Investigating the Efficacy of an Internet-Based Cognitive Behavioural Intervention for Perfectionism in Postsecondary Students

[redacted]

This thesis is submitted in partial fulfillment of the Honours Degree of Bachelor of Psychological Science

School of Psychology

The University of Adelaide

October 2018

Word Count: 8995

Table of Contents

List of Figures

List of Tables

Abstract

Perfectionism is associated with depression, anxiety and stress in postsecondary students, and has increased in this population. In light of these findings, this study investigated the effectiveness of an internet-based cognitive behavioural intervention (*Overcoming Perfectionism*) in reducing perfectionism, depression, anxiety and stress in postsecondary students. Participants completed pre-intervention measures of two dimensions of perfectionism (concern over mistakes and personal standards), depression, anxiety, stress and the Big Five personality traits, and were then randomised to either an intervention group or a waitlist control group. The intervention group were required to complete at least three of the eight modules that constitute *Overcoming Perfectionism* over a 3-week intervention period, whilst the waitlist control group were not granted access to the intervention. Both groups then completed post-intervention measures of perfectionism, depression, anxiety and stress. After applying exclusion criteria, the final sample consisted of 61 undergraduate university students (81.97% female) between 16 and 29 years of age (M = 19.62, SD = 2.33). One-way ANOVAs and pairwise comparisons revealed that there were specifically a significantly greater mean decrease in scores on the concern over mistakes and personal standards measures in participants in the intervention group initially high on these dimensions of perfectionism from pre- to post-intervention. These findings provide preliminary evidence that *Overcoming Perfectionism* is an effective intervention for significantly reducing concern over mistakes and personal standards in postsecondary students who initially have high levels of these aspects of perfectionism. Limitations and future study ideas were discussed.

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any University, and, to the best of my knowledge, this thesis contains no materials previously published except where due reference is made. I give permission for the digital version of this thesis to be made available on the web, via the University of Adelaide's digital thesis repository, the Library Search and through web search engines, unless permission has been granted by the School to restrict access for a period of time.

XXX

October 2018

Acknowledgements

Firstly, thank you to my supervisor XXX for the all the time he gave up to help me throughout the completion of my thesis and for teaching me many new things about research.

Secondly, thank you to my partner XXX for his constant patience, support and love.

Thirdly, thank you to my parents for always believing in me and encouraging me to achieve my full potential.

Finally, thank you to my friends within the honours cohort for their support and for making the year enjoyable.

1 Introduction

1.1 Overview

Perfectionism is generally understood as a personality orientation that involves striving for flawlessness, setting exceptionally high performance standards and engaging in extremely critical evaluations of the self and/or others (Hewitt & Flett, 1991; Frost, Marten, Lahart, & Rosenblate, 1990; Stoeber & Childs, 2010). A recent meta-analysis by Curran and Hill (2017) found that levels of perfectionism had linearly increased in American, Canadian and British college students from 1989 to 2016. In line with this, the general focus of this study was perfectionism in postsecondary students.

1.2 The Concept of Perfectionism

1.2.1 Unidimensional conceptualisations.

Despite the general definition of perfectionism provided above, specific conceptualisations of the construct have differed widely. For example, some researchers have regarded perfectionism as unidimensional. This includes Ellis (1962), who proposed 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). This also includes Burns (1980), who focused primarily on "perfectionistic cognitive styles" (p. 37).

1.2.2 Multidimensional conceptualisations.

Despite these unidimensional conceptualisations, perfectionism is largely considered to be a multidimensional construct currently. This is because perfectionism has both personal and interpersonal aspects, and the latter are largely disregarded by unidimensional conceptualisations (Hewitt & Flett, 1991).

Two of the most widely known and accepted multidimensional conceptualisations of perfectionism were proposed by Hewitt and Flett (1991) and Frost et al. (1990). Hewitt and Flett (1991) suggested that perfectionism consists of three dimensions, which they labelled self-oriented perfectionism, other-oriented perfectionism and socially prescribed perfectionism. Self-oriented perfectionism involves placing demanding expectations on oneself, assessing one's own performance harshly, and striving to achieve perfection whilst avoiding failure. Meanwhile, other-oriented perfectionism involves placing demanding expectations on significant others and assessing their performance harshly. Finally, socially prescribed perfectionism involves the perception that significant others are placing demanding expectations on oneself and are assessing one's performance harshly.

Contrastingly, Frost et al. (1990) proposed that perfectionism is comprised of six dimensions, which they labelled concern over mistakes, personal standards, doubts about actions, parental expectations, parental criticism and organisation. Concern over mistakes involves an excessive concern with flaws in one's performance, resulting in one being motivated to achieve their goals by a fear of failure as opposed to a need for achievement. Personal standards involves the setting of extremely high personal standards of performance. Doubts about actions involves a sense of uncertainty regarding the quality of one's performance, especially once a task is complete. Parental expectations involves the perception that one's parents have set very high goals for them, whilst parental criticism involves the perception that one's parents are overly critical of them. Finally, organisation involves a fixation on precision, order and organisation.

Based on their respective conceptualisations of perfectionism, Hewitt and Flett (1991) and Frost et al. (1990) each developed a measure of perfectionism. Both measures are called the Multidimensional Perfectionism Scale and consist of subscales for each dimension of

perfectionism that they proposed. A factor analysis of both scales revealed a two-factor solution (Frost, Heimberg, Holt, Mattia, & Neubauer, 1993). The first factor was labelled maladaptive evaluation concerns, and consisted of high loadings for the socially prescribed perfectionism, concern over mistakes, parental criticism, parental expectations and doubts about actions subscales. Meanwhile, the second factor was labelled positive achievement strivings and consisted of high loadings for the self-oriented perfectionism, other-oriented perfectionism, personal standards and organisation subscales.

This finding indicates that perfectionism consists of a positive and a negative global dimension. This is similar to conceptualisations of perfectionism that distinguished between normal and neurotic perfectionism (Hamachek, 1978); positive and negative perfectionism (Slade & Owens, 1998; Terry-Short, Owens, Slade, & Dewey, 1995); and active and passive perfectionism (Lynd-Stevenson & Hearne, 1999).

1.3 Perfectionism in Postsecondary Students

1.3.1 Overview.

As mentioned above, Curran and Hill (2017) found that self-oriented, other-oriented and socially prescribed perfectionism had linearly increased in American, Canadian and British college students between 1989 and 2016. The researchers speculated that this may because of cultural shifts towards competitiveness, meritocracy and individualism, an increase in anxious and controlling parental practices, and young people facing more demanding expectations nowadays.

1.3.2 Perfectionism, depression, anxiety and stress.

This increase in perfectionism would have likely had negative implications, given that studies utilising postsecondary student samples have found that dimensions of perfectionism

proposed by Hewitt and Flett (1991) and Frost et al. (1990) are associated with types of psychological distress.

Specifically, socially prescribed perfectionism has consistently been found to significantly and positively correlate with depression in postsecondary students (Arthur & Hayward, 1997; Flett, Hewitt, Blankstein, & O'Brien, 1991; Flett, Hewitt, Garshowitz, & Martin, 1997; Hill, McIntire, & Bacharach, 1997; Klibert et al., 2014; Rice, Ashby, & Slaney, 2007; Sherry, Hewitt, Flett, & Harvey, 2003; Wyatt & Gilbert, 1998). Additionally, research has found that concern over mistakes, doubts about actions, parental expectations and parental criticism are significantly and positively correlated with depression separately (Christopoulos & Hicks, 2008; Lynd-Stevenson & Hearne, 1999; Rice et al., 2007), and when combined to represent maladaptive perfectionism as a whole (Christopoulos & Hicks, 2008; Tran & Rimes, 2017) in postsecondary students. Although limited, there is also some evidence that self-oriented and other-oriented perfectionism (Klibert et al., 2014), as well as personal standards (Lynd-Stevenson & Hearne, 1999), are significantly and positively correlated with depression in postsecondary students.

Additionally, studies utilising postsecondary student samples have found that concern over mistakes, doubts about actions and parental concerns (Moretz & McKay, 2009), as well as self-oriented and socially prescribed perfectionism (Flett, Endler, Tassone, & Hewitt, 1994; Flett, Hewitt, & Dyck, 1989; Klibert et al., 2014), are significantly and positively correlated with state anxiety. Klibert et al. (2014) also found a significant and positive correlation between other-oriented perfectionism and state anxiety in undergraduate college students. Additionally, there is also some evidence that self-oriented and socially prescribed perfectionism are significantly and positively correlated with aspects of trait anxiety in postsecondary students (Flett et al., 1994; Flett et al., 1989).

Further, perceived stress has been found to significantly and positively correlate with other-oriented and socially prescribed perfectionism in postsecondary students (Chang & Rand, 2000), as well as concern over mistakes, doubts about actions, parental expectations and parental criticism when they are combined to represent maladaptive perfectionism as a whole in female college students (Chang, Watkins, & Banks, 2004). Similarly, Brand et al. (2015) found that when concern over mistakes and doubts about actions were combined, and parental expectations and parental criticism were combined, both composites were significantly and positively correlated with perceived stress in university students. They also found a significant and positive correlation between personal standards and perceived stress. Other studies also found significant and positive correlations between self-oriented and socially prescribed perfectionism with chronic and life stress in undergraduate university students (Molnar, Sadava, Flett, & Colautti, 2012), and all perfectionism dimensions proposed by Frost et al. (1990) and stressful life events experienced by university students (with the exception of organisation; Lynd-Stevenson & Hearne, 1999).

Overall, these findings clearly demonstrate that aspects of perfectionism are associated with depression, anxiety and stress in postsecondary students.

1.3.3 Perfectionism and the Big Five personality traits.

An increase in perfectionism in postsecondary students may have also had some implications in regard to the prevalence of different personality traits in this population. This is because studies utilising postsecondary student samples have found that certain dimensions of perfectionism proposed by Hewitt and Flett (1991) and Frost et al. (1990) are significantly correlated with some of the Big Five personality traits. To explain, the Big Five personality traits (also known as the five-factor model of personality) consist of five distinct personality

dimensions, which are openness, conscientiousness, extraversion, agreeableness and neuroticism (or emotional stability, when positively framed). The five-factor model of personality emerged from the lexical approach to personality (Saucier, Goldberg, & Institute, 2001) and is a widely accepted, comprehensive personality framework (O'Connor, 2002). Self-oriented perfectionism, other-oriented perfectionism, personal standards and organisation (that is, the dimensions that Frost et al. (1993) found to constitute positive achievement strivings) have consistently been found to significantly and positively correlate with conscientiousness in postsecondary students. Self-oriented perfectionism has also often been found to significantly and positively correlate with neuroticism. Meanwhile, socially prescribed perfectionism, concern over mistakes and doubts about actions (that is, some of the dimensions that Frost et al. (1993) found to constitute maladaptive evaluation concerns) have consistently been found to significantly and positively correlate with neuroticism (or negatively correlate with emotional stability) in studies utilising postsecondary student samples. Other significant correlations have been found between the dimensions of perfectionism and the Big Five personality traits in postsecondary students, but these findings were not consistent across all studies (Cox, Enns, & Clara, 2002; Flett et al., 1989; Hill et al., 1997; Molnar et al., 2012; Rice et al., 2007; Stumpf & Parker, 2000; Walton, Hibbard, Coughlin, & Coyl-Sheperd, 2018).

1.4 CBT for Perfectionism in Postsecondary Students

Given the evidence that dimensions of perfectionism proposed by Hewitt and Flett (1991) and Frost et al. (1990) are associated with depression, anxiety and stress in postsecondary students, it is important to determine interventions that can successfully reduce perfectionism in this population.

A systematic review and meta-analysis by Lloyd, Schmidt, Khondoker, and Tchanturia (2015) provides support for the effectiveness of cognitive behavioural therapy (CBT) in reducing perfectionism in individuals with clinical levels of perfectionism and psychiatric disorders related to perfectionism. Specifically, a very large pooled effect size was found for mean changes in concern over mistakes from pre- to post-intervention, whilst large pooled effect sizes were found for mean changes in self-oriented perfectionism and personal standards from pre- to post-intervention. Additionally, medium pooled effect sizes were found for mean changes in socially prescribed perfectionism, doubts about actions, depression and anxiety from pre- to post-intervention.

Two of the studies included within this systematic review and meta-analysis utilised postsecondary student samples. One of these studies was conducted by Arpin-Cribbie, Irvine, and Ritvo (2012), who randomised 83 university students scoring greater than one standard deviation above the mean on the Perfectionism Cognitions Inventory (PCI; Flett, Hewitt, Blankstein, & Gray, 1998) to a 10-week, web-based CBT intervention group, a 10-week, web-based general stress management intervention group, or a no treatment condition. The CBT intervention included the same materials as the general stress management intervention, as well as content related specifically to perfectionistic cognitions. A significant mean decrease in all variables (except for clinical anxiety) was found in the CBT intervention group from pre- to post-intervention, which included concern over mistakes, self-oriented perfectionism, other-oriented perfectionism, socially prescribed perfectionism and depressed mood. Additionally, variables including concern over mistakes, self-oriented perfectionism and socially prescribed perfectionism were found to have decreased significantly more in the CBT intervention group compared to the other groups from pre- to post-intervention. Depressed mood and clinical

anxiety were also found to have decreased significantly more in the CBT intervention group compared to the no treatment group from pre- to post-intervention. Further, in the CBT intervention group, change scores in self-oriented and other-oriented perfectionism were found to be significantly and positively correlated with change scores in clinical anxiety, whilst change scores in socially prescribed perfectionism were found to be significantly and positively associated with change scores in depressed mood. Significant correlations were not found between change scores in concern over mistakes and change scores in clinical anxiety or depressed mood.

