Self-concept certainty in adaptive and maladaptive perfectionists

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Abstract
The present study examined the content of self-related beliefs (i.e., the self-concept) and the level of certainty associated with these beliefs (i.e., self-concept certainty) across adaptive and maladaptive dimensions of perfectionism. A sample of 103 university students (26 adaptive perfectionists, 28 maladaptive perfectionists, and 49 non-perfectionists) completed a series of questionnaires and a reaction-timed computer task assessing their self-concept content and level of self-concept certainty. Results revealed significant differences in the content of self-beliefs about personality attributes between perfectionist groups, such that those classified as adaptive perfectionists held more positive beliefs and less negative-related beliefs about their personality attributes when compared to maladaptive perfectionists. Results regarding self-concept certainty were less clear, with adaptive perfectionists being most certain in general on self-report measures, but more certain for positive personality attributes only when compared to maladaptive perfectionists on a reaction-timed decision-making task. Findings from the present study are discussed in terms of the way that self-concept certainty may differ across adaptive and maladaptive subtypes of perfectionists.

Keywords
Perfectionism, self-beliefs, self-concept, self-concept certainty

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Perfectionism is regarded as a multidimensional construct that is involved in the etiology maintenance and course of a range of psychological disorders (Antony, Purdon, Huta, & Swinson, 1998; Egan, Wade, & Shafran, 2011; Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991; Shafran, Cooper, & Fairburn, 2002). For some, elevated levels of perfectionism may be considered a hindrance that contributes to maladaptive outcomes (see Shafran & Mansell, 2001), while for others, perfectionism may be experienced as adaptive (Rice, Ashby, & Slaney, 1998). Based on the earlier work of Hamachek (1978) and Hollender (1965), neurotic (or maladaptive) perfectionists are characterized as those who set unattainably high standards, allow for a relatively small margin of error, and tend to display an inability to be content or satisfied with their own performance. Alternatively, “normal” (or adaptive) perfectionists are defined as those who set high, but attainable standards, take pleasure in their performance and tend to be more optimistic about future success (Enns, Cox, & Clara, 2002;
Hamachek, 1978; Hollender, 1965; Slade & Owens, 1998).

The delineation between adaptive and maladaptive perfectionism has been well supported, with previous findings demonstrating a two-dimensional, higher order factor structure for the perfectionism construct (Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Rice et al., 1998; Slaney, Ashby, & Trippi, 1995). The first dimension emphasizes on the “pathological” aspects of perfectionism and has been found to be related to higher levels of depression and negative affect, while the second dimension represents the more “positive” components of perfectionism and is related to positive affect and unrelated to depression (Frost et al., 1993; Rice et al., 1998). Those described as adaptive perfectionists have also been found to report fewer feelings of inferiority, lower levels of procrastination and negative affect, and higher levels of self-efficacy, self-esteem, and positive affect when compared to those classified as maladaptive perfectionists (Ashby & Kottman, 1996; Lo & Abbott, 2013; LoCicero & Ashby, 2000; Slaney, Rice, Mobley, Trippi, & Ashby, 2001; see Stoebert & Otto, 2006). Interestingly, Egan, Wade, and Shafran (2011) have also identified a growing body of evidence that demonstrates the significant relationships between the more “adaptive” components of perfectionism and psychopathology. Thus, a more thorough understanding of the factors that maintain the different components of perfectionism is needed, including the role of self-relevant constructs such as the self-concept.

The self-concept is defined as an organized structure that contains subjective beliefs about one’s personal characteristics or personality attributes and is involved in the processing of self-relevant information (Campbell, 1990; Campbell et al., 1996). Research has demonstrated significant associations between maladaptive dimensions of perfectionism and endorsement of self-defeating cognitions (e.g., Blankstein, Flett, Hewitt, & Eng, 1993; Burns & Fedewa, 2005; Flett, Blankstein, Hewitt, & Koledin, 1992; Flett, Hewitt, Blankstein, & Koledin, 1991a; Flett, Hewitt, Blankstein, & O’Brien, 1991b; Rice et al., 1998; Stöber & Joormann, 2001), suggesting a potential fragile underlying self-concept in those with elevated levels of maladaptive perfectionism. Furthermore, maladaptive perfectionists have been found to report lower levels of self-esteem, greater feelings of inadequacy, and higher self-criticism than adaptive perfectionists (Ashby & Kottman, 1996; Grzegorek, Slaney, Franze, & Rice, 2004; Lo & Abbott, 2013; Rice & Slaney, 2002; Shafran et al., 2002; Stoebert & Becker, 2007). Taken together, these findings suggest that individuals characterized by “maladaptive perfectionism” possess relatively negative self-views when compared to those characterized by “adaptive perfectionism.”

