(3.81)	9.24	(2.68)	10.12	(3.28)
BDI-II	16.50	(12.50)	-		-	

Note: S.D. = Standard Deviation, CM = Concern over Mistakes, PS = Personal Standards, PE = Parental Expectations, PC – Parental Criticism, D = Doubts about Actions

2.3.3 Correlation analysis

To assess the validity of the measures, correlations were conducted between scales in each of the three groups. Prior to analysis, assumptions for correlation were tested. Testing for the normality of variables was described in the general data screening section. Assumptions of linearity and homoscedasticity were examined in each group separately by examining scatterplots between variables. There were 36 correlations in each group, thus 36 scatterplots were examined in each group. All scatterplots examined showed a

linear relationship between variables. The scatterplots also indicated that the scores were clustered relatively uniformly around the regression line, so the assumption of homoscedasticity had not been violated in the correlations.

To determine if correlations should be examined in the total sample ($N = 252$), or in each group separately, a LISREL analysis was performed using version 8.54. This was to determine if correlations varied significantly between the groups. Paired comparisons to test equality were performed. The athlete and control group had significantly different correlation matrices, as the Minimum Fit Function *chi-square* (45) = 443.29, $p = .01$, and the Normal Fit Weighted Least Squares *chi-square* (45) = 288.96, $p = .01$. The clinical and control group also had significantly different correlation matrices; Minimum Fit Function *chi-square* (45) = 1034.87, $p = .01$ and Normal Theory Weighted Least Squares *chi-square* (45) = 558.84, $p = .01$. Finally, the clinical and athlete group were also significantly different on correlation matrices; Minimum Fit Function *chi-square* (45) = 1124.64, $p = .01$ and Normal Theory Weight Least Squares *chi-square* (45) = 739.11, $p = .01$. These analyses all indicated significantly different correlations between groups, therefore correlation matrices are shown for each group separately.

The correlations between the PANPS (Terry-Short et al., 1995), MPS-F (Frost et al., 1990) and BDI-II (Beck, 1996) in the clinical group are presented in Table 6. The Organization subscale of the MPS-F was not included in analyses as it is not used to derive the total MPS-F score.

Table 6

Correlations between PANPS, MPS-F and BDI-II in clinical sample, n = 40

Measure	1	2	3	4	5	6	7	8	9	10
1. PANPS tot.-		.79**	.92**	.79**	.76**	.78**	.42**	.48**	.36*	.52**
2. PANPS Pos		-	.49**	.50**	.47**	.69**	.24	.22	.11	.50**
3. PANPS Neg			-	.80**	.78**	.68**	.44**	.55**	.43**	.43**
4. MPS total				-	.89**	.77**	.71**	.72**	.64**	.51**
5. MPS – CM					-	.66**	.46**	.52**	.50**	.52**
6. MPS – PS						-	.41**	.35**	.32**	.54**
7. MPS – PE							-	.66**	.36**	.31**
8. MPS- PC								-	.41**	.18
9. MPS – D									-	.22
10. BDI-II										-

* significant at <.05 level, ** significant at <.01 level (2-tailed)

It can be seen in Table 6 that the BDI-II (Beck et al., 1996) was correlated to a similar magnitude with both positive and negative subscales of the PANPS in the clinical sample. Thus, Hypothesis 3 that predicted depression would be correlated to a greater degree with negative than positive perfectionism was not supported. It is also important to note that BDI-II scores were also moderately correlated to a similar magnitude with Personal Standards and Concern over Mistakes, but not Doubts about Actions.

The correlations between the PANPS (Terry-Short et al., 1995) and MPS-F (Frost et al., 1990) in the athlete group is presented in Table 7, and the control group in Table 8.

Table 7

Correlations between PANPS and MPS-F in athlete sample, n = 111

Measure	1	2	3	4	5	6	7	8	9
1. PANPS total	-	.80**	.86**	.66**	.65**	.53**	.40**	.25**	.37**
2. PANPS Pos		-	.40**	.32**	.30**	.56**	.17	-.08	-.02
3. PANPS Neg			-	.75**	.76**	.34**	.47**	.45**	.59**
4. MPS total				-	.86**	.59**	.74**	.71**	.63**
5. MPS – CM					-	.39**	.51**	.51**	.54**
6. MPS – PS						-	.25**	.12	.08
7. MPS – PE							-	.63**	.35**
8. MPS- PC								-	.47**
9. MPS – D									-

* significant at <.05 level, ** significant at <.01 level (2-tailed)

Table 8

Correlations between PANPS and MPS-F in control group, n = 101

Measure	1	2	3	4	5	6	7	8	9
1. PANPS total	-	.69**	.83**	.80**	.71**	.67**	.35**	.47**	.51**
2. PANPS Pos		-	.17	.38**	.20**	.61**	.20*	.11	.11
3. PANPS Neg			-	.79**	.81**	.44**	.32**	.55**	.61**
4. MPS total				-	.87**	.65**	.59**	.73**	.59**
5. MPS – CM					-	.44**	.33**	.54**	.61**
6. MPS – PS						-	.17	.35**	.26**
7. MPS – PE							-	.54**	.09
8. MPS- PC								-	.24*
9. MPS – D									-

* significant at <.05 level, ** significant at <.01 level (2-tailed)

In relation to the total score on the PANPS (Terry-Short et al., 1995), it can be seen in Tables 6, 7 and 8 that the total PANPS score had a high positive correlation with the total MPS-F score in the clinical (.79) and control groups (.80), although it had a smaller correlation in the athletes (.66). Thus, Hypothesis 1 that predicted a high correlation between the MPS-F (Frost et al., 1990) and the PANPS was supported overall. Hypothesis 2a predicted that there would be a high correlation between positive perfectionism on the PANPS and the Personal Standards scale of the MPS. This hypothesis was supported as there were significant relationships between these subscales in the clinical group (.69) and controls (.61). Although the correlation in the athlete group (.56) did not exceed the predicted .60, this was still a moderate correlation. Hypothesis 2b predicted a significant relationship between Concern over Mistakes and Doubts about Actions on the MPS-F and negative perfectionism on the PANPS, and was also supported. As seen in Tables 6 to 8, there was a moderate correlation between Doubts about Actions and negative perfectionism in the clinical group (.43), athlete group (.59) and control group (.61). Furthermore, there were high correlations between Concern over Mistakes and negative perfectionism in the clinical (.78), athlete (.76) and control (.81) groups.

It is also important to compare correlations with subscales of the MPS-F (Frost et al., 1990) and positive and negative perfectionism. Table 9 presents these correlations because although the data are presented in Tables 6 to 8, the purpose was to allow ease of comparison between groups. First, it can be seen in Table 9 that Personal Standards was related more to positive perfectionism than negative perfectionism in the athlete and control groups, however interestingly it was equally related to both positive (.69) and negative (.68) perfectionism in the clinical group. Similarly, Concern over Mistakes was related more to both positive (.47) and negative (.78) perfectionism in the clinical group than for the athletes and controls where there was a smaller correlation (.20 to .30) with positive perfectionism. It should also be noted from Table 9 that Parental Expectations, Parental Criticism and Doubts about Actions were mostly not related to positive perfectionism in all groups, but these subscales did have moderate correlations with negative perfectionism.

Table 9

Comparison between positive and negative perfectionism on correlations with subscales of the MPS-F in clinical, athlete and control groups

	Clinical		Athlete		Control	
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
MPS - CM	.47**	.78**	.30**	.76**	.20**	.81**
MPS - PS	.69**	.68**	.56**	.34**	.61**	.44**
MPS - PE	.24	.44**	.17	.47**	.20*	.32**
MPS - PC	.22	.55**	-.08	.45**	.11	.55**
MPS - D	.11	.43**	-.02	.59**	.11	.61**

Note: Pos = Positive perfectionism subscale of PANPS, Neg = Negative perfectionism subscale of PANPS.

* significant at <.05 level, ** significant at <.01 level (2-tailed)

2.3.4 Internal consistency of the PANPS and MPS-F

The internal consistency of the measures was examined through Cronbach's alpha. It can be seen in Table 10 that internal consistency of the total PANPS score (Terry-Short et al., 1995) was acceptable in all groups, thus Hypothesis 4 was supported. The internal consistency of both the positive and negative perfectionism subscales was high. The MPS-F (Frost et al., 1990) also showed good internal consistency as shown in Table 10.

Table 10

Cronbach's alpha co-efficients for the PANPS and MPS-F in clinical, athlete, control and total sample

Scale	Clinical	Athlete	Control	Total sample
PANPS Total	.93	.88	.89	.90
Positive	.84	.85	.86	.84
Negative	.94	.87	.90	.91
MPS-F Total	.93	.89	.91	.91
CM	.93	.83	.90	.89
PS	.79	.75	.84	.79
PE	.86	.81	.85	.84
PC	.83	.81	.86	.85
D	.80	.66	.68	.75
O	.88	.87	.92	.90

Note: CM = Concern over Mistakes, PS = Personal Standards, PE = Parental Expectations, PC = Parental Criticism, D = Doubts about Actions, O = Organisation

2.3.5 Confirmatory factor structure of the PANPS

To examine the factor structure of the PANPS (Terry-Short et al., 1995) a Confirmatory Factor Analysis was conducted using LISREL. A Confirmatory Factor Analysis was deemed appropriate as an exploratory principal components factor analysis was conducted when the scale was developed (Terry-Short et al., 1995). Each of the 40 PANPS items for the total sample (N = 252) was entered into the LISREL equation. This was entered with the 20 items Terry-Short and colleagues reported to load on positive perfectionism and the 20 items reported to load on negative perfectionism. Table 11 indicates comparisons between three possible factor solutions for the PANPS. Model one is a 1 factor oblique solution, which would indicate one perfectionism factor. Model two is a 2 factor oblique solution that would indicate two correlated factors; positive and negative perfectionism. Model three is a 2 factor orthogonal solution that would indicate two separate factors; positive and negative perfectionism.

Table 11

*Comparisons among fit indices for three alternative PANPS factor models in total sample
N = 252*

Model	RMSEA	CFI	AGFI	RMR	NNFI	ECVI
Model 1 <i>(oblique 1 factor solution)</i>	0.19	0.76	0.33	0.17	0.75	31.32
Model 2 <i>(oblique 2 factor solution)</i>	0.12	0.82	0.55	0.10	0.81	14.40
Model 3 <i>(orthogonal 2 factor solution)</i>	0.19	0.75	0.33	0.18	0.74	31.15

Note: RMSEA = root mean square error of approximation; CFI = comparative fit index; AGFI = adjusted goodness of fit index; RMR = root mean square residual; NNFI = non-normed fit index; ECVI = expected cross-validation index

The minimum fit function chi-square results were as follows; model 1, *chi-square* (740) = 4474.91, $p = .01$; model 2, *chi-square* (739) = 3487.91, $p = .01$; model 3, *chi-square* (739) = 4573.75, $p = .01$. The chi-square for independence model for all 3 models was the same, *chi-square* (780) = 16490.34. It can be seen from Table 11 that the best fit for the PANPS was model 2, the oblique 2 factor solution, as it had the largest Comparative Fit Index (.82) and lowest Root Mean Square Residual (.12). This means that the PANPS is best considered as having two factors of positive and negative perfectionism, and these factors are correlated with each other. However, it should be noted that even model 2, which was the best fit of the data, was not an excellent fit, as the RMSEA $>.05$ and the CFI did not exceed .90.

2.3.6 Confirmatory factor structure of the MPS-F

To examine the factor structure of the MPS-F (Frost et al, 1990) a Confirmatory Factor Analysis was conducted using LISREL. This is because an exploratory principal components factor analysis using an orthogonal rotation was reported in the scale development by Frost and colleagues (1990). Each of the 35 MPS-F items for the total sample (N = 252) was entered into the LISREL equation. These were entered following Frost and colleagues' reported loadings on the subscales as follows; Concern over Mistakes (9 items); Personal Standards (7 items); Parental Expectations (5 items); Parental Criticism (4 items); Doubts about Actions (4 items) and Organisation (6 items).

Table 12 indicates comparisons between three possible factor solutions for the MPS-F. Model one is a 1 factor oblique solution, which would indicate one general perfectionism factor. Model two is a 6 factor oblique solution that would indicate six correlated factors; Concern over Mistakes (CM), Personal Standards (PS), Parental Expectations (PE), Parental Criticism (PC), Doubts about Actions (D), and Organisation (O). Model three is a 6 factor orthogonal solution that would indicate six separate factors consisting of CM, PS, PE, PC, D and O.

Table 12

*Comparisons among fit indices for three alternative MPS-F factor models in total sample
N = 252*

Model	RMSEA	CFI	AGFI	RMR	NNFI	ECVI
Model 1 <i>(oblique 1 factor solution)</i>	0.21	0.72	0.31	0.26	0.70	27.70
Model 2 <i>(oblique 6 factor solution)</i>	0.11	0.87	0.60	0.10	0.85	9.78
Model 3 <i>(orthogonal 6 factor solution)</i>	0.13	0.84	0.55	0.21	0.83	12.25

Note: RMSEA = root mean square error of approximation; CFI = comparative fit index; AGFI = adjusted goodness of fit index; RMR = root mean square residual; NNFI = non-normed fit index; ECVI = expected cross-validation index

The minimum fit function chi-square results were as follows; model 1, *chi-square* (560) = 5313.48, $p = .01$; model 2, *chi-square* (545) = 2773.29, $p = .01$; model 3, *chi-square* (560) = 3225.91, $p = .01$. The chi-square for independence model for all 3 models was the same, *chi-square* (595) = 17520.80. As seen in Table 12, model 2 which was an oblique 6-factor solution provided the best fit of the MPS-F as it had the highest CFI of all 3 models (.87) and lowest RMSEA (.11). Therefore, the MPS-F can be argued to have a six-factor solution, and the subscales are correlated rather than orthogonal. Similar to the factor solution for the PANPS, it should be noted that even model 2 which was the best fit of the data for the MPS-F was not an excellent fit as the RMSEA $>.05$ and the CFI did not exceed .90.

2.4 General Discussion

One of the aims of the study was to examine the reliability of the PANPS (Terry-Short et al., 1995). A high level of internal consistency of the overall PANPS scale ($\alpha = .89$ to $.93$) was found. This is important, as the internal consistency of the total scale has not been reported before. The internal consistency of the positive perfectionism scale was similar in this study ($\alpha = .84$ to $.86$) compared to previous studies, which found alpha levels of $.83$ to $.84$ respectively (Haase et al., 1999; 2002). The internal consistency of the negative perfectionism scale in this study was also similar although slightly higher ($\alpha = .87$ to $.94$) compared to previous studies where the alpha levels ranged from $.83$ (Haase et al., 2002) to $.88$ (Haase et al., 1999). The internal consistency that was found in this study in combination with the previous two studies by Haase and colleagues gives consistent evidence that the PANPS has good internal consistency of both subscales and the total score. This is because generally when alpha levels reach $.70$ and above a measure is considered to be demonstrating adequate internal consistency (Kaplan & Saccuzzo, 2001). The MPS-F (Frost et al., 1990) also demonstrated good internal consistency. There was a similar level of internal consistency of the MPS-F total score in this study ($\alpha = .89 - .93$) to previous studies ($\alpha = .90$; Frost et al., 1990). The six subscale alpha values were also similar ($\alpha = .75 - .90$) compared to the original scale development ($\alpha = .77 - .93$). This provides further evidence to the wealth of data that shows the MPS-F is a reliable measure.

This study also provided evidence for the validity of the PANPS (Terry-Short et al., 1995). The results indicated that the PANPS is a valid measure of overall perfectionism, as it had a strong correlation with the MPS-F (Frost et al., 1990), thus providing evidence of the convergent validity of the PANPS with other perfectionism measures. Given that the MPS-F has been reported to be a valid measure of perfectionism in many studies with both nonclinical and clinical populations, this provides good evidence of the convergent validity of the PANPS. One of the most important factors to determine, however, was whether the PANPS is actually measuring the specific constructs of positive and negative perfectionism. The results of this study provide some evidence for the validity of the positive perfectionism subscale as it had moderate to high correlations ($.56 - .69$) with Personal Standards, which has been used as an indicator of positive perfectionism in a range of studies (Bieling & Smith; 2001; Bieling, Israeli et al., 2004; Enns et al., 2001;

Frost & Henderson, 1991; Gould et al., 2002; Hall et al., 1998; Koivula et al., 2002; Rice & Dellwo, 2002).

However, one important issue is that Personal Standards was correlated more highly with positive perfectionism (.56 - .61) than negative perfectionism (.34 - .44) in the athlete and control groups, but was equally related to positive (.69) and negative (.68) perfectionism in the clinical group. The findings suggest that the positive perfectionism subscale of the PANPS (Terry-Short et al., 1995) has some validity in the athletes and controls in being more related in positive aspects of perfectionism on the MPS-F (Personal Standards). However, the evidence for validity of the positive perfectionism subscale in the clinical group is less convincing due to Personal Standards being related to the same degree to the positive and negative perfectionism subscales.

A further issue to consider is that BDI-II (Beck et al., 1996) scores were equally correlated with both positive and negative perfectionism on the PANPS (Terry-Short et al., 1995). This is in contrast to previous research with student (Stober & Joormann, 2001) and clinical samples (Juster et al., 1996) finding lower correlations between the BDI and positive perfectionism compared to negative perfectionism. It is not clear why depression was related to the same degree to both positive and negative perfectionism in this clinical sample. The first possibility is that for this sample, positive perfectionism is not completely positive, as it is moderately correlated with depression. Another possibility is that the positive perfectionism subscale of the PANPS is not a pure measure of positive perfectionism. In a recent study, two items on the Personal Standards scale of the MPS-F (Frost et al., 1990) were found to be less “pure” in measuring positive perfectionism (DiBartolo, Frost, Chang, Sota, & Grills, 2004). This is due to these two items being related to conditional self-worth, for example one of the items was “if I do not set the highest standards for myself I am likely to end up a second rate person”. With these two items removed, Personal Standards was found to be unrelated to measures of psychopathology and life hassles (DiBartolo et al.). DiBartolo and colleagues argued these items could be a reason for some inconsistency of results in the link between Personal Standards and psychopathology. Thus, it is possible that if the positive perfectionism subscale of the PANPS was similarly examined for potential items that were less “pure” in measuring positive perfectionism, and these items were removed, then a clearer indication of the relationship of the subscale with psychopathology may emerge.

Clearly, future research should examine this further. Another direction for future research would be to administer the BDI-II also to comparison groups (e.g., athlete, controls), not just clinical populations as in this study. This would help to further determine the validity of the PANPS, in particular the positive perfectionism subscale.

Despite these findings, there was some evidence found to support the validity of positive perfectionism. First, some discriminant validity was demonstrated as positive perfectionism was less correlated with the MPS-F (Frost et al., 2002) subscales of Doubts about Actions, Parental Criticism and Parental Expectations. These subscales have been used to indicate negative aspects of perfectionism in various studies (Bieling, Israeli et al., 2004; Bieling & Smith, 2001; Frost & Henderson, 1991; Gould et al., 2002; Hall et al., 1998; Koivula et al., 2002; Rice & Dellwo, 2002). Moreover, results of the Confirmatory Factor Analysis indicated that a two factor solution, consisting of positive and negative perfectionism, was a better fit of the data for the PANPS than one factor of general perfectionism. This provides some evidence for the validity of dividing perfectionism into positive and negative factors. It also suggests that positive and negative perfectionism are not distinct and separate constructs, but are overlapping. This is because an oblique solution was a better fit of the data than an orthogonal solution. An oblique solution was also found to fit the MPS-F better than an orthogonal solution and also a one factor solution. The results of an oblique rather than orthogonal solution fitting the MPS-F better is in contrast to Frost et al. (1990) who used an orthogonal solution. Bieling, Israeli et al. (2004) also found on a Confirmatory Factor Analysis that an oblique solution was a better fit of MPS-F data than an orthogonal solution. This suggests it would be useful for future research to consider oblique solutions for perfectionism measures and research, as subscales of perfectionism measures are highly correlated.

The validity of negative perfectionism was also supported, as the negative perfectionism subscale of the PANPS (Terry-Short et al., 1995) was moderately to highly correlated with Doubts about Actions and Concern over Mistakes on the MPS-F (Frost et al., 1990), and these two subscales of the MPS-F have been taken as indicators of negative perfectionism in a range of studies (Bieling & Smith, 2001; Enns et al., 2001; Frost & Henderson, 1991; Gould et al., 1996; Gould et al., 2002; Hall et al., 1998; Koivula et al., 2002; Rice & Dellwo, 2002). Furthermore, the negative perfectionism subscale of the PANPS was strongly correlated with BDI-II (Beck et al., 1996) scores in this study,

indicating convergent validity, as the subscale is associated with the negative consequence of depression. It is interesting to note the relationship between Parental Expectations and Parental Criticism subscales and negative perfectionism. Parental Criticism was moderately correlated with negative perfectionism (.45 - .55) in all groups while not being correlated at all with positive perfectionism, indicating that Parental Criticism could be something that is associated as a negative factor in perfectionism. Parental Expectations was also moderately correlated with negative perfectionism (.32 - .47), while having a weak significant correlation with positive perfectionism only in the control group (.20). Thus, a history of high expectations and criticism from parents appears to be something that is more related to negative than positive perfectionism. These findings fit with aetiological accounts of perfectionism, which state that parental criticism may be an important aetiological factor in developing negative perfectionism (Enns et al., 2002; Frost et al., 1991; Kawamura et al., 2002; Rice et al., 1996).

In summary, the results of this study provide further support for the internal consistency of the PANPS (Terry-Short et al., 1995), and this is the first study to demonstrate this in clinical and student samples. Furthermore, the results give some evidence for the validity of the total perfectionism scale and positive and negative perfectionism scales of the PANPS. Evidence for the validity of the negative perfectionism subscale appears to be good, whereas evidence for the validity of positive perfectionism was stronger in the athlete and student groups compared to the clinical group. However, it must be noted that the sample size of the clinical group was smaller, which may possibly account for this result. Nevertheless, results of a Confirmatory Factor Analysis were encouraging in providing evidence for two factors of positive and negative perfectionism fitting the data better than one general perfectionism factor. Future research should aim to further establish the validity of the PANPS, for example through examining the convergent validity of the PANPS with different measures of perfectionism such as the MPS-H (Hewitt & Flett, 1991a). It may be useful also to determine the discriminant validity of the PANPS by comparing it to measures not thought to be related to perfectionism, for example, measuring a construct such as impulsiveness. This study indicates some validity of a measure of positive and negative perfectionism however the validity of positive perfectionism needs to be further investigated in clinical samples.

CHAPTER 3

Study 2

Positive and negative perfectionism, rigidity and dichotomous thinking:

A comparison between athlete and clinical groups

3.1 Introduction

Perfectionism has consistently been found to be related to subclinical levels of distress, and elevated levels of perfectionism have been found in anxiety disorders, eating disorders and depression (Shafran & Mansell, 2001). The majority of the literature has focused on perfectionism being a maladaptive or negative factor, but there has been increasing interest in examining perfectionism from both a positive and negative perspective. This is because perfectionism is something that has been recognised as being not only a negative factor, but also something that may help to achieve success, or as Frost and colleagues (1990) have stated, “positive achievement striving”. Most authors in the area have argued that perfectionism consists of two types; positive and negative, although these two types of perfectionism are correlated with each other and as such are best not thought of as polar opposites (Bieling, Israeli et al., 2004).

One of the most obvious groups to examine in regards to positive perfectionism is elite athletes, as athletes are often thought of as possessing perfectionistic qualities (Dunn et al., 2002). Studies examining positive and negative perfectionism in athletes have all utilised the MPS-F (Frost et al., 1990) as the measure of perfectionism. The findings are very consistent across studies, where higher scores on the Concern over Mistakes subscale of the MPS-F is related to higher anxiety, whereas higher scores on the Personal Standards subscale is related to higher self-confidence (Frost & Henderson, 1991; Hall et al., 1998; Koivula et al., 2002). In further support of these findings, successful medal winning Olympic athletes have been shown to score high on Personal Standards, but low on Concern Over Mistakes (Gould et al., 2002). Consequently, the Personal Standards subscale is seen as reflecting positive perfectionism, whereas the Concern Over Mistakes subscale as reflecting negative perfectionism (Frost & Henderson, 1991).

Other researchers have also utilised the MPS-F (Frost et al., 1990) as well as the MPS-H (Hewitt & Flett, 1991a) to investigate positive and negative perfectionism in samples of University students. Results have indicated negative perfectionists had higher scores on anxiety, depression and maladjustment, whereas positive perfectionists had lower scores on anxiety, depression, and had better adjustment (e.g., Bieling & Smith, 2001; Enns et al., 2002; Frost et al., 1990; Rice & Dellwo, 2002). Furthermore, positive perfectionism was uniquely associated with positive emotions, whereas negative perfectionism had no significant association with positive emotions (Bieling & Smith, 2001). Consequently, these studies reviewed with athletes and university students have shown consistent results with positive perfectionism being associated with higher confidence and adjustment and negative perfectionism being associated with higher anxiety and depression.

While these studies utilising the multidimensional perfectionism scales (MPS-F; Frost et al., 1990; MPS-H, Hewitt & Flett, 1991a) have found consistent results, the MPS scales were designed as multidimensional measures of several aspects of perfectionism, rather than being *specifically* designed with the purpose to distinguish between positive and negative perfectionism. Two measures that have been specifically designed to distinguish between positive and negative perfectionism are the Perfectionism Questionnaire (PQ; Rheume et al., 1995) and the Positive and Negative Perfectionism Scale (PANPS; Terry-Short et al., 1995). Using the PQ, negative perfectionists have been found to take longer to complete problem-solving tasks and have higher subclinical OCD symptoms than positive perfectionists (Rheume, Freeston, et al., 2000).

Another measure of positive and negative perfectionism is the PANPS (Terry-Short et al., 1995). Terry-Short and colleagues used the PANPS to compare across a clinical sample of individuals with eating disorders and depression, an athlete sample and a control sample. They found that on scores of overall perfectionism, the clinical and athlete groups had higher scores than controls, however the clinical group had a higher overall perfectionism score than the athletes. Terry-Short et al. discovered that the athletes scored highest on the positive perfectionism subscale, whereas the eating disordered group scored the highest on negative perfectionism. The PANPS has also been used in other samples of elite athletes, without comparison groups. The negative perfectionism subscale was found to relate to disturbed eating attitudes in athletes (Haase et al., 1999) as

well as higher social physique anxiety (Haase et al., 2002), whereas positive perfectionism had no relationship with either disturbed eating or anxiety.

In summary, there appears to be differences between two types of perfectionism, where across a range of studies with athletes and students, positive perfectionism has consistently been found to be related to less psychopathology, while negative perfectionism has consistently been found to relate to higher psychopathology. However, the important question still remains as to *why* there differences between the two types of perfectionism. That is, how is it that some individuals can be highly perfectionistic yet have low levels of distress and better adjustment (positive perfectionists), while other individuals can have equally high standards but high levels of anxiety and depression (negative perfectionists)? While some authors have reported reasons, such as positive perfectionists not engaging in self-criticism when they do not meet their standard (Frost et al., 1990), no research has investigated other variables by which positive and negative perfectionists might vary. If this was understood, it could help to account for differences in the types of perfectionism. If theoretically and clinically related constructs to perfectionism were examined, then differences in these related constructs would help to explain why there are differences between positive and negative perfectionism.

Rigidity is a cognitive construct that is theorised to be a key characteristic of perfectionists. Despite this, only one study has investigated rigidity and perfectionism (Ferrari & Mautz, 1997). Ferrari and Mautz administered Schaie and Parham's (1975) attitudinal flexibility questionnaire to undergraduate students. They demonstrated significant correlations between attitude flexibility and the MPS-H (Hewitt & Flett, 1991a) *self-oriented* perfectionism ($r = -.43$), *socially-prescribed* perfectionism ($r = -.19$) and *other-oriented* perfectionism ($r = -.19$) subscales. These relationships indicated that the more flexible the individual's attitudes were, the lower their level of perfectionism. In other words, higher rigidity relates to higher perfectionism. Rigidity was also found to be a significant predictor of both *other-oriented* and *socially-prescribed* perfectionism on the MPS-H. It is not clear, however, how rigidity relates to positive and negative perfectionism. While it appears that high rigidity may be related to both positive and negative aspects of perfectionism, it is difficult to determine whether this could be to a different degree as the MPS-H does not specifically distinguish between positive and negative perfectionism. For example, is it that rigidity in cognitions is more strongly

related to negative perfectionism than positive perfectionism? To date no studies have examined the relationships between levels of rigidity and positive and negative perfectionism. Determining if there is a different magnitude of relationships between rigidity and positive and negative perfectionism may help to explain differences in these subcomponents of perfectionism.

Similarly, dichotomous thinking is another cognitive variable that has been related theoretically to perfectionism. Shafran et al. (2002), in their model of clinical perfectionism, view dichotomous thinking as a central factor that maintains perfectionism. They suggest that individuals make decisions in a dichotomous way as to whether they believe they have met their high personal standard (i.e., view it as either a complete success or a complete failure). However, few studies to date have examined the link between dichotomous thinking and perfectionism. Shafran and Riley (2005) found in their qualitative study of individuals with clinical perfectionism that the majority of the sample “frequently reported setting dichotomous rules and rigidly adhering to them” (p. 372). They found that dichotomous thinking therefore was present in most people interviewed who had clinical perfectionism. However, to date no studies have examined the link between dichotomous thinking and perfectionism in a quantitative study. Furthermore, no studies have examined the relationship between dichotomous thinking and positive and negative aspects of perfectionism. It would be useful to determine if dichotomous thinking might also be another factor that could account for different levels of positive and negative perfectionism across comparison groups.

Furthermore, while one study has compared positive and negative perfectionism across groups high and low in these types of perfectionism, namely clinical groups compared with athletes (Terry-Short et al., 1995), this study did not include a wide range of clinical disorders, only depression and eating disorders. It would be useful therefore to investigate a wider range of diagnostic groups, as this would be more of a representative sample of general clients seen in a clinical setting. Furthermore, using a combined sample with a range of diagnoses is essentially taking a “transdiagnostic” approach (Fairburn et al., 2003; Harvey et al., 2004). Given that perfectionism is a common factor that cuts across diagnostic categories (Fairburn et al.), it makes sense to examine it in a mixed diagnosis sample. In addition, a general sample would have the advantage of including diagnostic groups that have not yet been studied with regards to their level of

perfectionism. This includes Generalised Anxiety Disorder (GAD) and Post-Traumatic Stress Disorder (PTSD), to determine if these diagnoses have a similar level of perfectionism to other anxiety disorders and depression.

Therefore, this study aimed to compare overall perfectionism, positive and negative perfectionism, dichotomous thinking and rigidity across three groups; a clinical group with a wide range of anxiety disorders and depression, an athlete group and a control group. The hypotheses for the study are outlined below. Hypotheses 1-3 are predictions based on the findings of Terry-Short et al. (1995).

H1. On scores of overall perfectionism it is predicted that there will be a significant difference where; clinical group > athletes > controls

H2. On scores of positive perfectionism it is predicted there will be a significant difference where; athletes > controls > clinicals

H3. On scores of negative perfectionism it is predicted that there will be a significant difference where; clinicals > controls > athletes

Hypothesis 4 is based on indications in the literature that rigidity may be a significant part of perfectionism, and the findings of Ferrari and Mautz (1997) where rigidity was a significant predictor of perfectionism.

H4. On scores of rigidity it is predicted that there will be a significant difference where; clinicals > athletes > controls

Hypothesis 5 is based on the literature reviewed, and the model of Shafran et al. (2002) that has suggested dichotomous thinking is an important part of perfectionism.

H5. On scores of dichotomous thinking it is predicted there will be a significant difference where; clinicals > athletes > controls

Hypotheses 6 – 9 are based on the findings reviewed of the importance of rigidity and dichotomous thinking (e.g., Ferrari & Mautz, Shafran et al., 2002). It was hypothesised that rigidity and dichotomous thinking may be related to both positive and negative

perfectionism, but there would be weak associations with positive perfectionism and strong associations with negative perfectionism. This is because it was hypothesised that a stronger relationship between rigidity and dichotomous thinking with negative perfectionism may account for some of the differences in positive and negative perfectionism. Because the lower scores on the rigidity questionnaire indicate higher cognitive rigidity, clarification of the meaning of a negative correlation is outlined.

H6

- a) In all groups rigidity will have a small, significant negative correlation with positive perfectionism (i.e., higher rigidity will be related to higher positive perfectionism)
- b) In all groups rigidity will predict a significant amount of variance in positive perfectionism, in the direction outlined in Hypothesis 6a.

H7

- a) In all groups dichotomous thinking will have a small, significant positive correlation with positive perfectionism
- b) In all groups dichotomous thinking will predict a significant amount of variance in positive perfectionism, in the direction outlined in Hypothesis 7a.

H8

- a) In all groups rigidity will have a large, significant negative correlation with negative perfectionism (i.e., higher rigidity will be related to higher negative perfectionism)
- b) In all groups rigidity will predict a significant amount of variance in negative perfectionism, in the direction outlined in Hypothesis 8a.

H9

- a) In all groups dichotomous thinking will have a large, significant positive correlation with negative perfectionism
- b) In all groups dichotomous thinking will predict a significant amount of variance in negative perfectionism, in the direction outlined in Hypothesis 9a.

3.2 Method

3.2.1 Participants

The total sample consisted of 252 individuals which comprised 111 athletes (73 males, 38 females), 101 student controls (77 females, 24 males) and 40 clinical participants (29 females, 11 males). The sample was described in Study 1, so the description will not be repeated in this study.