The other study included within the meta-analysis by Lloyd et al. (2015) which utilised a postsecondary student sample was conducted by Radhu, Daskalakis, Arpin-Cribbie, Irvine, and Ritvo (2012). They randomised 248 undergraduate students scoring 66 or above on the PCI to either a treatment or waitlist control group. The treatment group completed 13 modules which were based on CBT principles and were specifically aimed at altering perfectionistic beliefs and their effects on mood. Meanwhile, the latter were not granted access to the intervention until the study was complete. Significant mean decreases in concern over mistakes, parental criticism and perfectionistic cognitions were found within the treatment group from pre- to post-intervention. Additionally, in the treatment group, change scores in depressed mood were found to be significantly and positively correlated with change scores in self-oriented perfectionism, concern over mistakes, personal standards, doubts about actions and organisation, whilst change scores in perceived stress were found to be significantly and positively correlated with change scores in self-oriented perfectionism, concern over mistakes and personal standards. Only change scores in organisation were found to be significantly and positively correlated with change scores in anxiety symptoms.

Similarly, Chand, Chibnall, and Slavin (2018) investigated the efficacy of eight sessions of CBT in medical students who initially scored 42 or above on both the standards and discrepancy subscales of the Almost Perfect Scale-Revised (APS-R; Slaney, Rice, Mobley, Trippi, & Ashby, 2001). Using a case series methodology, it was found that three out of four participants no longer met criteria for maladaptive perfectionism at a 6-month follow-up.

One study has also explored CBT for perfectionism in a nonclinical sample of students (Kearns, Forbes, & Gardiner, 2007). Specifically, cognitive behavioural coaching (a modified form of CBT), delivered through an intensive workshop series held over 6 weeks, was found to significantly reduce concern over mistakes and personal standards in higher degree by research students.

Overall, these findings demonstrate that CBT is an effective intervention for reducing at least some aspects of perfectionism in clinical and general populations of postsecondary students.

1.5 *Overcoming Perfectionism*

Recently, an internet-based cognitive behavioural intervention for perfectionism called *Overcoming Perfectionism* was developed. This intervention is based on the perfectionism-specific CBT manual *Cognitive-Behavioural Treatment of Perfectionism* (Egan, Wade, Shafran, & Antony, 2014). Ultimately, internet-based interventions are beneficial as they are more accessible, easier to disseminate and cheaper than face-to-face therapy (Arpin-Cribbie et al., 2012).

Rozental et al. (2017) translated and adapted *Overcoming Perfectionism* to a Swedish context, and then investigated its efficacy with a sample of 156 Swedes who had a primary concern of perfectionism. Specifically, participants were randomised to either a treatment or a

waitlist control group. Participants in the treatment group were required to complete one module of *Overcoming Perfectionism* per week over the course of 8 weeks and received feedback from a therapist. Meanwhile, the waitlist control group did not have access to *Overcoming Perfectionism* or a therapist during the intervention period. Intention-to-treat and completer analyses revealed significant between-group post-intervention effect sizes on the primary outcome measures, which were the concern over mistakes and personal standards subscales, and secondary outcome measures including the doubts about actions and organisation subscales, the Clinical Perfectionism Questionnaire (CPQ; Fairburn, Cooper, & Shafran, 2003), the Patient Health Questionnaire (PHQ-9; Spitzer, Kroenke, & Williams, 1999), and the Generalised Anxiety Disorder 7 (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006). Thus, the treatment group's mean improvement on these measures was significantly greater than that of the control group. However, significant between-group post-intervention effect sizes were not found for the parental expectations and parental concerns subscales, which were also classified as secondary outcome measures.

Meanwhile, Shafran et al. (2017) investigated the effectiveness of *Overcoming Perfectionism* in a sample of 120 individuals from the United Kingdom initially scoring 29 or above on the concern over mistakes subscale. Although their procedure was similar to that of Rozental et al. (2017), there were some key differences. This included participants in the treatment group being given 12 weeks to complete the modules as opposed to 8, and the Depression Anxiety Stress Scales-21 (DASS-21; Lovibond & Lovibond, 1995) being used to assess depression and anxiety instead of the PHQ-9 and GAD-7. Completer analyses revealed that mean scores on the primary outcome measures, which was the concern over mistakes subscale, were significantly lower in the treatment group compared to the waitlist control group

post-intervention. This was also observed for all secondary outcome measures, which were the personal standards, doubts about actions, parental criticism, parental expectations and organisation subscales, the CPQ and the DASS-21. Intention-to-treat analyses also revealed that mean scores on all primary and secondary outcomes were significantly lower in the treatment group compared to the waitlist control group post-intervention, with the exception of means scores on the organisation subscale and the DASS-21 subscales.

Taken together, these studies provide preliminary evidence that *Overcoming Perfectionism* can successfully reduce at least some dimensions of perfectionism and types of psychological distress in individuals with a primary concern of perfectionism and clinical levels of perfectionism.

Rozental et al. (2018) undertook a follow-up study of participants in the treatment groups for both the Swedish (Rozental et al., 2017) and the UK (Shafran et al., 2017) trials of *Overcoming Perfectionism*. More specifically, 78 participants from the Swedish trial completed a 12-month follow-up questionnaire, consisting of the concern over mistakes subscale, the CPQ, the PHQ-9 and the GAD-7. Meanwhile 62 participants from the UK trial completed a 6-month follow-up questionnaire, consisting of the concern over mistakes subscale, the CPQ and the DASS-21. Intention-to-treat and completer analyses revealed a significant mean decrease in both groups on all measures from pre-intervention to follow-up, demonstrating that *Overcoming Perfectionism* can cause long-term change in perfectionism and types of psychological distress.

1.6 Aims and Hypotheses

The effectiveness of *Overcoming Perfectionism* has not been investigated in postsecondary students. Given the evidence that dimensions of perfectionism are associated with depression, anxiety and stress in this population, this would be a beneficial exploration. Thus, the first aim of

this study was to determine whether *Overcoming Perfectionism* can significantly reduce perfectionism in postsecondary students.

The second aim of this study was to establish whether the correlations between perfectionism and depression, anxiety, stress and the Big Five personality traits found in this study corresponded with those found in previous studies utilising postsecondary students. It is important to determine these associations so a deeper understanding of the implications of being a perfectionist can be gained, and behaviour/outcomes related to perfectionism can be predicted. In turn, this could potentially lead to improved management of perfectionism.

2 Method

2.1 Participants

Participants were undergraduate students enrolled in the course Psychology IA at the University of Adelaide who signed up voluntarily for the study on The University of Adelaide School of Psychology Research Participation System. They received 3 course credits of research participation for taking part in the study.

2.2 Materials

2.2.1 *Overcoming Perfectionism.*

Overcoming Perfectionism (available at https://www.iterapi.se/sites/perfectionism/) is an internet-based cognitive behavioural intervention for perfectionism, and is based on the perfectionism-specific CBT manual *Cognitive-Behavioural Treatment of Perfectionism* (Egan et al., 2014). *Overcoming Perfectionism* consists of 8 modules (see Appendix). Each module includes examples of perfectionism, psychoeducation about perfectionism, and related worksheets. *Overcoming Perfectionism* also contains between-module work, so individuals begin to incorporate their learning into their daily lives.

2.2.2 Perfectionism.

Perfectionism was measured using the concern over mistakes and personal standards subscales of the Multidimensional Perfectionism Scale developed by Frost et al. (1990). These subscales were selected to assess perfectionism because they were the primary outcome measures in other studies that have investigated the efficacy of *Overcoming Perfectionism* (see Rozental et al., 2017; Shafran et al., 2017). The Multidimensional Perfectionism Scale is significantly correlated with other measures of perfectionism and has excellent internal consistency (α = .90). The concern over mistakes and personal standards subscales possess good internal consistency (α

= .88 and α = .83 respectively; Frost et al., 1990). The concern over mistakes subscale consists of nine items, whilst the personal standards subscale consists of seven items. Participants rated their agreement with each item on a 5-point Likert scale, which ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Therefore, possible scores ranged from 9 to 45 on the concern over mistakes subscale and 7 to 35 on the personal standards subscale. Higher scores represented higher levels of the corresponding perfectionism dimension.

2.2.3 Depression, anxiety and stress.

Depression, anxiety and stress were measured using the 21-item version of the Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 was used in this study as opposed to the full length DASS (which consists of 42 items) to reduce participant completion time. The DASS-21 is valid for use with clinical and nonclinical populations (Antony, Bieling, Cox, Enns, & Swinson, 1998; Henry & Crawford, 2005). It consists of three subscales measuring depression, anxiety and stress, which have been found to possess good to excellent internal consistency (α = .88 to .94, α = .82 to .87 and α = .90 to .91 respectively; Antony et al., 1998; Henry & Crawford, 2005). Each subscale consists of seven items. Participants rated how frequently each item applied to them over the past week on a 4-point Likert scale, which ranged from 0 (*never*) to 3 (*almost always*). Participants' total scores on each subscale are typically doubled so they can be compared to full length DASS scores. Therefore, possible final scores on each subscale ranged from 0 to 42, with higher scores representing higher levels of the corresponding type of psychological distress.

It must be noted that in this study, mean scores on the DASS-21 subscales were compared to general population norms outlined by Crawford, Cayley, Lovibond, Wilson, and Hartley

(2011), which were based on raw DASS-21 scores. Therefore, DASS-21 scores were not doubled when making this comparison.

2.2.4 The Big Five personality traits.

The Big Five personality traits were measured using the Openness Conscientiousness Extraversion Agreeableness Neuroticism Index Condensed (OCEANIC; Schulze & Roberts, 2006). The OCEANIC exhibits adequate convergent validity and consists of five subscales which each assess one of the Big Five personality traits. The openness subscale has acceptable internal consistency (α = .77), whilst the extraversion and agreeableness subscales have good internal consistency (α = .85 and α = .86 respectively), and the conscientiousness and neuroticism subscales have excellent internal consistency (α = .91 for both; Schulze & Roberts, 2006). The total scale consists of 45 items, with each subscale containing nine items. Participants rated their agreement with each item on a 6-point Likert scale, which ranged from 1 (*never*) to 6 (*always*). Total scores for each subscale were calculated by averaging participants' responses to the relevant items. Therefore, possible scores on each subscale ranged from 1 to 6, with higher scores representing higher levels of the corresponding personality trait.

2.3 Procedure

This study was approved by The University of Adelaide School of Psychology Human Research Ethics Subcommittee. Data collection occurred between March 16, 2018 and June 7, 2018. The website link to a pre-intervention survey was made available to participants once they had signed up for the study on The University of Adelaide School of Psychology Research Participation System. This pre-intervention survey included measures of perfectionism, depression, anxiety, stress and the Big Five personality traits. Prior to undertaking these measures, participants were presented with information about the study and were informed that they could withdraw from

the study at any time without penalty. After reading this information, participants were required to provide consent to participate in the study, for their data to be used for research purposes, and for the researcher to obtain their demographic information from university records.

After completing the pre-intervention survey, participants were randomised to either an intervention group or a waitlist control group. Randomisation was achieved by allocating every second participant who completed the pre-intervention survey to the waitlist control group. The intervention group were required to complete at least the first three modules of *Overcoming* Perfectionism (which are "Understanding Perfectionism", "Your Perfectionism Cycle" and "Surveys and Experiments") over a 3-week intervention period. Contrastingly, participants in the waitlist control group were not granted access to *Overcoming Perfectionism* until the study was completed. Only the first three modules were made mandatory for the intervention group because the estimated completion time for each module was 30 to 60 minutes, and participants were only required to complete 3 hours of research participation for Psychology IA. Additionally, the developers of *Overcoming Perfectionism* recommended that individuals complete at least one module per week, and so a 3-week intervention period was selected because if participants abided by this recommendation, they would complete the minimum requirements of this study.

After completing the pre-intervention survey, all participants were sent an email on the same or following business day which informed them of the group they had been randomised to and what was required of them. Participants were also informed that they would receive another email containing a website link to a follow-up survey in exactly 3 weeks' time. The researcher then sent an email to participants in the intervention group containing their login details via *Overcoming Perfectionism*.

The intervention group were sent an email 1 week into their intervention period reminding them of how much time they had left to complete the required number of modules. This email also highlighted that homework completion is a central aspect of effective treatment, in an attempt to encourage and motivate participants to complete the between-module work. Participants in the intervention group were also sent an email when there was 1 week left of their intervention period, which again reminded them of how much time they had left to complete the required number of modules. Additionally, this email reminded them that they were welcome and encouraged to complete additional modules.

All participants were sent another email containing a website link to a post-intervention survey exactly 3 weeks after they had been sent the first email from the researcher. This post-intervention survey included measures of perfectionism, depression, anxiety and stress. Participants were asked to complete the survey as soon as possible.

3 Results

3.1 *A Priori* Power Analyses

An *a priori* power analysis was conducted to determine the number of participants needed in each group to achieve an *a priori* power of .80 when conducting Welch's *t*-tests. Taking $\alpha = .05$ and assuming a medium effect size of $d = .50$, approximately 64 participants were needed in each group. $d = .50$ was deemed a medium effect size as per Cohen's (1988) effect size conventions. These conventions were used when referring to and interpreting effect sizes throughout the remainder of this study. Additionally, the alpha level was set at .05 for all other statistical analyses in this study as well.

An *a priori* power analysis was also conducted to determine the total number of participants needed to achieve an *a priori* power of .80 when conducting one-sample *t*-tests. Taking $\alpha = .05$ and assuming a medium effect size of $d = .50$, approximately 33 participants were needed.

Additionally, an *a priori* power analysis was conducted to determine the total number of participants needed to achieve an *a priori* power of .80 when calculating Pearson correlation coefficients. Taking $\alpha = .05$ and assuming a medium effect size of $r = .30$, approximately 84 participants were needed.