Higgins’ (1987) self-discrepancy theory postulates that one’s self-concept (i.e., the “actual self”) is either consistent or discrepant from personally relevant self-guides referred to as the “ideal self” (i.e., beliefs about those characteristics or attributes that one would like to have) and the “ought self” (i.e., beliefs about those characteristics or attributes that one perceives as their responsibility to have). Accordingly, maladaptive perfectionists are doubtful in their ability to meet their standards due to potentially larger discrepancies between the way they perceive their actual self and their ideal self/ought self, while adaptive perfectionists are possibly more realistic in their pursuit for success due to smaller discrepancies between how they view their actual self and how they believe they ought to or would like to be. Lo and Abbott (2013) found that discrepancies between the perfectionist’s performance and the personal standards that they have set (as measured by the discrepancy subscale of the Almost Perfect Scale—Revised; APS-R; Slaney et al., 2001) was significantly associated with higher levels of depression, anxiety, stress, and perceived threat. This finding highlights the importance of self-discrepancies or uncertainty regarding the self-concept in understanding and distinguishing between perfectionism dimensions. Self-concept research has identified “self-concept uncertainty” (i.e., the lack of certainty or clarity associated with beliefs about one’s personal characteristics or personality attributes) as an important structural component of the self. For example, individuals who hold less positive self-views have been found to be less certain about their views of the self (Campbell, 1990). This lack of certainty or clarity in the self-concept structure has also been associated with poorer overall psychological well-being (Campbell et al., 1996; Hanley & Garland, 2017; Ritchie, Sedikides, Wildschut, Arndt, & Gidron, 2011).

To date, there has been little empirical research carried out to investigate the relationship between components of the self-concept and perfectionism. In one previous study, Campbell and Di Paula (2002) found that socially prescribed perfectionism (a dimension generally considered maladaptive in the literature) was related to poor clarity in the beliefs
related to one’s personal characteristics or attributes, while perfectionistic striving (i.e., the extent to which one actively strives for perfection) was correlated to higher levels of clarity in the self-concept. These clarity levels were also found to increase over time for those who reported high perfectionistic striving scores. Taken together, these findings demonstrate that the beliefs related to the striving for perfection are important for understanding the structure of the self-concept in perfectionists. A more recent study by Eusanio, Thomson, and Jaque (2014) examined the relationship between dimensions of perfectionism and overall self-concept in a sample of university dancers and found that socially prescribed perfectionism was inversely related to self-concept. In addition, mediational analyses showed that socially prescribed perfectionism predicted a decrease in scores on measures of self-concept and that this relationship was mediated by internalized shame. Collectively, these results suggest the significance of shame and its related beliefs (e.g., feeling inadequate or worthless) in maintaining the relation between maladaptive forms of perfectionism and poor self-concept but also the potential beneficial effects of interventions that focus on increasing self-compassion and self-esteem (Eusanio, Thomson, & Jaque, 2014; Ferrari, Yap, Scott, Einstein, & Ciarrochi, 2018).

The present research aims to extend upon previous studies by examining the self-concept and, in particular, the level of certainty associated with beliefs about the self (i.e., self-concept certainty) across subtypes of perfectionists using both objective and subjective measures. Such measures of self-concept content and self-concept certainty have been previously validated in anxiety research (Wilson & Rapee, 2006) and include (1) a self-report measure that assesses subjective confidence ratings associated with self-descriptiveness ratings for positive, negative, and perfectionism-related personality attributes and (2) patterns of endorsement and response times on a computer task used to make self-descriptiveness decisions about positive, negative, and perfectionism-related personality attributes.

It was hypothesized as follows.

- Those classified as adaptive perfectionists would exhibit less endorsement of negative and perfectionism-related personality attributes but greater endorsement of positive attributes as being self-descriptive, compared to maladaptive perfectionists and non-perfectionists.
- Adaptive perfectionists would exhibit less uncertainty in making self-descriptiveness decisions than maladaptive perfectionists and non-perfectionists, as demonstrated by their higher self-reported confidence ratings and faster reaction times to self-descriptiveness decisions about positive, negative, and perfectionism-related personality attributes.
- Those considered as maladaptive perfectionists would exhibit less uncertainty in making self-descriptiveness decisions for negative and perfectionism-related personality attributes, but more uncertainty for positive attributes when compared to adaptive perfectionists and non-perfectionists.