3.2.2 Measures

The Multidimensional Perfectionism Scale (MPS-F; Frost et al., 1990)

The MPS-F is a 35 item self-report measure of perfectionism. It was described extensively in Study 1.

The Positive and Negative Perfectionism Scale (PANPS; Terry-Short et al., 1995)

The PANPS is a 40 item self-report measure of positive and negative perfectionism that was described extensively in Study 1.

The Dichotomous Thinking Scale (DTS; Byrne, Cooper, & Fairburn, 2004)

This short self-report measure determines the level to which participants engage in dichotomous thinking. The DTS is a 16-item scale that consists of two sections; 6 items that relate specifically to food, dieting and weight, and 10 items that relate to more general issues where dichotomous thinking occurs. It was developed with a sample of 126 obese women. The items from the DTS were developed through the authors examining items from a range of scales that they believed reflected the dichotomous thinking construct (Byrne et al., 2004). These scales included the Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978), an eating disorders measure (EDI; Garner et al., 1983), perfectionism scales (BPS; Burns, 1980a; MPS-F; Frost et al., 1990; MPS-H; Hewitt & Flett, 1991a) and Tolerance of Ambiguity Scales (Budner, 1962; MacDonald, 1970). However it is very important to note that none of the DTS items replicated items from these measures (Byrne et al.).

There were 24 items included first in a pilot study of a separate group of obese women participating in a treatment trial, which were then reduced down to the 16 items (Byrne et al., 2004). The 6 items relating to food and weight were excluded in this study, thus only the 10 general items were used. The 10 general items have been reported to have satisfactory internal consistency in a sample of obese women ($\alpha = 0.75$) (Byrne et al.). To further establish the internal consistency of the DTS because internal consistency had only been established in the original study (Byrne et al.), alpha co-efficients for the DTS were calculated in this study. There was satisfactory internal consistency in the total sample, as $\alpha = .81$. There was also satisfactory internal consistency in the control group, $\alpha = .85$, and clinical group, $\alpha = .88$. The internal consistency was slightly lower in the athlete group but at a marginally acceptable rate, $\alpha = .69$.

To date there have been no studies examining the validity of the DTS. A factor analysis of the entire 16 item scale has been conducted but the results have not been published (S.M. Byrne, personal communication, August 1st, 2003). For the entire scale there were four factors identified that accounted for 64% of the variance. Factor 1 accounted for 33% of the variance, and the items it included from the 10-item general scale (see Appendix F) were items 2, 3, 4, 5 and 6. Factor 2 accounted for 12% of the variance and included items 7, 9 and 10. Factor 3 accounted for 10% of the variance and included item 1. Factor 4 accounted for 9% of the variance and included item 8 (S.M. Byrne, personal communication, August 1st, 2003). However, these factors were not identified and labelled as to what they might represent, and unfortunately there are still no publications to date on the factor structure of the DTS.

Despite the investigation of the factor structure of the DTS, it was treated in this study as a unidimensional measure of dichotomous thinking as only the total score from the scale was investigated. The DTS is answered on a four point scale ranging from “Not at all true of me” to “Very true of me” and is scored by giving a value of 1-4 to each answer, with 4 equalling the most dichotomous response to an item. There are 2 items that are reverse scored. The scale ranges from a minimum of 10 to maximum of 40. Higher scores indicate a higher degree of dichotomous thinking. An example of an item is “I think of myself as doing things either very well or very badly”. See Appendix F for a copy of the DTS.

Rigidity Questionnaire – (RQ; Schaie & Parham, 1975)

A measure of attitudinal flexibility was used to measure rigidity. A 75-item self-report measure of attitudinal flexibility is one part of the Test of Behavioural Rigidity (Schaie & Parham, 1975). This measure was reduced to a 22-item questionnaire, as the 53 filler items were not included. The filler items were included to assess for issues such as random responding. An example of a filler item is; “Every family owes it to the city to keep their sidewalks cleared in winter and their lawns mowed in the summer”. The filler items are not used in the scoring of the scale, only the 22 items that assess rigidity. The questionnaire was chosen as it is one of the only questionnaire measures of rigidity available (Schultz & Searleman, 2002), and it is the only measure of rigidity that has been investigated in relation to perfectionism (Ferrari & Mautz, 1997).

The questionnaire is proposed to measure the ability to “perceive and adjust to new and unfamiliar surroundings and situations” (Ferrari & Mautz, 1997, p. 3). The measure has been shown to have good reliability and acceptable validity (Panek, Partlo, & Romine, 1993; Panek, Stoner, & Beystehner, 1983; Schaie & Parham, 1975). Answers are given on a true/false scale. The score ranges from a minimum of 1 to a maximum of 22. Lower scores indicate that the person is more rigid. An example of an item is; “Once I have made up my mind I seldom change it”. See Appendix G for a copy of the Rigidity Questionnaire.

Structured Clinical Interview for DSM-IV axis I disorders (SCID-I/P, Version 2.0; First et al., 1996) and Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II, Version 2.0; First et al., 1994)

The SCID and SCID-II were used to assess which DSM-IV diagnoses the clinical participants met, and are described in Study 1.

Beck Depression Inventory- Second Edition (BDI-II; Beck et al., 1996)

The BDI-II was used to assess depression and is described in Study 1.

3.2.3 Procedure

The participants were the same sample as described in Study 1. The data collection procedure was also described in Study 1 so will not be repeated here.

3.3 Results and Discussion

3.3.1 General Data Screening

The data were screened for errors in data entry and assessed for normality and outliers through SPSS, following the recommendations of Tabachnick and Fidell (2001). Data screening for the PANPS (Terry-Short et al., 1995) and MPS-F (Frost et al., 1990) were described in Study 1. Data screening for the DTS (Byrne et al., 2004) and Rigidity Questionnaire (Schaie & Parham, 1975) will be reported here. The frequencies for the DTS and Rigidity Questionnaire were examined in each of the three groups. All scores were within the expected ranges so there were no obvious errors in data entry.

Clinical group data screen

The DTS exhibited a normal distribution when histogram and stem and leaf plots were examined, and there were no outliers detected on a boxplot. The Rigidity Questionnaire also exhibited a normal distribution when a histogram and stem and leaf plot were examined, and also had no outliers on a boxplot.

Athlete group data screen

Histograms and stem and leaf plots were examined for the DTS which showed a normal distribution, and there were no outliers on a boxplot. The Rigidity Questionnaire also showed a normal distribution with no outliers.

Student control group data screen

The DTS was examined for normality using histograms and stem and leaf plots, and a skewed distribution was found towards lower scores on the DTS. There was also one outlier detected on a boxplot with a high score on the DTS. The Rigidity Questionnaire was also found to have a skewed distribution, and the skew was towards higher scores, which indicate a lower degree of rigidity. There was also one outlier detected on Rigidity Questionnaire scores, which was a low score, and this indicates a high degree of cognitive rigidity. To determine the influence of outliers, all analyses that are described in this study were run separately with these two control group outliers removed. Removal of outliers made no difference to any of the analyses. Therefore, it was decided to retain the outliers in the sample.

3.3.2 Descriptive data on perfectionism in specific primary diagnostic groups

Due to the small number of cases in each of the separate diagnostic groups, comparisons were made across the total clinical sample rather than by diagnostic group. However, Table 13 outlines mean scores in each diagnosis.

Table 13

Means (and standards deviations) of total MPS-F score, positive perfectionism and negative perfectionism by primary diagnosis

Diagnosis	N	MPS-Total	Positive P	Negative P
OCD	15	83.5 (23.8)	69.9 (11.5)	60.7 (15.5)
Depression	8	87.0 (16.1)	72.6 (7.7)	65.1 (15.8)
GAD	8	81.7 (21.9)	70.1 (8.8)	66.6 (18.7)
Social phobia	4	81.2 (19.4)	70.0 (7.5)	69.0 (20.3)
Panic disorder	2	62.0 (21.2)	59.0 (18.4)	42.3 (12.0)
Dysthymia	2	66.0 (11.3)	65.5 (7.7)	49.5 (9.2)
PTSD	1	95.0	88.0	78.0

It can be seen from Table 13 that there was a high level of perfectionism across most of the specific anxiety disorders and depression. The only two diagnoses that appeared to have a somewhat lower level of perfectionism were panic disorder and dysthymia. However, due to the small sample size this is merely a description and is probably not an important difference. Furthermore, these four participants were not identified as multivariate outliers which justifies retaining them in the sample.

3.3.3 Comparisons across groups on measures

The mean scores on each of the measures can be seen in Table 14.

Table 14

Mean (and Standard Deviation) of scores on positive and negative perfectionism, overall perfectionism, rigidity and dichotomous thinking

Measure	Clinical (n = 40)	Athlete (n = 111)	Control (n = 101)
MPS total	82.35 (SD = 20.35)	70.27 (SD = 13.04)	74.87 (SD = 17.82)
PANPS – Pos.	70.20 (SD = 10.19)	74.41 (SD = 9.15)	74.35 (SD = 10.19)
PANPS – Neg.	62.57 (SD = 16.63)	48.24 (SD = 10.93)	53.02 (SD = 13.16)
Rigidity	11.35 (SD = 4.65)	11.03 (SD = 4.09)	13.32 (SD = 4.41)
DTS	22.22 (SD = 7.47)	19.71 (SD = 4.79)	19.69 (SD = 6.40)

Note: PANPS-Pos = Positive perfectionism subscale of PANPS, PANPS-Neg = Negative perfectionism subscale of PANPS

There were several factors that were considered when choosing the most appropriate analysis to examine group differences on each of the measures. It was first considered whether to use Analysis of Variance (ANOVA) to examine differences between groups, but this was ruled out by the large differences in group size between the clinical group (n = 40), compared to the athlete (n = 111), and control (n = 101) groups. The validity of ANOVA is dependent on meeting several assumptions, one of these including homogeneity of variance. Tabachnick and Fidell (2001) state that "...as group sizes become more discrepant, the assumption of homogeneity of variance is more important...the F test is too liberal, leading to increased type 1 error rate and an inflated alpha level" (p. 46). To determine if using the total sample with disparate group sizes would violate the homogeneity of variance assumption, a series of paired t-tests were conducted on all combinations of groups and measures versus each other. It was found that for the majority of comparisons Levene's test for equality of variance was significant, indicating that the homogeneity of variance assumption was violated.

A second option that was considered was to attempt to match groups for size of 40 participants in each group by attempting to match the athlete and control participants as closely as possible to the clinical group. A matched sample was trialled and while it was possible to match successfully on group size and gender ratio, it was not possible to

match the groups on age. Analysis of Variance examining age in the matched groups indicated a significant main effect for group, $F(2,117) = 5.94, p = .003$. Post-hoc analysis using Tukey Honestly Significant Difference (HSD) revealed that the students were significantly younger than the clinical group, $p = .01$, and the athlete group, $p = .009$. It was not possible to match older participants from the control group, as the majority of undergraduate students were young. Consequently, attempting to match groups was not successful. Even if groups could be matched successfully, forcing a distortion of the representativeness of gender, age and number of participants may then distort understanding of the relationships of the independent variables to perfectionism. It can be argued that it is better to reflect subgroup numbers as they naturally occur in non-experimental research rather than forcing a distortion through matching for cell size so ANOVA can be performed.

For these reasons, the appropriate analysis for non-experimental design with unequal cell sizes is hierarchical multiple regression (Keppel & Zedeck, 1989). Hierarchical multiple regressions were used, and variables were entered in the following order for each analysis; Step 1: age, Step 2: gender, Step 3: group was contrast coded and the vectors entered. Planned comparisons were conducted on the matrix of vector correlation with each dependent variable adjusting for the omnibus residual variance. Due to the risk of inflated type 1 error as a result of multiple planned comparisons when comparing group differences, alpha level was adjusted and made more stringent using a modified Bonferroni correction. This modification resulted in an alpha level of .033, and this was used as the per comparison alpha level for all group comparisons.

Overall perfectionism on MPS-F

When the total score on the MPS-F was the criterion variable, age on the first step did not statistically significantly explain criterion variance, R^2 change = .006, F change (1,250) = 1.54, $p = .21$. Gender, however, did add significant incremental variance, R^2 change = .017, F change (1,249) = 4.39, $p = .03$. Specifically, females were higher on total perfectionism scores than males, $t(249) = 2.096, p = .03$. There was a main effect for group, after controlling for age and gender, R^2 change = .045, F change (2, 247) = 6.02, $p = .003$. Group differences were explored by planned comparisons using a modified Bonferroni correction (alpha = .033). The clinical group had significantly higher total perfectionism scores than the athletes, $F(1,247) = 14.65, p = .0001$. There was no

significant difference between the clinical and control group on the total MPS-F score, $F(1, 247) = 2.01, p = .169$. There was also no significant difference between the control and athlete groups, $F(1,247) = 3.69, p = .06$. Therefore, Hypothesis 1 which predicted the clinical group would have the highest level of total perfectionism, the athlete group a medium level of perfectionism and control group the lowest level of perfectionism was only partially supported. This is because the only significant difference was between the clinical group having higher total perfectionism scores than the athletes.

Positive perfectionism

With positive perfectionism as the criterion variable in a hierarchical regression, age accounted for a significant proportion of variance when entered on the first step, R^2 change = .03, F change (1,250) = 8.73, $p = .003$. Specifically, younger age was significantly related to higher positive perfectionism scores, $t(249) = -2.95, p = .003$. Gender added marginal significance to the explanation of positive perfectionism, R^2 change = .015, F change (1,249) = 3.86, $p = .05$. Males were marginally significantly higher in positive perfectionism than females, $t(247) = -2.46, p = .05$. After age and gender were controlled for, there was no main effect for group, R^2 change = .01, F change (2,247) = 2.01, $p = .13$. Thus, Hypothesis 2, which predicted group differences in positive perfectionism, was not supported.

Negative perfectionism

When age was added on the first step, it did not account for a significant proportion of variance in the criterion variable of negative perfectionism, R^2 change = .005, F change (1,250) = 1.53, $p = .22$. Gender did add significant incremental variance, R^2 change = .04, F change (1,249) = 11.48, $p = .001$. Females were significantly higher in negative perfectionism than males, $t(247) = 3.38, p = .001$. There was a significant main effect for group, R^2 change = .09, F change (2,247) = 14.44, $p = .0001$. Planned comparisons at alpha level .033 were conducted. The clinical group had significantly higher negative perfectionism than athletes, $F(1,247) = 35.55, p = .0001$. The clinical group also had significantly higher negative perfectionism than the student control group, $F(1,247) = 5.77, p = .02$. The athletes had significantly lower negative perfectionism than the students, $F(1,247) = 7.99, p = .008$. As a result, Hypothesis 3 that predicted the clinical group would have the highest level of perfectionism, the control group an average level of

negative perfectionism and athletes the lowest level of negative perfectionism, was supported.

Rigidity

When rigidity was the criterion variable, age on the first step did not statistically significantly explain criterion variance, R^2 change = .007, F change (1,250) = 1.72, $p = .19$. Gender also did not add significantly to variance in rigidity, R^2 change = .001, F change (1,249) = .26, $p = .60$. There was a main effect of group however after controlling for age and gender, R^2 change = .06, F change (2,247) = 7.64, $p = .001$. Planned comparisons using the adjusted alpha level of .033 were conducted. There was no significant difference in rigidity between the clinical and athlete group, $F(1, 247) = 2.69$, $p = .11$. The clinical group were significantly more rigid than the student group, $F(1,247) = 10.79$, $p = .001$. The athletes were significantly more rigid than the students, $F(1,247) = 14.73$, $p = .0001$. Hypothesis 4, which predicted the clinical group, would have the highest rigidity, athletes a medium level of rigidity and controls the lowest level of rigidity was only partially supported however. This is because while the clinical group were more rigid than students, and the athlete group were also more rigid than students, there were no significant differences in rigidity between the clinical and athlete groups.

Dichotomous thinking

Age on the first step was not significantly related to the criterion variable of DTS, R^2 change = .001, F change (1,250) = .32, $p = .57$. Gender also did not add significantly to variance in DTS scores, R^2 change = .004, F change (1,249) = .97, $p = .32$. There was a main effect of group after controlling for age and gender, R^2 change = .03, F change (2,247) = 3.54, $p = .03$. Group differences were explored using planned comparisons with the more stringent alpha level of .033. However, when planned comparisons were conducted with this alpha level, none of the group comparisons were significant. There was no significant difference between the clinical and athlete group on DTS scores, $F(1,247) = 3.55$, $p = .06$. There was also no significant difference between the clinical and control group, $F(1,247) = 3.55$, $p = .06$. Finally, there were also no differences between the control and athlete groups, $F(1,247) = .0001$, $p = .98$. Therefore, Hypothesis 5, which predicted group differences in dichotomous thinking, was not supported. It is worth noting that the trend was in the direction predicted of the clinical group having

higher DTS scores than the control and athlete groups, yet this was not significant, as outlined $p = .06$ in both comparisons.

3.3.4 Correlations between dichotomous thinking, rigidity, positive perfectionism and negative perfectionism

To examine the nature of relationships between dichotomous thinking, rigidity and positive and negative perfectionism, correlations among measures were conducted. Before correlational analyses were performed, assumption testing for correlation was completed. The testing of linearity and homoscedasticity was examined in each group separately by examining scatterplots between the variables. All scatterplots examined showed a linear relationship between variables. The scatterplots also indicated that the scores were clustered uniformly around the regression line, so the assumption of homoscedasticity had not been violated in the correlations.

To determine whether to perform correlations in the total sample ($n = 252$) or in each group separately, a LISREL analysis was performed to examine if correlation matrices differed significantly between the groups. Paired comparisons to test equality were performed. The athlete and control group had significantly different correlation matrices, as the Minimum Fit Function *chi-square* (15) = 34.77, $p = .003$, and the Normal Fit Weighted Least Squares *chi-square* (15) = 33.49, $p = .004$. The clinical and control group also had significantly different correlation matrices; Minimum Fit Function *chi-square* (15) = 34.63, $p = .003$ and Normal Theory Weighted Least Squares *chi-square* (15) = 34.66, $p = .003$. Finally, the clinical and athlete group were also significantly different on correlation matrices; Minimum Fit Function *chi-square* (15) = 37.26, $p = .001$ and Normal Theory Weight Least Squares *chi-square* (15) = 42.85, $p = .0001$. These analyses all indicated significantly different correlations between groups, therefore correlation matrices and regression analyses were conducted for each group separately, as it would not be justified to use one correlation analysis for the total sample of $n = 252$. The correlation matrix for each group can be seen in a combined format in Table 15.

Table 15

Correlations between PANPS, MPS-F, DTS, Rigidity, age and gender in clinical, athlete and control groups

Measure	1	2	3	4	5	6	7
Clinical, n = 40							
1. Positive P	-	.49**	.56**	.50**	-.29	-.19	-.07
2. Negative P		-	.84**	.80**	-.50**	-.03	.14
3. DTS			-	.84**	.53**	-.05	.15
4. MPS-F				-	.56**	-.06	.02
5. Rigidity					-	-.06	-.06
6. Age						-	.30
7. Gender							-
Athlete, n = 111							
1. Positive P	-	.40**	.26**	.32**	-.40**	-.30**	-.03
2. Negative P		-	.55**	.74**	-.45**	-.20*	.17
3. DTS			-	.53**	.45**	-.14	.14
4. MPS-F				-	.43**	-.18	.09
5. Rigidity					-	-.15	.04
6. Age						-	-.15
7. Gender							-
Control, n = 101							
1. Positive P	-	.17	.19	.38**	-.34**	-.05	-.09
2. Negative P		-	.63**	.80**	-.57**	.03	.09
3. DTS			-	.63**	.60**	-.05	-.07
4. MPS-F				-	.51**	.02	.10
5. Rigidity					-	.06	-.12
6. Age						-	-.14
7. Gender							-

* p < .05 ** p < .01 (2-tailed)

The majority of measures were significantly correlated with each other at the .01 level as indicated (2-tailed). Considering demographic variables first, it can be seen that the only significant relationships were between age and both positive and negative perfectionism in the athlete group. These correlations indicated that younger age was related to higher perfectionism in athletes.

It can be seen in Table 15 that dichotomous thinking was significantly and moderately to strongly correlated with negative perfectionism in the clinical ($r = .84$), athlete ($r = .55$) and control ($r = .63$) sample. Thus, Hypothesis 9a was supported. The results of correlations between dichotomous thinking and positive perfectionism are interesting as they were not significantly correlated in the control sample ($r = .19$), but were in the athlete ($r = .26$), and clinical ($r = .56$) samples. Hypothesis 7a which predicted small but significant correlations between dichotomous thinking and positive perfectionism was partially supported, although there was a strong correlation in the clinical sample. Overall, these findings indicate that dichotomous thinking is related more strongly to negative perfectionism than positive perfectionism, particularly in the athlete and control groups. However, in the clinical group it is related moderately to strongly with both positive and negative perfectionism.

When examining rigidity, it is important to note that negative correlations indicate higher rigidity. This is because a lower score on the Rigidity Questionnaire means higher cognitive rigidity. Table 15 illustrates that rigidity is correlated with total perfectionism on the MPS-F to a similar degree between the clinical ($r = -.56$), athlete ($r = -.45$) and control ($r = -.51$) groups. Rigidity was also correlated to a similar degree with negative perfectionism between the clinical ($r = -.50$), athlete ($r = -.45$) and control ($r = -.57$) groups. Consequently, Hypothesis 8a which predicted a strong relationship between negative perfectionism and rigidity was supported. Rigidity was significantly correlated with positive perfectionism in the athlete ($r = -.40$) and control ($r = -.34$) groups, but not in the clinical group ($r = -.29$). However, this correlation was in a similar direction. Thus, Hypothesis 6a which predicted a significant small correlation between rigidity and positive perfectionism was partially supported, although there was not a large difference in the magnitude of correlations between rigidity with positive and negative perfectionism. Table 15 also indicates that there was a significant relationship between dichotomous thinking and rigidity in all groups to a similar magnitude, with correlations

ranging from $r = -.45$ to $r = -.60$. This was in the direction that as dichotomous thinking increased, the degree of rigidity increased.

3.3.5 Predictors of positive and negative perfectionism

Multiple regression analyses were conducted to determine which variables could predict positive and negative perfectionism. Testing of regression assumptions of normality, linearity and homoscedasticity have been described in earlier sections of this study. Separate hierarchical regression analyses on unordered sets of predictors were conducted to investigate the influence of age, gender, dichotomous thinking and rigidity on the criterion variables of positive and negative perfectionism. Variables were entered in the following order; step 1: age; step 2: gender; step 3: dichotomous thinking and rigidity. The reason for this order of entry was to follow the usual practice of entering demographic variables first in the regression equation. Dichotomous thinking and rigidity were entered simultaneously on the same step as there was no basis to argue which variable was more important and should be entered before the other. To determine the unique contribution of dichotomous thinking and rigidity, squared semi-partial correlation co-efficients were examined. The results of the regression analysis for positive perfectionism in each group will be reported first, followed by negative perfectionism.

Positive perfectionism

Results of the regression analysis for positive perfectionism in the clinical group can be seen in Table 16.

Table 16

Summary of hierarchical regression analysis for variables predicting positive perfectionism in clinical sample, n = 40

Variable	<i>B</i>	<i>SE B</i>	<i>Beta</i>	<i>R² change</i>
Step 1				.03
Age	-.14	.12	-.19	
Step 2				.00
Age	-.14	.13	-.18	
Gender	-.47	3.8	-.02	
Step 3				.32
Age	-.01	.11	-.12	
Gender	-2.8	3.3	-.12	
DTS	.78	.22	.57**	
Rigidity	.01	.35	.01	

Note: *B* = unstandardised regression co-efficient; *SE B* = standard error of the unstandardised regression co-efficients; *Beta* = standardised regression co-efficients

** $p = <.01$

In combination all independent variables accounted for a significant proportion of variance in the regression equation when positive perfectionism was the criterion, $R^2 = .59$, $F(4,35) = 4.90$, $p = .003$. On step 1, age was not found to explain criterion variance, $R^2 = .037$, F change (1,38) = 1.45, $p = .23$. On step 2, gender was not found to explain incremental variance, $R^2 = .037$, F change (1,37) = .01, $p = .90$. On step 3, DTS and rigidity added significantly to the variance accounted for in positive perfectionism, $R^2 = .359$, F change (3,35) = 8.80, $p = .001$. An examination of the unique variance explained in the final model revealed that dichotomous thinking was the only significant predictor of positive perfectionism in the clinical group (see Table 16). As indexed by the squared semi-partial correlation co-efficient (sr^2), dichotomous thinking accounted for a unique 22% of variance ($sr^2 = .22$). As seen in Table 16, rigidity was not a significant predictor of positive perfectionism ($sr^2 = .0001$). Consequently, Hypothesis 6b was not supported in the clinical group, as rigidity was not a significant predictor of positive

perfectionism. Hypothesis 7b, which predicted dichotomous thinking would account for a significant amount of variance, where higher dichotomous thinking is related to higher positive perfectionism, was supported in the clinical group.

The results of the regression analysis for positive perfectionism in the athlete group can be seen in Table 17.

Table 17

Summary of hierarchical regression analysis for variables predicting positive perfectionism in athlete sample, n = 111

Variable	<i>B</i>	<i>SE B</i>	<i>Beta</i>	<i>R² change</i>
Step 1				.09
Age	-.28	.08	-.30**	
Step 2				.006
Age	-.29	.08	-.31**	
Gender	-1.5	1.7	-.08	
Step 3				.13
Age	-.24	.08	-.25**	
Gender	-1.3	1.7	-.06	
DTS	.17	.18	.09	
Rigidity	-.72	.21	-.32**	

Note: *B* = unstandardised regression co-efficient; *SE B* = standard error of the unstandardised regression co-efficients; *Beta* = standardised regression co-efficients
 ** $p < .01$

In combination all independent variables in the equation accounted for a significant proportion of variance in the criterion variable of positive perfectionism, $R^2 = .48$, $F(4,106) = 8.06$, $p = .0001$. On step 1, age significantly explained criterion variance, $R^2 = .091$, F change (1,109) = 10.86, $p = .001$. On step 2, gender did not explain incremental variance, $R^2 = .097$, F change (1,108) = .75, $p = .38$. On step 3, DTS and rigidity added significantly to the variance accounted for, $R^2 = .23$, F change (2,106) =

9.43, $p = .0001$. Examination of the unique variance explained in the final model showed dichotomous thinking was not a significant predictor of positive perfectionism in the athletes, ($sr^2 = .0062$). However, rigidity was a significant predictor, and rigidity accounted for a significant 8% of variance in positive perfectionism in the athletes ($sr^2 = .08$), with all other variables in the model. As seen in Table 17, age predicted a significant 9% of unique variance in positive perfectionism in athletes, where younger age was related to higher positive perfectionism. Hypothesis 6b, which predicted rigidity would account for a significant amount of variance in positive perfectionism, in the direction of higher rigidity being related to higher positive perfectionism, was supported in the athletes. However, Hypothesis 7b which predicted dichotomous thinking would account for a significant amount of variance in positive perfectionism was not supported in the athletes.

The results of the regression analysis for positive perfectionism in the control group can be seen in Table 18.

Table 18

Summary of hierarchical regression analysis for variables predicting positive perfectionism in control sample, n = 101

Variable	<i>B</i>	<i>SE B</i>	<i>Beta</i>	<i>R</i> ² change
Step 1				.003
Age	-.07	.14	-.05	
Step 2				.01
Age	-.09	.14	-.06	
Gender	2.5	2.4	-.10	
Step 3				.12
Age	-.07	.13	-.05	
Gender	-3.7	2.3	-.15	
DTS	.08	.19	-.05	
Rigidity	-.89	.28	-.38**	

Note: *B* = unstandardised regression co-efficient; *SE B* = standard error of the unstandardised regression co-efficients; *Beta* = standardised regression co-efficients

** $p = <.01$

In combination all independent variables accounted for a significant proportion of variance in the regression equation with positive perfectionism as the criterion, $R^2 = .37$, $F(4,96) = 3.8$, $p = .007$. On step 1, age did not significantly explain criterion variance, $R^2 = .003$, F change (1,99) = .25, $p = .61$. On step 2, gender did not explain incremental variance, $R^2 = .01$, F change (1,98) = 1.06, $p = .30$. On step 3, DTS and rigidity significantly added to the variance accounted for in positive perfectionism, $R^2 = .14$, F change (2,96) = 6.86, $p = .002$. Examination of the unique variance explained in the final model indicated dichotomous thinking did not predict unique variance in positive perfectionism in the control group ($sr^2 = -.0019$). Rigidity was the only significant predictor ($sr^2 = .09$), indicating rigidity accounting for 9% of unique variance in positive perfectionism. Hypothesis 6b, which predicted rigidity would account for a significant amount of variance in positive perfectionism was supported in the control group.

Hypothesis 7b was not supported in the control group as dichotomous thinking did not predict positive perfectionism.

Negative perfectionism

Hierarchical regression analyses were conducted on each group separately with the same order of entry as reported for the regressions with positive perfectionism. Table 19 indicates the results for the clinical group.

Table 19

Summary of hierarchical regression analysis for variables predicting negative perfectionism in clinical sample, n = 40

Variable	<i>B</i>	<i>SE B</i>	<i>Beta</i>	<i>R² change</i>
Step 1				.001
Age	-.04	.20	-.03	
Step 2				.03
Age	-.11	.21	-.08	
Gender	6.3	6.2	.17	
Step 3				.68
Age	-.001	.12	.01	
Gender	.90	3.6	.02	
DTS	1.8	.25	.79***	
Rigidity	-.26	.39	-.07	

Note: *B* = unstandardised regression co-efficient; *SE B* = standard error of the unstandardised regression co-efficients; *Beta* = standardised regression co-efficients

** $p < .001$

In combination all independent variables accounted for a significant amount of variance in the equation where negative perfectionism was the criterion, $R^2 = .84$, $F(4,35) = 21.31$, $p = .0001$. On step 1, age was not found to explain criterion variance, $R^2 = .001$, F change (1,38) = .05, $p = .81$. On step 2, gender did not explain incremental variance, $R^2 = .02$,

F change (1,37) = 1.0, p = .32. On step 3, DTS and rigidity added significantly to the variance accounted for in negative perfectionism, R^2 = .71, F change (2,35) = 40.95, p = .0001. Rigidity did not predict a significant amount of variance (sr^2 = .0036).

Consequently, Hypothesis 8b which predicted rigidity would account for significant variance in negative perfectionism was not supported in the clinical group. Dichotomous thinking was the only significant predictor as shown in Table 19, and accounted for a unique 43% of variance in negative perfectionism (sr^2 = .43). Hypothesis 9b that predicted dichotomous thinking would account for unique variance in negative perfectionism was therefore supported in the clinical group.

A hierarchical regression analysis for negative perfectionism in the athlete group can be seen in Table 20.

Table 20

Summary of hierarchical regression analysis for variables predicting negative perfectionism in athlete sample, $n = 111$

Variable	<i>B</i>	<i>SE B</i>	<i>Beta</i>	R^2 change
Step 1				.04
Age	-.23	.10	-.20*	
Step 2				.02
Age	-.20	.10	-.18	
Gender	3.3	2.1	.14	
Step 3				.31
Age	-.10	.09	-.08	
Gender	2.6	1.8	.11	
DTS	.91	.19	.40***	
Rigidity	-.70	.23	-.26**	

Note: *B* = unstandardised regression co-efficient; *SE B* = standard error of the unstandardised regression co-efficients; *Beta* = standardised regression co-efficients

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

In combination all independent variables accounted for a significant amount of variance in negative perfectionism, $R^2 = .61$, $F(4, 106) = 15.99$, $p = .0001$. On step 1, age significantly explained criterion variance, $R^2 = .04$, F change (1,109) = 4.7, $p = .03$. On step 2, however, gender did not account for incremental variance, $R^2 = .06$, F change (1,108) = 2.4, $p = .12$. On step 3, DTS and rigidity added significantly to the variance, $R^2 = .37$, F change (2,106) = 26.68, $p = .0001$. Age was a significant predictor of negative perfectionism in the athletes, accounting for 4% of the variance, where younger age was related to higher perfectionism. However, when DTS and rigidity were entered into the regression equation age was no longer a significant predictor. Rigidity accounted for a small but significant 5% of variance in negative perfectionism ($sr^2 = .05$). Dichotomous thinking was a significant predictor ($sr^2 = .12$), indicating DTS accounted for a significant 12% of the variance in negative perfectionism in the athletes. As a result both Hypothesis 8b and 9b were supported, as higher rigidity and dichotomous thinking predicted higher negative perfectionism in the athletes.

The results of the final regression analysis for negative perfectionism in the control group can be seen in Table 21.