Further, an *a priori* power analysis was conducted to determine the number of participants needed in each group to achieve an *a priori* power of .80 when conducting a one-way analysis of variance (ANOVA) with four groups. Taking $\alpha = .05$ and assuming a medium effect size of $f = .25$, approximately 45 participants were needed in each group.

3.2 Assumption Checking

The assumptions for the relevant parametric tests were checked prior to undergoing statistical analyses. The assumptions of normality and homoscedasticity were violated for some variables. Additionally, there were some outliers in the data. Therefore, parametric tests were followed by relevant nonparametric tests where assumptions had been violated in this study.

3.3 Participants

A total of 81 participants completed the initial survey. However, two participants withdrew from the study, nine participants in the intervention group did not complete at least the first three modules of *Overcoming Perfectionism* as required, seven participants did not complete the follow-up survey, and two participants were accidentally sent and completed the post-intervention survey before their 3-week intervention period was complete. Therefore, these participants were excluded from the study. This resulted in a final sample of 61 participants, with 25 postsecondary students in the intervention group and 36 postsecondary students in the waitlist control group. The demographic characteristics of the sample are presented in Table 1. In the intervention group, 19 participants completed three modules, two participants completed three and a half modules, two participants completed four modules, one participant completed seven and a half modules, and one participant completed all eight modules.

Table 1
Demographic Characteristics of the Sample

	Age				Sex			
					Female		Male	
	M	*SD*	Min	Max	*n*	%	*n*	%
Intervention group	19.84	2.75	16	29	20	80.00	5	20.00
Waitlist control group	19.47	2.02	17	25	30	83.33	6	16.67
Total sample	19.62	2.33	16	29	50	81.97	11	18.03

Note. Min = minimum; Max = maximum.

3.4 Comparing Mean Pre-Intervention Scores to General Population Norms

One-sample *t*-tests were conducted to determine whether mean pre-intervention scores on the concern over mistakes, personal standards and DASS-21 subscales in this study differed significantly from general population norms established by Suddarth and Slaney (2001) and Crawford et al. (2011). Results are displayed in Table 2. Mean pre-intervention scores on the anxiety and stress subscales of the DASS-21 were significantly higher than general population norms. These differences were large in size. The mean pre-intervention score on the depression subscale of the DASS-21 was also significantly higher than the general population norm. This difference was medium in size. Additionally, the mean pre-intervention score on the concern over mistakes subscale was significantly higher than the general population norm. This difference was small in size. The mean pre-intervention score on the personal standards subscale did not differ significantly from the general population norm.

Wilcoxon signed-ranks tests yielded the same general pattern of significant results.

Table 2
One Sample T-*Tests Comparing Mean Pre-Intervention Scores to General Population Norms*

	M	*SD*	*μ*	*t*(*df* = 60)	*p*	Cohen's *D*
Concern over mistakes	25.97	9.04	22.32	3.15	< .05	0.40
Personal standards	25.30	5.97	24.36	1.22	.23	0.16
DASS-21 depression	6.10	4.94	2.57	5.58	< .05	0.71
DASS-21 anxiety	5.70	4.62	1.74	6.70	< .05	0.86
DASS-21 stress	7.66	4.27	3.99	6.71	< .05	0.86

Note. DASS-21 = Depression Anxiety Stress Scales-21.

3.5 Comparing Groups on Outcome Variables Pre-Intervention

Welch's *t*-tests were conducted to determine whether there were any significant mean pre-intervention differences on any of the outcome variables between the intervention group and the waitlist control group. Results, along with pre-intervention descriptive statistics between groups,

are displayed in Table 3. There were no significant mean pre-intervention differences between groups on any of the outcome variables.

Wilcoxon signed-ranks tests yielded the same general pattern of non-significant results.

Table 3

Pre-Intervention Descriptive Statistics and Welch's T-*Tests on Outcome Variables Between Groups*

	Intervention group		Control group					
	M	*SD*	*M*	*SD*	*t*	*df*	*p*	Cohen's *D*
Concern over mistakes	25.76	8.48	26.11	9.52	-0.15	55.33	.88	0.04
Personal standards	26.28	5.58	24.61	6.22	1.10	55.13	.28	0.28
DASS-21 depression	10.32	8.75	13.50	10.51	-1.28	56.97	.20	0.33
DASS-21 anxiety	9.60	9.17	12.67	9.22	-1.28	51.99	.21	0.33
DASS-21 stress	13.12	8.13	16.83	8.58	-1.72	53.56	.09	0.44
Openness	3.58	0.66	3.48	0.65	0.61	51.50	.55	0.15
Conscientiousness	4.51	0.81	4.30	0.81	1.00	51.79	.32	0.26
Extraversion	3.68	0.92	3.47	0.89	0.88	50.52	.38	0.23
Agreeableness	4.94	0.59	4.78	0.67	0.99	55.25	.33	0.25
Neuroticism	3.45	0.79	3.71	1.03	-1.13	58.34	.26	0.29

Note. DASS-21 = Depression Anxiety Stress Scales-21.

3.4 Pre-Intervention Correlations Between Outcome Variables

Pearson's correlation coefficients were calculated to determine whether pre-intervention scores on the concern over mistakes and personal standards subscales correlated with pre-intervention scores on the DASS-21 and OCEANIC subscales. Results are displayed in Table 4. Scores on the concern over mistakes subscale were significantly and positively correlated with scores on the depression and stress subscales of the DASS-21, as well as scores on the neuroticism subscale of the OCEANIC. These correlations were large in strength. Scores on the concern over mistakes subscale were also significantly and positively correlated with scores on the anxiety subscale of the DASS-21. This correlation was medium in strength. Scores on the concern over mistakes subscale were not significantly correlated with scores on the openness, conscientiousness, extraversion or agreeableness subscales of the OCEANIC.

Contrastingly, scores on the personal standards subscale were significantly and positively correlated with scores on the conscientiousness subscale of the OCEANIC. This correlation was large in strength. Scores on the personal standards subscale were also significantly and positively correlated with scores on the extraversion and agreeableness subscales of the OCEANIC. These correlations were medium in strength. Scores on the personal standards subscale were not significantly correlated with scores on any of the DASS-21 subscales or the openness and neuroticism subscales of the OCEANIC.

A significant and positive correlation was also found between scores on the concern over mistakes and personal standards subscales. This correlation was medium in strength.

Spearman's rank correlation coefficients yielded the same general pattern of significant results outlined above. However, some of these significant correlations were weaker when calculated using this nonparametric test; specifically, correlations between scores on the concern

over mistakes subscale and the depression and stress subscales of the DASS-21, as well as the correlation between scores on the concern over mistakes and the neuroticism subscale of the OCEANIC, were found to be medium in strength.

Other significant correlations were found between scores on the DASS-21 and OCEANIC subscales, but these were not discussed as they were not the focus of this study.

Table 4

Pre-Intervention Correlations Between Outcome Variables

	1	2	3	4	5	6	7	8	9	10
1. Concern over mistakes		**.40**	**.55**	**.40**	**.50**	.23	.04	-.10	.02	**.50**
2. Personal standards			-.05	-.10	.03	.04	**.55**	**.30**	**.32**	-.02
3. DASS-21 depression				**.68**	**.81**	**.30**	**-.31**	**-.31**	-.18	**.74**
4. DASS-21 anxiety					**.72**	**.35**	-.22	-.17	.01	**.62**
5. DASS-21 stress						.23	-.17	**-.26**	-.09	**.70**
6. Openness							.04	.13	.10	**.35**
7. Conscientiousness								**.30**	**.46**	-.15
8. Extraversion									**.37**	-.17
9. Agreeableness										.10
10. Neuroticism										

Note. Statistically significant correlations where $p < .05$ are shown in boldface. DASS-21 = Depression Anxiety Stress Scales-21.

3.5 Correlations Between Change Scores in the Intervention Group

Change scores on the concern over mistakes, personal standards and DASS-21 subscales were calculated by subtracting pre-intervention scores from post intervention scores. Therefore, a negative change score represented a decrease in a variable from pre- to post-intervention, whilst a positive change score represented an increase in a variable from pre- to post-intervention.

Pearson's correlation coefficients were calculated to determine whether change scores on the concern over mistakes, personal standards and DASS-21 subscales were correlated within the intervention group. A significant and positive correlation between change scores meant that as one variable changed, the other variable also changed in the same direction. Results are displayed in Table 5. Change scores on the depression subscale of the DASS-21 were significantly and positively correlated with change scores on the anxiety and stress subscales of the DASS-21. Additionally, change scores on the anxiety subscale of the DASS-21 were significantly and positively correlated with changes scores on the stress subscale of the DASS-21. These correlations were large in strength. Further, change scores on the concern over mistakes subscale were significantly and positively correlated with change scores on the personal standards subscale. This correlation was medium in strength.

Spearman's rank correlation coefficients yielded the same general pattern of results in regard to both significance and strength.

Table 5
Correlations Between Change Scores in the Intervention Group

	1	2	3	4	5
1. Change in concern over mistakes		**.42**	.20	-.03	.11
2. Change in personal standards			.04	.05	.21
3. Change in DASS-21 depression				**.66**	**.57**
4. Change in DASS-21 anxiety					**.52**
5. Change in DASS-21 stress					

Note. Statistically significant correlations where $p < .05$ are shown in boldface. DASS-21 = Depression Anxiety Stress Scales-21.

3.6 Comparing Mean Change Scores Between Groups

Welch's *t*-tests were conducted to determine whether there was a significant difference in mean change scores on the concern over mistakes, personal standards and DASS-21 subscales between the intervention group and the waitlist control group.

Results, along with the descriptive statistics for change scores between groups, are displayed in Table 6. There was a significantly greater mean decrease in scores on the concern over mistakes and personal standards subscales in the intervention group compared to the control group from pre- to post-intervention. These differences were medium in size. Figure 1 and Figure 2 display these findings in graphical form. Meanwhile, no significant differences were found between groups in mean change scores on any of the DASS-21 subscales. Figure 3, Figure 4 and Figure 5 display these findings in graphical form. These findings indicate that the completion of at least the first three modules of *Overcoming Perfectionism* significantly reduced concern over mistakes and personal standards but did not significantly reduce depression, anxiety and stress in participants.

Wilcoxon signed-ranks tests yielded the same general pattern of significant results.

Table 6

Descriptive Statistics and Welch's T-*Tests on Change Scores Between Groups*

	Intervention group		Control group					
	Mean	*SD*	*Mean*	*SD*	*t*	*df*	*p*	Cohen's *D*
Concern over mistakes	-3.44	7.56	0.81	5.19	-2.44	39.40	.02	0.67
Personal standards	-2.08	4.56	0.86	3.85	-2.64	45.88	.01	0.70
DASS-21 depression	-0.08	6.23	2.17	4.72	-1.52	42.31	.13	0.41
DASS-21 anxiety	-1.28	5.13	0.00	4.85	-0.98	49.90	.33	0.26
DASS-21 stress	0.08	6.01	1.50	4.84	-0.98	44.29	.33	0.26

Note. DASS-21 = Depression Anxiety Stress Scores-21.

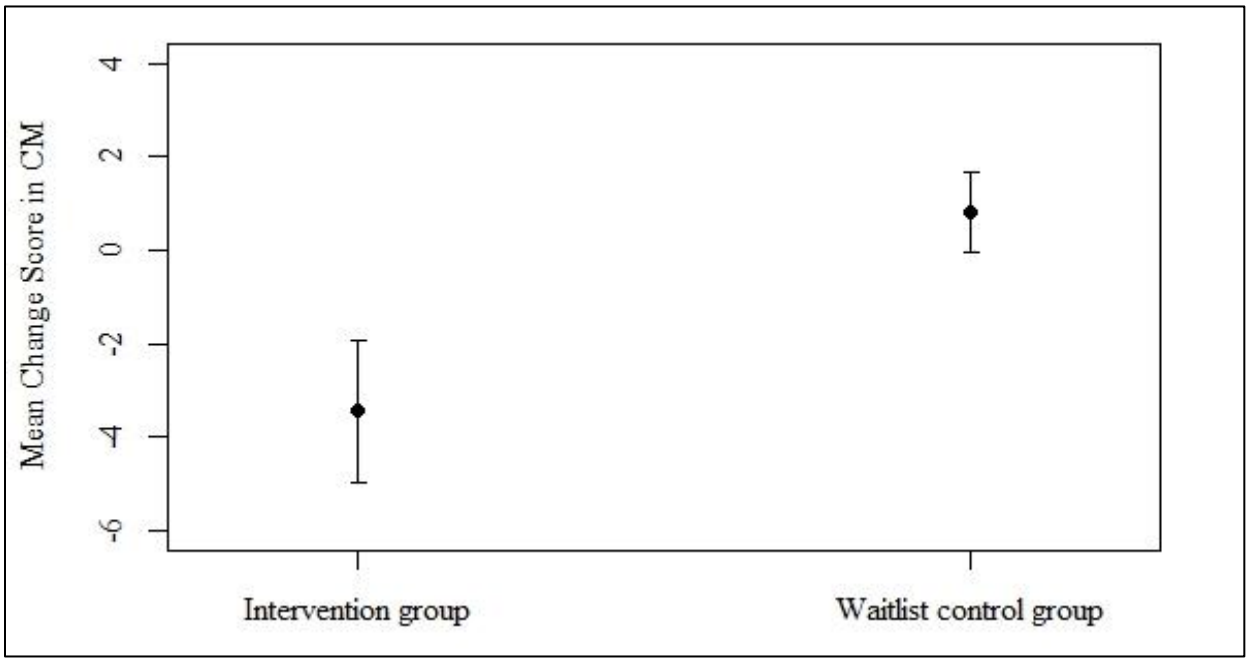

Figure 1. Mean change scores on the concern over mistakes subscale between groups, using error bars to represent standard error. CM = concern over mistakes.