Method

Participants

The sample consisted of 103 undergraduate students who were recruited from a first-year psychology course via an online School of Psychology research participation system and received course credit for their participation. There were no exclusion criteria. Participants (63 female and 40 male) ranged in age from 17 years to 43 years, with a mean age of 19.17 years (SD = 3.02). Adaptive, maladaptive, and non-perfectionists did not differ in mean age, F(2, 100) = 0.60, p = .55, or gender composition, χ²(2, N = 103) = 3.67, p = .16.

The APS-R was used to categorize participants as adaptive perfectionists, maladaptive perfectionists, or non-perfectionists. Using large samples of university students, Rice and Ashby (2007) developed cutoff scores for classifying perfectionists using the APS-R. In keeping with the applicability and generalizability of these cutoffs to nonclinical samples, a sample of university students was used in the present study. According to the decision rules suggested by Rice and Ashby, individuals who score ≥42 on the standards subscale are identified as perfectionists. Perfectionists who also score ≥42 on the discrepancy subscale (i.e., those who indicate greater levels of self-criticism and perceived failure) are classified as maladaptive perfectionists. Perfectionists who score <42 on the discrepancy subscale are classified as adaptive perfectionists. For the present study, the sample comprised 26 adaptive perfectionists, 28 maladaptive perfectionists, and 49 non-perfectionists. These group sample sizes are not comparable to those in previous
Good internal consistency for the RSES was shown in the present study (α = .87).

Perfectionism cognitions. The Perfectionism Cognitions Inventory (PCI; Flett, Hewitt, Blankstein, & Gray, 1998) is a 25-item questionnaire designed to measure automatic perfectionistic cognitions on a 5-point Likert-type scale, with higher scores indicating greater frequency of perfectionistic cognitions. The PCI has demonstrated high internal consistency (Flett, Hewitt, Whelan, & Martin, 2007). Excellent internal consistency was shown for the present sample, α = .94.

Self-ratings of personality attributes. A self-rating questionnaire consisting of 33 items was included in the present study to measure levels of an individual’s self-concept certainty. This instrument was originally designed by Wilson and Rapee (2006) to assess the content (i.e., beliefs about self-attributes) and a structural aspect (i.e., the level of certainty with which self-beliefs are held) of an individual’s self-concept. In keeping with Wilson and Rapee’s measure, ratings of self-descriptiveness were scored on a 7-point Likert-type scale for 11 positive (e.g., admirable, attractive) and 11 negative (e.g., critical, cruel) personality attributes, with higher scores indicating a stronger belief in the self-descriptiveness of each attribute. A further 11 negative-perfectionism–specific personality attributes (critical, failure, hopeless, idle, inadequate, incapable, pathetic, slack, stupid, weak, and worthless) were generated for the present study to reflect the specific perfectionism-related beliefs held by perfectionists. In addition to self-descriptiveness ratings, participants also provided confidence ratings for each personality attribute using a 5-point Likert-type scale, where higher scores indicate a greater level of certainty in self-descriptiveness ratings. High internal consistency was found in the work of Wilson and Rapee (2006) for both the self-descriptive rating subscales (α = .81 for positive attributes and α = .85 for negative attributes) and their associated confidence rating subscales (α = .85 for positive attributes and α = .92 for negative attributes). Coefficient αs in the present study for self-descriptiveness ratings were also acceptable: .77 for positive attributes (and α = .85 for associated confidence ratings), .78 for negative attributes (and α = .84 for associated confidence ratings), and .87 for perfectionism attributes (and α = .88 for associated confidence ratings). Adequate inter-rater agreement was
demonstrated between seven reviewers with regard to categorization of the three types of personality attributes (88% for positive attributes, 84% for negative attributes, and 75% for perfectionism attributes).

**Self-concept certainty computer task.** The computer task used in the present study was designed to assess self-concept certainty based on the methodology and stimuli from Wilson and Rapee (2006). All participants performed the same computer task, which consisted of an experimental list and a control list of adjectives representing personality attributes. In line with the methodology used by Wilson and Rapee, the adjectives chosen for the present study covered a range of aspects of the self-concept, including social, intellectual, moral, and physical attributes.