Table 21

Summary of hierarchical regression analysis for variables predicting negative perfectionism in control sample, n = 101

Variable	<i>B</i>	<i>SE B</i>	<i>Beta</i>	<i>R² change</i>
Step 1				.001
Age	.05	.18	.03	
Step 2				.01
Age	.08	.18	.04	
Gender	3.2	3.1	.10	
Step 3				.47
Age	.16	.13	.09	
Gender	3.4	2.3	.11	
DTS	.98	.19	.48***	
Rigidity	-.83	.28	-.28**	

Note: *B* = unstandardised regression co-efficient; *SE B* = standard error of the unstandardised regression co-efficients; *Beta* = standardised regression co-efficients

** $p < .01$, *** $p < .0001$

In combination all independent variables accounted for a significant proportion of variance in the regression equation when negative perfectionism was the criterion, $R^2 = .69$, $F(4,96) = 22.18$, $p = .0001$. On step 1, age did not explain criterion variance, $R^2 = .001$, F change (1,99) = .09, $p = .75$. On step 2, gender was not found to explain incremental variance, $R^2 = .01$, F change (1,98) = 1.08, $p = .30$. On step 3, DTS and rigidity significantly added to the variance, $R^2 = .48$, F change (2,96) = 43.26, $p = .0001$. Table 23 indicates rigidity was a significant predictor, and it accounted for a 5% of unique variance in negative perfectionism in the control group ($sr^2 = .05$). The largest predictor of negative perfectionism in the control group however was dichotomous thinking ($sr^2 = .14$), indicating it accounted for 14% of unique variance. Consequently, both Hypothesis 8b and 9b were supported in the control group, as higher rigidity and dichotomous thinking significantly predicted higher negative perfectionism.

3.4 General Discussion

3.4.1 Differences between groups in perfectionism

3.4.1.1 Overall perfectionism

The results supported the existing wide body of literature on the link between perfectionism and psychopathology, as the clinical group who consisted of a group of individuals with a range of different psychological disorders, had a higher level of overall perfectionism as measured by the MPS-F (Frost et al., 1990) compared to the athlete sample. This further reinforces the already well established results of elevated perfectionism in clinical groups compared to controls using the MPS-F in individuals with social phobia (Lundh & Ost, 2001), OCD (Frost & Steketee, 1997) and panic disorder with agoraphobia (Iketani et al., 2002a). This is the first study to show elevated perfectionism in individuals with a diagnosis of depression using the MPS-F as the measure of perfectionism, as previous studies showing elevated perfectionism in depressed individuals compared to controls have only used the MPS-H (Hewitt & Flett, 1991a, 1991b; Hewitt & Flett, 1993; Hewitt et al., 1996). Furthermore, this is the first study to have included other diagnostic groups not yet studied in relation to perfectionism, including GAD and PTSD, although only 1 participant had a diagnosis of PTSD. While mean scores for participants with a primary diagnosis of GAD and PTSD were similar to other anxiety disorders in this sample and a range of studies (see Shafran & Mansell, 2001), conclusions regarding different levels of perfectionism between diagnostic groups could not be made due to the small sample size in each of the diagnostic groups.

The results of elevated perfectionism in a mixed clinical group are similar to other studies showing elevated perfectionism in various disorders examined separately, which may suggest that perfectionism is indeed a common factor that is present at a similar level across many disorders, as has been suggested by various authors (Frost & DiBartolo, 2002; Shafran & Mansell, 2001). Moreover, this approach makes sense when perfectionism is viewed as a “transdiagnostic” process that cuts across diagnoses (Fairburn et al., 2003).

3.4.1.2 *Positive and negative perfectionism*

The prediction that the clinical group would have the highest level of negative perfectionism, the control group a medium level of negative perfectionism and the athlete group the lowest level of negative perfectionism was supported. This finding replicates Terry-Short et al. (1995). However, in contrast to Terry-Short and colleagues the current study did not find any differences in positive perfectionism between groups, or that athletes had a higher degree of positive perfectionism than the other groups. Thus, in the current study, negative perfectionism appears to be a better way to distinguish types of perfectionism between the groups rather than positive perfectionism.

It is not clear why there were no differences found between groups on positive perfectionism. One potentially confounding factor was that the student control group had high levels of positive perfectionism. Thus, it may have been more difficult to detect differences compared to the athlete group than if a general community control had been used. This may explain differences between the current findings and those of Terry-Short et al. (1995), as they used a general community control rather than students as a control. It is not surprising that the students would have a high degree of positive perfectionism, particularly as the sample was skewed towards students in later years of study, as they must have been successful to be continuing studies. What did distinguish the athletes from the other groups was their absence of negative aspects or consequences of perfectionism, for example self-criticism if personal standards were not met. These results suggest that it is the *absence* of negative factors that may potentially be a more sensitive factor in distinguishing types of perfectionism, rather than the *presence* of positive factors. This is because there were differences between the clinical and athlete group in negative perfectionism but not in positive perfectionism. This approach fits with the work of Rheaume and colleagues (Rheaume et al., 1995; Rheaume, Freeston et al., 2000; Rheaume, Ladoucer et al., 2000), who construe positive perfectionism as the absence of negative consequences of perfectionism.

3.4.2 Predictors of positive and negative perfectionism

3.4.2.1 Demographic variables

The results indicated that age was a significant predictor of positive and negative perfectionism in the athlete group. However, when dichotomous thinking and rigidity were entered into the regression equation, age was no longer a significant predictor of negative perfectionism. Consequently, the relationship appears to be between younger age and higher positive perfectionism. This result may be due to athletes being particularly high on positive achievement striving when younger. One explanation of this is that better performance may occur when younger, thus younger athletes may be more likely to strive towards goals in performance. Age was not a significant predictor of perfectionism in the clinical or student group and gender was not a significant predictor of either positive or negative perfectionism in any of the groups. This suggests that demographic variables do not play a major role overall in predicting perfectionism, particularly in clinical and student groups.

3.4.2.2 Rigidity and dichotomous thinking

The prediction of group differences in dichotomous thinking and rigidity, where clinical groups would have the highest levels of dichotomous thinking, athletes an intermediate level and students the lowest dichotomous thinking was not supported. However, correlation and regression analyses indicated that dichotomous thinking was strongly correlated and accounted for significant amounts of variance in negative perfectionism in all groups. Dichotomous thinking ranged in predicting 12% of negative perfectionism in the athletes, 14% in the students and 43% in the clinical group. Dichotomous thinking was also a significant predictor of positive perfectionism in the clinical group accounting for 22% of the variance, but was not a significant predictor of positive perfectionism in the other groups. Consequently, it can be seen that dichotomous thinking is very strongly related to negative perfectionism, but less related to positive perfectionism, and did not predict significant variance in the athlete and student groups in positive perfectionism. This suggests that dichotomous thinking may be one variable that can distinguish between and help to explain the differences in positive and negative perfectionism. For example, negative perfectionists may engage regularly in dichotomous thinking as shown by the strong correlation, whereas positive perfectionists may not engage as regularly in dichotomous thinking. This makes sense, as thinking dichotomously in relation to

achievement of personal standards is likely to lead to distress. For example a thought such as “I have not done the job perfectly therefore have completely failed at it” is an example of a dichotomous evaluation of a personal standard likely to lead to distress and negative perfectionism. In contrast, thinking “I have not done the job perfectly, but it is o.k.” is an example of a non-dichotomous evaluation of a personal standard that would not lead to distress and thus be more associated with positive perfectionism.

While there were no significant differences between the groups on levels of dichotomous thinking, the correlational and regression analyses suggested that the groups had a different pattern of relationships between dichotomous thinking and perfectionism, for example with dichotomous thinking being more strongly related to negative perfectionism in the clinical group compared to the other groups. Despite the mixed results, dichotomous thinking may be an important factor that could help to explain why some individuals who are highly perfectionistic have positive consequences of perfectionism whereas others have negative consequences. When a perfectionist views whether they have achieved their personal standard in a dichotomous way, then this is likely to lead to self-criticism, thus negative perfectionism. However, if a perfectionistic individual does not view their performance in a dichotomous way they are unlikely to be self-critical, which does not lead to negative consequences of perfectionism. The results of this study confirm the model proposed by Shafran et al. (2002) where dichotomous thinking is central in the model of maintenance of clinical (negative) perfectionism. The findings suggest that individuals may be able to hold very high standards but if they are able to evaluate their standards in a non-dichotomous way, then their perfectionism might not be associated with negative consequences. This interpretation seems to fit with previous claims that the difference in positive and negative perfectionism is that positive perfectionists do not engage in self-criticism when they do not meet their standard (Frost et al., 1990).

The implication is that dichotomous thinking may be an important factor to focus on modifying in clinical groups as this may be a central reason why for some people perfectionism may result in more negative than positive consequences. This is particularly true when it is considered the large amount of variance that dichotomous thinking predicted in the clinical group compared to the other groups. The discovery of dichotomous thinking as a factor that is differentially related to negative and positive

perfectionism is an important finding as no research to date has examined this, and it has a clear implications that dichotomous thinking should be targeted in treating perfectionism.

Contrary to expectations, the student group were found to have significantly lower rigidity than the athlete and clinical groups. This is an interesting finding as the student group were the same on positive perfectionism as the other groups, and even had higher negative perfectionism than the athletes. Therefore, this result does not appear to be easily explained by differences in perfectionism. It is not clear why the students were lower in rigidity than the other groups. One hypothesis could be that due to the experience of university education, students are taught to be flexible in their thinking, and/or students with more flexibility select themselves into study at university. Clearly, further research would need to determine reasons for lower rigidity in the student group.

In terms of correlational results, rigidity was found to have a moderate correlation with both positive and negative perfectionism. This was in the direction that higher rigidity was related to higher positive and negative perfectionism. The results were consistent in the athlete and control groups where rigidity accounted for 8% of the variance in positive perfectionism in athletes and 9% in the students. It is interesting to note that rigidity also accounted for 5% of the variance in negative perfectionism in both athletes and students. The results confirm the findings of Ferrari and Mautz (1997), who used the same measure of rigidity as this study, and found that rigidity was a significant predictor of *self-oriented* perfectionism on the MPS-H (Hewitt & Flett, 1991a). Given that *self-oriented* perfectionism has sometimes been taken as an indicator of positive perfectionism, these results are consistent. However, the explanatory value of rigidity in being a difference between positive and negative perfectionism is certainly not as strong as the explanatory role of dichotomous thinking. Although rigidity was a significant predictor of positive perfectionism, it accounted for a much smaller amount of variance than dichotomous thinking in negative perfectionism. Therefore, there is not a differential relationship between rigidity and positive and negative perfectionism. The essential findings of this study appear to be for the important role of dichotomous thinking in negative perfectionism.

CHAPTER 4

Study 3

The effect of positive and negative perfectionism on athletic performance

4.1 Introduction

Sports psychology involves both focusing on the factors that affect performance in sport and applying psychological principles to enhance athletic performance (Jarvis, 1999). The research area of peak performance in sports psychology is concerned with examining differences in psychological characteristics between successful and less successful athletes to determine what characteristics might influence performance (Williams & Krane, 1993). Peak performance research has compared athletes who are either chosen for an Olympic team or are Olympic medal winners (successful athletes), versus those who are not chosen or have not won medals (less successful athletes). Consistent findings have emerged where successful athletes compared to less successful athletes, have higher self-confidence, more positive self-talk, are better able to control anxiety pre and during performance, have more imagery of being successful, better concentration during competition and more task-relevant thoughts. This has been shown in athletes competing in gymnastics (Mahoney & Avener, 1977), badminton (Meyers et al., 1979), diving (Highlen & Bennett, 1983) and wrestling (Gould, Weiss, & Weinberg, 1981; Highlen & Bennett, 1979).

Another psychological characteristic that has been considered to be important in affecting athletic performance is perfectionism. Many sports psychologists have theorized that being a perfectionist is a hallmark of high-performance athletes (Anshel, 1993; Hardy et al., 1996; Henschen, 2000). Some of these researchers have focused on positive perfectionism as something that may enhance performance. Aspects of positive perfectionism can be seen in the following quote, which describes the psychological characteristics of successful athletes;

“Confident athletes think they can and *they* do. They never give up. They typically are characterized by positive self-talk, images and dreams. They imagine themselves winning and being successful. They say positive things to themselves and never minimize their abilities. They focus on successfully mastering a task rather than worrying about performing poorly or the negative consequences of failure” (Bunker, Williams, & Zinsser, 1993, p. 225)

This description highlights that successful athletes mentally strive to achieve a task, while also being low on concern over mistakes in performance, which is similar to positive perfectionism. In fact, even Albert Ellis has suggested that athletes must have at least some desire for excellence, because in time this might lead to a winning performance (Ellis, 1982).

However, the detrimental effect of perfectionism on athletic performance has also been acknowledged. For example, Bunker and Williams (1986) have suggested that when athletes react badly to mistakes this interferes with both their enjoyment and performance, which is similar to negative perfectionism. Koivula and colleagues (2002) summarize very well the impact of positive and negative perfectionism stating that;

“...setting high standards is an integral part of elite sports, and thereby often beneficial for the athlete’s performance, but when nothing but the perfect performance is perceived to be good enough, these originally positive expectations may instead lead to the development of a negative self-concept, and a fear-of-failure syndrome” (p. 866).

Despite these theoretical accounts of the impact of positive and negative perfectionism, the empirical question remains, does positive and negative perfectionism, actually impact on sporting performance? A number of studies have examined the relationship between perfectionism in general in athletes. The sports investigated have included mixed varsity athletics (Frost et al., 1990), running (Coen & Ogles, 1993; Hall et al., 1998), tennis (Gould et al., 1996), and Olympic events such as swimming and track and field (Gould et al., 2002; Koivula et al., 2002). These studies have found consistent results, for example, Concern over Mistakes on the MPS-F (Frost et al., 1990) being related to higher anxiety while Personal Standards is related to higher self confidence in relation to sport (Frost & Henderson, 1991; Hall et al., 1998; Koivula et al., 2002). Although the existing studies have broadly investigated the relationship between perfectionism and sport, no studies

have directly examined the relationship between perfectionism and actual sporting performance.

While Gould and colleagues (2002) did not measure the link between performance and perfectionism specifically, they did find interesting results in a sample of highly successful elite athletes. They investigated perfectionism in a sample of 10 US Olympic champions who had outstanding performance having won an average of 3 Olympic medals each (28 gold medals, 3 silver medals and 1 bronze medal). The athletes were from a range of sports (skiing, wrestling, swimming, ice hockey, speed skating and track and field) and had competed on average for 12 years at an international level. They found that the athletes scored high on Personal Standards, but low on Concern over Mistakes and Doubts about Actions. Therefore, this sample could be construed as being high in positive perfectionism. Given the very high level of success of this sample, this study may give some indirect evidence that positive perfectionism may lead to more successful sporting performance. However, given the very small sample, and that the link between perfectionism and sporting performance was not directly measured, this is merely a speculation. Gould and colleagues suggested that "...future researchers should explore both the positive and negative aspects of perfectionistic tendencies in athletes and their relationship to athletic success" (p. 198).

Consequently, while the various studies reviewed have examined positive and negative perfectionism in athletes, no studies to date have investigated if perfectionism impacts on athletic performance and success. This is important to examine, as if there was a difference in performance according to type of perfectionism, then perfectionism may be important for applied sports psychologists to target in helping improve performance. For example, reducing negative perfectionism, or fostering positive perfectionism might achieve this.

This study aimed to examine the relationship between positive and negative perfectionism and athletic performance. It was considered in the design of the study to also include the MPS-F and determine the degree of relationship between MPS-F subscales and performance. However, because the MPS-F has 6 subscales, along with positive and negative perfectionism this would have resulted in 8 variables being investigated. Due to the low sample size it was not feasible to investigate the MPS-F in addition to positive

and negative perfectionism because this would have resulted in an inflated experiment-wise error rate as a result of too few cases per variable. Moreover, positive and negative perfectionism were the variables that were of central interest to the study. Consequently, only the PANPS (Terry-Short et al., 1995) was used to investigate perfectionism in relation to athletic performance.

Because physical variables such as age and gender were expected that have an influence on performance times, these variables were investigated. There is evidence to suggest these physical variables do impact on sporting performance, for example with males having faster performance than females in various sports (Cashmore, 2002; Gill, 1992). It was also predicted that the amount of training athletes completed each week, and the number of years experience they had in racing in triathlon may have an influence on their performance time. There is evidence that training influences performance, where more training results in better performance (Cashmore, 2002). It was considered important to also examine the relationship between performance and these physical variables and experience as this would provide a useful comparison to the relationship of perfectionism and performance.

The hypotheses for Study 3 were;

H1: There will be a significant negative correlation between performance time and positive perfectionism (i.e., the lower the level of positive perfectionism, the longer the performance time)

H2: There will be a significant positive correlation between performance time and negative perfectionism (i.e., the higher the level of negative perfectionism, the longer the performance time).

H3: There will be a significant negative correlation between years of experience in triathlon and performance time (i.e., the less years experience in competing, the longer the performance time).

H4: There will be a significant negative correlation between number of hours training per week and performance time (i.e., the less training completed, the longer the performance time).

H5: Males will have significantly faster performance times than females.

H6: There will be a significant positive correlation between age and performance time (i.e., higher age will be related to longer performance time).

4.2 Method

4.2.1 Participants

Demographics

A sample of 111 athletes from the sport of triathlon was recruited, that were described in Study 1. From this sample, athletes were chosen who had competed in one or more sprint triathlon races that were conducted by the Triathlon Association of Western Australia in a time span of 6 months before and after questionnaire administration. This resulted in a sample of 38 triathletes, consisting of 26 (69%) males and 12 (31%) females. Therefore, this represented 34% of the overall athlete sample. The age range was 24 to 67 years of age, with the mean age being 39 years (S.D. = 10.79). The majority of the sample was in a relationship, with 74% either in a defacto relationship or married, while 26% was single. Eighty percent of the sample was engaged in full-time work, 10% in part-time work, and 10% in no paid work.

Triathlon description

Triathlon is an individual sport that is one event consisting of a swim leg, followed by a bicycle leg and finally a running leg. The distance of each of these legs varies depending on the type of event. To examine performance, one specific triathlon length was chosen: sprint triathlon. This is because it is one of the most commonly performed triathlons in the local area. The distance of a sprint triathlon is 750m swim, then a 20km cycle followed by a 5km run. Also, sprint triathlon contained a sample of individuals who were

more likely to be serious in competing in triathlon and training more often than if a shorter distance triathlon had been chosen. Longer distance triathlons such as “Ironman” distance was not selected because these events are held infrequently (i.e., every 1-2 years), and have a low number of local competitors, as many competitors are from other Australian states or are international competitors.

Triathlon experience

The sample consisted of individuals with a range of triathlon experience, although the majority of the sample consisted of very experienced competitors. Fifty seven percent of the sample considered they were novice triathletes, while 43% of the sample considered they were elite level triathletes. They competed in an average of 9.9 (SD = 3.3) triathlons per season, with the range being 3-18 events per season. The sample had competed in many triathlons in total, having raced in an average of 52.5 events (SD = 35.8). There was a large range of total number of events ever competed in, ranging from 9 events to 150 events.

4.2.2 Measures

The Positive and Negative Perfectionism Scale (PANPS; Terry-Short et al., 1995)

The PANPS is a 40 item self-report measure that was used to measure positive and negative perfectionism. It was described extensively in Study 1.

Performance measure

Three sprint triathlons were eligible for inclusion in this study, as they were in the 12 month period defined as 6 months before and 6 months after initial collection of questionnaire data from triathletes. Sixty eight percent of the sample had competed in 1 race, 32% had competed in 2 races and none of the sample had competed in all 3 races. An average time was calculated for the 32% of participants that had competed in 2 events. Performance times for each of the three sprint triathlons were gained by gathering data from a website for all participants who were eligible. The Triathlon Association of Western Australia (TWA) website was used to gather data on all events in the 12 month period. This covered two triathlon competitive seasons in 2003 and 2004, as seasons run from approximately October to April. The total performance score for participants was

recorded for each event. The higher the performance score, the longer time was taken to complete the event which therefore equals poorer performance.

Performance times are recorded for each event by TWA using computer recording devices that athletes step on at the finish line which record their time. This is triggered by a timing band located on the ankle of the athlete, which corresponds with their competitor number in the race. This is also checked by race officials who manually record the performance time for the athlete when they cross the finish line. Thus, performance times could be viewed as a highly accurate measure of actual performance.

4.2.3 Procedure

The collection of questionnaire data for all athletes was described in Study 1. In addition to questionnaire measures described in previous studies, the triathletes also completed a “triathlon participation questionnaire” (see Appendix H). This questionnaire resulted in information about length and frequency of experience in triathlon competition. Measures of performance for each triathlete were collected as described above.

4.3 Results and discussion

4.3.1 Data screening and assumption testing

Prior to data analysis the data were screened for data entry errors and normality. Frequencies for each of the variables were examined and all scores were within the expected range so there were no obvious errors in data entry. Normality was examined by use of histograms, stem and leaf plots and normality probability plots with tests. The variables of performance time, training hours per week, and negative perfectionism all showed normal distributions with no outliers. Positive perfectionism also had a normal distribution, although two outliers were detected, one scoring very high and one very low. Data analysis was conducted both with outliers removed and with them retained. The removal of outliers did not change the direction, significance or magnitude of results, thus outliers were retained.

Assumption testing for correlation was also conducted. The testing of linearity and homoscedasticity was examined in each group separately by examining scatterplots

between the variables. All scatterplots examined showed a linear relationship between variables. The scatterplots also indicated that the scores were clustered uniformly around the regression line, so the assumption of homoscedasticity had not been violated in the correlations. The mean scores for the variables used in correlation can be seen in Table 22. It should be noted that performance time is indicated for the total sample and this was the performance time used for the correlational analyses. However, performance times are also presented separately for males and females.

Table 22

Mean, standard deviation and range of scores on triathlon performance time, training, race experience, positive perfectionism and negative perfectionism.

Measure	Mean	S.D.	Range
Performance time (minutes) - total	69.81	9.61	55 – 90
<i>Performance time - females</i>	74.60	9.51	55 – 90
<i>Performance time - males</i>	67.60	8.27	57 – 85
Training per week (hours)	13.32	4.84	3 – 22.5
Positive perfectionism	75.26	8.59	53 - 97
Negative perfectionism	49.81	10.09	45 - 74
Race experience (years)	9.42	6.76	2-27

4.3.2 Correlation analysis

The data were analysed through a series of bivariate correlations between positive and negative perfectionism and performance time, which was the average performance time for each participant across the three sprint triathlons. All times are in total minutes of completion of the triathlon. To investigate the role of possibly related variables, age, gender, average hours of training per week and race experience were also examined.

Table 23

Correlations between performance time, age, gender, hours of training per week, race experience, positive perfectionism and negative perfectionism

Measure	1	2	3	4	5	6	7
1. Performance time	-	.26	.34**	-.31	-.34**	-.003	-.23
2. Age		-	-.29	-.29	-.14	.06	.29
3. Gender			-	-.15	-.04	.15	-.13
4. Training				-	.23	-.21	.01
5. Positive P					-	.31	-.13
6. Negative P						-	.02
7. Race experience							-

** $p = <.01$ (2-tailed)

It can be seen in Table 23 that there was a significant negative correlation between positive perfectionism and performance time in sprint triathlons. This indicates that the triathletes with shorter thus better performance times had a higher degree of positive perfectionism. Consequently, Hypothesis 1 which stated there would be a significant negative correlation between performance time and positive perfectionism was supported. However, Hypothesis 2 which stated that there would be a significant positive correlation between performance time and negative perfectionism was not supported as there was no significant correlation. Table 23 also indicates there was a significant relationship between gender and performance, and the direction of this relationship males being faster than females. To explore this gender effect further, an independent samples t-test was conducted. The homogeneity of variance assumption was met, as Levene's test of equality of variances was not significant, $p = .48$. There was a significant difference between males and females on performance time, $t(36) = -2.20$, $p = .03$. As seen in Table 22, males had faster performance times than females, thus Hypothesis 6 was supported. It should also be noted that the correlation between average hours training per week and performance time was marginally significant ($r = -.31$, $p = .06$). However, because this correlation did not reach significance, Hypothesis 4 was not supported. There was also no significant relationship between age and performance, thus Hypothesis 6, which

predicted higher age would be related to poorer performance was not supported. Finally, Hypothesis 3 which predicted more years of experience would be related to better performance was also not supported, because as seen in Table 23 there was no significant correlation between these variables.

4.4 General discussion

The results indicated that gender was significantly correlated with performance time in triathlon and that males had significantly faster performance than females. This result is not surprising given the evidence of the biological influence of gender on sporting achievement, where males have been found to demonstrate higher sporting achievement than females (Gill, 1992). It was interesting to note that variables that might be thought to influence performance such as age, amount of training per week, and experience in triathlon races did not have significant correlations with, or predict performance. This is despite the correlation between more training hours and better performance nearing significance ($p = .06$). It is likely that with a larger sample size this correlation of $r = -.31$ between training hours and performance would be significant. The impact of sample size on explaining the non significant findings for race experience and age may also apply. Despite correlations being in the predicted direction (i.e., age and performance $r = .26$, experience and performance $r = -.23$), these were not significant. Again, these correlations would likely be significant with a larger sample size. Of those physical variables that were not significant however, training appeared to be the variable with a larger effect than both age and length of experience. However, clearly gender was the most important physical variable that was related to sporting performance.

The variables that were of most interest to the study, however, were the psychological variables of positive and negative perfectionism. The results indicated that there was a relationship between higher positive perfectionism and better performance, but no relationship between negative perfectionism and performance. It was interesting that gender and positive perfectionism were the only variables significantly correlated with performance, and they had exactly the same magnitude of correlation with performance ($r = .34$). This might suggest that positive perfectionism is a particularly salient psychological variable in performance, as it was correlated to the same magnitude to performance as gender. It might be assumed that physical variables would be of more importance to performance than psychological variables. However, this preliminary

study suggests that a psychological variable can have a similar magnitude of significant relationship as a physical variable with performance. This is important as it suggests that applied sports psychologists may indeed have an important role to play in helping to improve performance if psychological variables have a relationship as strongly with performance as physical variables.

It is an interesting finding that positive perfectionism had some role in performance, and that higher positive perfectionism was correlated with better performance. This provides some evidence for the claims of various theorists that positive perfectionism may be something that can enhance performance (Hardy et al., 1996; Henschen, 2000). Positive perfectionism involves the setting of high personal standards, however an absence of self-criticism or concern over mistakes if a personal standard is not obtained. It makes sense that those who score highly on positive perfectionism have better athletic performance, as they are not concerned with making mistakes or the consequences of failure during a race. Consequently, they may focus more on task-relevant cognitions if they are not concerned over making mistakes. Focusing on task-relevant cognitions is known to be associated with better performance (Gould et al., 1981; Highlen & Bennett, 1979, 1983; Mahoney & Avenier, 1977; Meyers et al., 1979). A narrow focus of attention has also been demonstrated to be related to better performance (Boutcher, 1992). Furthermore, by not focusing on making mistakes or concerns over failure, athletes scoring higher on positive perfectionism are likely to be experiencing less anxiety, and excessive anxiety is known to interfere with performance (Gould et al., 1981; Gould & Krane, 1992; Highlen & Bennett, 1979, 1983; Mahoney & Avenier, 1977; Meyers et al., 1979). This explanation also fits with data indicating those scoring high on positive perfectionism were quicker at completing tasks than those with higher negative perfectionism (Rheaume, Freeston et al., 2000). However, anxiety was not measured in the athletes, so these explanations of results are provisional. Future research investigating the relationship between positive perfectionism and performance should include a measure of anxiety to determine if this helps to account for differences in performance.

Clearly, further research is required to determine more strongly the role of positive perfectionism in sporting performance. Future research should include a larger sample size which would make correlation analyses more robust and able to detect these relationships. Despite the small sample size, the results suggest some preliminary

evidence that positive perfectionism is a psychological characteristic that may be useful to be fostered in helping improve athletic success. Applied sports psychologists could work with athletes to encourage them to set high personal standards, but also particularly focus on identifying if athletes are self-critical or concerned over mistakes in performance. Those athletes who were self-critical could receive interventions, for example cognitive therapy to challenge their self-critical cognitions, and training in attention to task-relevant cognitions (Boutcher, 1992) which might serve to improve their performance.

Numerous authors have suggested that negative perfectionism may be a factor that impedes performance (Bunker & Williams, 1986; Frost & Henderson, 1991; Hall et al., 1998; Koivula et al., 2002) however evidence for this was not found. One reason may be that the athlete group was already generally low on negative perfectionism, and indeed this was shown in Study 2, where the athletes were significantly lower on negative perfectionism than other groups. Thus, because there was a low level of negative perfectionism in the sample, it might be expected no relationship would be found between negative perfectionism and performance. It could also be that those with high negative perfectionism do not reach the level of elite athletic performance that was the average in the sample, hence the low level of negative perfectionism. However, it may also be the case that the relationship was not found due to the small sample size, possibly with larger sample sizes a relationship might be detected.

This study was unique, as it is the first study to date that the author is aware of that has examined the relationship between perfectionism and actual performance times. The majority of peak performance research has focused on group comparisons of psychological variables, for example, between elite athletes who are chosen versus excluded from Olympic teams at qualification. While this approach might be informative, it does not actually compare performance results, and thus could be considered to be a less direct examination of performance than the methodology used in this study. This study also had the benefit of using a sport where performance times can be compared. Consequently, sports such as triathlon, running or swimming amongst others, make ideal sports to study the link between psychological characteristics and performance, as they have one performance time as the outcome. The studies to date that have examined perfectionism in athletes have only used mixed sport samples, thus making it impossible to compare performance across athletes. Future research into

perfectionism and performance should continue to use samples of athletes from the same sport where performance time can be easily compared. This research design will enable comparisons to be made about performance which cannot be done with mixed sport samples.

The most significant limitation of this study was the sample size. While some results were found for positive perfectionism, the effect may not be considered a large or robust effect, therefore the conclusions drawn about the relationship between positive perfectionism and performance must be considered cautiously. The results are probably best viewed as encouraging preliminary results which suggest that future research with a larger sample size should further investigate the link between positive perfectionism and performance. One of the major points to also consider is that even the significant results between higher positive perfectionism being related to better performance in sprint triathlon do not actually mean that positive perfectionism *causes* better performance. Correlational research can never infer causation, and it is possible that additional variables could explain this relationship.

In summary, the results indicate promising preliminary results for the impact of positive perfectionism being a beneficial factor in athletic performance. Despite the predictions of theorists, negative perfectionism did not seem to impede performance. Future research should aim to further examine the link between positive and negative perfectionism and performance with larger samples of athletes.

CHAPTER 5

Study 4

Positive and negative perfectionism and the Big Five personality factors

5.1 Introduction

A number of studies have been conducted to explore the relationship between perfectionism and personality (Dunkley et al., 1997; Hewitt et al., 1991; Magnusson et al., 1996; Slade & Dewey, 1986; Stumpf & Parker, 2000; Weissman & Beck, 1978). As reviewed in detail in the literature review in Chapter 1, in general the results of these studies suggest that the personality factors of Neuroticism and Conscientiousness are positively related to perfectionism, Extraversion and Agreeableness are negatively related to perfectionism, and Openness to Experience is not related to perfectionism. However, what of the relationship between positive and negative perfectionism and personality traits?

There is a paucity of literature that has considered positive and negative perfectionism in relation to personality. Slade and Owens (1998) have made predictions about which of the five factors might be related to perfectionism stating that “careful study of these dimensions (and facets) suggests that positive perfectionism may be related to...conscientiousness and may encompass some of the specific facets underpinning this dimension (i.e., competence, order and achievement striving)” (p. 385). Magnusson and colleagues (1996) argued that the personality traits of Neuroticism and Extraversion as measured by the EPQ (Eysenck & Eysenck, 1975) were related primarily to the negative aspects of perfectionism as measured by the MPS-F (Frost et al., 1990). This is because Neuroticism was positively correlated and Extraversion negatively correlated with the MPS-F subscales Doubts about Actions and Concern over Mistakes. This is similar to studies utilizing the DAS (Weissman & Beck, 1978) as the measure of perfectionism, which have found positive correlations between Neuroticism and perfectionism and negative correlations between Extraversion and perfectionism (Zuroff, 1994; Dunkley et al., 1997; 2004). Dunkley and colleagues (2004) have claimed that the DAS primarily reflects the negative aspects of perfectionism. Thus, studies using the DAS might also be

reflecting similar results to Magnusson and colleagues, where negative perfectionism has a positive association with Neuroticism and a negative association with Extraversion.

Stumpf and Parker (2000) claimed that unhealthy (negative) perfectionism was associated with Neuroticism, due to their finding of a positive correlation between Neuroticism and Concern over Mistakes and Doubts about Actions. In addition, Stumpf and Parker also argued that healthy (positive) perfectionism was associated with Conscientiousness, due to the positive relationship found between Conscientiousness and Personal Standards. Therefore, on the basis of the studies reviewed it may be that positive perfectionism is positively associated with higher Conscientiousness, whereas negative perfectionism might be related to higher Neuroticism and lower Extraversion.

There are several problems however with interpreting the results of the relationship between positive and negative perfectionism and personality from the studies reviewed. The studies by Dunkley and colleagues (1997, 2004) used the DAS as the measure of perfectionism, and while the DAS is thought to be primarily a measure of negative perfectionism, it is hard to interpret results in terms of negative and positive perfectionism, as the DAS is not used as a measure to distinguish types of perfectionism. Two studies (Magnusson et al., 1996; Stumpf & Parker, 2000) have used the MPS-F (Frost et al., 1990) where the subscale of Personal Standards has been used to reflect positive perfectionism, while Concern over Mistakes and Doubts about Actions has been used to reflect negative perfectionism. While the first study by Magnusson and colleagues reported that Neuroticism and Extraversion was related to negative perfectionism, they used the EPQ (Eysenck & Eysenck, 1975) as the measure of personality. This makes results hard to compare with studies using one of the main contemporary measures of personality, the NEO-PI-R (Costa & McCrae, 1992), as only some of the scales on the EPQ correlate with the NEO-PI-R (Costa & McCrae). Stumpf and Parker (2000) did use the NEO-PI-R to investigate positive and negative perfectionism on the MPS-F. However, their study had a major methodological problem of a very wide age range of participants from children to adults in a collapsed sample, which makes results difficult to interpret. This is because personality is not seen as being stable until early adulthood (Costa & McCrae), thus generalizations from this wide age range are difficult to make.