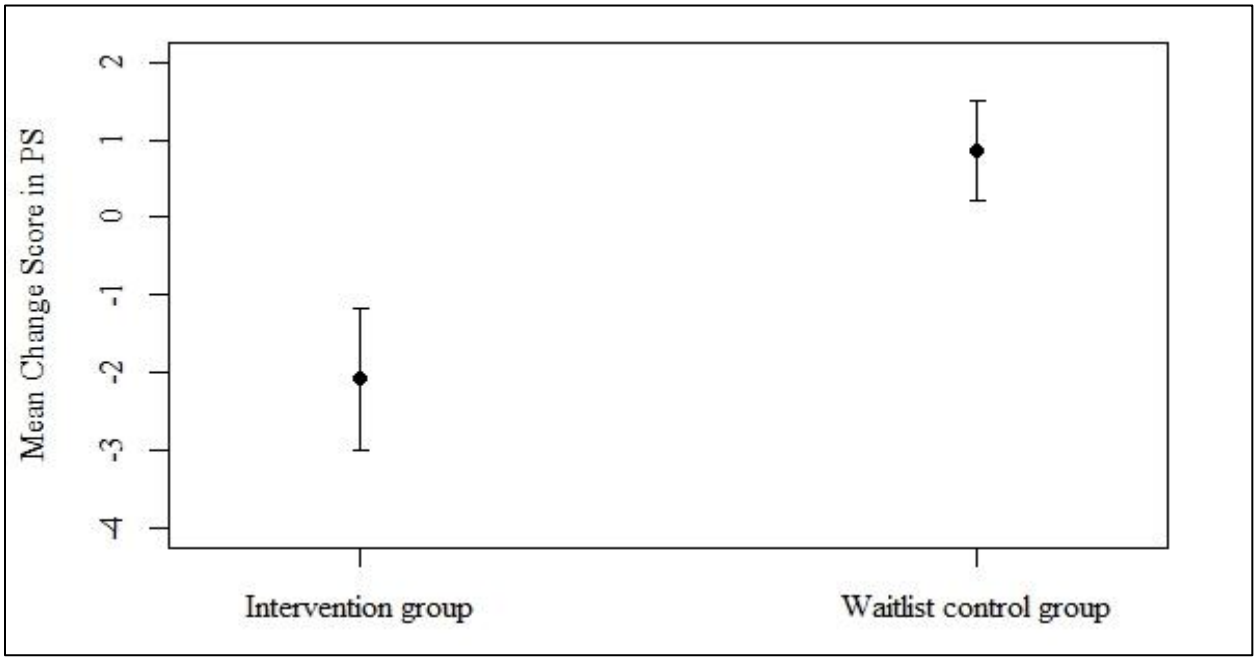

Figure 2. Mean change scores on the personal standards subscale between groups, using error bars to represent standard error. PS = personal standards.

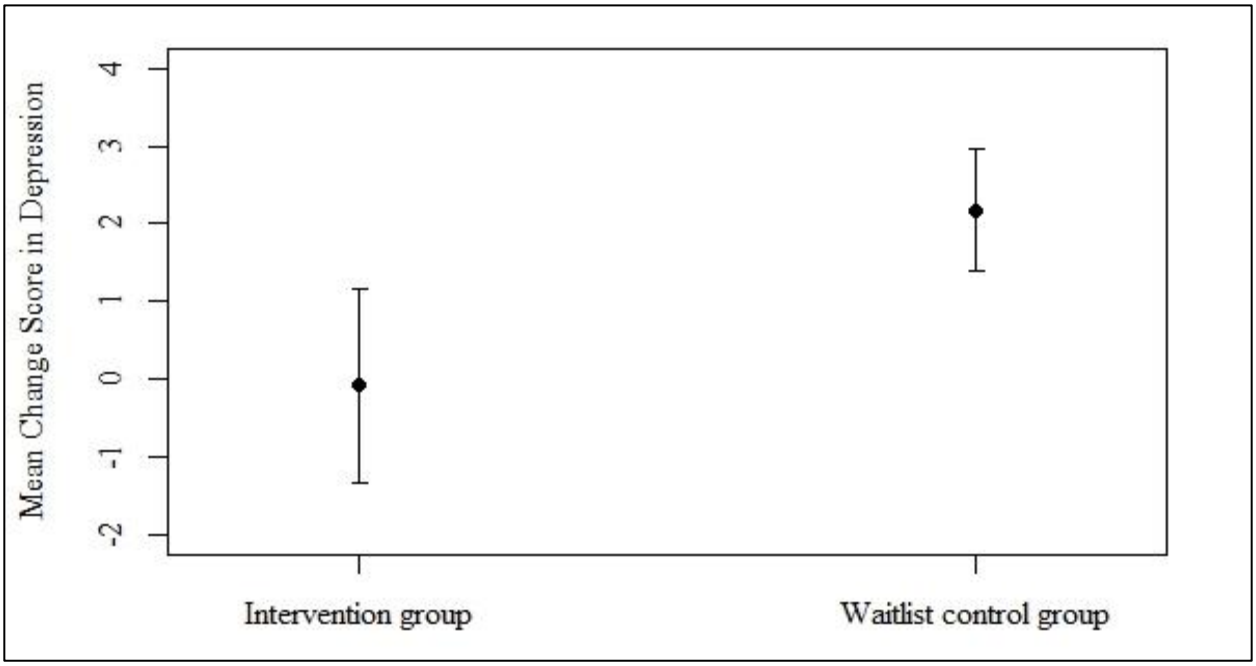

Figure 3. Mean change scores on the depression subscale of the DASS-21 between groups, using error bars to represent standard error.

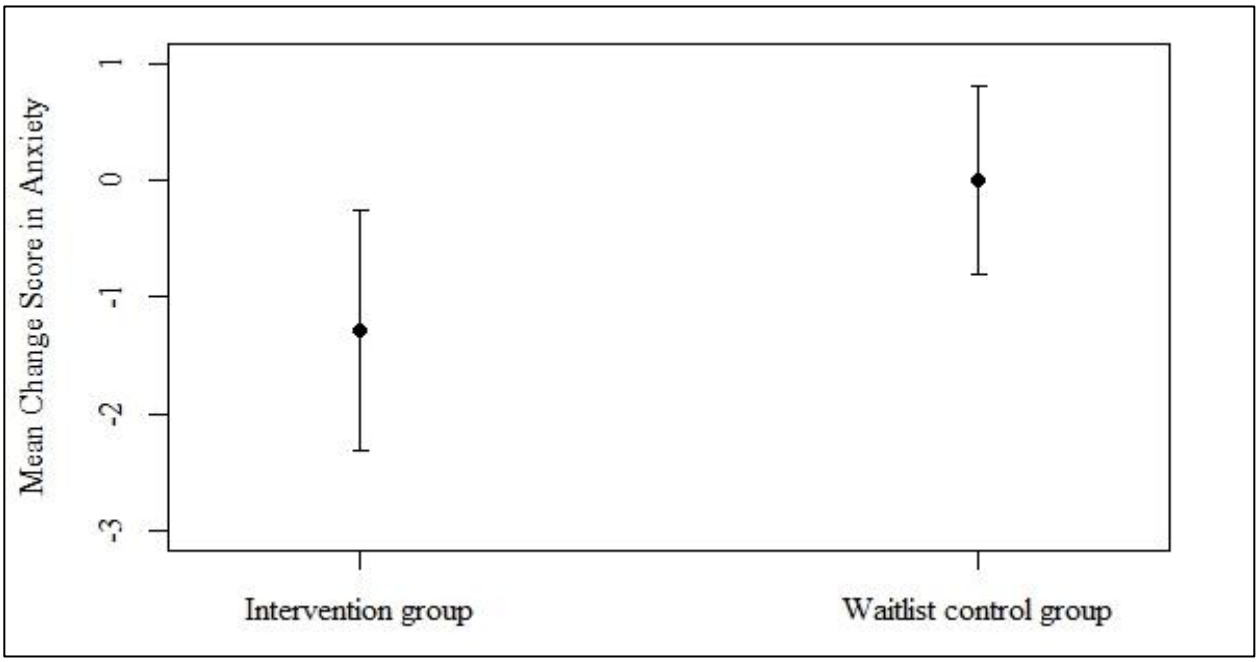

Figure 4. Mean change scores on the anxiety subscale of the DASS-21 between groups, using error bars to represent standard error.

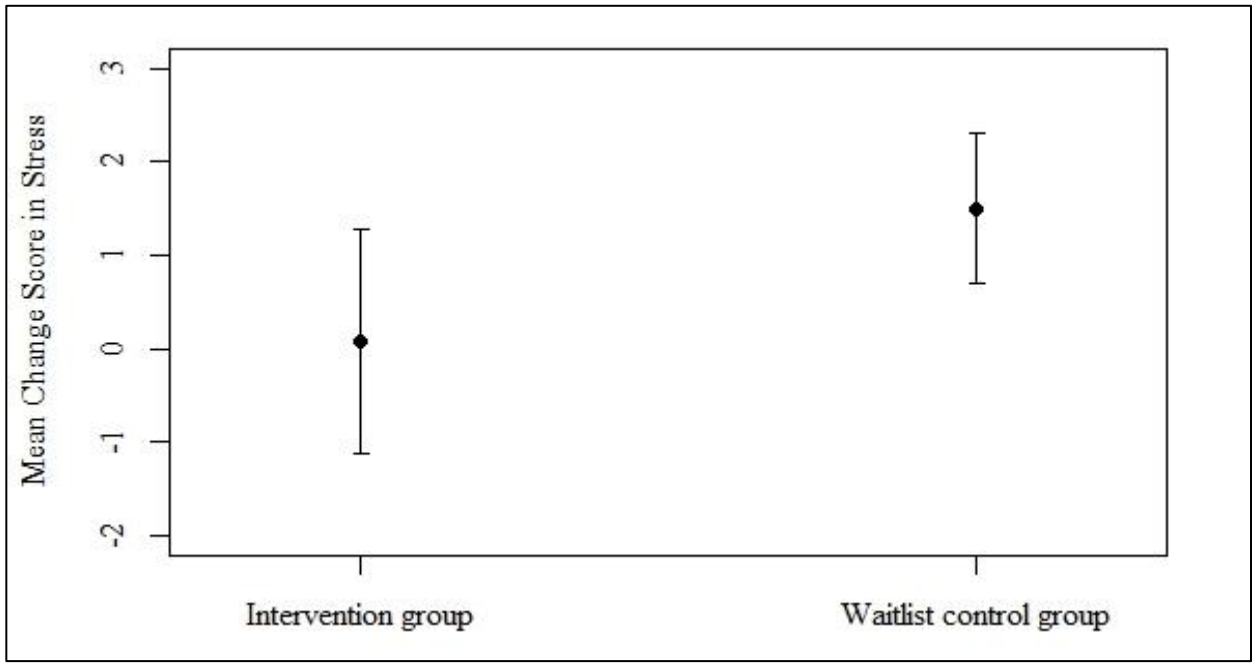

Figure 5. Mean change scores on the stress subscale of the DASS-21 between groups, using error bars to represent standard error.

3.6 Comparing Mean Change Scores by Group Membership and Initial Level of Perfectionism

A one-way ANOVA was conducted to determine if mean change scores in concern over mistakes differed by group membership and initial level of concern over mistakes. This was motivated by the fact that most previous studies exploring CBT for perfectionism in postsecondary students only included participants who scored above a certain cut-off on perfectionism scales (see Arpin-Cribbie et al., 2012; Chand et al., 2018; Radhu et al., 2012; Shafran et al., 2017). Participants were divided into four groups: those in the intervention group initially high in concern over mistakes, those in the intervention group initially low in concern over mistakes, those in the waitlist control group initially high in concern over mistakes, and those in the waitlist control group initially low in concern over mistakes. Participants were classified as initially high in concern over mistakes if their pre-intervention score on the concern

over mistakes subscale was equal to or greater than the sample's mean pre-intervention score on the concern over mistakes subscale, which was approximately 26. Correspondingly, participants were classified as initially low in concern over mistakes if they scored less than 26 on the concern over mistakes subscale pre-intervention. As shown in Table 7, the one-way ANOVA revealed that mean change scores on the concern over mistakes subscale were significantly different between at least two of the four groups. This effect was medium in size. As shown in Table 8, along with descriptive statistics for change scores between groups, pairwise comparisons with a Bonferroni correction revealed that there was a significantly greater mean decrease in scores on the concern over mistakes subscale in participants in the intervention group who were initially high in concern over mistakes compared to participants in the waitlist control group who were initially high in concern over mistakes and those in the waitlist control group initially low in concern over mistakes from pre- to post-intervention. These differences were large in size. This demonstrates that the completion of at least the first three modules of *Overcoming Perfectionism* specifically significantly reduced concern over mistakes in participants who initially scored high on this dimension of perfectionism. Figure 6 displays this finding in graphical form.

Contrastingly, a Kruskal-Wallis one-way ANOVA revealed no significant difference in mean change scores on the concern over mistakes subscale across the four groups.

Table 7
One-Way ANOVA of Mean Change Scores on the Concern Over Mistakes Subscale

	df	*SS*	*MS*	*F*	*p*	η^2
Between groups	1.00	368.10	368.50	9.83	< .05	.14
Within groups	59.00	2213.20	37.50			

Note. SS = sum of squares; MS = mean squares.