The experimental list was made up of 80 adjectives denoting personality attributes and three content categories, including 35 positive content attributes (e.g., attractive, creative), 23 negative-general content attributes (e.g., greedy, nasty), and 22 negative-perfectionism–specific content attributes (e.g., inadequate, failure). Adjectives with perfectionism-specific content were included in the present study to examine the beliefs about the self specifically related to dispositional perfectionism. These self-descriptive adjectives were chosen from a range of relevant sources in the perfectionism literature (Egan et al., 2011; Flett et al., 1991a; Shafran et al., 2002; Shafran & Mansell, 2001). Participants made binary (yes/no) decisions as to whether each word presented in the experimental list was “characteristic of them in general.” The proportion of positive, negative, and perfectionism-related personality attributes endorsed as being self-descriptive by participants was used as a measure of self-concept content.

The control list consisted of 80 adjectives describing personality characteristics to which participants made yes/no decisions as to whether the words represented positive or negative “personality characteristics in general.” In keeping with Wilson and Rapee’s (2006) methodology, each word on the control list was matched to one of the words in the experimental list in terms of valence (i.e., whether the word represented a positive versus a negative attribute), its frequency of usage, number of syllables, and length using the CELEX Lexical Database (Baayen, Pipenbrock, & Gulikers, 1995).

In keeping with the argument made by Wilson and Rapee (2006), it was assumed that individuals’ response times to making decisions regarding characteristics irrelevant to the self would be a good measure of the time required for individuals to make decisions in general. The control list used in the present study therefore accounted for potential differences in response times for making decisions generally relative to response times for self-referent decisions. As described by Wilson and Rapee, the index for self-concept certainty was calculated by subtracting the response times for general desirability ratings on each attribute on the control list, from the responses times for the corresponding self-descriptiveness ratings on the experimental list. The mean differences in response times for positive attributes, negative-general attributes, and perfectionism attributes were calculated for each participant. A larger positive mean difference in response times was assumed to be indicative of greater hesitancy in self-descriptiveness decisions (i.e., a greater level of uncertainty in self-concept).

**Procedure**

Participants were tested in groups of 8 to 10 during a single session. First, participants completed a battery of self-report questionnaires including the APS-R, DASS, RSES, PCI, and self-ratings of personality attributes questionnaire. Information about whether participants may have been experiencing difficulties with their mental health at the time of testing was not collected. Following this, participants completed the self-concept certainty computer task on a DELL desktop computer using DirectRT, V2010 (Empirisoft Corporation, 2010). According to Wilson and Rapee’s (2006) study, the experimental and control lists were presented to participants in blocks, and the order of the two lists was counterbalanced to control for any practice effects and fatigue.

In keeping with the methodology used by Wilson and Rapee, the following set of instructions was given to participants for the experimental list of items:

In this task, you will see words on the screen that represent personality characteristics, or ways of describing people. I would like you to look at each word, and decide whether or not you believe that each characteristic describes you in general.

In this task, you will see words on the screen that represent personality characteristics or ways of describing
people. In this task, I would like you to look at each word, and decide whether or not you think that each characteristic is a desirable characteristic for anyone to have—in other words, whether it is generally a positive attribute.

Words within each list were presented in a random order one at a time in the center of the computer screen. All words were presented in large (1 cm high) uppercase letters. Participants responded by either pressing a “yes” button on the left-hand ALT key of the computer keyboard or a “no” button on the right-hand ALT key of the computer keyboard. Each word remained on the computer screen until participants responded. Following each response was an interval of 1,100 s before the next word appeared on the screen. The type of response made by participants and the reaction time for each response made were recorded by DirectRT, V2010 (Empirisoft Corporation, 2010) in milliseconds. Following completion of the self-concept certainty computer task, participants were fully debriefed and thanked for their participation. All aspects of the present study received ethical approval from The University of Sydney Human Research Ethics Committee (Protocol No: 14022), and written informed consent was obtained from all participants.