Consequently, further research into the relationship between positive and negative perfectionism and personality is required. To date, no studies have utilized a measure which specifically distinguishes between positive and negative perfectionism in studies examining personality. Utilizing a specific measure of positive and negative perfectionism would help to make the relationships between personality traits and types of perfectionism clearer to understand than using general perfectionism measures. This could be useful in helping to further understand why there are differences in positive and negative perfectionism. Furthermore, no studies to date have examined personality in groups that may be high and low on positive and negative perfectionism. If groups that are extreme in terms of their perfectionism are examined, this may be useful in detecting differences in personality traits between groups, compared with those where participants have average levels of positive and negative perfectionism. Furthermore, no studies to date have examined personality traits in relation to positive and negative perfectionism in a sample of athletes. This is because it was shown in Study 2 that athletes score lower on negative perfectionism than other groups, thus the question arises whether this may be related to personality traits.

The purpose of this study was to examine a group who are low on negative perfectionism yet high on positive perfectionism in order to determine whether their personality traits differ from those who are high on negative perfectionism. Selecting athletes who score the lowest on negative perfectionism and a clinical group who score the highest on negative perfectionism is useful as this could serve to demonstrate relationships between personality and negative perfectionism in more extreme groups. It would be ideal to compare high negative perfectionists with high positive perfectionists to examine differences in personality traits. However, in Study 2 no differences between groups were found on positive perfectionism. Consequently, it was decided instead to contrast groups high and low in negative perfectionism. This is because essentially differences in high and low negative perfectionism in people who score similarly on positive perfectionism were of interest, to investigate any differences in personality traits between the groups. The overall aim is to understand why groups who are high and low on negative perfectionism may differ, which might help to further understanding of differences in types of perfectionism. This could help, for example, to inform treatment approaches for negative perfectionism, if certain personality traits are found to be associated with negative rather than positive perfectionism.

The hypotheses for the study are as follows. Specific hypotheses of differences between the athlete and clinical groups on personality traits are not predicted, because there is no previous research examining this, so analysis of group differences is exploratory.

Hypotheses 1 and 2 are based on the findings of Stumpf and Parker (2000) who found a significant association between Conscientiousness and Personal Standards.

H1: In both the athlete and clinical sample, there will be a significant positive association between positive perfectionism and Conscientiousness

H2: In both the athlete and clinical sample, there will be a significant positive association between negative perfectionism and Neuroticism.

Hypotheses 3 and 4 are predictions of the relationships of Agreeableness and Extraversion based on the literature reviewed which examined general perfectionism and personality on the NEO-PI-R (Dunkley et al., 1997; 2004; Hill et al., 1997; Zuroff, 1994).

H3: In both the athlete and clinical sample, there will be a significant negative relationship between negative perfectionism and Agreeableness

H4: In both the athlete and clinical sample, there will be a significant negative relationship between negative perfectionism and Extraversion.

Hypothesis 5 is based on the predictions of Slade and Owens (1998). Slade and Owens theorized that the specific facets of achievement striving, competence and order on the personality domain of Conscientiousness would be related to positive perfectionism.

H5: There will be a significant positive association between positive perfectionism and the facets of achievement striving, competence and order, in both the athlete and clinical groups.

5.2 Method

5.2.1 Participants

There were 40 participants recruited into the study, 20 athlete participants and 20 clinical participants. Those 20 athletes who scored the lowest on negative perfectionism from the entire sample of athletes ($n = 111$) on the PANPS (Terry-Short et al., 1995) were selected. The 20 clinical participants were chosen from the sample of 40 clinical participants described in Study 1. Those 20 clinical participants who scored the highest on negative perfectionism were selected. One clinical participant did not return the questionnaires despite numerous attempts of re-sending questionnaires and phoning the participant. The demographic characteristics of the sample can be seen in Table 24.

Table 24

Demographic characteristics of the athlete and clinical participants, $n = 39$

	Athlete ($n = 20$)	Clinical ($n = 19$)
Age	40.5 (SD = 6.6)	40.4 (SD = 14.3)
Gender		
Males	8 (40%)	3 (16%)
Females	12 (60%)	16 (85%)
Highest educational attainment		
Year 10	12.5%	21%
Year 12	12.5%	47%
University degree	74.5%	32%
Work		
No paid work	20%	48%
Part-time work	25%	42%
Full-time work	55%	10%
Relationship		
Single	20%	63%
Defacto or married	80%	37%

It can be seen in Table 24 that there were more males in the athlete group than the clinical group, however an independent samples t-test revealed that this difference was not significant $t(37) = 1.69, p = .10$. It is also evident from Table 24 that the athlete sample had a higher degree of education, and was more likely to be engaged in full-time work and a stable relationship, compared to the clinical sample.

The diagnoses for the clinical group can be seen in Table 25, which indicates the primary diagnoses for the sample. Table 26 indicates the total diagnoses for the sample. It can be seen in Table 25 that the most prevalent primary diagnosis was Obsessive-Compulsive Disorder (OCD). Also, it is worth noting that 84% of the sample had a primary diagnosis of an anxiety disorder, while only 16% of the sample had a primary diagnosis of depression. Thus, the clinical group was mainly an anxiety disorder sample.

Table 25

Primary diagnosis in the clinical sample, n = 19

Diagnosis	No. of diagnoses	Percentage
Obsessive-Compulsive Disorder (OCD)	8	42%
Generalised Anxiety Disorder (GAD)	5	26%
Major Depression	3	16%
Social Phobia	2	11%
Post-traumatic Stress Disorder (PTSD)	1	5%

Note: No = Number

It is also important to note from Table 26 that there was a high degree of diagnostic comorbidity in the clinical group. The mean number of axis I diagnoses per participant was 2.0, and the mean number of axis II diagnoses was 1.3, giving a mean total number of diagnoses per patient of 3.3. Sixty eight percent of the sample was diagnosed with two or more disorders, 53% had three or more disorders, 42% had four or more disorders and 37% had five or more disorders.

Table 26

Total axis I and axis II diagnoses in clinical group, n = 19

Diagnoses	Total number of diagnoses	Total percentage
Axis I diagnoses		
Depression	11	58%
OCD	8	42%
GAD	7	37%
Social phobia	6	32%
Panic disorder with and without agoraphobia	2	11%
PTSD	2	11%
Dysthymia	1	5%
Alcohol abuse	1	5%
Axis II diagnoses		
Obsessive-compulsive PD	8	42%
Paranoid PD	4	22%
Avoidant PD	4	22%
Dependent PD	3	16%
Borderline PD	2	11%
Narcissistic PD	2	11%
Schizoid PD	1	5%

Note: PD = Personality Disorder

The average BDI-II (Beck et al., 1996) score in the sample was 19.5 ($SD = 13.25$), which indicates a mild level of depression, however there was a very large range, with scores ranging from 1-53.

5.2.2 Measures

The Positive and Negative Perfectionism Scale (PANPS; Terry-Short et al., 1995)

The PANPS was used to measure positive and negative perfectionism. The scale has been described in Study 1.

The Beck Depression Inventory-II (BDI-II, Beck et al., 1996)

The BDI-II was used to measure depression, and was described in Study 1.

Structured Clinical Interview for DSM-IV axis I disorders (SCID-I/P, Version 2.0; First et al., 1996) and Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II, Version 2.0; First et al., 1994)

The SCID and SCID-II were used to assess which DSM-IV diagnoses the clinical participants met, and are described in Study 1.

The NEO Personality Inventory-Revised (NEO-PI-R; Costa & McCrae, 1992)

The NEO-PI-R is a 240 item measure of the five-factor model of normal personality and includes five scales measuring the following personality domains: Neuroticism (N), Extraversion (E), Openness to Experience (O), Agreeableness (A) and Conscientiousness (C). Each of the domains consists of six facets that comprise the domain. The NEO has good internal consistency (Costa, McCrae, & Dye, 1991), which ranges from .86 for Agreeableness to .92 for Neuroticism (Costa & McCrae, 1992). The test-retest reliability of the NEO-PI-R ranges from .68 to .83 for long periods (Costa & McCrae, 1988), and the NEO-PI also has good test-retest reliability over short-term periods (McCrae & Costa, 1983). The NEO-PI-R also has good convergent and discriminant validity (Costa & McCrae; 1992; McCrae & Costa, 1987) and a stable factor structure (Costa & McCrae, 1992).

The NEO-PI-R has been used extensively to measure personality in a wide range of samples. It is answered on a five-point Likert scale ranging from “strongly disagree” to “strongly agree”. An example of an item from the Conscientiousness domain is “I try to perform all the tasks assigned to me conscientiously”. The NEO-PI-R is scored by summing the items for each facet, and then adding the facet scores for each domain. Raw scores are plotted onto norms for males and females, which produce t scores (mean = 50,

SD = 10). T scores are interpretable in the following ranges; very low (<36), low (36-45), average (45-55), high (t = 55-65), very high (>65). These t score ranges ensure scores can be compared across individuals in a meaningful way. To enable scores to be compared across groups, t scores were compared rather than raw scores, thus t scores will be reported in the results. A NEO-PI-R question booklet is not included in an appendix as it is a very widely known and used measure of normal personality.

The Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983)

The BSI is a 53 item brief self-report measure of psychological symptomatology designed for clinical and non-clinical populations. It has been a very widely used measure of psychological distress. The BSI was included in the study to ensure that the athlete sample were not suffering from significant psychological distress, and therefore show that the athlete and clinical participants were not overlapping populations in regards to psychological distress. The BSI assesses a wide range of symptom areas (e.g., anxiety, somatization, depression) with 9 symptom dimensions. The 9 symptom dimensions are; somatization, obsessive-compulsive disorder, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism. It is a shortened version of the Symptom Checklist-90 (SCL-90-R; Derogatis & Cleary, 1977). The BSI yields 3 indices of adjustment, the Positive Symptom Total (PST), Positive Symptom Distress Inventory (PSDI) and the Global Severity Index (GSI). The GSI is an overall measure of psychological distress, and higher scores indicate a higher level of distress. The most widely used index of adjustment is the GSI. The GSI was used in this study as the index of psychological distress.

The BSI has been shown to have good reliability, with the overall scale having test-retest reliability of 0.90, and acceptable internal consistency (range = 0.71 - 0.85; Derogatis & Melisaratos, 1983). It is answered on a 4 point scale ranging from 0 = “not at all bothered” to 4 = “extremely bothered”. This indicates the extent to which a problem has distressed the participant in the past 7 days. An example of an item from the hostility subscale is “having urges to break or smash things”. Scores are summed and then divided by the total number of responses, which gives the GSI. The GSI raw score can range from a minimum of 0 to a maximum of 4.

Similar to the NEO-PI-R, raw scores are plotted onto norms for males and females. There are three types of norms available; inpatient psychiatric norms, outpatient psychiatric norms and nonpatient norms (Derogatis & Melisaratos, 1983). To enable group comparisons between the clinical and athlete groups, both groups were plotted on to nonpatient norms, and t scores were used in the analysis. A t score of above 63 on each of the subscales and the GSI indicates the person is in a “clinical range”. The BSI is not included in an appendix as it is a very widely used and well known measure of psychopathology.

5.2.3 Procedure

Participants were contacted via phone and asked to participate in a second study. All participants agreed to complete the study, and were sent the information form, consent form (see Appendix C) and questionnaires, which they returned to the researcher in a reply paid envelope.

5.3 Results and discussion

5.3.1 Data Screening

The data were initially screened for errors in data entry by examining frequencies for each score in both the clinical and athlete groups, and no errors were found as the scores were within the expected ranges. Screening for normality and outliers was conducted by examining histograms, stem and leaf plots, and normal Q-Q plots with skewness and kurtosis statistics. The clinical group was screened and the variables of negative perfectionism, Neuroticism, Extraversion, Openness to Experience, and Conscientiousness all exhibited normal distributions with no outliers. Positive perfectionism had a normal distribution but there was one outlier with a low score. Agreeableness also had a normal distribution but two outliers with high scores were identified. These three outliers were removed from the data, and analyses were conducted without outliers. As the removal did not change the results outliers were retained.

The variables of negative perfectionism, Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness all exhibited normal distributions and no outliers were detected in the athlete group. While positive perfectionism in the

athletes also had a normal distribution, one outlier was found with a low score. The outlier was removed and analyses run however removal did not change results thus the outlier was retained in the sample.

5.3.2 Mean scores on GSI, positive and negative perfectionism and personality domains

The mean scores on the GSI scores, perfectionism scores and NEO-PI-R personality domain scores for each group are shown in Table 27.

Table 27

Mean scores, (Standard Deviation) and range on PANPS, GSI and NEO-PI-R domains

	Clinical Group		Athlete Group	
	Mean	S.D. Range	Mean	S.D. Range
Positive P	72.21	(10.21)	72.15	(8.88)
Negative P	74.21	(12.01)	40.95	(5.25)
Neuroticism	66.57	(11.72) high	41.60	(7.46) low
Extraversion	46.57	(10.84) average	59.10	(9.85) high
Openness	53.15	(8.42) average	52.75	(12.58) average
Agreeableness	47.89	(12.22) average	50.10	(8.08) average
Conscientiousness	45.10	(17.21) average	55.35	(11.01) high
GSI (t-score)	63.0	(10.12) clinical range	45.2	(6.21) normal range

Note: Openness = Openness to Experience

5.3.3 Relationships between age, gender, the five personality domains and positive and negative perfectionism

It can be seen in Table 28 that there was a significant correlation between gender and Neuroticism in the clinical group, indicating that females in the clinical group had higher scores on Neuroticism than males. The only other significant correlation was a negative correlation between age and positive perfectionism in the athlete group. This indicated that younger age was related to higher positive perfectionism.

Table 28

Correlations between age, gender, personality domains, positive perfectionism and negative perfectionism in the clinical and athlete groups

	N	E	O	A	C	Positive P	Negative P
Clinical							
Age	-.11	-.13	-.25	.36	.15	-.34	-.21
Gender	-.45*	-.05	-.23	.16	.29	-.26	-.21
Athlete							
Age	.19	-.01	-.12	.21	-.03	-.53*	-.36
Gender	.23	-.10	.10	-.04	-.06	-.37	.29

Note: N = Neuroticism; E = Extraversion; O = Openness to Experience; A = Agreeableness; C = Conscientiousness; Positive P = positive perfectionism; Negative P = negative perfectionism

* $p < .05$

5.3.4 Group differences on positive perfectionism, negative perfectionism, psychological distress and personality

Before Analysis of Variance (ANOVA) was conducted, assumptions for ANOVA were examined. As described, the assumption of normality was met. Examining Levene's test assessed the assumption of homogeneity of variance. The assumption was met in all analyses as Levene's test was not significant, $p > .05$ in each analysis. For the group comparisons, effect sizes for significant findings as calculated through SPSS are reported. The basis, by which an effect was judged as being small, medium or large, was based on the recommendations of Cohen (1992). The probability level for a significant result was $p = .05$.

Analysis of Variance indicated there was no significant difference between positive perfectionism between the clinical and athlete group, $F(1,37) = .0001, p = .98$. However, it can be seen from Table 30 that the clinical group had a significantly higher degree of negative perfectionism, $F(1,37) = 127.74, p = .0001$. This difference in negative

perfectionism was a large effect as the effect size calculated was .77. There was also a significant difference between Global Severity Index (GSI) t-scores, $F(1,37) = 42.11, p = .0001$. This indicated the clinical group was significantly more distressed than the athlete group. Table 30 shows the clinical group had a mean GSI score in the clinical range, whereas the athletes were in a normal range. This significant difference between the groups on distress was a large effect, as eta squared = .53. Consequently, it can be concluded that the clinical and athlete group were from different populations, in terms of degrees of negative perfectionism and psychological distress.

The mean scores on each of the NEO domain and facet scores can be seen in Figure 3.

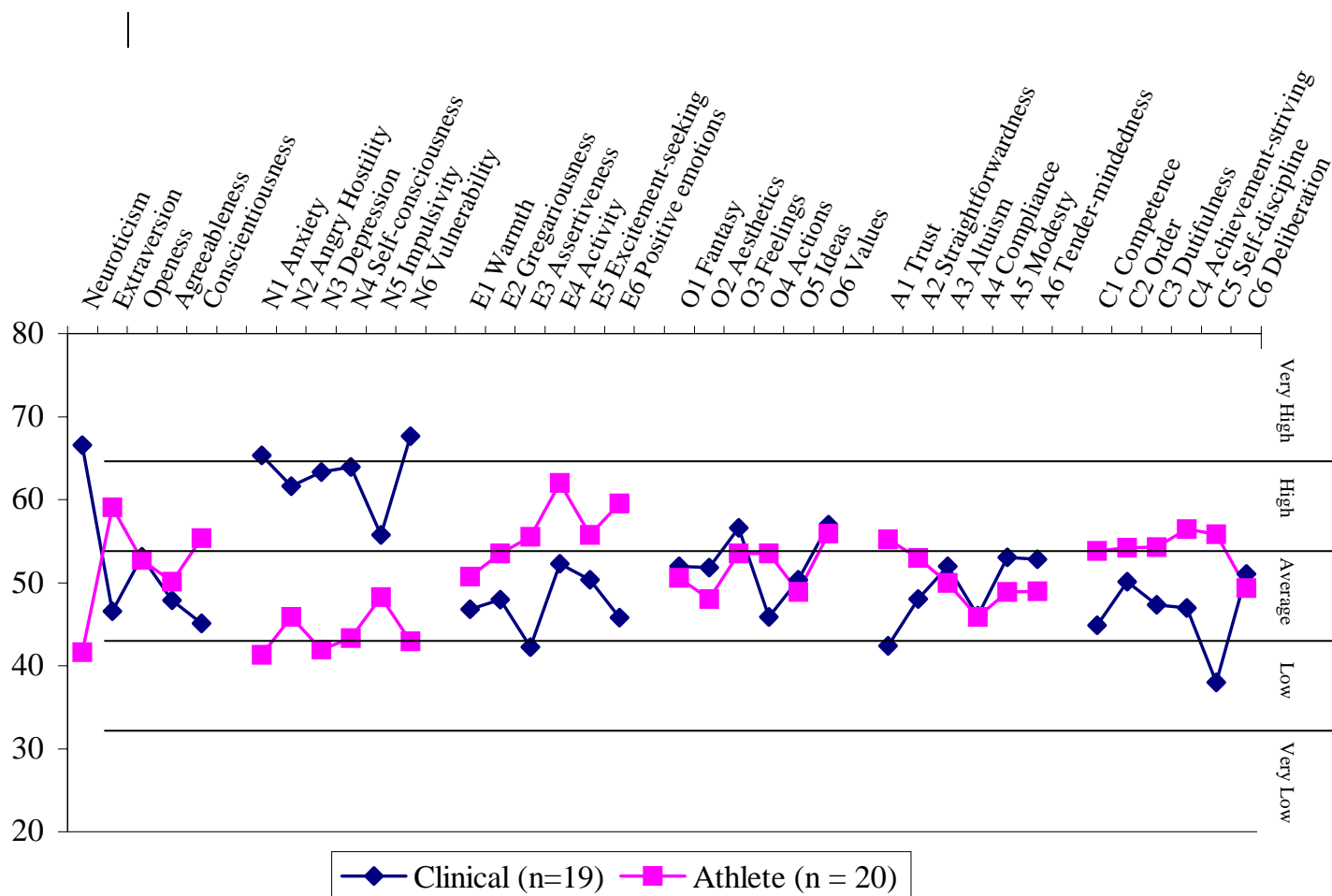


Figure 3. NEO PI-R trait domain and facet

It can be seen from this figure that the clinical group had a higher degree of Neuroticism, than the athlete group, $F(1,37) = 63.62, p = .0001$. This effect was large, as the effect size = .63. There was also a significant difference as seen in Figure 3, between the groups on Extraversion, with the athlete group having higher scores on Extraversion than the clinical group, $F(1,37) = 14.27, p = .001$. The eta squared was .27, indicating that this

was a medium effect. The only other significant difference between the groups was on the domain of Conscientiousness. The athlete group had a significantly higher level of Conscientiousness than the clinical group, $F(1,37) = 4.95, p = .03$. Eta squared for this analysis = .11, indicating this was a small to medium effect. There were no significant differences on the Openness to Experience domain between the athlete group and the clinical group, $F(1, 37) = .01, p = .90$, and eta squared = .0001. There were also no significant differences found on the Agreeableness domain between the athlete and clinical groups, $F(1,37) = .44, p = .50$, and eta squared = .01.

Not only were there group differences found on the Big Five personality domains, but there were also group differences found on the specific facets of achievement striving, competence and order from the Conscientiousness domain. The athlete group showed a significantly higher level of achievement striving ($M = 56.46, SD = 12.75$) than the clinical group ($M = 46.94, SD = 13.32$), $F(1,37) = 6.13, p = .02$. This was a small to medium effect as the estimated effect size was .14. There was also a significant difference between groups found on the facet of competence, where the athletes had higher scores on competence ($M = 53.80, SD = 9.75$) than the clinical group ($M = 44.84, SD = 16.90$), $F(1,37) = 4.16, p = .01$. This was a small effect as eta squared = .10. There were no significant differences found on the facet of order between the athlete group ($M = 54.20, SD = 13.88$) and the clinical group ($M = 50.10, SD = 18.39$), $F(1,37) = .64, p = .42$.

5.3.5 Correlations between personality, positive perfectionism and negative perfectionism

Prior to correlational analyses being conducted, the assumptions of correlation were tested. The testing of linearity and homoscedasticity was examined in each group separately by examining scatterplots between the variables. All scatterplots examined showed a linear relationship between variables, and scores were clustered uniformly around the regression line, so the assumptions were met. The results of bivariate correlations between the five personality domains, positive perfectionism, and negative perfectionism in the clinical group can be seen in Table 29.

Table 29

Correlations between NEO-PI-R domains, positive perfectionism and negative perfectionism in the clinical group

Measure	1	2	3	4	5	6	7
1. Positive P	-	.39	.24	.10	.24	-.19	.19
2. Negative P		-	.44	.08	.43	-.59**	.13
3. Neuroticism			-	-.28	.28	-.40	-.16
4. Extraversion				-	.24	.20	.20
5. Openness					-	-.34	-.41
6. Agreeableness						-	.29
7. Conscientiousness							-

** $p < .01$ (2-tailed)

The only significant association found in the clinical group as seen in Table 29, was a moderate negative correlation between negative perfectionism and Agreeableness. This indicated that lower Agreeableness is related to higher negative perfectionism. Therefore, Hypothesis 3, which predicted this association, was supported in the clinical group. However, Hypotheses 2 and 4 were not supported, as there were no significant relationships between negative perfectionism and the domains of Neuroticism and Extraversion, although the correlation of .44 between Neuroticism and negative perfectionism was nearing significance, as $p = .058$. Positive perfectionism had no significant relationship with any of the personality domains, thus Hypothesis 1 which predicted a significant positive association between positive perfectionism and Conscientiousness was not supported in the clinical group. In contrast, there were several significant associations found between the variables in the athlete group, as seen in Table 30.

Table 30

Correlations between NEO-PI-R domains, positive perfectionism and negative perfectionism in the athlete group

Measure	1	2	3	4	5	6	7
1. Positive P	-	.29	-.26	.16	-.03	-.23	.10
2. Negative P		-	.53*	-.45*	.08	-.41	-.40
3. Neuroticism			-	-.51*	-.03	-.24	-.63**
4. Extraversion				-	.50*	.09	.70**
5. Openness					-	-.03	.10
6. Agreeableness						-	.21
7. Conscientiousness							-

* $p < .05$, ** $p < .01$ (2-tailed)

First, in regards to associations between perfectionism and personality in the athletes, there were no significant associations between positive perfectionism and the five personality domains. Thus, Hypothesis 1 which predicted that positive perfectionism would be positively correlated with Conscientiousness was not supported. There were, however, significant associations between negative perfectionism and personality domains. Table 30 indicates that there was a significant positive correlation between negative perfectionism and Neuroticism, thus Hypothesis 2 was supported in the athlete group. In contrast, there was a moderate negative relationship between negative perfectionism and Extraversion, and this supported the prediction of Hypothesis 4. However, Hypothesis 3 which predicted a negative relationship between negative perfectionism and Agreeableness was not supported in the athlete group.

In relation to associations between the five personality domains, it can be seen in Table 30 that there were several significant relationships between the domains in the athlete group. Neuroticism had significant, negative correlations with both Extraversion and Conscientiousness in the athletes. There was also a moderate significant, positive association between Extraversion and both Openness to Experience and Conscientiousness.

Hypothesis 5 predicted significant positive associations between positive perfectionism and the facets of achievement striving, competence and order. There were no significant associations found in either the athlete or clinical group, thus Hypothesis 5 was not supported. The athletes had no significant correlations between positive perfectionism and achievement striving ($r = .27, p = .24$), competence ($r = .18, p = .43$) or order ($r = .02, p = .92$). The clinical group also had no significant correlations between positive perfectionism and achievement striving ($r = .32, p = .17$), competence ($r = .30, p = .21$) or order ($r = .07, p = .76$).

5.4 General discussion

The main aim of this study was to explore which of the Big Five personality domains were associated with positive and negative perfectionism. A secondary aim was to examine if specific facets from the personality domain of Conscientiousness were associated with positive perfectionism. It is very important to note when considering the results that the sample size of 39 participants was a low number for the analyses used, thus the study was underpowered. There were slightly less participants than is a recommended minimum per variable for correlation analyses (Tabachnick & Fidell, 2001). Therefore, the results discussed should be considered as preliminary findings to be further investigated with a larger sample.

5.4.1 Relationships between positive perfectionism and personality

Various authors have theorized that positive aspects of perfectionism may be related to the personality trait of Conscientiousness (Hill et al., 1997; Slade & Owens, 1998; Stumpf & Parker, 2000). This is not surprising, given that Costa and McCrae (1992) describe the conscientious individual as someone who is purposeful, determined, scrupulous, punctual, reliable, organized, and actively plans and carries out tasks. This description overlaps with some of the reported characteristics of perfectionism. However, in the present study there was no relationship found between positive perfectionism and Conscientiousness in either group. It is difficult to compare the current results to other studies, as no other studies have used a specific measure of positive perfectionism. Nevertheless, the current findings are contrary to previous studies that have used subscales of perfectionism measures as indicators of positive perfectionism. These studies found significant relationships between Conscientiousness and *self-oriented* perfectionism (Hill et al.,

1997) on the MPS-H (Hewitt & Flett, 1991a) and Conscientiousness and Personal Standards (Stumpf & Parker, 2000) on the MPS-F (Frost et al., 1990). However, these studies had much larger sample sizes than the current study, of over 200 participants (Hill et al.) and over 1000 participants (Stumpf & Parker), so one explanation for the lack of significant findings in this study was the small sample size. Furthermore, no support was found for the assertion of Slade and Owens (1998) that the Conscientiousness facets of achievement striving, competence and order would be related to positive perfectionism.

It is interesting to note that despite the lack of significant correlation between Conscientiousness and positive perfectionism, there were differences in mean scores on Conscientiousness between the two groups. The athlete group was found to be more conscientious than the clinical group, and was also significantly higher on the specific Conscientiousness facets of achievement striving and competence. These results fit with descriptions of athletes as being individuals who are high in positive achievement striving (Bunker et al., 1993; Gould et al., 2002). Costa and McCrae (1992) state that achievement striving is having high levels of aspiration, being diligent and working hard to achieve goals. Indeed Costa and McCrae state generally in regards to Conscientiousness "...probably few people become great musicians or athletes without a reasonably high level of this trait" (p. 16). It is possible that the measure of positive perfectionism used did not distinguish adequately between those high and low in positive achievement striving, and that a measure such as the facet of achievement striving on the NEO-PI-R may distinguish this. This argument is strengthened by findings throughout this research of no differences between groups on the positive perfectionism scale. It may be more useful therefore to think of positive achievement striving as being something that can be distinguished between groups of people with high standards rather than positive perfectionism. In this sense, perfectionism may be a term that could be reserved to be used in regards to negative perfectionism. Consequently it may be more useful to refer to differences in *positive achievement striving* rather than *positive perfectionism*. This view is following the position of Frost and colleagues (1993) who distinguish between the two factors of "Positive Striving" and "Maladaptive Evaluation Concerns" on both MPS measures (MPS-F; Frost et al., 1990; MPS-H, Hewitt & Flett, 1991a). Thus, Frost and associates make a distinction between achievement striving and negative perfectionism, rather than positive and negative perfectionism.

It was also interesting to note that competence was higher in athletes. This result is not surprising as competence measures the sense to which an individual feels they are capable and effective (Costa & McCrae, 1992), and is related to self-esteem (Costa et al., 1991). Clearly the clinical group may be expected to be lower in competence if this construct is tapping self-esteem. One factor that may have also contributed to this difference is that the largest diagnostic group in the clinical sample was OCD. It has been found that OCD patients have lower scores on the facet of competence compared to non-OCD anxious and depressed patients (Rees, Anderson, & Egan, in press; Rector, Hood, Richter, & Bagby, 2002). Thus, having almost half of the current clinical sample with a diagnosis of OCD may have further attenuated the differences in competence scores between the clinical and athlete groups. Rees and colleagues argued that OCD patients "...tend to experience difficulty motivating themselves to perform desired tasks due to high expectations" (p. 21). Therefore, one explanation of the differences in competence scores is that individuals high in negative perfectionism avoid starting tasks due to thinking they may not be able to achieve their high standard. This is even despite having a similar level of positive perfectionism as the athletes. This result also makes intuitive sense as 42% of the clinical group had a diagnosis of Obsessive-Compulsive Personality Disorder (OCPD), and avoidance of tasks due to fear of not performing them perfectly is a criteria of OCPD. This also fits well with Shafran and colleagues' (2002) model of the maintenance of negative perfectionism, where avoidance is a key feature. Overall the results show the important difference that clinical groups are lower on competence. This suggests that cognitions regarding competence may be a particularly important aspect to target in treatments for people high in negative perfectionism.

5.4.2 Relationships between negative perfectionism and personality

The only significant relationship between Big Five personality factors and negative perfectionism in the clinical group was on the domain of Agreeableness. The relationship indicated that the higher the degree of negative perfectionism, the lower the degree of Agreeableness. Agreeableness is a measure of interpersonal style, and people who score low on this are described as egocentric, sceptical of others' intentions, antagonistic, tough-minded, low in altruism, and competitive rather than cooperative (Costa & McCrae, 1992). This confirms other studies that have found significant negative relationships between Agreeableness and scales used to indicate negative perfectionism (Dunkley et al., 1997; 2004; Hill et al., 1997).

One hypothesis to explain this relationship is that Agreeableness may be, to some extent, an indicator of the relative severity of psychopathology or degree of comorbidity. This argument is based on the research where Agreeableness has consistently been found to be significantly lower in individuals with a diagnosis of a personality disorder (Saulsman & Page, 2004; Saulsman, Page, & Egan, 2003). Of course, one of the main overarching criteria for all personality disorders in the DSM-IV (APA, 1994) is interpersonal difficulties (i.e., low agreeableness). One possibility is that when negative perfectionism is high, individuals are likely to create interpersonal difficulties due to their rigidity about completing tasks perfectly. For example, others may react with frustration to a negative perfectionist being rigid about needing a task to be performed very well, which increases interpersonal difficulties. Therefore, a hypothesis for future research is that negative perfectionism is a common factor in personality dysfunction. This would fit with the rigidity of cognitions and interpersonal difficulties which are a hallmark of personality disorders, and clearly a significant part of high negative perfectionism. This also fits with the argument of Ellis (2002) that perfectionists have more rigid and persistent beliefs than non-perfectionist patients.

Furthermore, an important point to note when considering the implications of the results is the degree of diagnostic comorbidity in the sample. There was an average of 3.3 diagnoses per person, which indicates the sample could be considered to be moderately severe with this degree of comorbidity. In another study of a severe sample of patients who were attending an intensive (5 days per week) outpatient group therapy program for personality disorders at a public mental health service, we found an average level of comorbidity of 5.09 diagnoses per patient overall. This comprised of an average of 4.06 axis I diagnoses per patient and 1.03 axis II diagnoses per patient (Egan, Nathan, & Lumley, 2003). Although different structured diagnostic measures were used in the Egan et al. study, it does give some comparison, and indicates that the sample in the present study would be considered to be a complex one with a moderately high degree of comorbidity.

The clinical group had a significantly higher level of Neuroticism than the athletes, and this result is not surprising, as clinical groups are characterised by high Neuroticism scores compared to non-clinical groups (Costa & McCrae, 1992). Neuroticism was

only significantly positively related to negative perfectionism in the athletes, despite this correlation nearing significance in the clinical group. It is likely that with a larger sample size this correlation of $r = .44$ in the clinical group would have been significant. The significant relationship between Neuroticism and negative perfectionism in the athletes is similar to studies that have found this in student samples (Stumpf & Parker, 2000; Magnusson et al., 1996) where negative perfectionism is indicated by subscales of the MPS-F (Frost et al., 1990). This is also similar to findings using DAS (Weissman & Beck, 1978) items that primarily measure negative perfectionism (Dunkley et al., 1997; Zuroff, 1994). The results of the relationship between high negative perfectionism and high Neuroticism most likely reflect the role of negative affect and psychological distress. Because negative perfectionism is related to distress, and Neuroticism is the degree to which an individual is vulnerable to distress (Costa & McCrae), then this correlation would be expected.