Table 8

Pairwise Comparisons of Mean Change Scores on the Concern Over Mistakes Subscale

				Pairwise comparisons							
				p				Cohen's *D*			
Group	*n*	*M*	*SD*	1	2	3	4	1	2	3	4
1. Intervention/high CM	14	-5.86	8.37		.18	.03	.02		0.81	0.96	1.00
2. Intervention/low CM	11	-0.36	5.24			1.00	1.00			0.17	0.28
3. Waitlist control/high CM	20	0.50	4.84				1.00				0.13
4. Waitlist control/low CM	16	1.19	5.74								

Note. Pairwise comparisons were calculated using the Bonferroni correction. CM = concern over mistakes; Intervention/high CM = participants in the intervention group initially high in concern over mistakes; Intervention/low CM = participants in the intervention group initially low in concern over mistakes; Waitlist control/high CM = participants in the waitlist control group initially high in concern over mistakes; Waitlist control/low CM = participants in the waitlist control group initially low in concern over mistakes.

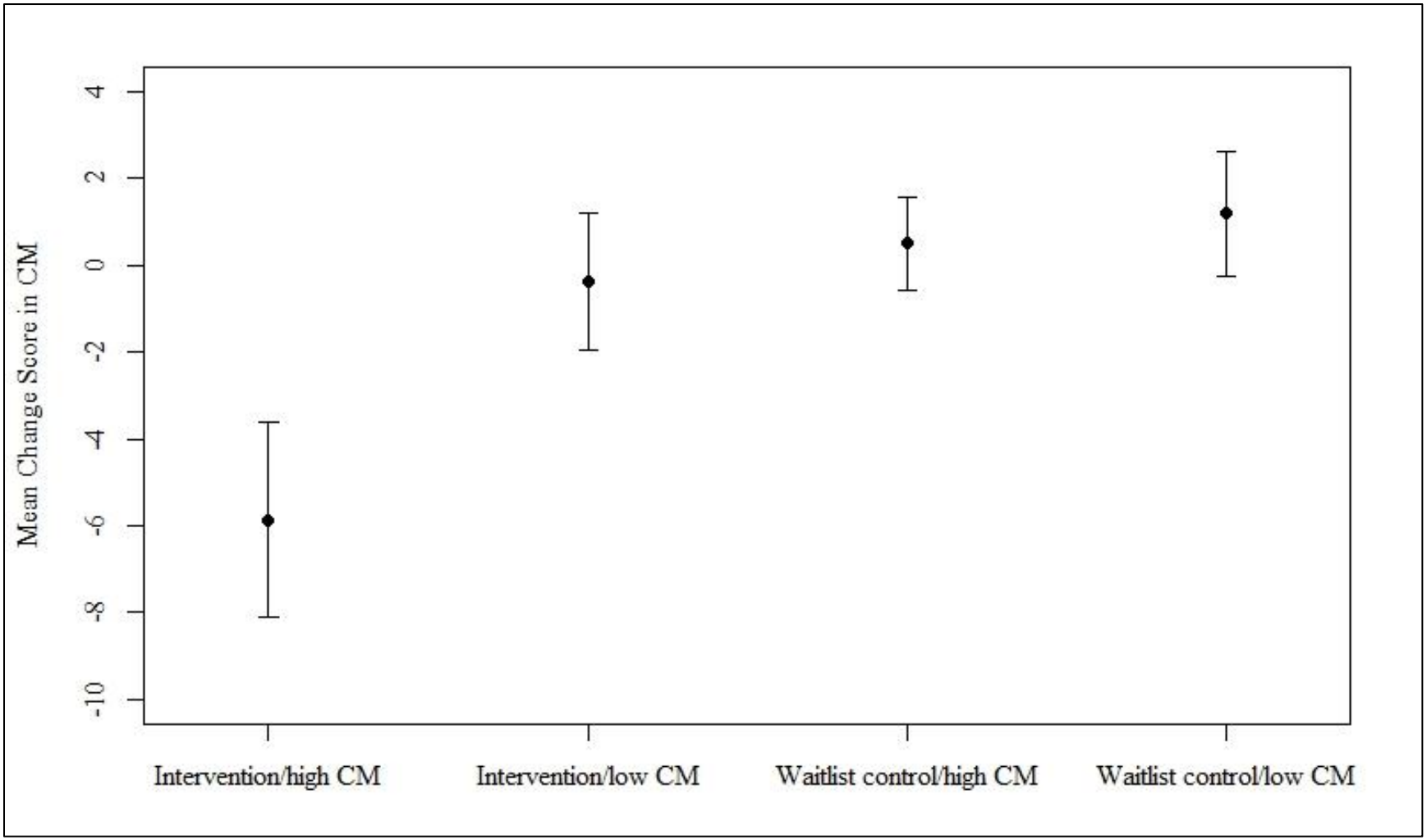

Figure 6. Mean change scores on the concern over mistakes subscale by group membership and initial level of concern over mistakes, using error bars to represent standard error. CM = concern over mistakes; Intervention/high CM = participants in the intervention group initially high in concern over mistakes; Intervention/low CM = participants in the intervention group initially low in concern over mistakes; Waitlist control/high CM = participants in the waitlist control group initially high in concern over mistakes; Waitlist control/low CM = participants in the waitlist control group initially low in concern over mistakes.

A one-way ANOVA was also conducted to determine if mean change scores on the personal standards subscale differed by group membership and initial level of personal standards. Similarly, participants were divided into four groups: those in the intervention group initially high in personal standards, those in the intervention group initially low in personal standards, those in the waitlist control group initially high in personal standards, and those in the waitlist control group initially low in personal standards. Again, participants were classified as initially high in personal standards if their pre-intervention score on the personal standards subscale was equal to or greater than the sample's initial mean pre-intervention score on the personal standards subscale, which was approximately 25. Correspondingly, participants were classified as initially low in personal standards if they scored less than 25 on the personal standards subscale pre-intervention. As shown in Table 9, the one-way ANOVA revealed that mean change scores on the personal standards subscale were significantly different between at least two of the four groups. This effect was medium in size. As shown in Table 10, along with descriptive statistics for change scores between groups, pairwise comparisons with a Bonferroni correction revealed that there was a significantly greater mean decrease in scores on the personal standards subscale in participants in the intervention group who were initially high in personal standards compared to participants in the intervention group who were initially low in personal standards and those in the waitlist control group who were initially low in personal standards from pre- to post-intervention. These differences were large in size. This demonstrates that the completion of at least the first three modules of *Overcoming Perfectionism* specifically significantly reduced personal standards in participants who initially scored high on this dimension of perfectionism. Figure 7 displays this finding in graphical form.

A Kruskal-Wallis one-way ANOVA also revealed that mean change scores on the personal standards subscale were significantly different between at least two of the four groups. A Dunn's multiple comparison test revealed that the only significant difference was between participants in the intervention group who were initially high in personal standards and those in the waitlist control group who were initially low in personal standards.

Table 9

One-Way ANOVA of Mean Change Scores on the Personal Standards Subscale

	df	*SS*	*MS*	*F*	*p*	η^2
Between groups	1.00	252.20	252.16	16.65	< 0.05	.22
Within groups	59.00	893.60	15.15			

Note. SS = sum of squares; MS = mean squares.

Table 10

Pairwise Comparisons of Mean Change Scores on the Personal Standards Subscale

				Pairwise comparisons							
				p				Cohen's *D*			
Group	*n*	*M*	*SD*	1	2	3	4	1	2	3	4
1. Intervention/high PS	16	-3.69	4.74		.04	.12	.00		1.24	0.82	1.33
2. Intervention/low PS	9	0.78	2.44			1.00	1.00			0.50	0.45
3. Waitlist control/high PS	18	-0.56	2.87				.18				0.80
4. Waitlist control/low PS	18	2.28	4.24								

Note. Pairwise comparisons were calculated using the Bonferroni correction. Intervention/high PS = participants in the intervention group initially high in personal standards; Intervention/low PS = participants in the intervention group initially low in personal standards; Waitlist control/high PS = participants in the waitlist control group initially high in personal standards; Waitlist control/low PS = participants in the waitlist control group initially low in personal standards.

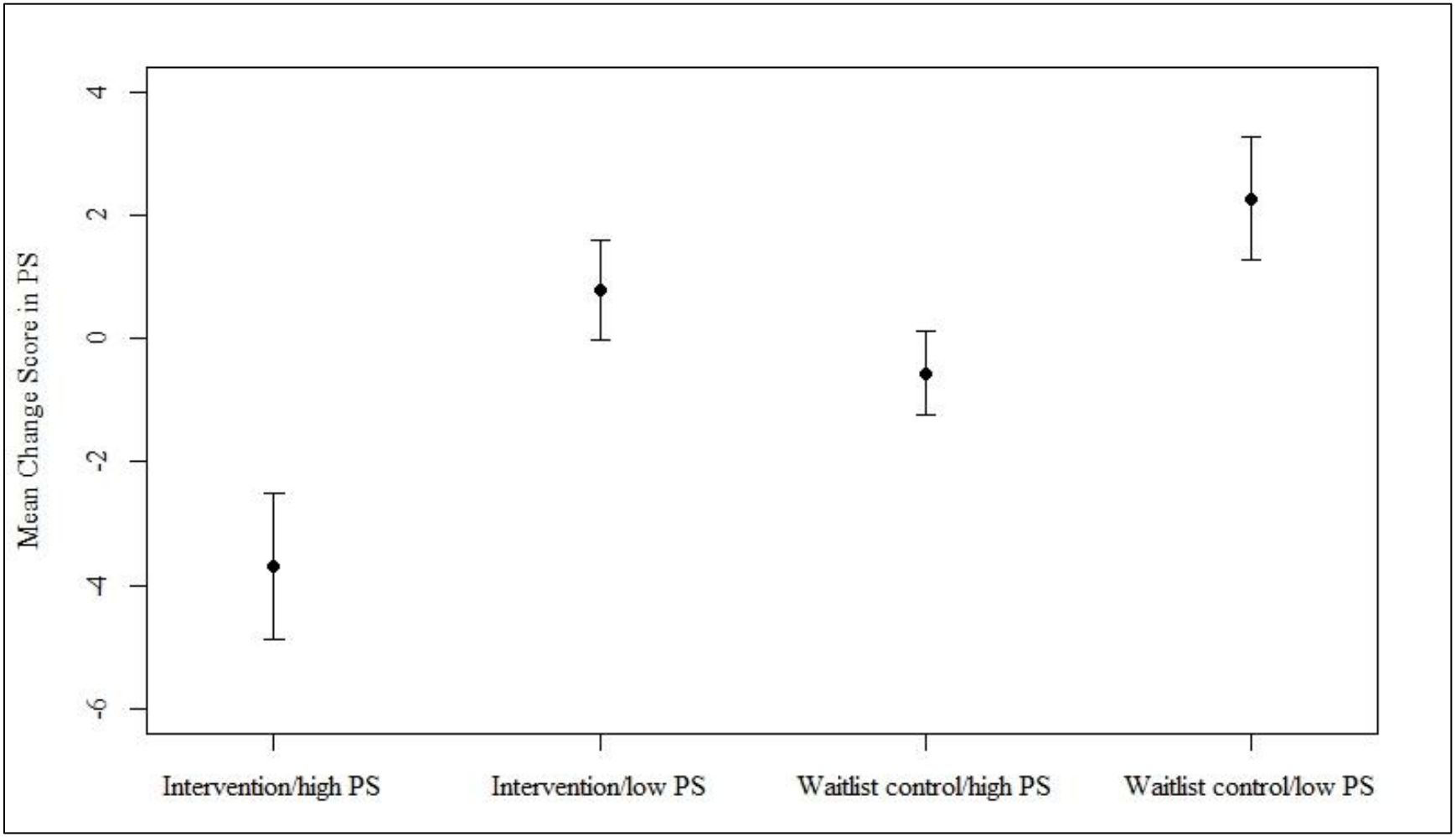

Figure 7. Mean change scores on the personal standards subscale by group membership and initial level of personal standards, using error bars to represent standard error. PS = personal standards; Intervention/high PS = participants in the intervention group initially high in personal standards; Intervention/low PS = participants in the intervention group initially low in personal standards; Waitlist control/high PS = participants in the waitlist control group initially high in personal standards; Waitlist control/low PS = participants in the waitlist control group initially low in personal standards.

Finally, one-way ANOVAs were conducted to determine if mean change scores on the DASS-21 subscales differed by group membership and initial level of concern over mistakes. Participants were divided by their initial level of concern over mistakes because it is a negative dimension of perfectionism (Frost et al., 1993) and there is more evidence that it is associated with depression, anxiety and stress in postsecondary students than personal standards (see Introduction). Participants were divided in the same way as they had been when conducting the one-way ANOVA for change scores on the concern over mistakes subscale. Descriptive statistics for mean change scores on the depression, anxiety and stress subscales of the DASS-21 by group membership and initial level of concern over mistakes are displayed in Table 11. As shown in Table 12, Table 13 and Table 14, there were no significant differences in mean change scores on any of the DASS-21 subscales between the four groups. Figure 8, Figure 9 and Figure 10 display these findings in graphical form.

Kruskal-Wallis one-way ANOVAs yielded the same general pattern of nonsignificant results.

Table 11

Descriptive Statistics for Mean Change Scores on the DASS-21 Subscales by Group Membership and Initial Level of Concern of Mistakes

		Change in DASS-21 Depression		Change in DASS-21 Anxiety		Change in DASS-21 Stress	
Group	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
1. Intervention/ high CM	14	0.29	7.92	-0.86	6.31	1.86	5.68
2. Intervention/ low CM	11	-0.55	3.36	-1.82	3.28	-2.18	5.90
3. Waitlist control/high CM	20	1.90	5.17	-0.60	5.11	1.20	5.25
4. Waitlist control/low CM	16	2.50	4.23	0.75	4.55	1.88	4.41

Note. DASS-21 = Depression Anxiety Stress Scores-21; CM = concern over mistakes; Intervention/high CM = participants in the intervention group initially high in concern over mistakes; Intervention/low CM = participants in the intervention group initially low in concern over mistakes; Waitlist control/high CM = participants in the waitlist control group initially high in concern over mistakes; Waitlist control/low CM = participants in the waitlist control group initially low in concern over mistakes.