Results

Symptom measures

Means and standard deviations on the DASS, RSES, and PCI for adaptive, maladaptive, and non-perfectionists are presented in Table 1. Multiple one-way analyses of variance (ANOVAs) indicated that the mean scores on all of these measures were significantly different across perfectionist group. Follow-up Bonferroni comparisons revealed that mean scores on all three subscales of the DASS were significantly higher for maladaptive perfectionists than adaptive perfectionists, all *p*'s < .017. On average, reported levels of depression, anxiety, and stress symptomatology all fell within the mild range for maladaptive perfectionists and within the normal range for adaptive perfectionists. Among maladaptive perfectionists, 28.60% reported at least moderate levels of depressive symptoms, 53.70% reported at least moderate anxiety symptoms, and 39.30% reported at least moderate levels of stress. For adaptive perfectionists, 3.80% reported at least moderate levels of depressive symptoms, 7.60% reported at least moderate anxiety symptoms, and 15.30% reported at least moderate levels of stress. In addition, mean scores on the RSES were significantly higher among the adaptive perfectionists in comparison with maladaptive perfectionists, *p*'s < .001. Follow-up analyses also indicated that maladaptive perfectionists reported significantly higher mean scores on the PCI when compared to adaptive and non-perfectionists, *p*'s < .001.

Table 1. Mean scores (and standard deviations) on symptom measures by perfectionist group.

| Self-report questionnaires | Non-perfectionists  | Adaptive perfectionists | Maladaptive perfectionists |
|----------------------------|----------------------|-------------------------|----------------------------|
| DASS-D                     | 4.00 (4.29)          | 1.77 (1.68)             | 4.46 (2.83)                |
| DASS-A                     | 3.08 (3.03)          | 2.27 (2.24)             | 5.36 (4.46)                |
| DASS-S                     | 5.76 (3.72)          | 5.04 (3.88)             | 8.61 (5.37)                |
| RSES                       | 20.00 (4.63)         | 24.27 (3.04)            | 15.61 (3.89)               |
| PCI                        | 35.82 (14.90)        | 46.81 (16.37)           | 70.75 (16.17)              |

Note. DASS-D = Depression Anxiety Stress Scale (Depression); DASS-A = Depression Anxiety Stress Scale (Anxiety); DASS-S = Depression Anxiety Stress Scale (Stress); RSES = Rosenberg Self-Esteem Scale; PCI = Perfectionism Cognitions Inventory.

Self-descriptiveness ratings for personality attributes

A series of one-way ANOVAs revealed significant differences in self-descriptiveness ratings for positive personality attributes, *F*(2, 100) = 3.50, *p* = .03, η² = .07, negative personality attributes, *F*(2, 100) = 6.85, *p* < .01, η² = .12, and perfectionism-related personality attributes, *F*(2, 100) = 8.97, *p* < .001, η² = .15, as a function of perfectionist group. Using Bonferroni adjusted critical *z* levels of .017 (.05/3), post hoc comparisons indicated that adaptive perfectionists reported significantly higher self-descriptiveness ratings for positive attributes than did non-perfectionists only, and significantly lower self-descriptiveness ratings for negative attributes than did...
Table 2. Mean (and standard deviations) self-descriptiveness ratings and confidence levels in self-descriptiveness ratings for positive, negative, and perfectionism-related personality attributes by perfectionist group.

| Measures | Non-perfectionists (n = 49) | Adaptive perfectionists (n = 26) | Maladaptive perfectionists (n = 28) | F | p | η²p |
|----------|-----------------------------|----------------------------------|----------------------------------|----|----|-----|
| SR-Pos   | 3.89 (.61)                  | 4.27 (.61)                       | 3.90 (.66)                       | 3.50 | .03 | .07 |
| SR-Neg   | 1.87 (.79)                  | 1.41 (.77)                       | 2.19 (.74)                       | 6.85 | <.01 | .12 |
| SR-Perf  | 1.67 (.92)                  | 1.35 (.68)                       | 2.32 (.92)                       | 8.97 | <.001 | .15 |
| CR—Pos   | 2.76 (.58)                  | 3.11 (.57)                       | 2.71 (.47)                       | 4.48 | .01 | .08 |
| CR-Neg   | 2.87 (.58)                  | 3.20 (.53)                       | 2.68 (.58)                       | 5.86 | <.01 | .11 |
| CR—Perf  | 2.94 (.61)                  | 3.38 (.51)                       | 2.63 (.63)                       | 11.04 | <.001 | .18 |

Note. SR-Pos = self-descriptiveness ratings for positive personality attributes; SR-Neg = self-descriptiveness ratings for negative personality attributes; SR-Perf = self-descriptiveness ratings for perfectionism-related personality attributes; CR-Pos = confidence levels for self-descriptiveness ratings of positive personality attributes; CR-Neg = confidence levels for self-descriptiveness ratings of negative personality attributes; CR-Perf = confidence levels for self-descriptiveness ratings of perfectionism-related personality attributes.