In terms of the personality domain of Extraversion, the results showed that the athlete group was significantly more extraverted than the clinical group. Similar to the results of group differences in Neuroticism, this result is not surprising given that higher scores on Extraversion are correlated with greater happiness and better adjustment (Costa & McCrae, 1992). Clinical groups have consistently been found to score lower on Extraversion than non-clinical groups (Costa & McCrae), and the current study confirms this well established finding. It is interesting to note from correlational results that higher negative perfectionism in athletes was related to lower Extraversion. Furthermore in athletes, lower Extraversion was also related to lower Conscientiousness and higher Neuroticism. Thus, when athletes have a lower degree of Extraversion, they appear to be similar to the clinical group in having higher Neuroticism and lower Conscientiousness.

5.4.3 Limitations of the study

This study had several major limitations that underline the importance of considering results cautiously. The analyses were underpowered, thus results presented may not be an accurate reflection of the relationship between variables. Because of the small sample size, moderate correlations were not significant. Therefore, generalisation of results and definitive conclusions cannot be made. It is worth noting that correlations that are significant in a small sample size are likely to be large effects, and therefore are worthy of future investigation. However, the restriction of range that was created by the small

sample size, and the process of selection of subjects (i.e., those who were high and low on negative perfectionism), has a serious influence on the correlations, thus generalisation of results cannot be made.

A further methodological issue concerned the investigation of high and low negative perfectionism. The purpose of the study was to understand the relationship of personality domains to high and low negative perfectionism, and this was essentially one independent variable. However, there was also a second independent variable in the research; the athlete versus clinical group. Consequently, there was a methodological confound between these variables. Thus, the present findings may simply be reflecting the difference between clinical and non-clinical groups that is an established finding, (i.e., clinical groups being high on Neuroticism and low on Extraversion), rather than reflecting differences in high and low negative perfectionism. Thus, the differences between the groups on personality variables are difficult to interpret in a meaningful way, as many of the differences, for example on the variables of Neuroticism and Extraversion, would be expected when comparing a clinical group to a group of athletes who are high functioning, regardless of their level of perfectionism. Therefore, it is difficult to draw conclusions about the role of perfectionism and personality from this study.

One way to avoid this confound in future research would be to use only a clinical group, and select from within this group individuals who score high and low on negative perfectionism. This would make it easier to determine the nature of relationships between personality and negative perfectionism without the confound of clinical versus a non-clinical group that was present in this study. However, this may be difficult to achieve and could be an artificial dichotomy, as the strong correlation between negative perfectionism and psychological distress is a well established finding, and it would seem unlikely to find a clinical group that had high levels of distress but low negative perfectionism.

5.4.4 Conclusions

In summary, these results indicated the interesting finding that the personality domain of Agreeableness was related to negative perfectionism in the clinical group. It was hypothesized that this might be related to personality disorder pathology and negative interpersonal results of perfectionism. However, this is clearly a speculation as the

current study could not provide evidence for this claim. The major limitation of this study was the small sample size, thus correlation analyses were underpowered so the results should be interpreted with caution. It was suggested that the major explanation of results of group differences was the role of negative affect. Future research should aim to further examine the nature of relationships between personality and perfectionism. For example, a path analysis could be used to investigate the direction of relationships more thoroughly, and future research should also include measures of negative affect.

CHAPTER 6

Study 5

A clinical investigation of motivation to change and cognition about failure in perfectionism

6.1 Introduction

The construct of perfectionism has almost exclusively been examined using quantitative methods. As described throughout this research, most of the explorations of perfectionism have focused on measuring perfectionism through questionnaires administered to various groups. While quantitative methodology is certainly a most important and useful way to further research, there is growing awareness that other methodologies such as qualitative methods can be a very useful adjunct to quantitative research (Denzin & Lincoln, 2000). This is because qualitative methods, such as interviews, can provide a rich and idiosyncratic understanding of an area, the complexity of which may not always be captured by quantitative methods (Denzin & Lincoln).

There has been a paucity of research examining perfectionism using qualitative methodology. Neumeister (2004a,b,c) has published three studies based on twelve “gifted” college students. The students were in their honours year of study and had been identified as gifted during elementary school years. Six students who scored highly on the MPS-H (Hewitt & Flett, 1991a) subscale of *self-oriented* perfectionism, and six who scored highly on *socially-prescribed* perfectionism were selected from a pool of 290 students. Qualitative interviews were conducted with the students to further examine their perfectionism. An example of a question was “think of an experience in which you did not do as well as you thought you would, tell me about this”. Neumeister (2004a) reported that the students who scored highly on *self-oriented* perfectionism were described as setting “performance approach goals”. In contrast, students who scored high on *socially-prescribed* perfectionism were described as setting “performance avoidance goals”. These interpretations were based on a thematic analysis of the qualitative interviews. Further, Neumeister (2004b) stated that students who were high on *socially-prescribed* perfectionism reported in interviews that they had experienced authoritarian parenting, and had a fear of disappointing others. In contrast, those who were high on *self-oriented* perfectionism reported modelling parental perfectionism, and reported more

feelings of mastery about academic achievements. Finally, Neumeister (2004c) reported on how students stated they reacted to academic success and failure. *Self-oriented* perfectionists were reported as taking pride in their successes, making internal attributions for success, and when they failed, making situation-specific attributions. In contrast, *socially-prescribed* perfectionists were stated as minimising their successes, making internal attributions for failure, and overgeneralising the consequences of failure. The results of Neumeister (2004a,b,c) appear to mirror quantitative results. Students scoring high on *self-oriented* perfectionism reported more positive aspects, whereas those scoring high on *socially-prescribed* perfectionism reported more negative aspects. It is difficult, however, to draw conclusions about positive and negative perfectionism from these results, as the MPS-H (Hewitt & Flett, 1991a) is not a specific measure of positive and negative perfectionism.

A recent study by Riley and Shafran (2005) used a qualitative approach with fifteen individuals who were defined as having clinical perfectionism, and six people without clinical perfectionism. Participants were judged by the authors as whether “they displayed the core psychopathology of clinical perfectionism” (p. 370). The qualitative interview used inductive methodology to allow themes to emerge from the data, but questions were asked about striving towards goals, whether the participants’ feel they have ever reached their own standard, and their scheme for self-evaluation. A specific example of a question they used is; “Do you ever feel that you’ve reached your standards?” (p. 371). Riley and Shafran reported the core themes from the data as involving self-imposed unhelpful standards, continually striving and striving despite negative consequences. They also reported several themes which indicated some of the mechanisms that maintain clinical perfectionism including; self-critical reaction to failure, positive reaction to success, biases in thinking, rules and rigidity, avoidance, escape, safety behaviour, procrastination, fear driven and value driven behaviour. It was interesting to note the group with clinical perfectionism, not the comparison group, mainly endorsed these themes. This gives some indication of particular processes that occur in negative or clinical perfectionism. Despite the wealth of information derived from this study, and its important relevance to clinical and negative perfectionism, it did not focus on positive aspects of perfectionism.

Another study that has examined perfectionism using qualitative methodology attempted to examine differences between adaptive (positive) and maladaptive (negative) perfectionism. Rice, Bair, Castro, Cohen, and Hood (2003) interviewed nine university students. The students were classified as being adaptive perfectionists, maladaptive perfectionists or non-perfectionists based on a cluster analysis of their scores on the MPS-F (Frost et al., 1990). Adaptive perfectionists ($n = 2$) were defined as scoring above the top-one third in the distribution of Personal Standards and below the bottom one-third on Concern over Mistakes from the original sample of 139 students. Maladaptive perfectionists ($n = 4$) were defined as scoring above the top-one third of the distribution on both Personal Standards and Concern over Mistakes. Non-perfectionists ($n = 3$) scored in the middle range on both subscales. One problem with this study is the very small sample sizes in each of the classifications, of 2 adaptive and 4 maladaptive perfectionists. Furthermore, this way of defining adaptive and maladaptive perfectionism based on cluster analysis has the problem that definitions are based on the overall sample, and thus it is harder to generalise these results than if a specific measure of positive and negative perfectionism was used.

Despite these problems, Rice and colleagues (2003) used a qualitative interview that asked the students the four following questions; (i) how would you describe perfectionism?; (ii) what are the worst things about perfectionism?; (iii) what are the best things about perfectionism? (iv) what should psychologists know about perfectionism? The results were analysed by examining themes from the response to the interviews. Rice et al. stated that the adaptive perfectionists reported less distress when they did not achieve a personal standard, whereas the maladaptive perfectionists were more likely to report distress. These qualitative results again seem to mirror well the findings of quantitative research.

Because they are qualitative the interviews by Neumeister (2004a,b,c) and Rice et al. (2003) only asked very general questions, which would likely only access surface level cognition about perfectionism. It would be useful to examine the stream of cognitions from surface level cognitions to deeper level cognitions about the meaning of an event. This could be based on a well known clinical technique in cognitive therapy, the vertical-arrow technique (Burns, 1980b). This requires the patient to answer questions successively in regards to their concerns, for example questions include “what would that

mean to me?” and “what would be the worst that could happen if that were true?”. These successive questions result in accessing deeper level cognitions, through to core beliefs (Beck, 1995). The key aspect of this technique is that a therapist asks the patient for the *meaning* of a cognition successively until important beliefs are uncovered (Beck). No qualitative research has reported using the vertical-arrow technique to access cognitions in a sample of perfectionists. If people high and low on negative perfectionism were asked about their cognitions to a failure situation, using the vertical-arrow technique, this might help to inform the nature of cognitive differences between these groups.

Frost and colleagues (1997) examined cognitions about failure situations through the use of journal recordings. They selected students who were either high or low on Concern over Mistakes on the MPS-F (Frost et al., 1990), and in this way they may be construed as individuals who are high and low on negative perfectionism. The participants kept a journal for 5 days answering questions about mistakes they had made, their thoughts and feelings about the mistakes, and concerns about other people noticing the mistake. The high Concern over Mistake participants were found to report more negative emotional reactions to mistakes, to report more “should” statements about the mistakes, and reported the mistakes as being more serious and having more catastrophic consequences compared to those low on Concern over Mistakes. When the participants were contacted by telephone 2 weeks after finishing their journal task, both those high and low on Concern over Mistakes reported remembering a similar number of mistakes. This study indicated there were no differences in the duration of thought about a mistake between high and low negative perfectionists, rather it was the *beliefs* about the mistakes that were different between groups. This study also suggests that further investigation of beliefs and cognitions about mistakes would be useful to examine.

No studies to date were found that have investigated perfectionists’ motivation to change perfectionism, and if they have insight into their perfectionism. Motivation to change behaviour is very important, because if individuals do not view perfectionism as a problem they are unlikely to want to change it. Burns (1980b) suggested as his first technique to change perfectionism a motivational approach to listing advantages or disadvantages of perfectionism. Furthermore, Antony and Swinson (1998) also suggest in their self-help book on perfectionism that one of the first steps is to understand the helpful and unhelpful consequences of perfectionism.

Motivational interviewing is intended to instigate change in clients, and involves a series of processes that examine the costs and benefits to an individual of particular problem behaviours (Miller & Rollnick, 2002). Motivational interviewing has been found to be effective in treating substance abuse (Burke, Arkowitz, & Dunn, 2002; Zweben & Zuckoff, 2002). The importance of addressing motivation to change has been noted by Wilson and Schlam (2004) who stated;

“If psychological treatments are to be maximally effective, they must include empirically supported strategies for reinforcing and enhancing patients’ motivation to change” (p. 370).

It has been well documented that anorexia nervosa is a good example of a disorder that is difficult to treat due to resistance to change (Garner & Garfinkel, 1997; Vitousek, Watson, & Wilson, 1998; Wilson & Schlam). There is certainly some conceptual overlap between perfectionism and disorders such as anorexia nervosa, as perfectionism has been widely studied and found to be elevated in anorexia (Bastiani et al., 1995; Davis et al., 2000; Halmi et al., 2000; Slade & Dewey, 1986; Srinivasagam et al., 1995).

Consequently, it makes sense to examine if individuals want to change their perfectionism. For example, one possibility might be that their behaviour has many positive benefits, thus they do not wish to change. For example, in anorexia nervosa there are benefits, such as perceived control, and these benefits can make it difficult for patients to want to change their behaviour. If treatments for perfectionism are to be developed, then the first logical place to start is in examining if perfectionistic individuals want to actually change their behaviour. If they do not want to change their perfectionism, then new treatments developed may need to focus a portion of the treatment towards enhancing motivation to change.

The aim of this study was to be a descriptive study that examined responses on a structured clinical interview designed to assess the following areas; cognitions in regards to failure, insight into perfectionism, and motivation to change perfectionism. This would provide a rich description of these areas through a clinical technique of assessment via structured interview. The purpose was to provide descriptive data that could inform directions in this area for future investigation. There were no specific hypotheses for the study due to the lack of previous research and because qualitative techniques generally do not make specific hypotheses, but rather are guided by themes that emerge from the data (Denzin & Lincoln, 2000).

The study included athlete and clinical participants. The study was designed with the purpose primarily to understand responses in questions about motivation to change perfectionism and cognitions regarding failure in the clinical group. This is because the aim of the study was to understand potential factors, such as resistance to change, which may have implications for treatment of individuals with psychological disorders. However, it was also determined that it would be useful to ask an athlete group the same questions as a comparison group. For example, determining the different way that athletes responded to questions regarding cognitions about failure might service to inform why there are differences between groups on the consequences of perfectionism.

6.2 Method

6.2.1 Participants

The participants were recruited for the study from the sample of 20 clinical and 20 athlete participants with extreme high and low scores on negative perfectionism, respectively on the PANPS (Terry-Short et al., 1995) (see Study 4 for details). From this sample, 10 clinical participants who had the highest ranked scores on negative perfectionism were selected. The 10 athlete participants who had the lowest ranked scores on negative perfectionism were also selected. Thus, the sample consisted of a total of 20 participants.

The demographic characteristics of the sample are shown in Table 31.

Table 31

Demographic characteristics of the athlete and clinical participants, n = 20

	Clinical (n = 10)	Athlete (n = 10)
Age	38.4 (SD = 10.69)	41.70 (SD = 8.56)
Gender		
Males	2 (20%)	4 (40%)
Females	8 (80%)	6 (60%)
Highest educational attainment		
Year 10	20%	0%
Year 12	50%	10%
University degree	30%	90%
Work		
No paid work	40%	20%
Part-time work	50%	10%
Full-time work	10%	70%
Relationship		
Single	60%	20%
Defacto or married	40%	80%

Following the pattern described in previous studies, the athlete group had a higher degree of education, were more likely to be engaged in full-time work and in a relationship compared to the clinical group. There were more males in the athlete than the clinical group. The clinical group had higher negative perfectionism ($M = 86.20$, $SD = 5.65$) than the athletes ($M = 37.60$, $SD = 4.81$), and this difference was significant, $F(1, 18) = 428.58$, $p = .0001$. Eta squared = .96, indicating this was a large effect. There was no significant difference between positive perfectionism in the clinical group ($M = 76.30$, $SD = 7.15$) compared to the athletes ($M = 70.90$, $SD = 11.04$), $F(1, 18) = 1.68$, $p = .21$, and eta squared for this analysis = .09.

The primary diagnoses for the clinical group can be seen in Table 32.

Table 32

Primary diagnosis in the clinical sample, n = 10

Diagnosis	Number of diagnoses	Percentage
Generalised Anxiety Disorder (GAD)	3	30%
Obsessive-Compulsive Disorder (OCD)	2	20%
Social Phobia	2	20%
Major Depression	2	20%
Post-traumatic Stress Disorder (PTSD)	1	10%

It can be seen from Table 32 that 80% of the sample had a primary diagnosis of an anxiety disorder. The total diagnoses for the sample are shown in Table 33.

Table 33

Total axis I and axis II diagnoses in clinical group, n = 10

Diagnosis	Number of diagnoses	Percentage
Axis I diagnoses		
Major Depression	8	80%
Social Phobia	6	60%
Generalised Anxiety Disorder (GAD)	3	30%
Obsessive-Compulsive Disorder (OCD)	2	20%
Post-traumatic Stress Disorder (PTSD)	2	20%
Panic disorder	1	10%
Alcohol abuse	1	10%
Axis II diagnoses		
Obsessive-compulsive PD	5	50%
Avoidant PD	3	30%
Paranoid PD	3	30%
Dependent PD	2	20%
Borderline PD	2	20%
Narcissistic PD	2	20%
Schizoid PD	1	20%

Table 33 indicates that the sample had a high degree of comorbidity of disorders, and that the majority of the participants (80%) were depressed in addition to having other anxiety and personality disorders. The average BDI-II (Beck et al., 1996) score in the clinical group was 21.4 ($SD = 12.4$), indicating a moderate level of depression. It is also important to note that half of the sample had a comorbid diagnosis of Obsessive-Compulsive Personality Disorder in addition to other diagnoses. There was an average of 2.3 axis I diagnoses and 1.8 axis II diagnoses per person. The total average number of diagnoses was 4.1 diagnoses per patient. The degree of diagnostic co-morbidity was high as 70% of the sample was diagnosed with two or more disorders, 70% had three or more disorders, 50% had four or more disorders and 40% had five or more disorders.

6.2.2 Measures

The Positive and Negative Perfectionism Scale (PANPS; Terry-Short et al., 1995)

The PANPS was used to measure negative perfectionism to classify those participants scoring in extreme high and low ranges on the negative subscale. It has been described in Study 1.

Structured Clinical Interview for DSM-IV axis I disorders (SCID-I/P, Version 2.0; First et al., 1996) and Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II, Version 2.0; First et al., 1994)

The SCID and SCID-II were used to assess which DSM-IV diagnoses the clinical participants met, and are described in Study 1.

Beck Depression Inventory- Second Edition (BDI-II; Beck et al., 1996)

The BDI-II was used to assess depression and is described in Study 1.

Structured clinical interview about motivation to change and cognitions about failure

A structured clinical interview was developed for this study, and the questions which comprised the interview, can be seen in Table 34. Section 1 of the interview had questions relating to insight into perfectionism, and motivation to change. Section 2 had questions relating to how the interviewee perceived failure to meet their high standards.

Table 34

Structured clinical interview questions

Section 1 – Motivation to change

1. Do you see yourself as being a perfectionist or having high standards?
2. Is being a perfectionist a useful thing for you?
3. Is being a perfectionist an unhelpful thing for you?
4. Given the choice between giving up being a perfectionist and staying a perfectionist, what would you choose?
5. What would be the advantages of continuing to be perfectionistic?
6. What would be the disadvantages of continuing to be perfectionistic?
7. What would be the advantages of not being perfectionistic anymore?
8. What would be the disadvantages of not being perfectionistic anymore?

Section 2 – Failure to meet high standards

9. Can you tell me about the areas in your life which you hold high standards for yourself?
 10. Choose one area where you have high standards for yourself and tell me about a recent example where you failed to meet up to the standard you set yourself.
 11. Considering that situation, what does it say about you as a person that you failed to meet this standard?
 12. What is the worst thing about the fact that you failed to meet this standard?
 13. Do you think of yourself as a failure for having not met this standard?
 14. Did not meeting the standard cause you distress or upset?
 15. Did it cause others distress or upset?
 16. How long after failing to meet this standard did you continue to think about it?
 17. What other factors about you do you think might have attributed to you not meeting this standard?
 18. What other factors not about you do you think might have attributed to you not meeting this standard, like external events or other people?
 19. What have you learned from this situation where you failed to meet your standard?
 20. Due to the situation, will you re-evaluate your standards and set them higher or lower?
-

This study was not intended to be a descriptive study rather than a strict qualitative study, and as such, qualitative methodology was not followed. Qualitative methodology requires that the interviewer expands on and asks new questions to saturation point based on the participants' responses, which is an expansive technique (Denzin & Lincoln, 2000). The aim of this study was to determine responses to pre-defined areas that were of theoretical interest, thus a structured interview was used rather than the usual technique of open questioning in qualitative research.

The questions were derived theoretically based on knowledge of the literature regarding motivation to change and cognitive therapy techniques to access cognitions about failure. Thus, it was a descriptive clinical study of relevant cognitions and beliefs about perfectionism. Section two of the interview was designed loosely around the idea of the vertical arrow technique in trying to access deeper level cognitions about an event. However, obviously the vertical arrow technique was not used as this is an individual technique that is modified depending on the responses of the patient in cognitive therapy. Thus, section two used questions that are similar to ones that may be utilised in a cognitive therapy session using the vertical arrow technique.

6.2.3 Procedure

The participants who were eligible for the study were contacted via phone and asked to participate in a final study which involved an interview. All participants agreed to complete the study. The interviews were all audio taped and were transcribed verbatim after each interview by the researcher. All interviews for the clinical participants were conducted at the Curtin University Psychology Clinic. Interviews for the athlete group were conducted either at their workplace (80%) or home (20%). All interviews were conducted in a room with only the interviewer and participant present. The structured clinical interview questions were followed strictly, and no extra questions were asked. The only extra statement used was if participants' answered "no" to being a perfectionist in question 1, but endorsed that they had high standards. This statement was; "the rest of the interview uses the term perfectionism, when you hear that if you just think of your high standards". The additional statement was used for the athletes but was not required for clinical participants as they did not respond "no" to question 1. The only other supplement to questions was to repeat a question if the participant did not understand it, and to sometimes use the probe "can you tell me more about that?" if the participant

only gave a very brief answer to a question. The time of interviews varied depending on how long the participant's answers to questions were. The range was 20 minutes to 1 hour, and the average interview time was 35 minutes.

6.3 Results

The results will be presented first for motivation to change questions, and then cognitions about failure. Because the study was a descriptive study, procedures for thematic analysis (for example such as coding and inter-rater reliability of categories) that are used in qualitative research was not followed. This is because the interview was designed as a structured clinical interview to compare results of all participants to the same pre-defined questions. Therefore, the results are a descriptive analysis of interview responses.

6.3.1 Motivation to change

Insight into perfectionism – question 1

In response to question 1, when asked if they viewed their self as being a perfectionist, all 10 participants in the clinical sample stated they did. Furthermore, in response to this question several of the clinical participants elaborated with explanations about the duration of their perfectionism, and definitions of what perfectionism entailed for them as follows;

“ I just, um, have this idea about you know, always doing your best, trying your best” [C4]

“...if I can't do it right then I won't do it at all, it's been like that since I was a kid and its really destructive” [C5]

“Yes most certainly. Just generally, if something's got to be done it should be done properly, and done to the best of your ability” [C8]

“I have always been a perfectionist, and it has always been my way” [C10]

In contrast, the athlete group all responded that they viewed their self as having high standards, but not perfectionism. This was highlighted through the following responses;

“I think I have very high standards for myself but I wouldn't say I have a tendency for perfectionism” [A1]

“Certainly in some aspects of my life, I think the word perfectionist has a negative connotation, people see it as being very anally retentive and obsessive”

[A3]

The difference that the athlete group saw between being a perfectionist and having high standards was summarised well by the following response to question 1;

“I see myself as someone who sets high standards, not a perfectionist. I see them as a little bit different, I do set high standards for myself and I suppose sometimes others around me as well, but not to the point where it has to be perfect, and I suppose not to the point where if you don’t reach that standard I come down on myself severely or down on others who don’t reach it. Which I think is more the perfectionist as opposed to setting high standards” [A4]

Perceived benefits of perfectionism – question 2

Participants were asked whether they perceived perfectionism to be a useful thing for them. The response of clinical participants to this question was mixed, 4 participants stated that they thought perfectionism was not useful, 4 stated that it was both useful and not useful, while only 2 participants stated it was useful alone. Of the participants who thought perfectionism was not useful a typical response was;

“ No...because I get stressed out about a lot of things that I don’t need to” [C4]

The clinical participants who gave mixed responses in regards to the helpful aspects of perfectionism stated;

“ Possibly because it means that I’ve got an area of my life that’s actually working...but on the other hand sometimes it can be, ah, quite a narrow-minded way of looking at things” [C3]

In contrast, the athlete group overwhelmingly viewed perfectionism as a useful aspect, where 8 participants gave responses only about useful benefits of perfectionism. However, 1 athlete gave a response stating there were both positive and negative effects of perfectionism, and another stated perfectionism was not beneficial.

A typical response from an athlete about the benefits of perfectionism was;

“...it makes my life easier...if I didn’t have goals then my life would be, um, less meaningful, it wouldn’t be as rewarding” [A2]

The one athlete that responded about negative and positive benefits of perfectionism pointed to interpersonal aspects of perfectionism that were negative;

“ I find it is useful in that it gives me order and structure to a lot of aspects of my life...unfortunately it's had a negative connotation in my private and personal life, being called a perfectionist in a negative way” [A3]

Perceived advantages of continuing perfectionism – question 5

Question five asked participants to report on what advantages they perceived about continuing to be perfectionistic. The majority of the clinical participants (8 participants) reported significant advantages of their perfectionism, while the remainder did not mention advantages in response to this question. A few participants could not clarify exactly what the advantages were, while the most commonly reported advantages were other people commenting on good work they had produced, and helping to achieve high standards. A representation of these views includes;

“I don't know, I don't really think about it, I just think this works for me” [C8]

“...I suppose that I enjoy like sort of having those sort of standards and being you know, sort of like, trying to be the best at what I do.” [C4]

“Um, I have certain standards in my life that I want to get to, I need that sort of thing to help me aim towards where I want to go” [C2]

“You gain respect, you're organised, there's less stress, there's less tension...” [C6]

“Other people may acknowledge that, so its something that somebody else can say about you that's positive” [C3]

One interesting response also pointed to similar advantages, but reported insight into the notion that despite these advantages, perfectionism was not particularly effective;

“Um, well I would say people, um they look at you as being I suppose as being very reliable, very trustworthy, someone who has impeccable high standards that is someone you might want to have working for them or I don't know babysitting for them or anything responsible, so an advantage in that way is people think highly of you, as long as they don't know the internal bit that it's not actually very effective” [C1]

Similarly, the athlete group all reported advantages of perfectionism. However, rather than reporting advantages that included others noticing their good performance, their responses mainly were centred around high standards helping them to achieve their goals as follows;

“Achieving, um, goals, professionally, personally, socially, it helps to achieve goals basically” [A2]

“Being able to achieve some good things, setting goals and striving towards them, it keeps life interesting” [A4]

“I can hopefully achieve in my life, I think that’s one of my main goals, to live life to the fullest” [A7]

“Well I guess that you can achieve a lot more, both personally and professionally...”[A9]

Perceived negative consequences of perfectionism – question 4

The majority of the clinical group (8 participants) reported that perfectionism was an unhelpful aspect for them, while one clinical participant stated it was not unhelpful, and another that it was both helpful and unhelpful. Typical responses about why it was unhelpful included;

“ Yes...I hate that being someone that has to have it all so right because it puts too much pressure on me. Um, and that then leads to all sorts of other things like you feel depressed, or angry and all that, so in that way it’s not helpful” [C6]

“It can be because I get extremely anxious about things, because I want things done a certain way” [C8]

In comparison, the athlete group was split between agreeing that perfectionism was an unhelpful trait (4 participants) while an equal proportion thought perfectionism was not unhelpful (4 participants), and 2 participants reported both unhelpful and helpful aspects. Of the athletes who thought perfectionism was unhelpful, all cited interpersonal reasons;

“Sometimes it can be a nuisance because even with my wife I set too high a standards and you put a lot of pressure on other people because you expect the same as what you expect of yourself” [A1]

“Sometimes, um, I know people, my wife for example, can be frustrated sometimes...” [A2]

“Yep...I think in my social life because I’m a perfectionist and organised sometimes I think that would cut other people out” [A7]

Perceived disadvantages of continuing perfectionism – question 6

In response to a question asking what the disadvantages of perfectionism were, the clinical group mostly reported disadvantages (8 participants), while the remainder gave mixed responses. The responses mainly pointed to anxiety and stress on self and pressure on others around them. Responses highlighting this include;

“Well basically I continue going through my life worrying about things that don’t actually matter, you know, um, the little details” [C1]

“I guess it can be annoying to other people sometimes if they don’t have the same sort of standards that you do, it can cause a bit of friction, um also you can get a bit frustrated with yourself if you haven’t done something well” [C2]

“Um, you can beat yourself up a lot, I’m not perfect, but because I have this strong force where I have to be sometimes, I get down on myself, so it can be a bit of a burden” [C3]

“Well other than sort of making, you know, the lives of people, my family around me, unbearable and maybe even the extent you know sort of like being so stressed out about myself” [C4]

“Um, I guess I have low self-esteem because of it, um it’s just like everything has to be done right, or not done at all, and there’s sort of no medium ground for anything” [C5]

In contrast, the athlete group were split in reporting disadvantages, where slightly more of the group reported some disadvantages (6 participants) whereas the other 4 participants could not think of any disadvantages of perfectionism. Of those athletes who reported disadvantages, all reported interpersonal consequences, rather than stress upon their self as the clinical group reported. Responses highlighting this are;

“It’s a pain in the arse to other people, um, people who are not of a like ilk, find it obsessive, find it unnecessarily pedantic and they, it grates a lot of people, so interpersonally it comes at a cost to be like that, so it either restricts the number of people you associate with or have relationships with down to similar minded people...” [A3]

“It gets on lots of people’s nerves...” [A6]

“Um, I guess people who don’t have the same sort of views can sometimes be turned off by people who do have that sort of approach. Um, yeah so you maybe sort of alienate some sort of people” [A8]

Choice to keep or relinquish perfectionism – question 3

Question 3 asked participants a hypothetical question, whether, if they had the choice, they would choose to give up or keep perfectionism. The majority of the clinical participants (7 participants) stated they would prefer to keep their perfectionism, while 3 participants in the clinical group stated they would like to change their perfectionism. In regards to those clinical participants who wished to change, the following response was typical;

“ I would give it up. Because as I said it’s not helpful, it causes me a lot of stress” [C1].

In contrast, the clinical participants who did not want to relinquish their perfectionism made statements pointing to the positive benefits of perfectionism as their reason why they would not give up and also the negative consequences of what would happen if they were not;

“ I would stay one. I just think there are more advantages, like I said it helps with my achievements” [C2]

“ I would probably stick with it...I would feel like the wheels would be falling off if I wasn’t perfectionistic” [C3]

“...I would prefer to be perfectionistic...apart from the stressing out side of it and everything, I don’t believe there’s anything sort of wrong in it” [C4]

“I think I would have to say that I would stay the perfectionist because then I have some hope of achieving, if I let go of that, it is when I would sink” [C7]

“ I would stay...it’s the way the world runs...if you do things well...then they respect you...I feel valued when people give me good feedback on a job I have done” [C8]

The athlete group were similar to the clinical group as the majority (9 participants) stated they would choose to remain being a perfectionist. Typical responses from the athletes emphasised they were happy with being a perfectionist, and also that they could not change their perfectionism;

“I couldn’t change, it’s in my nature” [A9]

“ I’m quite happy with myself as I am because that’s the way you achieve more, if you don’t have high standards you try to achieve and maintain then you’re not going to progress” [A8]

“I don’t think I could choose not to have high standards, because I guess that’s how I see myself” [A7]

6.3.2 Cognitions about failure to meet high standards

Examples of not meeting high standards – question 10

Participants gave a detailed example in response to this question. Table 35 indicates the examples that were given by participants.

Table 35

Clinical and athlete participants’ examples of failure to meet a high standard

Example	Number reporting issue
Clinical group	
Not finishing study	2
Being too critical of their child	1
Failing to do a good job of making an invitation	1
Not doing a good job of a dinner party	1
Not helping enough on a voluntary committee	1
Not packing correct clothes for a holiday	1
Being behind on housework	1
Making a mistake at work	1
Running late to an appointment	1
Athlete group	
Did not perform in race in desired time (poor performance)	3
Did not finish a race	2
Not recovering from knee injury fast enough	1
Not training enough for triathlon recently	1
Not handling a work situation well	1
Not putting enough time into work	1
Not being a good friend to someone	1

It can be seen from Table 35 that there was a wide mix of situations reported by the clinical participants including family, work and other situations. In contrast, 7 of the athletes gave an example related to triathlon, while the remainder were mostly in regards to work.