Table 12

One-Way ANOVA of Mean Change Scores on the Depression Subscale of the DASS-21

	df	*SS*	*MS*	*F*	*p*	η^2
Between groups	1.00	59.80	59.78	2.04	0.16	.03
Within groups	59.00	1725.50	29.25			

Note. SS = sum of squares; MS = mean squares.

Table 13

One-Way ANOVA of Mean Change Scores on the Anxiety Subscale of the DASS-21

	df	*SS*	*MS*	*F*	*p*	η^2
Between groups	1.00	26.00	25.97	1.05	0.31	.02
Within groups	59.00	1453.00	24.63			

Note. SS = sum of squares; MS = mean squares.

Table 14

One-Way ANOVA of Mean Change Scores on the Stress Subscale of the DASS-21

	df	*SS*	*MS*	*F*	*p*	η^2
Between groups	1.00	7.20	7.19	0.25	0.62	.00
Within groups	59.00	1709.40	28.97			

Note. SS = sum of squares; MS = mean squares.

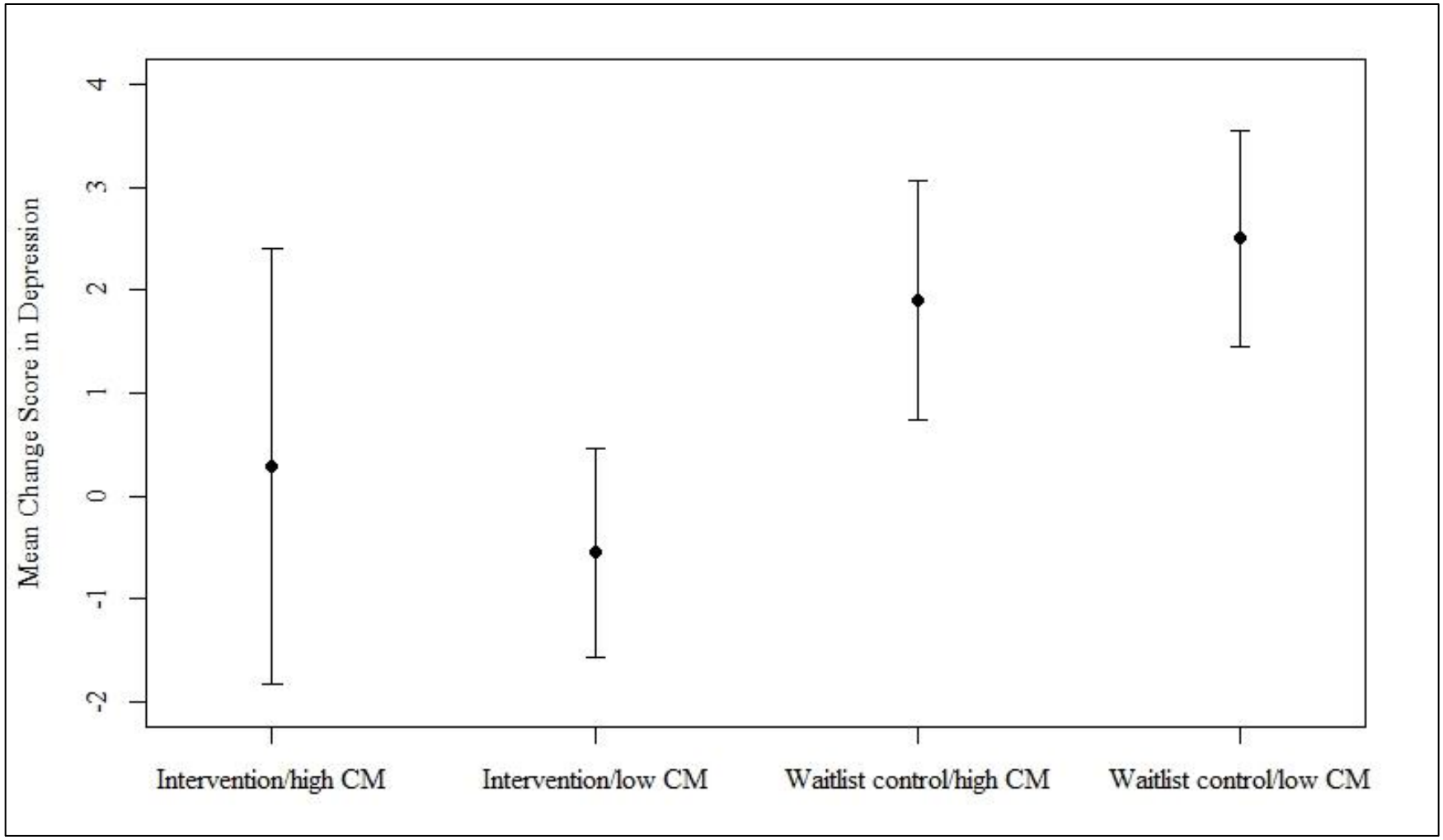

Figure 8. Mean change scores on the depression subscale of the DASS-21 by group membership and initial level of concern over mistakes, using error bars to represent standard error. CM = concern over mistakes; Intervention/high CM = participants in the intervention group initially high in concern over mistakes; Intervention/low CM = participants in the intervention group initially low in concern over mistakes; Waitlist control/high CM = participants in the waitlist control group initially high in concern over mistakes; Waitlist control/low CM = participants in the waitlist control group initially low in concern over mistakes.

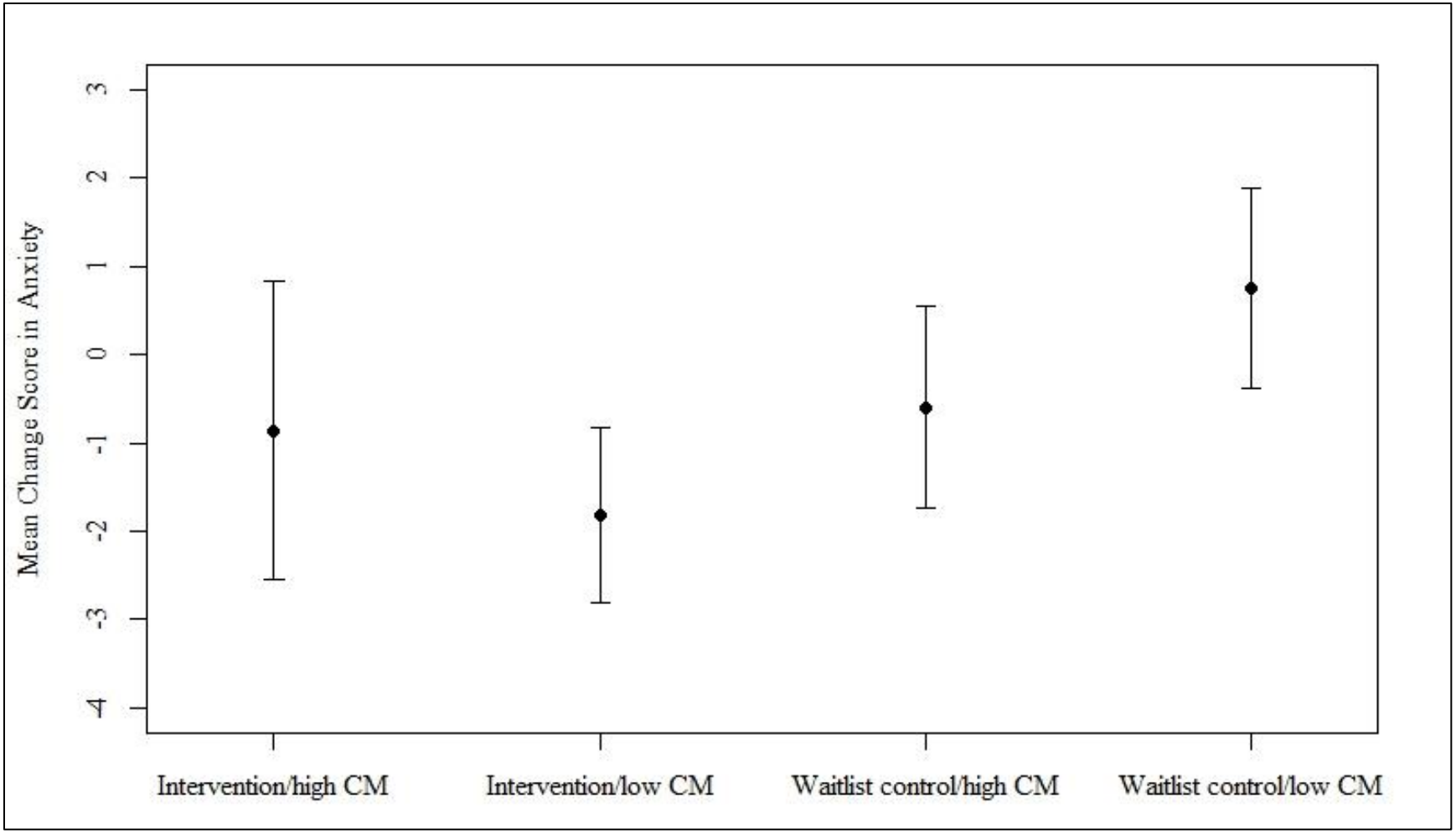

Figure 9. Mean change scores on the anxiety subscale of the DASS-21 by group membership and initial level of concern over mistakes, using error bars to represent standard error. CM = concern over mistakes; Intervention/high CM = participants in the intervention group initially high in concern over mistakes; Intervention/low CM = participants in the intervention group initially low in concern over mistakes; Waitlist control/high CM = participants in the waitlist control group initially high in concern over mistakes; Waitlist control/low CM = participants in the waitlist control group initially low in concern over mistakes.

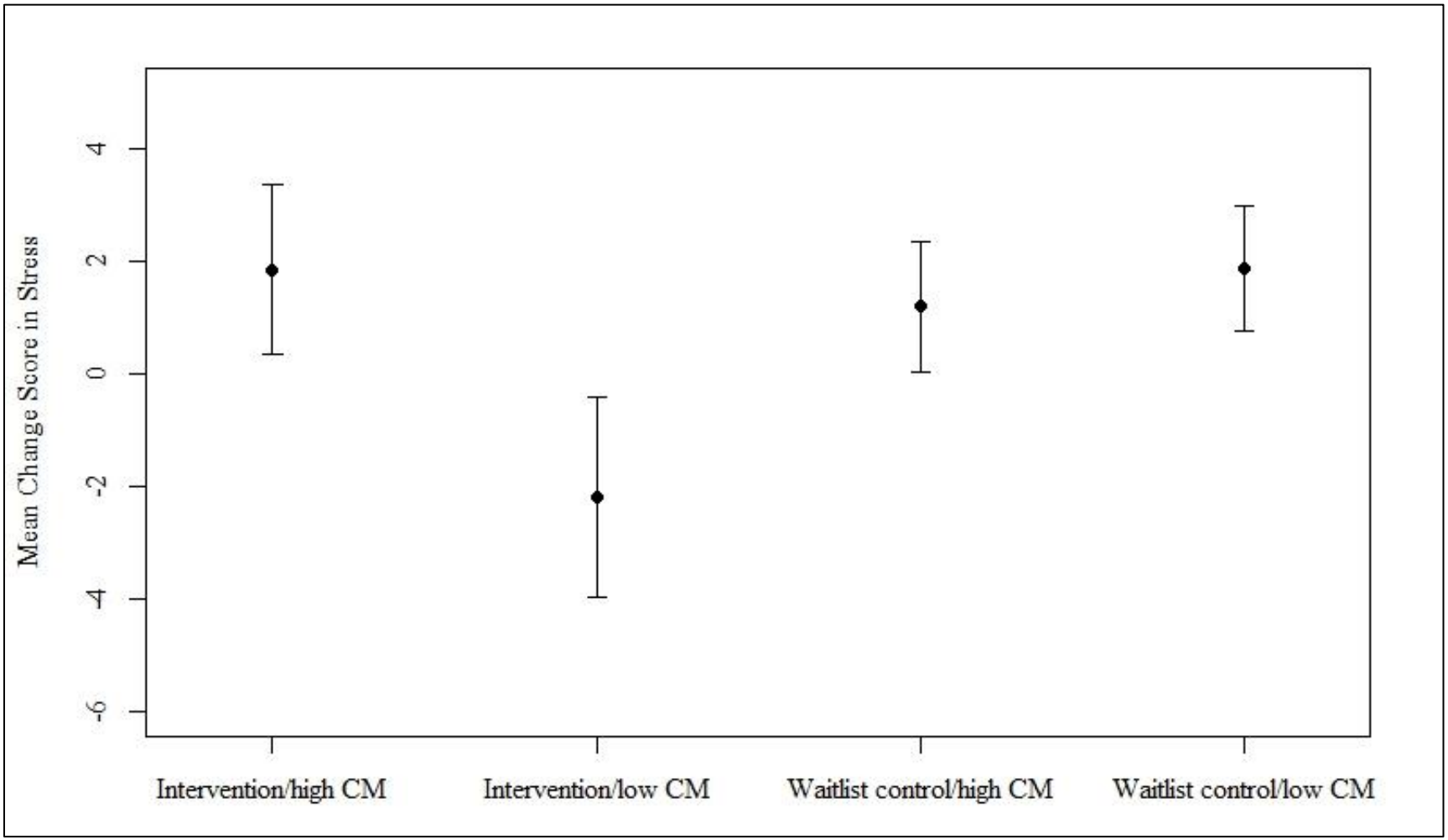

Figure 10. Mean change scores on the stress subscale of the DASS-21 by group membership and initial level of concern over mistakes, using error bars to represent standard error. CM = concern over mistakes; Intervention/high CM = participants in the intervention group initially high in concern over mistakes; Intervention/low CM = participants in the intervention group initially low in concern over mistakes; Waitlist control/high CM = participants in the waitlist control group initially high in concern over mistakes; Waitlist control/low CM = participants in the waitlist control group initially low in concern over mistakes.