Confidence in self-descriptiveness ratings

One-way ANOVAs also revealed significant differences in confidence levels for self-descriptiveness ratings across the three perfectionism groups on positive personality attributes, $F(2, 100) = 4.48, p = .01, \eta^2_p = .08$; negative personality attributes, $F(2, 100) = 5.86, p < .01, \eta^2_p = .11$; and perfectionism-related personality attributes, $F(2, 100) = 11.04, p < .001, \eta^2_p = .18$. Using a Bonferroni-adjusted z level of .017 (.05/3), post hoc comparisons showed that adaptive perfectionists were significantly more confident than maladaptive and non-perfectionists in their self-descriptiveness ratings for both positive attributes and perfectionism-related attributes, but only significantly more confident than maladaptive perfectionists for negative attributes. No significant differences in mean confidence levels for self-descriptiveness ratings were found between maladaptive perfectionists and non-perfectionists for all personality attributes, all $p > .017$ (see Table 2). Collectively, the results indicated that adaptive perfectionists were relatively more confident in their self-descriptiveness ratings for all personality attributes.

Proportion of personality attributes endorsed during computer task

Figure 1 presents the overall proportion of positive, negative, and perfectionism-related personality attributes endorsed as self-descriptive by perfectionists during the self-concept certainty computer task. Initial inspection of the data revealed that positive attributes were negatively skewed, while negative and perfectionism-related attributes were both positively skewed. A series of Kruskal–Wallis nonparametric tests were therefore conducted, which revealed significant differences in the proportion of positive attributes as well as perfectionism-related personality attributes endorsed as being self-descriptive between the three groups of perfectionists, $\chi^2(2, N = 103) = 10.79, p < .01$ and $\chi^2(2, N = 103) = 9.90, p < .01$, respectively. No significant group differences were found for the proportion of negative personality attribute endorsement, $\chi^2(2, N = 103) = 1.66, p = .44$. Post hoc comparisons were conducted using Mann–Whitney tests and a Bonferroni-adjusted z level of .017 (.05/3). The analyses revealed that adaptive perfectionists ($Mdn = 85.71$) endorsed a significantly higher proportion of positive attributes as being self-descriptive when compared to non-perfectionists, $Mdn = 77.14$), $z(N = 77) = 2.30, p < .017, r = .27$, and maladaptive perfectionists, $Mdn = 71.42$),
z (N = 77) = 3.00, p < .017, r = .41. In addition, adaptive perfectionists (Mdn = 9.10) endorsed a significantly lower proportion of perfectionism-related attributes as self-descriptive when compared to non-perfectionists, Mdn = 13.64), z (N = 77) = 2.32, p < .017, r = .27, and maladaptive perfectionists, Mdn = 18.18), z (N = 77) = 3.04, p < .01, r = .41. No significant differences in endorsement rates were found between maladaptive perfectionists and non-perfectionists for both positive attributes and perfectionism-related attributes, all ps > .05. Together, the results showed that adaptive perfectionists endorsed more positive attributes but fewer perfectionism-related attributes when compared to maladaptive perfectionists and non-perfectionists.

**Reaction times for self-descriptiveness decisions**

Figure 2 presents the mean-controlled reaction times for each set of personality attributes by perfectionist group. A 3 × 3 ANOVA was used to analyse controlled reaction times, with perfectionist group as the between-groups factor (non-perfectionists, adaptive perfectionists, maladaptive perfectionists) and valence as the within-subjects factor (positive attributes, negative attributes, perfectionism-related attributes). The main effect for perfectionist group was not significant, F(2, 82) = 2.98, p = .06, η²_p = .07; however, the main effect for valence was significant, F(2, 164) = 5.86, p < .01, η²_p = .07. The Perfectionist Group × Valence interaction was also significant, F(4, 164) = 4.63, p < .01, η²_p = .10. Pairwise comparisons using an adjusted z of .017 showed that controlled self-descriptiveness reaction times for positive personality attributes were significantly higher (i.e., slower) among maladaptive perfectionists when compared to non-perfectionists and adaptive perfectionists. For both negative and perfectionism-related personality attributes, controlled self-descriptiveness reaction times for adaptive perfectionists were significantly higher (i.e., slower) in comparison with maladaptive perfectionists. For non-perfectionists, the only significant difference was between their lower (i.e., faster) controlled self-descriptiveness reaction times for positive attributes than negative attributes. Adaptive perfectionists’ controlled reaction times for positive attributes were significantly lower (i.e., faster) than both negative attributes and perfectionism-related attributes, with no difference in their reactions times between negative and perfectionism personality attributes (see Figure 2). No significant differences in controlled self-descriptiveness reaction times were found between all personality attributes for maladaptive perfectionists, all ps > .05. In summary, the results revealed that maladaptive perfectionists exhibited slower controlled self-descriptiveness reaction times for positive attributes but faster reaction times for negative and perfectionism-related attributes than adaptive perfectionists.