In response to asking the participants about the meaning of failure to meet a high standard, the majority of clinical participants (7 participants) gave responses indicating they viewed themselves either as failures or not having tried hard enough. The remainder did not give specific evaluations about the meaning about them as a person in response to the question. Examples of the majority of responses include;

“Um I wasn’t very focused about it at the time, I was just pretty lazy...” [C2]

“Um, that I failed I suppose, I wasn’t very happy with myself...” [C3]

“Internal dialogue says something like I’m a bad mother...” [C5]

“For me it’s not good enough...I can run through my head that other people might say that its good, but I find that hard to accept. And even though I got 79%, I mean that’s a good mark, but it doesn’t feel like it” [C7]

In contrast, none of the athlete participants reported negative evaluations about themselves when asked this question. For example some participants responded that they didn’t fail, or that it did not mean anything negative about them;

“Um, I don’t really think it says anything” [A4]

“No I didn’t really fail to meet it because I didn’t know what I was capable of achieving, so I was not disappointed” [A10]

Other athletes’ responses centred on meaning that they might try harder next time;

“Me as a person, um, I don’t know...while I was disappointed...I guess probably the only thing it has done is maybe made me a bit keener to go again and have another go” [A8]

“That perhaps sometimes you just have to work that little bit harder” [A6]

Other athletes also responded that making mistakes is normal;

“That I’m human, that I can make mistakes as well! That you can’t do everything well all the time” [A5]

Another response gave meaning about performance on the day rather than a global evaluation about meaning to them as a person;

“Well I think I was just too soft on the day, mentally maybe not prepared...I just didn't have it on that day...” [A1]

Perception of being a failure – question 13

The responses to whether participants viewed their self as being a failure for not having met the standard were similar to the previous question presented. The majority of clinical participants (7 participants) agreed strongly that they viewed their self as a failure, while the remainder did not. An example of a typical response about failure was;

“ Yes, absolutely...I believe it's honestly my fault...”[C6]

“Yes, definitely. There is always that dissatisfaction” [C7]

However, an example of a response from a participant who did not see their self as a failure was; *“No, I'm doing the best I can” [C10]*

The responses of the athlete group were also similar to the previous question, where all 10 athletes stated strongly that they did not see themselves as being a failure. Typical responses which highlighted this include;

“No, definitely not. I'm achieving quite a bit” [A10]

“No, because I've overcome it, it has taken a bit longer, but I overcome it, I kept at it” [A6]

One interesting response from an athlete was that she did not view herself as a failure due to separating her performance from her view of herself;

“ No. Um, because it was a very personal goal...while it was, um, important because it was something I aimed at, it wasn't important in the whole scheme of life, type thing. Um, no, the fact I came 3rd instead of 1st, or whether I had come 23rd, while it would be disappointing, it's not like something that effects me as a person” [A8]

The worst consequence of not meeting a standard – question 12

Clinical participants referred to a variety of negative consequences of not having met a personal standard. A commonly mentioned worst consequence was negative emotions (guilt, stress or worry), which was referred to by 4 of the participants, for example *“I guess the worst thing about it is that I did generate a lot of stress in myself...” [C5]*. Another theme mentioned by 2 clinical participants was worrying that others would notice and think badly of them. Other responses included the worst thing about not

meeting their standard being; *“Because I couldn’t meet it, then it ends up hurting someone else”* [C6]. Another negative consequence reported was time delay; *“It means I have to re-do it, so it’s more time...I guess it just slowed the process down”* [C2].

In contrast, the athlete group were not all able to report a worst consequence, with 3 athletes stating there was no negative consequence of not having met their standard. Of those who did report negative consequences, some reported disappointment in their self; *“...in the morning, you have to face yourself in the mirror, and think that I was too soft, and not tough enough to do the race...”* [A1].

Another response also highlighted disappointment in self, but also planning for how to overcome this by trying again or lowering standards;

“I guess the fact that I didn’t achieve something that I thought for a long time I was capable of achieving. You know like I have got very close a number of times, and this was probably one of my best chances, and I didn’t get there, so I will have to see if there is a new opportunity to achieve that or set myself a new goal” [A8]

Failure to meet standards causing distress to self and others – Questions 14 & 15

In response to whether not meeting their standard caused them distress, the majority of clinical participants agreed it did (9 participants). For example participants stated; *“Yes, definitely a lot”* [C7] and *“Yeah it does, I get stressed and fret”* [C8]. However, in response to whether not meeting their standard caused others distress, an equal proportion responded yes (4 participants) and no (4 participants), while the remainder stated they did not know if it caused others distress. Of those who said it did cause others distress, they cited reasons of others reactions to their own distress;

“Well yes it does because obviously he knows [partner] when I’m upset and it makes him upset...” [C1]

However, the athlete group had a reverse pattern of responses, where 8 athletes stated it did not cause them distress, and 9 stated that it did not cause others distress. An example of a response explaining why not meeting a standard did not cause them distress included;

“Disappointment more than stress or upset...I’m fairly realistic in my goal setting therefore if you don’t achieve it you know it’s not the end of the world”

[A8]

Persistence of thought about not meeting a personal standard – question 16

In response to asking the length of time participants continued to think about not meeting their standard, the majority of the clinical group reported thinking about it for a long time. Responses included a smaller time of 1 week (1 participant), 3 weeks (1 participant), 4 weeks (2 participants), 3 months (1 participant), to 9 months (1 participant), while the remainder did not specify length of time. A similar response was also given by the athletes, ranging from 1 week (1 participant), 3 weeks (1 participant), 5 months (1 participant), 6 months (3 participants) to 12 months (1 participant). Only 1 athlete stated they did not think about it at all, and 2 others did not specify the length of time.

Internal factors contributing to not meeting a standard – question 17

The clinical participants responded with a range of attributions to what factors contributed to them not meeting their personal standard. Three of the clinical participants cited negative, internal attributions in response to this question, for example;

“...it just come down to laziness in the end and making excuses...” [C2]

“Being very unfit, I guess I was a bit tired, and that didn’t help me let go of my ridiculous thoughts of wanting to control the evening” [C3]

Two responses emphasised lack of time and having too many demands, but also included self-blaming factors;

“...there wasn’t any space to sit down and work out what I needed to do, but then part of me is aware that there is always an excuse” [C7]

Another response emphasised the role of parental modelling;

“...probably I think the way I was brought up. So if you’re brought up in a house with very high standards and high expectations, and pretty tough really the way I was brought up...” [C6]

One participant gave an interesting response, noting that it was perfectionism itself that contributed to not meeting the standard, and gave a clear account of the effect of perfectionism for them;

“Well, the mere fact that I am a perfectionist, because, um, very rarely, or it would be very hard to meet that standard...because it’s always just out of reach, because...there will always be something more...I would look it at and I would see that shade is not quite the right colour, so there will always be something more...” [C1]

In contrast, none of the athletes cited self-blaming or very negative internal attributes as a cause for not meeting their standard. One theme reported by 2 of the athletes was their priorities having shifted, and putting their family first, for example;

“I think inherently I wanted a break...a desire to spend more time with my wife putting the other things to one side” [A2]

Another theme reported by 2 other athletes was not being focused, for example;

“...I didn’t remain as focused on it as I could have done. However, in the big scheme of things, um, it is after all a series of bicycle races, it’s not the end of the world...it was just an unfortunate sequence of events that lead to a clash of timings and my mind was off the game really” [A3]

This response highlighted some attributions towards external rather than internal reasons, and other similar responses included;

“Um, partly the situation, the fact that we were travelling in a foreign country and so your routine changes and its something that is very hard to control. Flying on planes with people with germs, I always tend to get sick...” [A8]

Furthermore, another 2 athletes cited their reason as age, and that their poorer performance was due to getting older.

External factors contributing to not meeting a standard – question 18

In response to what external factors contributed to not meeting a personal standard, only half of the clinical participants could report an external factor such as time demands on them, or actions of other people. There were 2 clinical participants who said there were no external factors that contributed. It was interesting to note that 3 of the clinical participants cited internal attributions instead to this question, for example; *“...my mind was just jumbled. It’s just the inner turmoil” [C10]*

However, 9 out of the 10 athletes cited external reasons for not meeting their standard. These reasons included such things as weather *“I was cold, it was a cold morning” [A10]* and luck *“I think that I was just, um, unlucky getting excessive scar tissue” [A6]*. One

athlete cited other people and equipment issues as external reasons as well as in interaction of personal reasons;

“Certainly other people, other people should have known not to put that amount of stress on me...other external events, well you know I had a major mechanical fault that was none of my, well it was partially my doing, not being familiar with the equipment” [A3]

What was learned from not meeting a personal standard – question 19

There was a range of different responses from the clinical group about what they had learned due to not meeting their personal standard. One theme reported was about needing to try harder or do better next time, examples of this include;

“Um, pretty much comes back to taking more care, and taking more time instead of rushing” [C9]

“Just that you do need to put the effort in to get where you want to go” [C2]

Another theme reported by 3 clinical participants was they needed to try a new approach next time including;

“Um, I’ve learned it was not really worth all the um, pain and suffering afterwards, that I should do something that is more achievable” [C3]

“...the importance of actually planning whatever I need to do, and doing it as soon as possible, rather than thinking that I can do this later” [C7]

Other responses however cited more negative things such as not learning anything;

“Absolutely nothing because I repeat the behaviour” [C8] and reliance on medication;

“I need my medication, if I didn’t have my medication I would probably be completely out of control...” [C5].

In a manner somewhat similar to the clinical group, 3 athletes reported they learned they needed to try hard next time stating;

“I need to lift my game even higher” [A7];

“...I have to work harder next year...” [A9]

“...that I would never give up in one of those races, even if I had to walk to the finish, or just sit there for half an hour...because I don’t want the pain ever again, the pain of not finishing” [A1]

However, other athletes emphasised positive consequences and lessons and the role of social support in helping to deal with not meeting a standard;

“That you can overcome it, you just have to go about it in a different way. I looked for outside help, and I spoke to lots of other people” [A6]

Another response emphasised being flexible about not meeting standards;

“I think you need to have flexibility no matter what you do because you can’t always stick rigidly to what you want to do because there might be other factors outside of what you have control...” [A2]

Finally, one athlete emphasised their lesson was that not achieving their standard was not significant;

“I guess just that, um, it’s not really that important...there are so many other things that are more significant” [A8]

Re-evaluation of personal standards: question 20

The final interview question asked participants whether due to not meeting their standard, they would re-evaluate their standards and now set them higher or lower. None of the clinical participants stated they would set their standard lower. Instead, the majority (7 participants) stated that they would not change their standards and would stay the same.

An example of this type of response was;

“I don’t know that my standards ever move, because I think they are always impossibly high, so I certainly wouldn’t make them any higher” [C5]

However, 3 participants stated that they would next time set their standards higher;

“Well I constantly try and set it higher, to do a better job next time” [C9]

“I would probably actually set them higher, which is part of the trap I suppose” [C7]

Half of the athletes reported that their standard would stay the same. However, 3 reported they would set their standard higher, for example; *“I guess I would say I’m setting them higher, because I’ve set myself a goal that in the next 10 years I’m going to do an Ironman triathlon” [A6]*. The other 2 athletes responded that they would set their standard lower, and a detailed example of this response highlighting how this would be done was;

“I guess in the whole scheme of things, I might have to set them a little lower rather than thinking I’m going to win a national championship, um, making my goals to remain injury free before a big event, actually attending and competing in the event effectively, and then the last goal would be to come back with a piece of metal around my neck, rather than focusing purely on winning something”

[A3]

6.4 Discussion

Results will be discussed first in regards to insight into perfectionism and motivation to change, followed by cognitions about failure to meet a personal standard. One important point to note when considering the results is the degree of severity of the clinical sample. This sample of 10 clinical participants was more severe than the sample of 20 participants described in Study 4. The average total number of diagnoses was 4.1 diagnoses per participant in this study compared to 3.3 diagnoses in the previous study. This sample can be considered severe, as the average of 4.1 diagnoses per patient is strikingly similar to findings of an average of 4.06 diagnoses per patient in a severe, outpatient personality disorders sample (Egan et al., 2003). In terms of severity it is also important to note that this sample of the 10 most extreme scorers on negative perfectionism had an average depression score on the BDI-II (Beck et al., 1996) in the moderate range, whereas the sample of 40 clinical participants in Study 1 and 2 were in the mild range.

6.4.1 Motivation to change

First, it was clear that all clinical participants had insight into being perfectionistic. What was an interesting difference between groups was that athletes reporting themselves as having high standards rather than being high in perfectionism. This seems to correspond well with the argument of Frost and colleagues (1993), who distinguish between positive achievement striving and maladaptive evaluation concerns. The responses of athletes in regards to insight into high standards also corresponded well with the literature that makes a distinction between positive perfectionism being where self-criticism for meeting high standards does not occur as it does in negative perfectionism (e.g., Frost et al., 1990). For example, a quote which captured this well was the response of an athlete who stated they set high standards but *“...not to the point where if you don’t reach that standard I come down on myself severely”*.

In regards to perceived benefits of perfectionism as assessed through questions two and five, both groups reported many benefits of perfectionism. However, the athletes were more likely to report positive benefits, while some of the clinical group showed insight and reported some negative aspects even though the question asked about positive benefits. There was a common theme between both the clinical and athlete groups, where both groups reported perfectionism being positive in helping to achieve goals and personal standards. However, while the athletes only reported positive benefits around this personal theme, the clinical group reported a different theme to athletes, namely about gaining respect of other people due to achievements. The clinical group reported perfectionism as being positive because others commented positively on their achievements and thought highly of them due to achievements. This personal versus interpersonal theme appeared to be a key difference between the two groups, and may be a difference between high and low negative perfectionism. This suggests that an area to target when considering motivation to change in clinical groups is the perception of other people valuing them as a person due to achievement, as this may need to be challenged before a patient may consider changing perfectionism.

When participants were asked about negative consequences of perfectionism, the clinical group reported many negative consequences such as negative emotions (anxiety, depression), poor self-esteem, and a negative impact on others such as family members. These results indicate that this clinical sample had a high degree of insight into their perfectionism, and the negative impact that it has for them. The athletes perceived many less negative consequences than the clinical group, as might be expected. However, it was interesting to note that almost half of the athletes were reporting negative aspects, and a theme that recurred in this sub sample was the impact of perfectionism on interpersonal relationships, particularly intimate relationships. These findings suggest that the negative impact of perfectionism on interpersonal relationships is common across both high and low negative perfectionism, whereas its impact in terms of negative emotions is associated with high negative perfectionism. The impact on interpersonal relationships in the athlete group provides support to the argument that positive perfectionism is not wholly positive (e.g., Bieling, Israeli et al., 2004; Bieling & Smith, 2001). While there may indeed be many positive benefits to individuals of having a high degree of positive perfectionism, it is likely that there are also some associated costs of others' reactions to the very high degree of positive achievement striving, for example as

reported partners becoming frustrated at high expectations. The effect of high positive achievement striving on intimate relationships is an area that has not yet been researched, and is something that deserves future attention in a quantitative study.

One of the most interesting findings in regards to motivation to change was in regards to the hypothetical question posed to interviewees about whether they would choose to keep or relinquish their perfectionism. The majority of the clinical group stated they would prefer to keep their perfectionism rather than give it up. This is a very important finding, as, despite having a high degree of insight into the negative consequences of perfectionism, the clinical group preferred to stay perfectionistic. As reviewed earlier, this confirms the idea that perfectionism has some commonality with clinical disorders which are difficult to treat due to the individual valuing aspects of the behaviour, for example, as seen in anorexia nervosa. It is interesting to consider the reasons why the clinical participants wanted to keep their perfectionism. The main reasons cited were because it helps with achievements, feeling valued by others who comment on their good work, and that if they were to give up perfectionism something catastrophic would occur (i.e., “*that is when I would sink*”; “*I would feel like the wheels would be falling off if I wasn’t perfectionistic*”). This is a similar finding to Riley and Shafran (2005), who reported similar findings of catastrophic fear of failure if perfectionism was to be relinquished with one of their participants stating “*It would just be a total loss of security if I fell from this standard*” (p. 373). Riley and Shafran labelled this theme as motivation for perfectionism, and emphasised that this motivation for striving is an important aspect of perfectionism that was not included in Shafran et al.’s (2002) model. This further highlights the importance of addressing resistance to change, as it has been argued that perfectionists may not wish to relinquish their perfectionism due to benefits and rewards (Lundh, 2004).

The results suggest several areas for future research and clinical intervention. In developing a treatment for perfectionism, one approach would be to heighten the patient’s awareness through psycho-education and Socratic questioning, of the basis by which they are judging the positive impact of perfectionism. It is likely that some of the responses are reflecting dichotomous thinking. That is, they may be judging that if they were not perfectionistic, they would not achieve at *all*, which is a dichotomous thought. Furthermore, patients may be judging dichotomously that others value them mainly for

their good performance of tasks, rather than other personal aspects. These cognitions could be drawn to the patient's awareness and challenged through Socratic questioning where a patient could be led to understand that they may be able to reduce perfectionism and still be able to achieve or for others to value them. Similarly, catastrophic aspects were perceived if they were not perfectionistic (i.e., "*I would sink*"). This suggests that before starting a treatment for perfectionism, through psycho-education, a patient could be given case examples of people who were able to reduce perfectionism effectively without catastrophic consequences. Another possibility would be to challenge through cognitive therapy the realistic basis of this image of losing control if they were to reduce perfectionism.

6.4.2 Cognitions about failure

One of the most obvious differences between the groups when participants were asked about their beliefs in regards to failing to meet a personal standard was their degree of negative self-evaluation. While the clinical group made global, internal attributions about themselves as being failures, the athletes reported that they did not perceive they had failed. Instead, the athletes reported that they felt disappointed but made specific attributions about their self rather than taking global meaning from an event. For example, one statement from an athlete was "*...I just didn't have it on the day*". This appears to be one distinguishing feature between the groups, and fits well to attribution theories of depression that have stated people make internal, global and stable negative attributions about their self (Abrahamson, Seligman, & Teasdale, 1978). These types of attributions have also been found to underlie the development of anxiety disorders (Barlow, 2002), thus may be best thought of as a common underlying factor across clinical disorders and negative perfectionism.

The impact of attribution style may also apply when considering how the groups responded to a question asking what internal factors were responsible for not meeting their standard. While the clinical group made self-blaming, negative internal attributions, the athletes did not. Furthermore, an interesting difference between groups was in response to what external factors may be responsible for not meeting a personal standard. When asked this question, only half of the clinical participants could even report external factors, instead some reported it was completely their fault. However, the majority of athletes gave many external reasons such as being unlucky, the weather, or the impact of

other people. This may indicate the athletes are engaging in external rather than internal attributions when faced with not meeting a personal standard. This difference in attribution style may be one factor that accounts for differences in distress due to not meeting a standard. The results indicated that the clinical group reported significant distress to themselves and others, whereas the athletes did not report distress when they did not meet a standard. This finding mirrors quantitative research that has found individuals high in negative perfectionism have high distress as opposed to individuals high in positive perfectionism who have lower distress (Bieling & Smith, 2001, Enns et al., 2002; Rice & Dellwo, 2002). It may be that because the athletes are able to make external, situation specific attributions for failing to meet a standard they do not become distressed, in contrast to the clinical group who made internal, global attributions.

Another difference between groups was that the athlete group reported not thinking in a dichotomous manner about not meeting a personal standard, as highlighted by the quote by one athlete “...I’m human...I can make mistakes as well...you can’t do everything well all the time”. However, the clinical group viewed their performance in a dichotomous manner for example responding “*absolutely*” and “*definitely*” in response to whether they viewed themselves as being a failure. This again highlights the central role of dichotomous thinking in negative perfectionism that has been suggested as a major maintaining factor (Shafran et al., 2002).

One interesting similarity found between groups was the length of time they reported thinking about the standard they had not met. Both groups reported thinking about not meeting their standard for a relatively long time period. While this self-report could not be considered to be an accurate measure of the time spent thinking about failure to meet a standard, it does suggest that in this sample the persistence of thought may not be a factor explaining differences between the groups. This is similar to previous research (Frost et al., 1997) that found individuals who scored high compared to low on Concern over Mistakes reported remembering a similar number of mistakes when asked 2 weeks after having made a mistake. Despite reporting a similar number of mistakes there were important differences found by Frost and colleagues on beliefs about mistakes, where participants high on Concern over Mistakes reported more negative affect and “should” statements about their mistakes. These findings are similar to the current descriptive findings.

The final question of the interview asked participants whether they would set their standards higher or lower next time due to not meeting their standard. It was interesting to note that none of the clinical participants stated they would set their standards lower, however some athletes stated they would lower their standards. Shafran and colleagues' (2002) model of perfectionism suggests that individuals high in negative perfectionism constantly engage in re-setting their standards higher. Although some of the clinical group stated their standards would stay the same, the remainder did respond they would set them higher. These results lend some support to Shafran et al.'s model as the clinical group clearly were more likely to be re-setting standards at a high level.

The major limitation of this study was that it might have been subject to bias, as qualitative responses were interpreted only by the author, and representation of typical responses from participants were not checked by an independent rater. Therefore, this needs to be taken into account when considering the results. Furthermore, the sample size was small with 10 participants in each group, thus it is possible that the views expressed may not be representative of a larger sample of participants. Another limitation was the use of the term "perfectionism" and the question directed towards athlete participants of "Given the choice between giving up being a perfectionist and staying a perfectionist, what would you choose?". Given that athletes were low on negative perfectionism, using the term perfectionism and asking them if they want to remain a perfectionist, when they are already low in negative perfectionism may have lead to answers that are affected by social desirability. That is, athletes may have given answers relating to what they believe the interviewer may have wanted, despite not identifying with being a perfectionist. This could have potentially skewed the results of the interview, and needs to be taken into account when considering the meaning of the responses.

Despite these limitations, the results suggest that future research needs to be directed towards developing ways to enhance motivation to change in any treatment for perfectionism that is developed. The finding that the majority of a clinical group did not want to change their perfectionism may be an important factor that has been overlooked when considering treatment for perfectionism, and thus clinicians may need to focus more explicitly on this area.

CHAPTER 7

General Discussion

This discussion will focus on the major findings of the research in regards to the conceptualisation and treatment of perfectionism. These areas include exploring positive and negative aspects of perfectionism, the role of rigidity and dichotomous thinking in perfectionism, personality factors in perfectionism and motivation to change perfectionism. Support for the cognitive-behavioural model of perfectionism (Shafran et al., 2002) offered by aspects of this research will be outlined. Clinical implications of the results, including specific examples of intervention strategies will be discussed. Recommendations for future research and treatment development will also be outlined.

7.1 The validity of the PANPS and the construct of positive perfectionism

Study 1 provided further evidence for a stable factor structure of the PANPS, with two factors of positive and negative perfectionism, which are significantly correlated with each other. This study provided evidence for the validity of the total scale, and specifically its convergent validity, as it had a high degree of correlation with the MPS-F (Frost et al., 1990). Thus, the PANPS is measuring the overall construct of perfectionism. Convincing evidence was also presented for the validity of the negative subscale of the PANPS. In Study 1 it was demonstrated that the negative perfectionism subscale had a high degree of correlation with the subscales of the MPS-F that have been used to indicate negative aspects of perfectionism (Concern over Mistakes and Doubts about Actions). Study 2 also provided evidence for the predictive validity of the negative perfectionism scale as group differences were found, in what could be considered a contrasted groups approach to validity.

There were several other factors across studies that supported the validity of the PANPS (Terry-Short et al., 1995). One way of determining validity is to identify if variables have a distinct pattern of relationships with other variables, that is, discriminant validity. The fact that positive perfectionism, but not negative perfectionism, was correlated with better performance time in the athletes in Study 3, and that negative perfectionism, but not positive perfectionism, discriminated the clinical and athlete groups, gives some evidence

for the validity of the scale. In Study 2, it was demonstrated that positive perfectionism was related more to rigidity while negative perfectionism was related more to dichotomous thinking. This is further evidence for the distinctive relationship of positive and negative perfectionism with different variables. The positive perfectionism subscale was also not correlated with the Doubts about Actions subscale of the MPS-F (Frost et al., 1990) which has been used to indicate negative perfectionism, whereas the negative perfectionism subscale was significantly correlated with Doubts about Actions. This is further evidence for the validity of the positive perfectionism subscale. Thus, taking these findings together, there appears to be good evidence for the validity of the PANPS.

One complicating aspect of the findings of this research was that there were no clear cut, distinctive relationships between variables. There was a high degree of intercorrelation between most subscales and measures. As outlined, positive and negative perfectionism were demonstrated to be significantly correlated factors. Furthermore, while positive and negative perfectionism were related to a different degree with rigidity and dichotomous thinking, there was some degree of overlap with these variables. While the Personal Standards subscale of the MPS-F (Frost et al., 1990) was related to a greater degree with positive than negative perfectionism in the athlete and control groups, it was equally related to both positive and negative perfectionism in the clinical group, despite Personal Standards being a scale that is thought to indicate positive perfectionism. Moreover, depression scores were correlated to the same magnitude with both positive and negative perfectionism. This was in contrast to previous studies finding lower correlations between depression and positive perfectionism compared to depression and negative perfectionism (Juster et al., 1996). Some degree of overlap between variables would be expected, however, these results suggest that the validity of the positive perfectionism subscale of the PANPS (Terry-Short et al., 1996) should be further investigated in clinical groups.

It was interesting to note that differences in positive perfectionism were not detected between athlete, clinical and control groups, in contrast to the findings of Terry-Short and colleagues (1995). Given that differences could not be detected on positive perfectionism between groups, but differences could be detected in negative perfectionism this suggests that it may be the *absence* of negative consequences of perfectionism rather than the *presence* of positive consequences that can distinguish groups. The findings indicate that

of specific measures of positive and negative perfectionism, the Perfectionism Questionnaire (PQ; Rheume et al., 1995) could potentially be a useful measure. This is because the PQ views positive perfectionism as the *absence* of negative consequences rather than the *presence* of positive consequences as in the PANPS. It would be useful for future research to contrast the PQ with the PANPS with a focus on further investigating the construct validity of positive perfectionism.

While group differences could not be demonstrated on positive perfectionism, there were significant differences found in Study 4 on the personality trait of positive achievement striving, where athletes were significantly higher than the clinical group. This suggests that overall it may be more valid to consider differences between groups such as athletes and a clinical group in terms of differences in achievement striving, rather than differences in positive perfectionism. Frost and colleagues (1990, 1993) have argued the distinction between *positive achievement striving* and *negative perfectionism*, rather than *positive perfectionism* and *negative perfectionism*. Thus, the term perfectionism is something that should be reserved in regards to negative aspects of perfectionism. Shafran et al. (2002) also argue this, claiming that clinical perfectionism is the construct of interest to clinicians rather than positive achievement striving. Despite arguing for two types of perfectionism, Bieling, Israeli and colleagues (2004) also note “it is at least possible that Positive Striving is a construct that is sufficiently distinct from perfectionism, at least as perfectionism is generally defined by clinical writers, that it should be investigated in its own right” (p. 1382). The implication is that achievement striving may be a different construct from negative perfectionism. Therefore, research should consider reserving the term perfectionism for the negative consequences and aspects of perfectionism, and that individuals who excel should be considered in terms of their positive achievement striving. The results also suggest that for clinical groups, positive achievement striving leads to both positive and negative consequences, whereas for athletes, positive achievement striving leads to considerably less negative consequences. Thus, the relationship between positive and negative outcomes of perfectionism is more complex than merely dividing perfectionism into positive and negative categories. Consequently, the argument that attention should be focused on clinical perfectionism and separating this from other aspects, such as positive achievement striving, as proposed by Shafran et al. (2002), appears to be a justified approach to the area.

Further research attention should investigate if the relationship between positive and negative perfectionism can be explained by the particular domains in the persons life in which perfectionism is present. For example, could perfectionism be positive in some areas (e.g., work, study), yet negative in other areas (e.g., eating behaviours, social performance)? Shafran et al. (2002) suggested that "...an interaction between clinical perfectionism and treatment response will be seen whenever the domain in which perfectionism is expressed overlaps with the domain affected by the psychiatric disorder...For example, if patients are perfectionist in terms of social performance and their psychiatric disorder is social phobia, we suggested that the presence of the perfectionism will serve as an additional maintaining mechanism and will thereby impede successful treatment" (p. 783). Consequently, one explanation of the complex relationship between positive and negative perfectionism found in this research, for example where the clinical group was equally high in positive perfectionism compared to the athletes and controls, is that perfectionism may be positive in some areas of life, however if perfectionism is present in a domain where a psychiatric disorder is also present, then perfectionism becomes a negative factor. It would be useful for research to utilise the PQ (Rheaume et al., 1995) to investigate this question further, as this measure asks respondents to list the domains and areas of their life in which they are a perfectionist.

Another explanation of the complex relationship between positive and negative perfectionism that would be useful for future research to explore is that for many individuals, perfectionism might start out as a positive factor, but later becomes negative. It would be useful for longitudinal research to follow individuals who are high on perfectionism and do not have a psychological disorder to discover if over time their perfectionism is maintained as a positive factor, or whether it may turn and develop into a negative factor. An alternative reason to explain differences in positive and negative perfectionism may be that it is the extent to which an individual is a perfectionist that can explain the degree of negative consequences that they suffer as a result. Future research should aim to examine if it is the degree of perfectionism which can explain differences in positive and negative consequences of perfectionism.

7.2 The role of rigidity in positive and negative perfectionism

It was argued that rigidity should be a factor that is related to perfectionism, in particular negative perfectionism, as various authors have pointed to a central problem in perfectionism being the individuals' rigidity and inflexibility (Ellis, 2002; Ferrari & Mautz, 1997; Shafran & Mansell, 2001). The role of rigidity in perfectionism is important to understand because of treatment implications. As Ferrari and Mautz (1997) stated, "from a clinical perspective, demonstrating a relationship between perfectionism and rigidity may suggest that individuals who either personally hold or have imposed upon them high standards for success or failure may be inflexible to therapeutic interventions" (p. 2). The results of this research indicated that rigidity was mainly a significant predictor of positive perfectionism. High rigidity only predicted a relatively small amount of variance in positive perfectionism in the athlete and student groups, accounting for 8% of unique variance in the athletes and 9% in the students. Furthermore, rigidity was not found to be a useful factor in distinguishing between positive and negative perfectionism, as it did not appear to differ to a great degree between positive and negative perfectionism. In fact, even though rigidity predicted significant variance in negative perfectionism in the athlete sample, it was small (5%). There appear to be two possible explanations of these findings. The first explanation is that rigidity is a factor that is not as central to understanding differences in perfectionism, and may not be as important within the construct of negative perfectionism as has been predicted in the literature. However, a second explanation of the findings is that the measure of rigidity used was not a suitable measure, so results do not reflect the true relationship between rigidity and perfectionism.

The argument that the results are due to issues in the measurement of rigidity is based on several factors. One main reason is that it appears the measure of rigidity used, the questionnaire of attitudinal flexibility (Schaie & Parham, 1975), is measuring some aspects of high standards and positive perfectionism. For example, questions such as "I set high standards for myself and feel others should do the same" and "I am known as a hard and steady worker", from the rigidity questionnaire overlap with positive perfectionism. Furthermore, various items on the rigidity questionnaire appear to be assessing organisation or order e.g., "I like to have a place for everything, and everything in its place" and "I always like to see to it that my work is carefully planned and organized". These items do not appear to be related to rigidity. This would explain the

degree of correlation between rigidity and positive perfectionism, and rigidity being a significant predictor of positive perfectionism as some of the items clearly are similar to the construct of positive perfectionism. Moreover, items on the questionnaire that appear to be more directly related to rigidity including “I don’t work on a problem unless there is a possibility of coming out with a clear-cut and simple answer”; “Once I have made up my mind I seldom change it”; and “For most questions there is just one right answer once a person is able to get all the facts” do not seem to be assessing the negative aspects of rigidity. These items may not reflect what is thought of as rigidity in a clinical sense, which usually refers to maladaptive rigidity and inflexibility of beliefs and behaviour. There are some items on the questionnaire that are closer to the clinical meaning of rigidity, and examples of these include; “I am in favour of very strict enforcement of all laws, no matter what the consequences”; “I think I am stricter about right and wrong than most people” and “Most of the arguments or quarrels I get into are over matters of principle”. These items overlap with aspects of Obsessive-Compulsive Personality Disorder (OCPD) as defined in the DSM-IV (APA, 1994).

In summary, the Rigidity Questionnaire (Schaie & Parham, 1975) may not in fact be measuring what is thought of as rigidity. Particularly, the measure does not appear to directly measure negative aspects of rigidity that are noted in clinical definitions of rigidity. The DSM-IV (APA, 1994) defines rigidity in cognitions, behaviour and interpersonal functioning as one of the hallmarks of personality disorders. One possibility is that if a measure was available that could more directly assess the negative aspects of rigidity, such as stubbornness, and rigidity of not changing beliefs even when it may be beneficial for the person, then a significant relationship may be found between rigidity and negative perfectionism. One problem for further investigation of rigidity and perfectionism is the paucity of measures that assess negative aspects of rigidity. The area of research into rigidity has been criticized as having no accepted ways to measure rigidity, and many researchers creating idiosyncratic measures of rigidity, which have only minimal descriptions of the materials (Schultz & Searleman, 2002). Indeed many studies of rigidity have measured the construct in terms of performance on tasks such as the Stroop Colour naming task (Stroop, 1935) or the Wisconsin Card Sorting Task (Harris, 1998). Clearly, these tasks are not closely related to a clinical definition of rigidity. Further research is required to develop an adequate measure of rigidity. If an adequate measure of rigidity was available, then further examination of the relationship

between rigidity and perfectionism could occur. If the relationship between rigidity and perfectionism could be further understood, this could potentially have an impact on clinical interventions for perfectionism.

7.3 The role of dichotomous thinking in positive and negative perfectionism

The results indicated that despite being no differences between the groups on levels of dichotomous thinking, it was significantly related to negative perfectionism.

Dichotomous thinking was strongly correlated with and predicted a large amount of variance in negative perfectionism, particularly in the clinical group accounting for 43% of the variance, but also predicted significant variance in the student and athlete groups (14% and 12% respectively). However, dichotomous thinking only had a small degree of correlation with positive perfectionism and was only a significant predictor of this in the clinical group. Even though dichotomous thinking predicted variance in positive perfectionism in the clinical group, it was less important predicting 22% of the variance in positive perfectionism versus 43% of the variance in negative perfectionism. It was argued on the basis of these results that dichotomous thinking might be one factor that explains differences in positive and negative consequences of perfectionism. The implication is that dichotomous thinking may explain why high standards can lead to negative consequences for some individuals. If individuals are “all-or-nothing” in their thinking about whether they have achieved a personal standard they may experience more distress due to dichotomous thoughts such as “I am a failure” in relation to not achieving a standard. This suggests that a key defining feature of negative perfectionism, which separates it from positive achievement striving, is the impact of dichotomous thinking.