4 Discussion

4.1 Overview

This was the first study to investigate the efficacy of the internet-based cognitive behavioural intervention *Overcoming Perfectionism* in reducing perfectionism in postsecondary students. The concern over mistakes and personal standards dimensions of perfectionism were specifically explored, as these were the main outcome variables in previous studies that investigated the efficacy of *Overcoming Perfectionism* (see Rozental et al., 2017; Shafran et al., 2017). This study also adds to the literature surrounding the relationships between perfectionism and depression, anxiety, stress and the Big Five personality traits in postsecondary students.

4.2 Findings in Specific Relation to the Aims of the Study

Both parametric and nonparametric tests revealed a significantly greater mean decrease in scores on the concern over mistakes subscale in the intervention group compared to the waitlist control group from pre- to post-intervention. This difference was medium in size. Further investigation via relevant parametric tests revealed that there was specifically a significantly greater mean decrease in scores on the concern over mistakes subscale in participants in the intervention group who were initially high in concern over mistakes compared to participants in the control group. This is likely due to the fact that those who initially had high levels of concern over mistakes had more room to decline on this dimension of perfectionism. Differences were large in size. A relevant nonparametric test revealed that there was no significant difference in mean change scores on the concern over mistakes subscale between these participants. However, an effect may not have been observed because the use of a nonparametric test reduced statistical power.

Both parametric and nonparametric tests also revealed a significantly greater mean decrease in scores on the personal standards subscale in the intervention group in comparison to the waitlist control group from pre- to post-intervention. This difference was medium in size. Further investigation via relevant parametric tests revealed that there was specifically a significantly greater mean decrease in scores on the personal standards subscale in participants in the intervention group who were initially high in personal standards compared to participants in the intervention group who were initially low in personal standards and those in the control group who were initially low in personal standards from pre- to post-intervention. Again, this is likely because those who initially had high levels of personal standards had more room to decline on this dimension of perfectionism. These differences were large in size. Equivalent nonparametric tests revealed that there was only a significantly greater mean decrease in scores on the personal standards subscale in participants in the intervention group who were initially high in personal standards compared to those in the waitlist control group who were initially low in personal standards from pre- to post-intervention. The negative mean change score on the personal standards subscale obtained by the waitlist control participants who were initially high in personal standards was likely due to random variation. This may explain why no significant difference in mean change scores on the personal standards subscale was found between these participants and participants in the intervention group who were initially high in personal standards.

Overall, these findings indicate that completion of at least the first three modules of *Overcoming Perfectionism* can result in a significant reduction in concern over mistakes and personal standards in postsecondary students who initially have high levels of these aspects of

perfectionism. This adds to previous literature that found *Overcoming Perfectionism* to be effective with other samples (see Rozental et al., 2017; Shafran et al., 2017).

Both parametric and nonparametric tests revealed that there was no significant difference in mean change scores on the depression, anxiety and stress subscales of the DASS-21 between the intervention group and the waitlist control group. Further investigation revealed that there was no significant difference in mean change scores on the depression, anxiety and stress subscales of the DASS-21 by group membership and initial level of concern over mistakes. This may mean that the completion of at least the first three modules of *Overcoming Perfectionism* is not enough to significantly reduce depression, anxiety and stress in postsecondary students, regardless of their initial level of concern over mistakes. However, the study was underpowered. Therefore, future researchers should ensure their studies have adequate statistical power so an accurate conclusion can be drawn regarding this.

Both parametric and nonparametric tests revealed that pre-intervention scores on the concern over mistakes subscale were significantly and positively correlated with pre-intervention scores on all DASS-21 subscales and the neuroticism subscale of the OCEANIC. The strength of these correlations ranged from medium to large. This indicates that concern over mistakes is associated with depression, anxiety, stress and neuroticism in postsecondary students. This corresponds with some of the findings from previous studies cited in the introduction (see Brand et al., 2015; Chang et al., 2004; Christopoulos & Hicks, 2008; Cox et al., 2002; Lynd-Stevenson & Hearne, 1999; Moretz & McKay, 2009; Rice et al., 2007; Stumpf & Parker, 2000; Walton et al., 2018). Those who have an excessive concern with making mistakes perceive their mistakes as personal defects and are motivated by a fear of failure. This would likely lead to higher emotional instability, and thus may explain these associations.

Both parametric and nonparametric tests revealed that pre-intervention scores on the personal standards subscale were significantly and positively correlated with pre-intervention scores on the conscientiousness, extraversion and agreeableness subscales of the OCEANIC. The strength of these relationships ranged from medium to large. This indicates that personal standards is associated with conscientiousness, extraversion and agreeableness in postsecondary students. This corresponds with some of the findings from previous studies cited in the introduction (see Cox et al., 2002; Rice et al., 2007; Stumpf & Parker, 2000; Walton et al., 2018). Personal standards may be associated with conscientiousness because those who set extremely high personal standards of performance are likely to be organised, vigilant and self-disciplined to ensure their goals are met. Additionally, personal standards may be associated with extraversion and agreeableness because those with high personal standards likely strive for excellence in their social life (amongst other life domains), and therefore may be sociable, friendly and compassionate.

Pre-intervention scores on the personal standards subscale were not significantly correlated with pre-intervention scores on any of the DASS-21 subscales. This does not provide support for studies cited in the introduction that found that personal standards was significantly and positively correlated with depression and stress in postsecondary students (see Brand et al., 2015; Lynd-Stevenson & Hearne, 1999). Relationships between these variables may not have been found because the study was underpowered. Alternatively, the findings made by Brand et al. (2015) and Lynd-Stevenson and Hearne (1999) may have been the result of random chance and these variables may not actually be associated in postsecondary students.

4.3 Additional Findings

There were also some other key findings within this study. Firstly, both parametric and nonparametric tests revealed that pre-intervention scores on the concern over mistakes and personal standards subscales were significantly and positively correlated. This correlation was medium in strength. This indicates that these dimensions may not encapsulate entirely different aspects of perfectionism, and that there is some overlap between them.

Secondly, both parametric and nonparametric tests revealed that mean pre-intervention scores on all DASS-21 subscales were significantly higher than general population norms established by Crawford et al. (2011). This indicates that postsecondary students are, on average, significantly more depressed, anxious and stressed than the general population. Both parametric and nonparametric tests also revealed that the mean pre-intervention score on the concern over mistakes subscale was significantly higher than the general population norm established by Suddarth and Slaney (2001). However, it cannot be concluded that postsecondary students are, on average, significantly higher in concern over mistakes than the general population, as Suddarth and Slaney's (2001) norms were actually established using a sample of undergraduate college students. Therefore, it can only be concluded that participants in this study were, on average, significantly higher in concern over mistakes compared to other postsecondary students. This significant difference may have been found because this study may have largely attracted individuals suffering from perfectionism being voluntary, resulting in a biased sample of postsecondary students initially high in perfectionism. If this were indeed the case, participants must have specifically had high mean levels of concern over mistakes initially, as there was no significant difference in the mean pre-intervention score on the personal standards subscale and the norm for personal standards established by Suddarth and Slaney (2001).

Thirdly, in the intervention group, significant and positive correlations were found between change scores on the concern over mistakes and personal standards subscales, the depression and anxiety subscales of the DASS-21, the depression and stress subscales of the DASS-21, and the anxiety and stress subscales of the DASS-21 using both parametric and nonparametric tests. The strength of these relationships ranged from medium to large. No significant relationships were found between change scores on the concern over mistakes and personal standards subscales and change scores on any of the DASS-21 subscales. The finding that change scores on the concern over mistakes subscale were not correlated with changes in depression and anxiety is consistent with findings by Arpin-Cribbie et al. (2012). However, the finding that change scores on the concern over mistakes and personal standards subscales were not correlated with depression and stress was not consistent with findings by Radhu et al. (2012). Clearly, findings are mixed and further investigation is needed. Ultimately, it is important to determine whether change scores in these variables are correlated so researchers know whether reducing one could also successfully reduce another.

4.4 Considerations

As implied above, the findings of the current study indicate that *Overcoming Perfectionism* is an effective intervention for reducing concern over mistakes and personal standards in postsecondary students. However, personal standards is a positive dimension of perfectionism (Frost et al., 1993), and has been found to significantly and positively correlate with positive outcomes in students such as self-esteem (Rice et al., 2007) and academic achievement (Cox et al., 2002), as well as life satisfaction when combined with organisation to represent adaptive perfectionism as a whole (Chang et al., 2004). Additionally, studies that have found an association between personal standards and depression and stress in this population are limited

(see Introduction). Thus, researchers must consider whether they truly should reduce this dimension of perfectionism. If not, *Overcoming Perfectionism* should be modified to target only the negative aspects of perfectionism.

4.5 Additional Limitations

As well as those discussed above, this study also had some other limitations that need to be addressed. Firstly, it cannot necessarily be concluded that completion of the first three modules of *Overcoming Perfectionism* is enough to significantly reduce concern over mistakes and personal standards in postsecondary students. This is because 6 out of 25 participants in the intervention group actually completed more than the first three modules. Therefore, future studies should compare change scores in perfectionism, depression, anxiety and stress based on the number of modules completed. Future studies could also investigate different combinations of modules to determine which are the most effective at reducing perfectionism in postsecondary students.

Secondly, as highlighted by Flett and Hewitt (2002), the way in which perfectionism is defined and measured directly impacts the findings. Therefore, the results from the current study should not be generalised to the other dimensions of perfectionism proposed by Frost et al. (1990), perfectionism as a whole, or perfectionism as defined by other researchers. Future studies should investigate how effective *Overcoming Perfectionism* is at reducing other dimensions of perfectionism, and perfectionism as measured by other scales, in postsecondary students.

Thirdly, once inclusion/exclusion criteria had been applied, the number of participants in the intervention group and the waitlist control group were unequal. The division of participants by their group membership and initial level of perfectionism also meant the number of

participants in each group was unequal when conducting one-way ANOVAs. This would have further decreased statistical power.

Fourthly, given that 81.97% of the sample were female, caution should be taken when generalising results to male postsecondary students. Additionally, the study was undertaken at an Australian university using measures developed in the Western world. Therefore, caution should also be taken when generalising results to postsecondary students outside the Western world. Future studies should target and attempt to recruit more males, and assess postsecondary students living in different countries and of different cultures.

Finally, self-report measures were used to assess all variables. Thus, participants may have fallen prey to the social desirability bias and/or their responses may not have reflected their true levels of perfectionism, depression, anxiety, stress and/or the Big Five personality traits. Although timelier and costlier, future studies could employ clinical psychologists to undertake clinical interviews with participants to provide a more objective assessment of these variables.

4.6 Additional Ideas for Future Studies

In other studies that investigated the efficacy of *Overcoming Perfectionism,* (see Rozental et al., 2017; Shafran et al., 2017), participants in the intervention group were supervised by a therapist. Participants in the current study were not due to lack of resources. Thus, in combination with the suggestions above, future studies could also investigate whether *Overcoming Perfectionism* is more effective at reducing perfectionism in postsecondary students when participants are supervised by a therapist.

Additionally, a future study should undertake a follow-up of participants in the intervention group in this study to determine whether the completion of at least three modules of *Overcoming Perfectionism* can lead to long-term reductions in perfectionism in postsecondary students.

4.7 Strengths

The biggest strength of this study that it was the first study to investigate how effective *Overcoming Perfectionism* is at reducing perfectionism specifically in postsecondary students.

4.8 Conclusion

In conclusion, this study provides preliminary evidence that *Overcoming Perfectionism* is an effective intervention for reducing concern over mistakes and personal standards in postsecondary students who are initially high on these dimensions of perfectionism. This study also demonstrates that in postsecondary students, concern over mistakes is indeed significantly and positively correlated with depression, anxiety, stress and neuroticism, whilst personal standards is significantly and positively correlated with conscientiousness, extraversion and agreeableness. These correlations highlight some of the potential implications of being a perfectionist, and can assist in predicting behaviours and outcomes related to perfectionism. Future study ideas include investigating the specific number of modules that need to be completed for perfectionism to be reduced significantly, the effect of different combinations of modules, if *Overcoming Perfectionism* can successfully reduce other dimensions of perfectionism, and if *Overcoming Perfectionism* can cause long-term reductions in perfectionism.

References

Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychological Assessment, 10*(2), 176-181. doi:10.1037/1040-3590.10.2.176

Arpin-Cribbie, C., Irvine, J., & Ritvo, P. (2012). Web-based cognitive-behavioral therapy for perfectionism: a randomized controlled trial. *Psychotherapy Research, 22*(2), 194-207. doi:10.1080/10503307.2011.637242

Arthur, N., & Hayward, L. (1997). The relationships between perfectionism, standards for academic achievement, and emotional distress in postsecondary students. *Journal of College Student Development, 38*(6), 622-632.

Brand, S., Kirov, R., Kalak, N., Gerber, M., Pühse, U., Lemola, S., . . . Holsboer-Trachsler, E. (2015). Perfectionism related to self-reported insomnia severity, but not when controlled for stress and emotion regulation. *Neuropsychiatric Disease and Treatment, 2015*(11), 263-271. doi:10.2147/NDT.S74905

Burns, D. D. (1980). The perfectionist's script for self-defeat. *Psychology Today, 14*(6), 34-52.