**Discussion**

The aim of the present study was to investigate the self-concept, and in particular, self-concept certainty across subtypes of perfectionists. Specifically, the study examined self-beliefs about positive, negative, and perfectionism-related personality attributes for adaptive, maladaptive, and non-perfectionists as
well as the level of certainty associated with those beliefs. Results indicated that maladaptive perfectionists reported higher levels of depression, anxiety, and stress symptomatology and experienced more frequent perfectionistic thinking than adaptive perfectionists. In addition, adaptive perfectionists reported higher levels of self-esteem when compared to maladaptive perfectionists. These findings are largely consistent with the previous research that has linked the more pathological facets of perfectionism with higher levels of emotional distress and maladaptive thought processes (Ashby & Kottman, 1996; Burns & Fedewa, 2005; Frost et al., 1993; Grzegorek et al., 2004; Hamachek, 1978; Lo & Abbott, 2013; Slaney et al., 1995).

Self-concept content, as measured by ratings of self-descriptiveness, and endorsement proportions for personality attributes were largely in line with study hypotheses. On self-descriptiveness ratings of personality attributes, adaptive perfectionists indicated higher ratings for positive attributes than did non-perfectionists, but not maladaptive perfectionists despite results being in the predicted direction. In addition, adaptive perfectionists gave lower ratings than both maladaptive perfectionists and non-perfectionists for negative attributes, but only maladaptive perfectionists for perfectionism-related attributes. Similar results were obtained for the self-concept certainty computer task with adaptive perfectionists endorsing more positive attributes and fewer perfectionism-related attributes as being self-descriptive than maladaptive perfectionists and non-perfectionists. Interestingly, no significant perfectionist group differences were found for the endorsement of negative attributes; however, the direction of results seemed to indicate that adaptive perfectionists were generally endorsing fewer negative attributes when compared to maladaptive perfectionists and non-perfectionists. This is consistent with the features of the computer task where self-descriptive endorsement rates generally tend to be higher for positive attributes than for negative-related attributes. Together, the overall pattern of these results suggest that maladaptive perfectionists typically hold less positive self-views and more negative self-schemata than adaptive perfectionists. These findings provide support to previous research demonstrating that maladaptive perfectionists tend to perceive themselves in a more negative manner due to self-defeating beliefs related to inadequacy and self-criticism (Ashby & Kottman, 1996; Eusanio et al., 2014; Grzegorek et al., 2004; Lo & Abbott, 2013). Moreover, the current results appear to suggest that adaptive perfectionism traits (e.g., higher self-esteem, lower perceived self-discrepancies between one’s own performance and personal standards, fewer feelings of inferiority) may serve a protective function or buffer against the endorsement of unhelpful self-beliefs when compared to maladaptive perfectionists and non-perfectionists.

Findings regarding self-concept certainty across the three perfectionist groups showed mixed support for the study hypotheses. On measures of self-report, adaptive perfectionists were more confident about their self-ratings for positive and perfectionism-related attributes than both maladaptive perfectionists and non-perfectionists. They were also more confident in their self-descriptiveness ratings for negative attributes when compared to maladaptive perfectionists only. When examined together, these results suggest that adaptive perfectionists are relatively less uncertain about whether or not they possess positive, negative, and perfectionism-related personality attributes. In other words, adaptive perfectionists appear to be less uncertain about their overall view of the self. This is in line with the findings from Campbell and Di Paula (2002), which showed that constructs reflecting the more adaptive forms of perfectionism (e.g., perfectionistic striving) were related to higher levels of clarity in the beliefs related to one’s personal characteristics or attributes (i.e., the self-concept). Moreover, the present findings provide support to the theory and research that suggests those who possess more positive self-views typically report less uncertainty and instability in their views about themselves (Campbell, 1990; Campbell et al., 1996). Maladaptive perfectionists on the other hand, tended to be less certain about whether they possessed positive personality attributes. This finding could be explained by the significantly higher levels of depression, anxiety, and stress symptomatology reported in the maladaptive perfectionist group. Although these levels only score within a mild range, the proportion of at least moderate levels of depression, anxiety, and stress being reported was larger for maladaptive perfectionists than adaptive perfectionists. It is possible that such elevated levels of psychopathological symptoms may have influenced the way in which maladaptive perfectionists defined beliefs about their personal attributes and the level of certainty associated with these beliefs.