This finding confirms the cognitive-behavioural model of clinical perfectionism that was proposed by Shafran and colleagues (2002). Dichotomous evaluation of performance was proposed to include selectively attending to failure and hypervigilant monitoring of whether a standard is met (Shafran et al). This was hypothesized to be one of the primary maintaining factors of perfectionism. The current findings of the important role of dichotomous thinking in the negative consequences of perfectionism appear to strongly confirm the Shafran et al. model, and suggests the model has validity. As dichotomous thinking was found to strongly predict negative perfectionism rather than positive perfectionism, this also suggests that Shafran and associates model has validity as it is proposed to account for maintaining factors of clinical (negative) perfectionism. It

appears that dichotomous thinking is indeed a very important factor in negative or clinical perfectionism. Shafran and colleagues stated in regards to dichotomous thinking “...people with perfectionism internally operationalise their standards in the form of rules...such rules by their nature are dichotomous ...attempting to adhere to these multiple strict rules means that the person is dominated by “shoulds” and by guilt and self-recrimination when a rule is transgressed” (p. 781). It is not surprising that dichotomous thinking was found to be a major factor in negative perfectionism, as dichotomous thinking appears to lead to self-criticism and negative emotions when it is perceived a standard is not met. Recent qualitative research has pointed to dichotomous thinking being common in clinical perfectionism (Riley & Shafran, 2005), and a case study of the treatment of clinical perfectionism has also highlighted dichotomous thinking as important (Shafran et al., 2004). Clearly, dichotomous thinking is a particularly important variable that warrants further research and clinical attention.

The need for further research attention into dichotomous thinking has been highlighted by Byrne et al. (2004) who have outlined that various authors have proposed dichotomous thinking is a maintaining factor for a range of DSM-IV axis I disorders including anorexia and bulimia nervosa (Fairburn, 1985; Garner & Bemis, 1982), panic disorder (Clark, 1986) and depression (Beck, 1976). Byrne and colleagues have also noted that dichotomous thinking has also been characterized as a major feature of borderline personality disorder (Linehan, 1993) and suicidal behaviour (Litinsky & Haslam, 1998; Rotheram-Borus, Trautman, Dopkins, & Shrout, 1990), chronic pain (Dyck & Agar-Wilson, 1997), marital violence (Eckhardt & Kassinove, 1998), and relapse of depression (Teasdale et al., 2001). Furthermore, in the study where the Dichotomous Thinking Scale (DTS) was developed (Byrne et al., 2004), the only psychological variable that predicted weight regain in obese women was the 10 general dichotomous thinking items that were used in the present study. Other psychological variables such as self-efficacy and history of an eating disorder as measured on the Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) did not relate to weight regain. This suggests that dichotomous thinking is a particularly prominent variable that may have considerable predictive value in a range of problems.

Despite the recognition of the importance of dichotomous thinking in theoretical models of psychological disorders and perfectionism, little attention has been given to ways to

effectively change dichotomous thinking. When dichotomous thinking was first proposed as a negative thinking style by Beck (1976), it followed that dichotomous thinking could be changed through the use of standard cognitive restructuring. This involves the patient identifying the dichotomous rules they hold and then learning to challenge these rules through cognitive therapy. However, it is questionable whether cognitive restructuring alone may be effective in changing dichotomous thinking. This is because of the degree of rigidity with which patients often hold their dichotomous views. While no research to date has specifically examined effectiveness of this intervention for changing dichotomous thinking, it would be worthwhile to investigate other ways to change dichotomous thinking. In suggesting ways to change dichotomous thinking in negative perfectionism, Shafran and colleagues (2002) suggest “traditional cognitive methods such as cognitive restructuring and using a continuum to help decrease dichotomous thinking (Greenberger & Padesky, 1995) may all be used, as may behavioural experiments” (p. 787). It would be useful therefore for future research to develop specific behavioural experiments for changing dichotomous thinking in negative perfectionism. Specific clinical suggestions for how to change dichotomous thinking will be made under the clinical implications section in a later part of the discussion.

Despite the theoretical and clinical importance of dichotomous thinking in understanding and treating negative perfectionism, there are several factors that must be taken into account when considering the current results. One issue is the potential overlap between the DTS and perfectionism measures. As outlined, the DTS (Byrne et al., 2004) was derived from a range of measures, and one of these was the MPS-F (Frost et al., 1990). While none of the items were replicated, it is possible that one reason for the correlation between dichotomous thinking and perfectionism is the DTS may have similar items. However, it must be noted that conclusions drawn about dichotomous thinking were based on the relationship between the DTS and PANPS (Terry-Short et al., 1995). Byrne and colleagues did not use any items from the PANPS in creating the DTS. They also reported that none of the DTS items replicated items from perfectionism questionnaires. Moreover, an inspection of items (see Appendix F) would indicate that items on the DTS are measuring dichotomous thinking more than perfectionism. As a point of comparison the DTS has items including “I think of myself as either good or bad”; “I think of myself as doing things either very well or very badly” and “I think of myself as either in control or out of control”. Example items on the PANPS negative perfectionism scale however

include “I set impossibly high standards for myself; “I feel dissatisfied with myself unless I am working towards a higher standard all the time and “When I achieve my goals I feel dissatisfied”. It can be seen therefore that there is some distinction between dichotomous thinking items and perfectionism items. While the majority of items seem to be assessing dichotomous thinking, it would be useful however to further refine the DTS to remove the small number of items with potential overlap with perfectionism. An example of a DTS item that would be useful to remove is “Even if I’ve made some mistakes, I don’t consider myself to have failed totally”. This does unfortunately overlap in content with one item on the PANPS negative perfectionism subscale, which was “If I make a mistake I feel that the whole thing is ruined”. It would be useful to remove this item from the DTS, as it appears to overlap with perfectionism scales. This overlapping item on the DTS and PANPS may have increased the degree of correlation and relationship between the scales.

Consequently, despite the DTS being partly based on perfectionism measures and one item overlapping in content with the PANPS, it does seem to be measuring dichotomous thinking. While dichotomous thinking may be a prevalent thinking style in perfectionism, it could be viewed as a separate but related construct that may feature particularly in negative perfectionism, but can also be seen in individuals who are not perfectionistic. For example, a depressed individual might not have high standards but might think in a dichotomous manner. Furthermore, dichotomous thinking is purely a cognitive construct, whereas perfectionism is a broad construct that includes cognitive, emotional and behavioural components. Therefore, while there may be some overlap between dichotomous thinking and perfectionism, there appears to be enough reason to think of these as related constructs but not as exactly the same. Clearly, further research is required to determine the nature of the relationship between dichotomous thinking and perfectionism. One issue is the alternative argument that dichotomous thinking is simply one cognitive manifestation of perfectionism and is not a distinct construct. Future research needs to determine whether dichotomous thinking is a distinct construct from perfectionism, which might be achieved through refining measures of dichotomous thinking to not include items with potential overlap with perfectionism measures.

7.4 The effect of positive perfectionism on athletic performance

The results of Study 3 provided some preliminary evidence that higher positive perfectionism was related to better sporting performance. This is an interesting result in the context of the general findings of the other studies. While positive perfectionism was not found to be important in being able to distinguish between groups, it appears that it could potentially be a useful factor to examine in athletes. Thus, examining positive achievement striving may be something that makes sense in athletes as there is evidence from this research it could impact on behaviour. Overall, negative perfectionism is more important to examine in clinical groups, and has more explanatory value than positive perfectionism. This may be further reason to distinguish between the constructs of positive achievement striving and negative perfectionism rather than positive and negative perfectionism.

The results indicate that sports psychology research may benefit from further examination of the role of positive perfectionism in performance. Contrary to theoretical speculations (Bunker & Williams, 1986; Frost & Henderson, 1991; Hall et al., 1998; Koivula et al., 2002), negative perfectionism was not related to poorer performance in elite athletes. Identifying and fostering positive achievement striving in athletes may be a useful approach to study, rather than assuming negative perfectionism is the important variable to examine and change. Although, negative perfectionism may be an important factor to examine in potential athletes who are striving to achieve an elite level, and this needs to be examined in the future. Clearly, due to the small sample size of athletes in the study, further research is needed with larger samples to examine the role of perfectionism in performance to help inform applied sports psychology interventions to improve performance.

7.5 Personality correlates of positive and negative perfectionism

This research aimed to understand the constructs of positive and negative perfectionism by examining the relationship of positive and negative perfectionism to the Big Five model of personality. Despite the findings and predictions of previous researchers (Hill et al., 1997; Slade & Owens, 1998; Stumpf & Parker, 2000), the personality domain of Conscientiousness was not found to be significantly related to positive perfectionism in the current study. There are several reasons why the current study may not have found this expected relationship. One reason is the small sample size. The previous research

which has found significant positive relationships between *self-oriented* perfectionism and Conscientiousness had a sample of over 200 students (Hill et al., 1997) and when a positive relationship was detected between Personal Standards and Conscientiousness the sample size was over 500 students (Stumpf & Parker, 2000). Thus, due to being underpowered, the current study may not have detected a significant relationship. Another reason for not finding a significant correlation between positive perfectionism and Conscientiousness was that the current sample was a clinical and athlete group, whereas the previous studies described have used students. It may be that a different relationship exists in clinical and athlete groups between Conscientiousness and positive perfectionism, due to these groups being more extreme in terms of high and low negative perfectionism compared to students who are average on negative perfectionism. Future research with clinical groups should aim to establish the relationship between Conscientiousness and perfectionism, and whether this relationship is different to other groups, such as students.

In regards to negative perfectionism, Agreeableness was the one personality domain that had a different relationship with negative perfectionism in the athlete and clinical groups. There was no difference in the mean level of Agreeableness between the athlete and clinical groups but in the clinical group low Agreeableness was significantly related to higher negative perfectionism. One hypothesis that was made about these findings is Agreeableness might be an indicator of the severity of psychopathology, as it has consistently been found to be significantly lower in individuals with personality disorders (Saulsman & Page, 2004; Saulsman et al., 2003). One finding that links to this is that as the level of negative perfectionism increased, so did the number of diagnoses. Although this data has been presented in each of the respective studies, to demonstrate this relationship, Table 36 allows comparison across studies. Table 36 indicates the relationship between higher negative perfectionism and more diagnoses. In terms of statistical significance, the positive correlation between negative perfectionism and the average number of diagnoses per person was significant, $r = .48$, $p = .001$. One recent study has also found similar results where negative perfectionism was a significant predictor of higher comorbidity in an anxiety disorders sample (Bieling, Summerfeldt et al., 2004).

Table 36

Diagnostic comorbidity and mean negative perfectionism in clinical participants across studies

	Study 1 & 2 (n = 40)	Study 4 (n = 19)	Study 5 (n = 10)
Neg. perfectionism	62.57 (SD = 16.63)	74.21 (SD = 10.21)	86.20 (SD = 5.65)
Av. diagnoses each	2.5	3.3	4.1
2 or more diagnoses	63%	68%	70%
3 or more diagnoses	33%	53%	70%
4 or more diagnoses	20%	42%	50%
5 or more diagnoses	13%	37%	40%

Note: Neg. perfectionism = Negative perfectionism subscale of PANPS, Av = average

Therefore, it is proposed that one explanation of the importance of Agreeableness in negative perfectionism is that when a clinical participant's Agreeableness is lower this may be indicative of personality disorder pathology and higher diagnostic comorbidity. Recent research has indicated that low Agreeableness is a significant predictor of general personality pathology (Saulsman, Nathan, & Page, 2005). Thus, it may be that negative perfectionism is something that is more elevated in personality disorders, or indicative of diagnostic severity. This may explain some of the negative consequences of perfectionism in clinical versus athlete groups, as athletes do not have a significant degree of psychological distress. Alternatively, higher diagnostic rates as negative perfectionism increased may not be related to personality disorder pathology specifically, but rather a general relationship with severity. However, generally, a high degree of comorbidity of disorders is often associated with personality disorders. The explanation of the importance of Agreeableness being related to personality disorder pathology is however a hypothesis. The research design utilized cannot determine whether the importance of Agreeableness in predicting negative perfectionism is due to personality disorder pathology or diagnostic severity. Future research should aim to examine the nature of the relationship between Agreeableness, negative perfectionism, personality disorder pathology and diagnostic severity.

Another area that would be useful to examine is if there is a directional nature of relationships between personality domains and negative perfectionism. For example, future research could determine if negative perfectionism leads to personality traits such as higher Neuroticism and lower Extraversion, or if negative perfectionism develops as a response to these personality traits. A third reason may be that there is no directional relationship, but that these personality traits and negative perfectionism exist concurrently with neither *causing* the other. One way the directional nature of the relationships between personality variables and perfectionism could be investigated is through longitudinal studies. For example, it would be useful to examine perfectionism and the Big Five personality traits in individuals in their teenage years when it is known that personality traits are still forming and are less stable than in adult years (Costa & McCrae, 1992). The sample could then be followed longitudinally to adult years when personality becomes stable. This could help to determine if there is a directional relationship between personality traits and negative perfectionism. If there was a directional relationship, for example where personality traits such as high Neuroticism and low Extraversion preceded development of negative perfectionism, then research may examine if it is possible to intervene with these personality traits to effect change in perfectionism, and if this in turn could effect change in levels of psychological distress and development of psychological disorders. However, it must be noted that the finding of low Extraversion and high Neuroticism is very consistent across clinical groups (Costa & McCrae, 1992), so these results may not be related to perfectionism per se, but simply be the personality factors that are correlated with having psychological distress.

7.6 Motivation to change perfectionism

This research was the first to date of which the author is aware, that has examined motivation to change in perfectionism. The results indicated that clinical participants had a high degree of insight into the negative effects of perfectionism. One of the most important findings of this descriptive study was that despite recognition of negative consequences, the majority of clinical participants stated they would prefer to stay being perfectionistic. These findings suggest that perfectionism is a pervasive problem where individuals have ambivalence to change. It was argued that negative perfectionism has many similarities with other problems where resistance to change is a core feature. One of the most obvious groups where there is often large resistance to change is eating disorders. As Wilson and Schlam (2004) have stated “anorexia nervosa provides perhaps

the classic example of a clinical disorder that is notoriously difficult to treat, in part, because patients with the disorder experience a lack of motivation – if not resistance – to change” (p. 370). Furthermore, it has been suggested that perfectionism is a major obstacle to change in eating disorders (Fairburn et al., 2003). Enhancing motivation to change is a commonly used technique in treatment for eating disorders (Wilson & Schlam). Given the use of motivational enhancement in eating disorders where there is resistance or ambivalence to change suggests that such an approach may be worthwhile investigating in other problems such as negative perfectionism where there may also be resistance to change. Thus, one general conclusion from the findings is that motivation to change needs to be addressed in the development of treatments for negative perfectionism. The results indicate this is an important first step in development of treatments for perfectionism, as if this component is not addressed, it may be unlikely that treatment will be maximally effective. Two areas that would be important to examine are the perceived positive consequences of perfectionism, and the perceived catastrophic consequences imagined if perfectionism was changed. Suggestions for how to approach these areas in treatment will be considered under the clinical implications section.

There are also implications for research into motivation to change. First, although the findings appear to be important in highlighting the clinical participants’ unwillingness to change perfectionism, the results were based on a small sample using descriptive methodology. Thus, further research needs to determine if these results can be replicated and thus generalized in a larger clinical sample. Furthermore, it would be useful to examine motivation to change through the use of quantitative methodology. This will be difficult as the measurement of motivation through quantitative methods needs to be addressed as there are no accepted or valid measurements (Wilson & Schlam, 2004). Finally, it would be useful to incorporate motivational aspects and resistance to change in models that attempt to understand the aetiology and maintenance of negative perfectionism. This may be important as resistance to change, for example, through perceiving positive benefits of perfectionism and catastrophic consequences if perfectionism was to be changed, could be a major maintaining factor of perfectionism. Recently, Riley and Shafran (2005) have added “motivation for perfectionism” p. (373) as another maintaining mechanism of clinical perfectionism.

7.7 Models of perfectionism

It was argued that one of the most well developed models to date to account for the maintenance of perfectionism was the cognitive-behavioural model of clinical perfectionism proposed by Shafran and colleagues (2002). There were two aspects of this model that were indirectly examined in the research. These were two of the several maintaining factors of perfectionism they proposed and included dichotomous evaluation of performance (dichotomous thinking), and persistent re-setting of standards. As discussed, the results supported that dichotomous thinking was an important factor in negative perfectionism. The term negative perfectionism as it is used throughout this research, although not the same, could be argued to be somewhat similar to what Shafran and colleagues termed “clinical perfectionism”, which they defined as perfectionism that is unhelpful and is clinically significant. Moreover, the results of the descriptive clinical study gave some indirect support that those clinical participants with high negative perfectionism do indeed re-set standards higher after they perceive they have not met a personal standard. This is because participants stated they would either keep their standards the same or re-set them higher the next time they attempted a task. Shafran et al. highlight the importance of this behaviour stating, “a consequence of resetting standards is that it is even more likely that the person will experience failure, thus their self-criticism is likely to be maintained” (p. 783). Therefore, the findings of the importance of dichotomous thinking and re-setting of standards, using both quantitative and qualitative research methods, lends support for the utility and validity of the model. Recent qualitative research has given support to the model (Riley & Shafran, 2005). Future research should also aim to directly test the model, for example a structural equation modelling approach could be used to examine the validity of the model in clinical participants. Despite future work being required to test the validity of the model, to date it appears the model is a valid account of the maintaining factors of unhelpful perfectionism.

While Shafran et al.’s (2002) model appears to provide some useful maintaining factors for negative perfectionism, the model does not account for aetiological factors of perfectionism. One model that has attempted to account for aetiological factors of perfectionism was described by Flett and colleagues (2002). The main aetiological factors they proposed were child factors (e.g., temperament), parent factors (e.g., parenting styles), and environmental pressures. One major aetiological factor that

appears to be missing from this account however is a generalized vulnerability to negative affect. This vulnerability could potentially be both biological and psychological. It appears from the wide body of research reviewed that one of the consistent findings is that individuals with negative perfectionism suffer from negative affect (e.g., Brown et al., 1999; Frost et al., 1993; Minarik & Ahrens, 1996). It was also demonstrated in this study and others (Dunkley et al., 1997, 2004; Hill et al., 1997; Magnusson et al., 1996; Slade et al., 1991; Stumpf & Parker, 2000; Zuroff, 1994) that they have elevated Neuroticism. Thus a major factor, which appears to be missing from models of perfectionism, is the role of a generalized vulnerability to negative affect and Neuroticism. There is reason to think that Neuroticism may be similar to a predisposition to negative affect, as Costa and McCrae (1992) define Neuroticism as the degree to which an individual is vulnerable to negative emotions, thoughts and behaviours. Negative affect, which consists of both generalized anxiety and depression, could be argued to perhaps be the manifestation of the personality domain of Neuroticism. Research needs to address if individuals with high negative perfectionism have a vulnerability to negative affect, and if this is through the personality domain of Neuroticism. Other research would suggest this is a useful aspect to consider. For example, Barlow's (2002) model of anxiety disorders suggests an important role of vulnerability to negative affect in the development of anxiety disorders. As suggested, it would be very useful for longitudinal research to determine if general personality traits such as Neuroticism pre-date the development of perfectionism. Furthermore, the interaction of a vulnerability to negative affect with environmental factors such as learning of perfectionism through modelling would be useful to incorporate in models of perfectionism. Figure 4 conceptually shows this possible relationship.

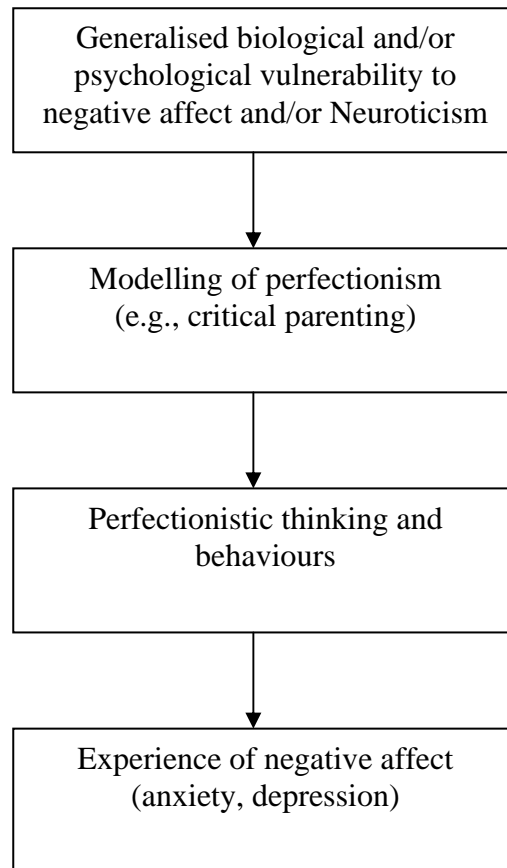


Figure 4

A hypothesized relationship of factors that may account for the development of negative perfectionism

Clearly, this idea needs to be expanded, tested and refined. Longitudinal research is required to determine the nature of variables such as Neuroticism and vulnerability to negative affect in the development of negative perfectionism. In summary, models of both the aetiology and maintenance of negative perfectionism need to be further developed and tested for their utility.

Finally, in terms of positive and negative perfectionism, only one model was considered in the research (Slade & Owens, 1998). The model is a dual process model of positive and negative perfectionism based on behavioural reinforcement theory (Skinner, 1968). It was theorized that positive perfectionism was approach behaviour that was driven by motivation to achieve a goal to *obtain* positive consequences, whereas negative perfectionism was avoidance behaviour driven by motivation to achieve a goal to *avoid* negative consequences (Slade & Owens, 1998; Terry-Short et al., 1995). While this

appears to be a useful conceptualization of differences in positive and negative perfectionism in terms of approach and avoidance behaviour, it is difficult to fit the findings of the current research to this model. Because it has been argued that it is more useful to distinguish positive achievement striving as a construct from negative perfectionism, it may be more useful to further develop models specifically of negative perfectionism, or utilise models such as Shafran et al. (2002). Consequently, models could be developed that account for positive achievement striving separately from models that account for negative perfectionism. Although research on positive achievement striving may help to understand aspects of negative perfectionism, it may be more useful to focus models on when perfectionism is negative and unhelpful. Therefore, the stance of Shafran and colleagues (2002) in focusing on negative or clinical aspects of perfectionism is justified.

7.8 Clinical implications and applications of the results

The clinical implications of the results will be considered first by examining general treatment issues, followed by specific suggestions for treatment of important areas arising from the research. It has been argued throughout this research that specific clinical interventions for perfectionism need to be developed. This view has been expressed in the literature by several authors. For example, Frost and DiBartolo (2002) stated; “Recent treatment outcome data suggest that perfectionism may need to be targeted separately from other foci of treatment (e.g., depression and eating disordered behaviour) for improvement to occur” (p. 365). Frost and DiBartolo cited as convincing supporting evidence for this claim the study by Srinivasagam et al. (1995) which showed that recovered anorexic patients still had higher perfectionism scores than controls. This suggests that unless perfectionism is focused on explicitly in treatment it may continue, and this may put a person at risk, for example, of future relapse. Shafran et al. (2004) have stated “most clinicians would agree...longstanding...clinical perfectionism, characterised by rigidity and rules, rarely dissipates spontaneously” (p. 356). Similarly, Shafran and colleagues (2002) have stated in regards to the relationship between perfectionism and psychological disorders “...the presence of perfectionism will serve as an additional maintaining mechanism and will thereby impede successful treatment” (p. 783). Evidence for this claim is provided by the data from studies indicating that perfectionism impedes the therapeutic relationship in CBT and IPT for depression (Zuroff et al., 2000) and perfectionistic patients do worse in treatment than patients with lower

levels of perfectionism (Blatt et al., 1995, 1998). Furthermore, Bieling, Summerfeldt et al. (2004) have suggested "...if perfectionism were treated directly, it is possible that the individual would experience symptomatic relief across a number of domains" (p. 199). Given that perfectionism is a common factor that is underlying most psychological disorders, there appears to be good reason to think of perfectionism as a factor which "cuts across" disorders and thus may be a core mechanism to consider directly changing in treatment for most psychological conditions. Fairburn and colleagues (2003) have referred to clinical perfectionism as a "transdiagnostic pathological process" (p. 524). They suggest that "...transdiagnostic conceptualization and treatment is relevant when major clinical features shared by two or more diagnostic states are maintained by common pathological processes" (p. 524). This approach is parsimonious with a recent approach generally towards applying cognitive-behavioural theory and treatment transdiagnostically not just in the area of eating disorders (Harvey et al., 2004). Perfectionism fits this idea of being a transdiagnostic process, as it appears to be a common maintaining factor for many psychological disorders. The question is if perfectionism is directly changed as a focus of treatment, could this in turn reduce a wide variety of symptoms and psychological disorders?

To date there have been no published controlled trials for the treatment of perfectionism. Although currently there is a treatment trial being conducted for the transdiagnostic treatment of eating disorders, which includes a component of treating clinical perfectionism, with specific intervention techniques for clinical perfectionism (Fairburn, 2005), these techniques and results have not yet been published. There is however, a range of ideas in the literature that could inform treatments for perfectionism. For example, useful ideas for cognitive-behavioural treatment have been proposed by Antony and Swinson (1998) and also Shafran and colleagues (2002). Shafran et al. propose treatment of perfectionism should have four components; (i) a shared cognitive-behavioural formulation of perfectionism (ii) establishing goals of treatment (iii) using behavioural experiments to test competing hypotheses and (iv) using cognitive-behavioural methods (cognitive restructuring and behavioural experiments) to challenge dichotomous thinking and cognitive biases.

A recent case study by Shafran and colleagues (2004) further elaborated on treatment methods for perfectionism. In their case study of treatment of perfectionism in a woman

with binge eating disorder they identified four aspects of treatment; “1) identifying clinical perfection as a problem; 2) broadening the patient’s scheme for self-evaluation; 3) using behavioural experiments to test competing hypotheses; 4) using cognitive-behavioural methods to assess personal standards, self-criticism and cognitive biases that maintain clinical perfectionism” (p. 354). Shafran and colleagues described the use of techniques such as pie charts to broaden schemes for self-evaluation, and behavioural experiments to try and test ideas of needing to do things perfectly. However, the description of treatment was brief, and specific behavioural experiments to address dichotomous thinking were not reported. It would be useful therefore to identify further examples of how behavioural experiments could be used for areas such as dichotomous thinking in perfectionism.

Behavioural experiments are a powerful method to bring about change in cognitive therapy (Bennett-Levy, Westbrook et al., 2004). A behavioural experiment is a planned activity which is usually conducted between cognitive therapy sessions and is designed to either test the validity of patient’s beliefs and/or to construct and test new adaptive beliefs (Bennett-Levy, Westbrook et al.). There appears to be consistent support for the idea of using behavioural experiments to address perfectionism (Shafran et al., 2002; 2004). Hence, several examples of behavioural experiments will be given as ideas for clinical applications. In these examples, quotes from participants in Study 5 are used as examples of unhelpful cognitions, but alternative cognitions and predictions are hypothesized.

7.8.1 Interventions to target dichotomous thinking

It has already been argued in detail why dichotomous thinking is a core area that needs to be targeted in treatment of perfectionism. Apart from the use of traditional cognitive restructuring, or methods such as a continuum to decrease dichotomous thinking (Greenberger & Padesky, 1995), behavioural experiments may hold promise in helping to change dichotomous thinking. An example of a behavioural experiment for a quote that was provided by a clinical participant in Study 5 that embodies dichotomous thinking in perfectionism is provided in Table 37. It should be noted that the headings for the tables outlining behavioural experiments is adapted from Bennett-Levy, Butler et al. (2004).

Table 37

A behavioural experiment for changing dichotomous thinking in perfectionism

Background about the cognition: The participant is a university student and received 79% for an assignment, but feels because it was not a high distinction which is a grade of 80% and above, she failed at the task, a clear example of dichotomous thinking.

Unhelpful target cognition: “For me it’s not good enough...even though I got 79%, I mean that’s a good mark, but it doesn’t feel like it”.

Helpful alternative cognition: My mark of 79% was probably amongst one of the top marks in the class, it is likely that not many people receive the grade of a high distinction

Prediction: A lot of other people in my class must have done better at the assignment than I did and must have got high distinctions, because I got a distinction this shows I am a failure.

Experiment:

- 1) Do a survey of classmates and ask them what their mark for the assignment was to see what the range in marks was from lowest to highest.
 - 2) Approach the lecturer of the class and ask what the average mark for the class was, and the number of high distinctions that were gained in the class.
-

Through utilizing a behavioural experiment like this as a part of cognitive therapy aimed at changing dichotomous thinking in perfectionism, it would be hoped the degree of belief in the unhelpful cognition would be decreased, but increased in the helpful cognition. For example, one outcome of this behavioural experiment would be to discover that her mark is likely to be one of the top marks in the class, it was well above the average class mark, and that very few people received a high distinction. Further behavioural experiments could then be used to continue to change the participant’s dichotomous thinking, such as producing an assignment to a lower standard than she usually would and observing what happens.

7.8.2 Interventions to enhance motivation to change perfectionism

It has been argued that one of the key findings of the research was that individuals with high levels of negative perfectionism have strong beliefs about the benefits that perfectionism provides, and perceived negative consequences that would occur if perfectionism were changed. It was stated that this results in individuals not wanting to

change perfectionism. One clinical implication of this finding is that treatments for perfectionism should focus on highlighting this ambivalence to change at the start of treatment, and revisiting this ambivalence during treatment. One method would be to use Socratic questioning about the perceived benefits and negative consequences of perfectionism. This would involve using the Socratic method to get a patient to think of the pros and cons of continuing and stopping the behaviour, which is similar to the idea of a “decision matrix” in motivational interviewing (Miller & Rollnick, 2002). Motivational interviewing techniques have a conceptual overlap with CBT (Wilson & Schlam, 2004). It has been stated that “motivational interviewing is essentially a strategy for operationalizing the Socratic method to mobilize commitment to change” (Vitousek et al., 1998, p. 400). Consequently, Socratic questioning techniques around ambivalence to change, and positive and negative consequences of change could be employed for perhaps 2-3 sessions at the start of treatment.

A second clinical application, which could be used concurrently with Socratic questioning, would be to use behavioural experiments designed to challenge cognitions about perceived benefits of continuing perfectionism, and perceived negative consequences of changing perfectionism. Table 38 outlines a behavioural experiment for a quote from a clinical participant in Study 5, which could be aimed to challenge the perceived benefit of perfectionism.

Table 38

A behavioural experiment for the perceived interpersonal benefits of perfectionism

Background about the cognition: The clinical participant answered the question “what would be the advantages of continuing to be perfectionistic?” which resulted in the unhelpful target cognition. There were several parts of this statement that could be the target of a behavioural experiment (e.g., perfectionism causing less stress) to test whether they were accurate beliefs, however the first part about perfectionism resulting in gaining respect is outlined. The participant was a stay at home mother of three children and one area of her perfectionistic standards was keeping the house immaculately clean and tidy all of the time.

Unhelpful target cognition: “You gain respect, you’re organized, there’s less stress, there’s less tension”.

Helpful alternative cognition: People could respect me even when I complete a task to a lower standard than I usually would.

Prediction: Unless I have the house immaculately clean before my friend comes to lunch she will think less of me as a person, respect me less, and will comment on the house and that my standards are dropping.

Experiment: Invite her friend to lunch without cleaning the house before, including leaving toys scattered in rooms, some dishes in the sink, and bathroom not cleaned, then observe what her friend says to her.

The behavioural experiment outlined could be used to demonstrate to the participant that her friend would still respect her as a person even when the house was not immaculately clean, and would be unlikely to make negative comments if it was not clean. Another behavioural experiment that could be used is to target the belief expressed that perfectionism causes less stress. This could include keeping a self-monitoring record of when perfectionistic behaviour was occurring and also to track mood. This could demonstrate to the patient that perfectionism caused increased anxiety and stress due to the pressure it put on her compared to when she was not engaging in perfectionistic behaviour.

Another area that was discovered in Study 5 was the perceived catastrophic consequences that might occur if perfectionism was changed. Table 39 outlines a behavioural

experiment which links a quote from Study 5, which is aimed to challenge the perceived negative consequences if perfectionism was to be changed.

Table 39

A behavioural experiment for the perceived negative consequences of changing perfectionism

Background about the cognition: The participant answered the question “given the choice between giving up being a perfectionist and staying a perfectionist, what would you choose?”, which resulted in the unhelpful target cognition. The particular aspect of this cognition that could be targeted is the catastrophic belief of “sinking” if perfectionistic standards were changed. This participant worked in an office job and took great pride in her work.

Unhelpful target cognition: “I think I would have to say that I would stay the perfectionist because then I have some hope of achieving, **if I let go of that, it is when I would sink**”

Helpful alternative cognition: I would be able to cope if I lowered my standards to some degree, I may not fall in a heap and sink.

Prediction: If I was to lower my standards at work I would produce bad work that would mean I have sunk and lost it.

Experiment: For one week at work send reports to her boss that she considers being a first draft instead of her usual final draft that has been checked several times and observe what happens.

This behavioural experiment could be used to help demonstrate to the participant that by sending a report of a lower standard than usual, she does not experience her perceived catastrophic consequences of “sinking”. In summary, behavioural experiments could be targeted to any cognitions that are obstructing change in perfectionism, to demonstrate the lack of validity to the client at the start of treatment. Future research developing treatments for perfectionism should include behavioural experiments as a major part of treatment.