Chand, S. P., Chibnall, J. T., & Slavin, S. J. (2018). Cognitive behavioral therapy for maladaptive perfectionism in medical students: a preliminary investigation. *Academic Psychiatry, 42*(1), 58-61. doi:10.1007/s40596-017-0708-2

Chang, E. C., & Rand, K. L. (2000). Perfectionism as a predictor of subsequent adjustment: evidence for a specific diathesis-stress mechanism among college students. *Journal of Counseling Psychology, 47*(1), 129-137. doi:10.1037/0022-0167.47.1.129

Chang, E. C., Watkins, A. F., & Banks, K. H. (2004). How adaptive and maladaptive perfectionism relate to positive and negative psychological functioning: testing a stress-mediation model in black and white female college students. *Journal of Counseling Psychology, 51*(1), 93-102. doi:10.1037/0022-0167.51.1.93

Christopoulos, M., & Hicks, R. E. (2008). Perfectionism, Occupational Stress and Depression Among Australian University Students. In S. Boag (Ed.), *Personality Down Under: Perspectives from Australia* (pp. 201-209). New York, NY: Nova Science Publishers.

Cox, B. J., Enns, M. W., & Clara, I. P. (2002). The multidimensional structure of perfectionism in clinically distressed and college student samples. *Psychological Assessment, 14*(3), 365-373. doi:10.1037//1040-3590.14.3.365

Crawford, J., Cayley, C., Lovibond, P. F., Wilson, P. H., & Hartley, C. (2011). Percentile norms and accompanying interval estimates from an Australian general adult population sample for self-report mood scales (BAI, BDI, CRSD, CES-D, DASS, DASS-21, STAI-X, STAI-Y, SRDS, and SRAS). *Australian Psychologist, 46*(1), 3-14. doi:10.1111/j.1742-9544.2010.00003.x

Curran, T., & Hill, A. P. (2017). Perfectionism is increasing over time: a meta-analysis of birth cohort differences from 1989 to 2016. *Psychological Bulletin*. Advance online publication. doi:10.1037/bul0000138

Egan, S. J., Wade, T. D., Shafran, R., & Antony, M. M. (2014). *Cognitive-Behavioural Treatment of Perfectionism.* New York, NY: The Guilford Press.

Ellis, A. (1962). *Reason and Emotion in Psychotherapy*. New York, NY: Lyle Stuart.

Fairburn, C., Cooper, Z., & Shafran, R. (2003). *Clinical Perfectionism Questionnaire*. Unpublished manuscript, Department of Psychiatry, University of Oxford, Oxford, England.

Flett, G. L., Endler, N. S., Tassone, C., & Hewitt, P. L. (1994). Perfectionism and components of state and trait anxiety. *Current Psychology, 13*(4), 326-350. doi:10.1007/BF02686891

Flett, G. L., & Hewitt, P. L. (2002). Perfectionism and Maladjustment: An Overview of Theoretical, Definitional, and Treatment Issues. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism: Theory, Research, and Treatment* (pp. 5-31). Washington, DC: American Psychological Association.

Flett, G. L., Hewitt, P. L., Blankstein, K., & O'Brien, S. (1991). Perfectionism and learned resourcefulness in depression and self-esteem. *Personality and Individual Differences, 12*(1), 61-68. doi:10.1016/0191-8869(91)90132-U

Flett, G. L., Hewitt, P. L., Blankstein, K. R., & Gray, L. (1998). Psychological distress and the frequency of perfectionistic thinking. *Journal of Personality and Social Psychology, 75*(5), 1363-1381. doi:10.1037/0022-3514.75.5.1363

Flett, G. L., Hewitt, P. L., & Dyck, D. G. (1989). Self-oriented perfectionism, neuroticism and anxiety. *Personality and Individual Differences, 10*(7), 731-735. doi:10.1016/0191-8869(89)90119-0

Flett, G. L., Hewitt, P. L., Garshowitz, M., & Martin, T. R. (1997). Personality, negative social interactions, and depressive symptoms. *Canadian Journal of Behavioural Science, 29*(1), 28-37. doi:10.1037/0008-400X.29.1.28

Frost, R. O., Heimberg, R. G., Holt, C. S., Mattia, J. I., & Neubauer, A. L. (1993). A comparison of two measures of perfectionism. *Personality and Individual Differences, 14*(1), 119-126. doi:10.1016/0191-8869(93)90181-2

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research, 14*(5), 449-468. doi:10.1007/BF01172967

Hamachek, D. E. (1978). Psychodynamics of normal and neurotic perfectionism. *Psychology: A Journal of Human Behavior, 15*(1), 27-33.

Henry, J. D., & Crawford, J. R. (2005). The short‐form version of the Depression Anxiety Stress Scales (DASS‐21): Construct validity and normative data in a large non‐clinical sample. *British Journal of Clinical Psychology, 44*(2), 227-239. doi:10.1348/014466505X29657

Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology, 60*(3), 456-470.

Hill, R. W., McIntire, K., & Bacharach, V. R. (1997). Perfectionism and the Big Five factors. *Journal of Social Behavior and Personality, 12*(1), 257-270.

Kearns, H., Forbes, A., & Gardiner, M. (2007). A cognitive behavioural coaching intervention for the treatment of perfectionism and self-handicapping in a nonclinical population. *Behaviour Change, 24*(3), 157-172. doi:10.1375/bech.24.3.157

Klibert, J., Lamis, D. A., Collins, W., Smalley, K. B., Warren, J. C., Yancey, C. T., & Winterowd, C. (2014). Resilience mediates the relations between perfectionism and college student distress. *Journal of Counseling & Development, 92*(1), 75-82. doi:10.1002/j.1556-6676.2014.00132.x

Lloyd, S., Schmidt, U., Khondoker, M., & Tchanturia, K. (2015). Can psychological interventions reduce perfectionism? A systematic review and meta-analysis. *Behavioural and Cognitive Psychotherapy, 43*(6), 705-731. doi:10.1017/S1352465814000162

Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Sydney, NSW: Psychology Foundation of Australia.

Lynd-Stevenson, R. M., & Hearne, C. M. (1999). Perfectionism and depressive affect: the pros and cons of being a perfectionist. *Personality and Individual Differences, 26*(3), 549-562. doi:10.1016/S0191-8869(98)00170-6

Molnar, D. S., Sadava, S. W., Flett, G. L., & Colautti, J. (2012). Perfectionism and health: A mediational analysis of the roles of stress, social support and health-related behaviours. *Psychology and Health, 27*(7), 846-864. doi:10.1080/08870446.2011.630466

Moretz, M. W., & McKay, D. (2009). The role of perfectionism in obsessive–compulsive symptoms: ‘‘not just right’’ experiences and checking compulsions. *Journal of Anxiety Disorders, 23*(5), 640-644. doi:10.1016/j.janxdis.2009.01.015

O'Connor, B. (2002). A quantitative review of the comprehensiveness of the five-factor model in relation to popular personality inventories. *Assessment, 9*(2), 188-203. doi:10.1177/1073191102092010

Radhu, N., Daskalakis, Z. J., Arpin-Cribbie, C. A., Irvine, J., & Ritvo, P. (2012). Evaluating a web-based cognitive-behavioral therapy for maladaptive perfectionism in university students. *Journal of American College Health, 60*(5), 357-366. doi:10.1080/07448481.2011.630703

Rice, K. G., Ashby, J. S., & Slaney, R. B. (2007). Perfectionism and the five-factor model of personality. *Assessment, 14*(4), 385-398. doi:10.1177/1073191107303217

Rozental, A., Shafran, R., Wade, T., Egan, S., Nordgren, L. B., Carlbring, P., . . . Andersson, G. (2017). A randomized controlled trial of internet-based cognitive behavior therapy for perfectionism including an investigation of outcome predictors. *Behaviour Research and Therapy, 95*, 79-86. doi:10.1016/j.brat.2017.05.015

Rozental, A., Shafran, R., Wade, T. D., Kothari, R., Egan, S. J., Ekberg, L., . . . Andersson, G. (2018). Guided web-based cognitive behavior therapy for perfectionism: results from two different randomized controlled trials. *Journal of Medical Internet Research, 20*(4), e154. doi:10.2196/jmir.9823

Saucier, G., Goldberg, L. R., & Institute, O. R. (2001). Lexical studies of indigenous personality factors: premises, products, and prospects. *Journal of Personality and Social Psychology, 69*(6), 847-879. doi:10.1111/1467-6494.696167

Schulze, R., & Roberts, R. D. (2006). Assessing the Big Five: development and validation of the Openness Conscientiousness Extraversion Agreeableness Neuroticism Index Condensed (OCEANIC). *Zeitschrift für Psychologie, 214*(3), 133-149. doi:10.1026/0044-3409.214.3.133

Shafran, R., Wade, T. D., Egan, S. J., Kothari, R., Allcott-Watson, H., Carlbring, P., . . . Andersson, G. (2017). Is the devil in the detail? A randomised controlled trial of guided internet-based CBT for perfectionism. *Behaviour Research and Therapy, 95*, 99-106. doi:10.1016/j.brat.2017.05.014

Sherry, S. B., Hewitt, P. L., Flett, G. L., & Harvey, M. (2003). Perfectionism dimensions, perfectionistic attitudes, dependent attitudes, and depression in psychiatric patients and university students. *Journal of Counseling Psychology, 50*(3), 373-386. doi:10.1037/0022-0167.50.3.373

Slade, P. D., & Owens, R. G. (1998). A dual process model of perfectionism based on reinforcement theory. *Behavior Modification, 22*(3), 372-390. doi:10.1177/01454455980223010

Slaney, R. B., Rice, K. G., Mobley, M., Trippi, J., & Ashby, J. S. (2001). The revised almost perfect scale. *Measurement and Evaluation in Counselling and Development, 34*(3), 130-145.

Spitzer, R. L., Kroenke, K., & Williams, J. B. (1999). Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. . *JAMA, 282*(18), 1737-1744. doi:10.1001/jama.282.18.1737

Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Archives of Internal Medicine, 166*(10), 1092-1097. doi:10.1001/archinte.166.10.1092

Stoeber, J., & Childs, J. H. (2010). The assessment of self-oriented and socially prescribed perfectionism: subscales make a difference. *Journal of Personality Assessment, 92*(6), 577-585. doi:10.1080/00223891.2010.513306

Stumpf, H., & Parker, W. D. (2000). A hierarchical structural analysis of perfectionism and its relation to other personality characteristics. *Personality and Individual Differences, 28*(5), 837-852. doi:10.1016/S0191-8869(99)00141-5

Suddarth, B. H., & Slaney, R. B. (2001). An investigation of the dimensions of perfectionism in college students. *Measurement and Evaluation in Counselling and Development, 34*(3), 157-165.

Terry-Short, L. A., Owens, R. G., Slade, P. D., & Dewey, M. E. (1995). Positive and negative perfectionism. *Personality and Individual Differences, 18*(5), 663-668. doi:10.1016/0191-8869(94)00192-U

Tran, L., & Rimes, K. A. (2017). Unhealthy perfectionism, negative beliefs about emotions, emotional suppression, and depression in students: A mediational analysis. *Personality and Individual Differences, 110*, 144-147. doi:10.1016/j.paid.2017.01.042

Walton, G. E., Hibbard, D. R., Coughlin, C., & Coyl-Sheperd, D. D. (2018). Parenting, personality, and culture as predictors of perfectionism. *Current Psychology*, 1-13. doi:10.1007/s12144-018-9793-y

Wyatt, R., & Gilbert, P. (1998). Dimensions of perfectionism: a study exploring their relationship with perceived social rank and status. *Personality and Individual Differences, 24*(1), 71-79. doi:10.1016/S0191-8869(97)00146-3

Appendix

Overcoming Perfectionism Modules and Their Components

Table A1
Overcoming Perfectionism Modules and Their Components

Module	Components
1. Understanding Perfectionism	1.1 Introduction 1.2 What is unhelpful perfectionism? 1.3 Why perfectionism continues 1.4 Fact or fiction? 1.5 “The harder you work, the better you'll do”- Fact or fiction? 1.6 Facts about perfectionism and performance 1.7 Preparing for change 1.8 Key take away 1.9 Between module work
2. Your Perfectionism Cycle	2.1 Introduction 2.2 Between-module work 2.3 A reminder 2.4 The first steps 2.5 Drawing your own diagram 2.6 Between-module work 2.7 Take-home message
3. Survey and Experiments	3.1. Introduction 3.2 Between-module work 3.3 Perfectionism behaviours 3.4 Surveys 3.5 Reflect on the responses 3.6 Behavioural experiments 3.7 Different forms of behavioural experiments 3.8 An added benefit 3.9 Between-module work 3.10 Take home message
4. New Ways of Thinking	4.1 Introduction 4.2 Between-module work 4.3 Changing thinking 4.4 Imagining vivid future positive outcomes 4.5 From all or nothing thinking to flexibility and freedom 4.6 “Rules break, guidelines bend”: Turning rigid rules into guidelines

	4.7 Changing thinking styles 4.8 Between-module work 4.9 Key take away
5. Useful Skills for Managing Unhelpful Perfectionism	5.1 Introduction 5.2 Procrastination 5.3 Problem solving 5.4 Pleasant events 5.5 Take home message 5.6 Before the next module
6. Self-Criticism or Self-Compassion?	6.1 Introduction 6.2 How to respond 6.3 Take home message 6.4 Before the next module
7. Re-Examining the Way We Define Our Self-Worth	7.1. Introduction 7.2 Your self-worth 7.3 Step 1. Recognizing that your self-worth can be independent of your achievements 7.4 Step 2. Encouraging flexible and realistic goals 7.5 Step 3. Spreading your self-worth across as many areas of your life as possible 7.6 Step 4. Develop more balance in what you pay attention to daily 7.7 Take home message 7.8 Before the next module
8. Staying Well: Managing Unhelpful Perfectionism in the Long Term	8.1 Introduction 8.2 Improve your sense of self-worth 8.3 Questions 8.4 Thank you!