For the self-concept certainty task, controlled reaction times for self-descriptiveness decisions about
positive attributes were faster among adaptive perfectionists than maladaptive perfectionists. That is, adaptive perfectionists showed less uncertainty in deciding whether positive attributes were self-descriptive or not. This finding is consistent with our results regarding self-reported confidence ratings for positive attributes. Contrary to study hypotheses, however, controlled reaction times for self-descriptiveness decisions about negative attributes and perfectionism-related attributes were significantly slower for adaptive perfectionists relative to maladaptive perfectionists. In other words, adaptive perfectionists were relatively less certain about whether they possessed negative and perfectionism-related characteristics. Interestingly, these results contradict our findings regarding confidence levels in self-descriptiveness ratings for both negative and perfectionism-related attributes. A possible explanation for these discrepant findings may be due to different approaches used to measure self-concept certainty in the present study, with one being a subjective self-rating questionnaire measuring confidence levels on a 5-point Likert-type scale and without any time constraints, and the other being an objective measure of reaction time to binary (yes/no) decisions on a computer decision-making task in a time-limited capacity. Furthermore, the traits typically found in adaptive perfectionists (e.g., high standards, lower perceived self-discrepancies, higher self-efficacy, and lower self-criticism) may have caused them to be more cautious and possibly hesitant when making decisions about negative-related personality attributes and, therefore, taken more time on the computer task. Alternatively, it may be that adaptive perfectionists are simply more certain about whether they possess positive characteristics, while maladaptive perfectionists on the other hand, tend to be surer of their negative attributes only.

There are a number of study limitations that warrant discussion. First, self-concept content was assessed using self-report measures (i.e., self-descriptiveness ratings/decisions about personality attributes). As discussed in the work of Wilson and Rapee (2006), such self-report data are likely to have been influenced by a social desirability response bias. That is, rather than providing an accurate representation of their beliefs about self-attributes, participants may have biased toward the characteristics or attributes that they perceived as being socially acceptable (e.g., considerate, polite, sincere). Future research in this area should therefore consider assessing for this possibility. Second, the administration of measures assessing self-esteem and perfectionism cognitions prior to self-concept measures may have impacted the way in which participants defined their self-beliefs and subsequent level of certainty about these beliefs. Future studies may benefit from administering self-concept and self-concept certainty measures at baseline (i.e., prior to any other measures). Third, only one structural component of the self-concept was examined in the present study (i.e., self-concept certainty). Therefore, role of other structural aspects of the self (e.g., temporal stability and internal consistency) across subtypes of perfectionists warrants further investigation. Lastly, it is possible that some of the null findings may have been due to an inadequate sample size being employed. That is, the current study may not have been sufficiently powered to detect effects. Future studies in this area should therefore consider utilizing a larger sample of university students.

The present findings also have important clinical and treatment implications. Specifically, they appear to present a troublesome picture for those described as maladaptive perfectionists as they generally tend to possess more negative self-views and are less certain about their positive personal characteristics or attributes. More importantly then, these findings suggest potential target areas for treating this population of vulnerable individuals in academic settings. Psychological interventions for treating university maladaptive perfectionists may therefore benefit from focusing on self-compassion (Eusanio et al., 2014; Ferrari et al., 2018), improvement and stabilization of core positive self-beliefs, and restructuring of underlying negative self-schemata.

To the best of our knowledge, the present study is the first to examine the self-concept, and specifically, a structural aspect of the self-concept in adaptive and maladaptive perfectionists. The present findings demonstrated distinct differences in the content of self-related beliefs between adaptive and maladaptive perfectionists; however, the findings with relation to the level of certainty associated with these beliefs were less clear. Thus, further research is needed to clarify the differences in level of self-concept certainty across subtypes of perfectionists.

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