7.8.3 Interventions to target personality variables

One implication of the findings of Study 4 is that interventions targeted at changing personality traits of people high in negative perfectionism might be useful to explore. Because traits such as Agreeableness, and Neuroticism to some extent were found to be important in regards to negative perfectionism, intervention may be able to be developed to target these broad level personality features. Saulsman and Page (2004) suggest in regards to individuals with personality disorders that future research could examine “...the viability and utility of generic treatments targeted at elevated Neuroticism and low Agreeableness” (p. 1079). This view is consistent with the notion of personality having plasticity. Even though researchers such as Costa and McCrae (1992) argue that personality is an enduring characteristic unlikely to change, it is important to note they do state that personality can change if intervention is specifically targeted to change personality. It would be interesting to examine if a generic treatment targeted towards broad change in personality variables could be effective in changing personality, and if in turn this change could impact on the negative aspects of perfectionism. One question that remains to be answered is; ‘can intervention reduce Neuroticism, and if so could this reduce negative perfectionism?’ This is an area that future research could be directed towards, in an attempt to reduce the negative impact of perfectionism in clinical groups.

7.9 Unique contributions and general limitations of the research

This research made several contributions to the literature. The validity of a specific measure of positive and negative perfectionism, the PANPS (Terry-Short et al., 1995) was extensively examined, as this had not been reported before. It was important to examine the validity of this scale to help further understand the constructs of positive and negative perfectionism. The relationship between dichotomous thinking and perfectionism was demonstrated, which had not been examined before, and further attempts were made to understand the relationship between rigidity and perfectionism. Furthermore, this research was the first to demonstrate a relationship between perfectionism and athletic performance, and this has applications for research and intervention in applied sports psychology to improve performance. A relationship between low Agreeableness and high negative perfectionism was also demonstrated, and the degree of diagnostic comorbidity was discussed in relation to this finding. Finally, the qualitative study was unique as it is the first to have demonstrated that ambivalence to

change is important in perfectionism, and this has clear implications for treatment where enhancing motivation to change will be crucial in treatments for perfectionism.

Specific limitations of particular studies have been discussed throughout the respective areas earlier in the discussion. There are several general limitations of the research overall that must be noted when considering the implications of the research. First, in relation to the clinical sample, one problem is that individuals were recruited at different stages in their treatment, ranging from an assessment phase through to nearing completion of treatment. Therefore, it is impossible to know if levels of perfectionism may have changed over treatment, and this may have potentially impacted on the results. For example, if perfectionism did change over treatment, individuals in treatment might have lower levels of perfectionism than individuals in an assessment phase. However, it must also be considered that unless perfectionism is directly targeted, it is unlikely to change as a result of general cognitive-behavioural treatment, as studies have found that perfectionism does not change after standard treatment in both depression (Blatt et al., 1995, 1998; Zuroff et al., 2000) and eating disorders (Srinivasagam et al., 1995). A further very significant problem due to diagnosing the sample at intake but some of the participants completing questionnaires at later phases of treatment is that it is possible those individuals may not have met criteria for an Axis I disorder. Consequently, the definition of the group overall as a “clinical group” may not be accurate for those who completed questionnaires at later stages of treatment, and is only accurate for those who completed questionnaires at the time of intake when their diagnosis was completed.

There are other limitations of the research relating to the selection of the sample for positive and negative perfectionism. The aim of the research was to select one group who were high in negative perfectionism (clinical group) and another group who were high in positive perfectionism (athlete group). Studies 4 and 5 selected participants from the athlete and clinical groups who were highest on positive and negative perfectionism respectively. However, the overall sample in the athlete and clinical groups were not selected for a *significant* degree of perfectionism. It would have been preferable to select for the initial sample individuals from a larger pool of athlete and clinical participants, those who had a significantly high degree of positive and negative perfectionism. This would have enabled stronger conclusions to be made about the role of high levels of perfectionism than can be made from the current research due to the sample selection.

Another issue is the choice of undergraduate university students as a “control” sample. It was demonstrated in Study 2 that the student group were elevated in perfectionism, and as such, they were not in a sense a “control” group as intended when designing the research. Retrospectively, it appears that a general community sample would have been a more appropriate sample for a control group than students. This is because students are likely to be higher in perfectionism than the general community due to the emphasis at university on achievement. Because the students were also mainly in their final years of study, it is also likely that their perfectionism would be elevated due to an increase in emphasis on achievement towards the completion of their degrees.

A further issue of potential concern is the use of the same sample of participants across studies. It could be argued that the use of the same participants across studies means that the studies are not fully independent of each other, and as a result family-wise error correction to the alpha level for multiple comparisons may have been warranted. In defence of this potential criticism, it is argued that because the specific hypotheses, aims and purposes of each study were independent, this is a reason for treating the studies as separate and not correcting for alpha level when considering multiple comparisons across studies. Another limitation in regards to sample was the number of participants. While there were adequate numbers of subjects for studies 1 and 2, studies 3 and 4 were underpowered. Therefore, the conclusions that can be made from the studies with smaller sample sizes are limited.

A general issue in regards to the research design was that the studies were correlational. Obviously in all correlational research the correlation between two constructs cannot infer causation. For example, while dichotomous thinking appeared to be a factor that was differentially related to positive and negative perfectionism, it couldn't be said that dichotomous thinking is the *cause* of differences in perfectionism. Similarly, although there were differences between groups on personality domains, again it could not be stated that these *cause* differences in positive and negative aspects of perfectionism. Furthermore, the research primarily relied on self-report measures. Thus, as with any research based on self-report there may have been potential bias, for example in presenting oneself in a more positive manner, or not accurately having insight into the domain which the self-report measure is assessing.

7.10 Directions for future research

Directions for future research will focus on two main areas; the conceptualisation of perfectionism and the clinical treatment of perfectionism.

7.10.1 Conceptualization of perfectionism

A major aim of this research was to improve understanding of the complex construct of perfectionism. This was achieved by closely examining two sub-components of the construct; positive and negative perfectionism. The results of this research have shown that dichotomous thinking and rigidity have a unique relationship with positive and negative perfectionism. One possibility for future research would be to use a path analysis approach to further investigate the role of these variables in explaining positive and negative perfectionism. The constructs of rigidity and dichotomous thinking can be construed of as being cognitive variables, and as such may be potentially important targets of cognitive therapy. As well as further exploring the role of these cognitive variables, further studies examining other cognitive styles in perfectionism would be useful. This could help determine which cognitive styles should be targeted specifically in future treatments developed for perfectionism.

Rigidity was found to be moderately related to perfectionism in this study but replication of this finding is required. Studies including a number of different rigidity measures or perhaps the development of more clinically relevant measures of negative rigidity would help to further determine the nature of the relationship between the two constructs. Future research should also determine the degree to which dichotomous thinking is a separate construct from perfectionism, or if it is a cognitive manifestation of perfectionism alone. This could be aided through further refining measures of dichotomous thinking to reduce overlap between dichotomous thinking and perfectionism measures. Further research into rigidity and dichotomous thinking could help to improve understanding of the development and maintenance of perfectionism.

Further understanding of the construct could also be gained by conducting more studies into perfectionism and specific behavioural outcomes, such as athletic performance. It is possible to manipulate certain variables known to be related to positive and negative perfectionism and evaluate the impact on outcome. For example, one group of athletes could receive an intervention that is focused on encouraging positive perfectionism,

challenging self-critical cognitions and training task-relevant cognitions, versus a control group who receive no intervention. Performance could be compared between groups to determine if attempting to manipulate positive perfectionism can enhance performance. Future research utilising large samples of athletes would be necessary in order to have adequate power to detect an effect of this sort.

There remains a need for many more studies to examine the relationship between personality variables and perfectionism. Ideally, longitudinal research is needed to investigate when negative perfectionism emerges in an individual in relation to personality traits such as high Neuroticism and low Extraversion. This may help to elucidate which personality patterns are more likely to be related to negative perfectionism. For example, this research indicated that Agreeableness was an important personality variable in negative perfectionism. Further clarification of these relationships would again help to guide the development of interventions for negative perfectionism. For example, it could be possible to target certain aspects of personality in order to reduce negative perfectionism.

Further work is needed to develop models of perfectionism, in particular, aetiological models. One area to examine is the role of vulnerability to negative affect and how this then relates to the development of negative perfectionism. In terms of models of maintaining mechanisms for perfectionism, direct testing of the validity of Shafran et al.'s (2002) model should be conducted, for example, through the use of structural equation modelling.

7.10.2 Treatment of perfectionism

The findings of this research highlight the importance of developing specific treatments for perfectionism. Research needs to examine whether treating perfectionism can result in a greater reduction of symptoms and disorders than standard CBT for specific disorders that is already used. Interventions could include targeting dichotomous thinking and resistance to change perfectionism through Socratic questioning and behavioural experiments. Clearly, various other techniques may also be useful in targeting perfectionism, and future research needs to examine this further. One area for future research may be to utilise treatments for perfectionism that are currently being refined for

eating disorders as a part of a new transdiagnostic CBT that is not yet published (Fairburn, 2005), but have been reported in a case study (Shafran et al., 2004). When this treatment is published, one possibility would be to attempt to apply the clinical perfectionism treatment component in a similar “transdiagnostic” manner across a range of anxiety disorders and depression. For example a standard CBT protocol for anxiety disorders could be compared to a treatment protocol with the addition of treatment of clinical perfectionism, in those patients where it is a maintaining factor for their disorder, and outcomes for the two treatments could be compared. It will be particularly interesting in future research to determine if attempting a “transdiagnostic” approach in the treatment of anxiety disorders and depression, particularly through the addition of treating perfectionism may prove to confer extra benefit to standard CBT treatments.

7.11 Conclusions

There are three main discoveries from this research that make an important contribution to understanding perfectionism. These include a critical re-examination of the validity of the construct of positive perfectionism, evidence for the importance of dichotomous thinking in perfectionism and the role of resistance to change perfectionism. First, the research aimed to better understand perfectionism via examining positive and negative perfectionism. One of the main findings was that to break perfectionism into categories of positive and negative does not appear to have strong validity. This is because the relationship of positive and negative consequences of perfectionism appears to be complex, for example, clinical groups have both high levels of positive and negative perfectionism. As a result, evidence was presented in support of the notion of reserving the term perfectionism for negative perfectionism, or as Shafran and colleagues (2002) have stated “clinical perfectionism”, which is perfectionism that significantly impacts in a negative way on the individual’s life. This is important as it suggests that while examining positive aspects of how people are able to achieve may be important, this should be considered in terms of positive achievement striving rather than perfectionism. The research also suggests that positive achievement striving may be an important factor to examine in individuals who excel, such as athletes, as it was shown to have an impact on performance. However, the main group of interest in regards to perfectionism are those people who are suffering from clinical levels of distress. The fact that clinical groups have both high levels of positive and negative perfectionism fits extremely well with the model of Shafran et al. who suggest clinical perfectionism has both positive and

negative consequences. Therefore, it appears that positive aspects can be incorporated into models of negative or clinical perfectionism in a more useful way than creating a dichotomy between positive and negative perfectionism.

The second important finding from this research was that dichotomous thinking is indeed an important factor in negative perfectionism. While various authors had proposed dichotomous thinking as a related variable to perfectionism, to date this is the first research of which the author is aware that has demonstrated this relationship. One of the most interesting aspects of this finding is that dichotomous thinking was more related to negative than positive aspects of perfectionism. Consequently, the research has uncovered that one reason people may suffer negative outcomes due to perfectionism is because of dichotomous thinking. This is a very important finding as it suggests that dichotomous thinking is a more important factor in explaining psychological distress than has been recognised before. While the idea of dichotomous thinking has been recognised since the development of cognitive therapy (e.g., Beck, 1979), it has not been a large part of treatment protocols. Because negative perfectionism is so strongly related to a range of psychological disorders, and dichotomous thinking is a factor that may start to explain why perfectionism becomes negative, then it is imperative that research and clinical attention must be given to this variable. If dichotomous thinking was targeted as a central aspect of treatment protocols, along with perfectionism, it could potentially have an impact on removing a major maintaining factor of a wide range of psychological disorders.

Finally, it was argued throughout the research that because of the strong link between perfectionism and psychopathology, and that perfectionism interferes with treatment, that specific treatments for perfectionism must be developed. One of the main discoveries of this research was the qualitative evidence that individuals have a resistance to change perfectionism. It was shown that despite having good insight into the negative impact that perfectionism has, when given a choice, individuals reported they would prefer not to change perfectionism. This again fits well with the model of Shafran et al. which indicates that clinical perfectionism is comprised of some positive consequences as well as negative. This is a very important finding as it suggests a particular challenge in developing successful treatments to target perfectionism. Clearly, attention will need to be given to enhancing individual's desire to change perfectionism in novel ways, for

example emphasis on challenging catastrophic beliefs of what would happen if they were to change, and the reality of perceived benefits of perfectionism. This is an important finding that may be incorporated into treatment protocols targeting perfectionism in the future.

This research program has provided further understanding of the important construct of perfectionism. The findings contribute to existing knowledge and extend the current conceptualisation of perfectionism. This research has also provided useful information for the future development of treatment targeted at reducing the negative consequences of perfectionism. If perfectionism can be changed, this could potentially improve clinical outcomes for the treatment of many individuals with psychological distress.

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APPENDIX A**DEMOGRAPHICS**

Please circle your response.

1. Age: _____

2. Gender: Male / Female

3. Relationship status: Single / Defacto or Married

4. Study: If currently enrolled, year of study: _____

If not currently enrolled, highest educational achievement
(e.g., year 12, bachelor degree): _____

5. Work: I am engaged in - no paid work / part-time work / full-time work

APPENDIX B

PARTICIPANT INFORMATION SHEET (Triathletes)

A Study About Personal Standards

Curtin University School of Psychology is conducting a research project aimed at understanding more about when people set high standards for themselves. It is hoped that understanding more about this can help to inform applications in sports psychology about ways that people think might influence performance. This understanding of how high standards can be attained in a useful way also might help us to develop psychological treatments for people who suffer from anxiety or depression. We are inviting anyone to participate who is currently competing in, or has competed in the sport of Triathlon in the last 12 months. This includes any level from novice to elite, and any number of races, but you must be above 18 years of age to participate.

What will the project involve?

If you participate, you will complete a set of questionnaires. This will take approximately 30 minutes to complete and asks you to indicate how strongly you agree with a number of different statements.

A small number of people who complete the questionnaires may be contacted and asked if they are willing to participate in a second study that involves a short 30 minute interview, and another questionnaire.

What happens to the information collected?

The completed questionnaires will be marked, and an individual feedback profile will be provided to you for your own information. This feedback might be personally useful in better understanding yourself, and also factors that might influence your performance in triathlon. The researchers will keep all completed questionnaires completely confidential. Only the chief researcher will have access to the questionnaires, and the information including whether you participated or not, and this information will not be made available

to any individual or organisation, including Triathlon Western Australia, under any circumstances. Individual answer sheets will be stored separately from identifying information and no individual results will be utilized from this study in any research that may be published. You can withdraw from the project at any time without any negative consequences. The Curtin University of Technology Human Research Ethics Committee has approved this project.

If you would like more information...

If you have questions about any aspect of this research project, please contact Sarah Egan (Chief Researcher) on 08 9266 3436 at Curtin University of Technology's School of Psychology.

Thankyou for your time

Sarah Egan

Chief Researcher

CURTIN SCHOOL OF PSYCHOLOGY

1. I have read the information provided to me about the *study about personal standards*.
I fully understand the aims and procedures.
2. I understand that my participation in this program is voluntary and that I can withdraw from the project at any time without negative consequences.
3. I understand that all information obtained is in the strictest confidence.
4. On the basis of the above information, I give my permission to participate in this project.

Name: _____

Address: _____

_____ Post Code: _____

Phone Number: _____

Participant's Signature: _____ Date: _____

Witness Signature:

PARTICIPANT INFORMATION SHEET (Clinic Sample)

A Study About Personal Standards

Curtin University School of Psychology is conducting a research project aimed at understanding more about when people set high standards for themselves. Sometimes setting high standards can be useful, and sometimes it can become unhelpful. The understanding about how people set high standards might be able to help us further develop psychological treatments for anxiety or depression. We are inviting anyone to participate who is currently in treatment in the Curtin University Adult Psychology Clinic.

What will the project involve?

If you participate, you will complete a set of questionnaires. This will take approximately 30 minutes to complete and asks you to indicate how strongly you agree with a number of different statements.

Some people who complete the questionnaires may be contacted and asked if they are willing to participate in a second study that involves a short 30 minute interview, and another questionnaire.

What happens to the information collected?

The completed questionnaires will be marked, and an individual feedback profile will be provided to you for your own information. This feedback might be personally useful in better understanding yourself, and might be useful in your psychological treatment. The researcher will keep all completed questionnaires completely confidential. Individual answer sheets will be stored separately from identifying information and no individual results will be utilized from this study in any research that may be published. You can withdraw from the project at any time without any negative consequences. Your treatment at the Curtin Psychology Clinic will not be effected if you choose not to participate or to withdraw from the project. The Curtin University of Technology Human Research Ethics Committee has approved this project.

If you would like more information...

If you have questions about any aspect of this research project, please contact Sarah Egan (Chief Researcher) on 08 9266 3436 at Curtin University of Technology's School of Psychology.

Thankyou for your time

Sarah Egan

Chief Researcher

**CURTIN PSYCHOLOGY CLINIC
SCHOOL OF PSYCHOLOGY**

1. I have read the information provided to me about the *study about personal standards*. I fully understand the aims and procedures.
2. I understand that my participation in this program is voluntary and that I can withdraw from the project at any time without negative consequences.
3. I understand that all information obtained is in the strictest confidence.
4. On the basis of the above information, I give my permission to participate in this project.

Name: _____

Address: _____

_____ Post Code: _____

Phone Number: _____

Participant's Signature: _____ Date: _____

Witness Signature:

PARTICIPANT INFORMATION SHEET (General Sample)

A Study About Personal Standards

Curtin University School of Psychology is conducting a research project aimed at understanding more about when people set high standards for themselves. Sometimes setting high standards can be useful, and sometimes it can become unhelpful. The understanding about how people set high standards might be able to help us further develop psychological treatments for anxiety or depression. We are inviting anyone to participate who is currently a student enrolled at Curtin University of Technology.

What will the project involve?

If you participate, you will complete a set of questionnaires. This will take approximately 30 minutes to complete and asks you to indicate how strongly you agree with a number of different statements.

What happens to the information collected?

The researcher will keep all completed questionnaires completely confidential. Individual answer sheets will be stored separately from identifying information and no individual results will be utilized from this study in any research that may be published. You can withdraw from the project at any time without any negative consequences. Your study at Curtin University of Technology will not be affected if you choose not to participate or to withdraw from the project. The Curtin University of Technology Human Research Ethics Committee has approved this project.

If you would like more information...

If you have questions about any aspect of this research project, please contact Sarah Egan (Chief Researcher) on 08 9266 3436 at Curtin University of Technology's School of Psychology.

Thankyou for your time

Sarah Egan

Chief Researcher

**CURTIN PSYCHOLOGY CLINIC
SCHOOL OF PSYCHOLOGY**

1. I have read the information provided to me about the *study about personal standards*. I fully understand the aims and procedures.
2. I understand that my participation in this program is voluntary and that I can withdraw from the project at any time without negative consequences.
3. I understand that all information obtained is in the strictest confidence.
4. On the basis of the above information, I give my permission to participate in this project.

Name: _____

Address: _____

_____ Post Code: _____

Phone Number: _____

Participant's Signature: _____ Date: _____

Witness Signature:

APPENDIX C

PARTICIPANT INFORMATION SHEET (Clinic Sample)

A Further Study About Personal Standards

As you are aware from participating in the first study, Curtin University School of Psychology is conducting a research project aimed at understanding more about when people set high standards for themselves. Sometimes setting high standards can be useful, and sometimes it can become unhelpful. The understanding about how people set high standards might be able to help us further develop psychological treatments for anxiety or depression.

What will the project involve?

If you participate, you will complete a short-interview asking you for more information about how you set high standards, and what you think when you don't meet those standards. This will take approximately 20 minutes to complete. You will also be asked to complete a personality inventory and a short measure of psychological symptoms, these measures ask you to indicate how strongly you agree with a number of different statements. This will take approximately 40 minutes to complete.

What happens to the information collected?

The completed personality questionnaires will be marked, and an individual feedback profile will be provided to you for your own information. This feedback might be personally useful in better understanding yourself. The researcher will keep all completed questionnaires completely confidential. Individual answer sheets will be stored separately from identifying information and no individual results will be utilized from this study in any research that may be published. You can withdraw from the project at any time without any negative consequences. Your treatment at the Curtin Psychology Clinic will not be effected if you choose not to participate or to withdraw from the project. The Curtin University of Technology Human Research Ethics Committee has approved this project.

If you would like more information...

If you have questions about any aspect of this research project, please contact Sarah Egan (Chief Researcher) on 08 9266 3436 at Curtin University of Technology's School of Psychology.

Thankyou for your time

Sarah Egan

Chief Researcher

**CURTIN PSYCHOLOGY CLINIC
SCHOOL OF PSYCHOLOGY**

1. I have read the information provided to me about the *further study about personal standards*. I fully understand the aims and procedures.
2. I understand that my participation in this program is voluntary and that I can withdraw from the project at any time without negative consequences.
3. I understand that all information obtained is in the strictest confidence.
4. On the basis of the above information, I give my permission to participate in this project.

Name: _____

Address: _____

_____ Post Code: _____

Phone Number: _____

Participant's Signature: _____ Date: _____

Witness Signature:

PARTICIPANT INFORMATION SHEET (Triathletes)

A Further Study About Personal Standards

As you are aware from participating in the first study, Curtin University School of Psychology is conducting a research project aimed at understanding more about when people set high standards for themselves. It is hoped that understanding more about this can help to inform applications in sports psychology about ways that people think might influence performance. This understanding of how high standards can be attained in a useful way also might help us to develop psychological treatments for people who suffer from anxiety or depression.

What will the project involve?

If you participate, you will complete a short-interview asking you for more information about how you set high standards, and what you think when you don't meet those standards. This will take approximately 20 minutes to complete. You will also be asked to complete a personality inventory and a short measure of psychological symptoms, these measures ask you to indicate how strongly you agree with a number of different statements. This will take approximately 40 minutes to complete.

What happens to the information collected?

The completed questionnaires will be marked, and an individual feedback profile will be provided to you for your own information. This feedback might be personally useful in better understanding yourself, and also factors that might influence your performance in triathlon. The researchers will keep all completed questionnaires completely confidential. Only the chief researcher will have access to the questionnaires, and the information including whether you participated or not, and this information will not be made available to any individual or organisation, including Triathlon Western Australia, under any circumstances. Individual answer sheets will be stored separately from identifying information and no individual results will be utilized from this study in any research that may be published. You can withdraw from the project at any time without any negative consequences. The Curtin University of Technology Human Research Ethics Committee has approved this project.

If you would like more information...

If you have questions about any aspect of this research project, please contact Sarah Egan (Chief Researcher) on 08 9266 3436 at Curtin University of Technology's School of Psychology.

Thankyou for your time

Sarah Egan

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1. I have read the information provided to me about the *further study about personal standards*. I fully understand the aims and procedures.
2. I understand that my participation in this program is voluntary and that I can withdraw from the project at any time without negative consequences.
3. I understand that all information obtained is in the strictest confidence.
4. On the basis of the above information, I give my permission to participate in this project.

Name: _____

Address: _____

_____ Post Code: _____

Phone Number: _____

Participant's Signature: _____ Date: _____

Witness Signature:

APPENDIX D

MPS

Please circle your response:

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly Agree</i>
1. My parents set very high standards for me.	1	2	3	4	5
2. Organisation is very important to me.	1	2	3	4	5
3. As a child, I was punished for doing things less than perfect.	1	2	3	4	5
4. If I do not set the highest standards for myself, I am likely to end up to a second-rate person.	1	2	3	4	5
5. My parents never tried to understand my mistakes.	1	2	3	4	5
6. It is important to me that I be thoroughly competent in everything I do.	1	2	3	4	5
7. I am a neat person.	1	2	3	4	5
8. I try to be an organised person.	1	2	3	4	5
9. If I fail at work/school, I am a failure as a person.	1	2	3	4	5
10. I should be upset if I make a mistake.	1	2	3	4	5
11. My parents wanted me to be the best at everything.	1	2	3	4	5
12. I set higher goals than most people.	1	2	3	4	5
13. If someone does a task at work/school better than I, then I feel like I failed the whole task.	1	2	3	4	5
14. If I fail partly, it is as bad as being a complete failure.	1	2	3	4	5
15. Only outstanding performance is good enough in my family.	1	2	3	4	5
16. I am very good at focusing my efforts on attaining a goal.	1	2	3	4	5
17. Even when I do something very carefully, I often feel that it is not quite right.	1	2	3	4	5
18. I hate being less than the best at things.	1	2	3	4	5
19. I have extremely high goals.	1	2	3	4	5

20.	My parents have expected excellence from me.	1	2	3	4	5
21.	People will probably think less of me if I make a mistake.	1	2	3	4	5
22.	I never felt like I could meet my parents' expectations.	1	2	3	4	5
23.	If I do not do as well as other people, it means I am an inferior human being.	1	2	3	4	5
24.	Other people seem to accept lower standards from themselves than I do.	1	2	3	4	5
25.	If I do not do as well all the time, people will not respect me.	1	2	3	4	5
26.	My parents have always had higher expectations for my future than I have.	1	2	3	4	5
27.	I try to be a neat person.	1	2	3	4	5
28.	I usually have doubts about the simple everyday things I do.	1	2	3	4	5
29.	Neatness is very important to me.	1	2	3	4	5
30.	I expect higher performance in my daily tasks than most people.	1	2	3	4	5
31.	I am an organised person.	1	2	3	4	5
32.	I tend to get behind in my work because I repeat things over and over.	1	2	3	4	5
33.	It takes me a long time to do something "right".	1	2	3	4	5
34.	The fewer mistakes I make, the more people will like me.	1	2	3	4	5
35.	I never felt like I could meet my parents' standards.	1	2	3	4	5

APPENDIX E

PANPS

Please circle the appropriate number under the column which applies best to each of the following statements. Ensure none are missed out. All replies are strictly confidential

	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Don't know</i>	<i>Agree</i>	<i>Strongly Agree</i>
1. When I start something I feel anxious that I might fail.	1	2	3	4	5
2. My family and friends are proud of me when I do really well.	1	2	3	4	5
3. I take pride in being meticulous when doing things.	1	2	3	4	5
4. I set impossibly high standards for myself.	1	2	3	4	5
5. I try to avoid disapproval of others at all costs.	1	2	3	4	5
6. I like the acclaim I get for an outstanding performance.	1	2	3	4	5
7. When I am doing something I cannot relax until it's perfect.	1	2	3	4	5
8. It feels as though my best is never good enough for other people.	1	2	3	4	5
9. Producing a perfect performance is a reward in its own right.	1	2	3	4	5
10. The problem of success is that I must work even harder.	1	2	3	4	5
11. If I make a mistake I feel that the whole thing is ruined.	1	2	3	4	5
12. I feel dissatisfied with myself unless I am working towards a higher standard all the time.	1	2	3	4	5
13. I know the kind of person I ought or want to be, but feel I always fall short of this.	1	2	3	4	5
14. Other people respect me for my achievements.	1	2	3	4	5
15. As a child however well I did, it never seemed good enough to please my parents.	1	2	3	4	5

16. I think everyone loves a winner.	1	2	3	4	5
17. Other people expect nothing less than perfection of me.	1	2	3	4	5
18. When I'm competing against others, I'm motivated by wanting to be the best.	1	2	3	4	5
19. I feel good when pushing out the limits.	1	2	3	4	5
20. When I achieve my goals I feel dissatisfied.	1	2	3	4	5
21. My high standards are admired by others.	1	2	3	4	5
22. If I fail people, I fear they will cease to respect or care for me.	1	2	3	4	5
23. I like to please other people by being successful.	1	2	3	4	5
24. I gain great approval from others by the quality of my accomplishments.	1	2	3	4	5
25. My successes spur me on to greater achievements.	1	2	3	4	5
26. I feel guilty or ashamed if I do less than perfectly.	1	2	3	4	5
27. No matter how well I do I never feel satisfied with my performance.	1	2	3	4	5
28. I believe that rigorous practice makes for perfection.	1	2	3	4	5
29. I enjoy the glory gained by successes.	1	2	3	4	5
30. I gain deep satisfaction when I have perfected something.	1	2	3	4	5
31. I feel I have to be perfect to gain people's approval.	1	2	3	4	5
32. My parents encouraged me to excel.	1	2	3	4	5
33. I worry what others think if I make mistakes.	1	2	3	4	5
34. I get fulfillment from totally dedicating myself to a task.	1	2	3	4	5
35. I like it when others recognised that what I do requires great skill and effort to perfect.	1	2	3	4	5
36. The better I do, the better I am expected to do by others.	1	2	3	4	5
37. I enjoy working towards greater levels of precision and accuracy.	1	2	3	4	5
38. I would rather not start something than risk doing it less than perfectly.	1	2	3	4	5
39. When I do things I feel others will judge critically the standard of my work	1	2	3	4	5
40. I like the challenge of setting very high standards for myself.	1	2	3	4	5

APPENDIX F

DTS

PLEASE READ EACH OF THE FOLLOWING STATEMENTS AND DECIDE HOW TRUE IT IS OF YOUR THINKING OVER THE PAST MONTH. If it is not true of you at all, circle 1; if it is slightly true of you, circle 2; if it is fairly true of you, circle 3; and if it is very true of you, circle 4.

	Not at all true of me	Slightly true of me	Fairly true of me	Very True of me
1. Even if I don't do a job very well, I still think it is worth doing.	1	2	3	4
2. I think of things in "black and white" terms.	1	2	3	4
3. Unless a relationship of mine is a success, I think of it as a failure.	1	2	3	4
4. I think of myself as either good or bad.	1	2	3	4
5. I think of myself as either in control or out of control.	1	2	3	4
6. I think of myself as either clever or stupid.	1	2	3	4
7. I either get on very well with people or not at all.	1	2	3	4
8. Even if I've made some mistakes, I don't consider myself to have failed totally.	1	2	3	4
9. I think of myself as either ugly or good-looking.	1	2	3	4
10. I think of myself as doing things either very well or very badly.	1	2	3	4

APPENDIX G

Read each of the following statements carefully, decide how you feel about it, and then mark your answer in the space provided. If you agree with the statement or feel that it applies to you, make a heavy mark in the space for TRUE (T). If you disagree with the statement or feel that it does not apply to you, make a heavy mark in the space for FALSE (F). There is no right or wrong answer to any question. All these statements are about things concerning which people have different opinions. The best answer is your own opinion. Be sure to answer every statement even if you have to guess at some.

- | | T | F | |
|-----|----------|----------|---|
| 1. | — | — | I never make judgements about people until I am sure about the facts. |
| 2. | — | — | I am in favour of a very strict enforcement of all laws, no matter what the consequences. |
| 3. | — | — | It bothers me when something unexpected interrupts my daily routine. |
| 4. | — | — | People who seem unsure about certain things make me feel uncomfortable. |
| 5. | — | — | I think I am stricter about right and wrong than most people. |
| 6. | — | — | I always like to see to it that my work is carefully planned and organised. |
| 7. | — | — | A strong person will be able to make up his mind on even the most difficult questions. |
| 8. | — | — | I wish people would be more definite about things. |
| 9. | — | — | I don't like to work on a problem unless there is a possibility of coming out with a clear cut and simple answer. |
| 10. | — | — | For most questions there is just one right answer once a person is able to get all the facts. |
| 11. | — | — | The trouble with most people is that they just don't take things seriously enough. |
| 12. | — | — | I often start things I never finish. |

13. ___ ___ I set high standards for myself and feel that others should do the same.
14. ___ ___ Most of the arguments I get into are over matters of principle.
15. ___ ___ I don't like things to be uncertain and unpredictable.
16. ___ ___ It is annoying to listen to a speaker who cannot seem to make up his mind as to what he really believes.
17. ___ ___ Once I have made up my mind I seldom change it.
18. ___ ___ Our thinking would be a lot better off, if we would just forget about words like "probable", "approximate", and "perhaps".
19. ___ ___ I like to have a place for everything, and everything in its place.
20. ___ ___ I am known as a hard and steady worker.
21. ___ ___ I find that a well-ordered mode of life, with regular hours and an established routine, is best suited for my temperament.
22. ___ ___ It is hard for me to sympathise with a person who is always doubting and unsure about things.

APPENDIX H

Triathlon participation questionnaire

1. Please state the month and year in which you participated in your first triathlon

2. Would you class yourself as a novice or elite triathlete? (please circle)
Novice / Elite

3. How many triathlons would you compete in, on average during a season? _____

4. How many triathlons have you competed in total (of any type)?: _____

5. Please state each distance triathlon you have competed in, the total number of races you have ever competed in of each type, and your personal best completion time:

Finish for fun:

Distances: Swim _____ Bike _____ Run _____

Total number of races: _____

Personal best time: _____

Sprint:

Distances: Swim _____ Bike _____ Run _____

Total number of races: _____

Personal best time: _____

Long-course:

Distances: Swim _____ Bike _____ Run _____

Total number of races: _____

Personal best time: _____

6. When did you complete your last triathlon? _____

7. What series of triathlon will you be competing in this season?

8. How many hours per week do you train on average? _____

