When perfect is never good enough: The predictive role of discrepancy on anxiety, time spent on academic tasks, and psychological well-being in university students

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ABSTRACT

This study explored the relationships between the discrepancy facet of perfectionism, time spent on academic tasks, task-related and overall anxiety, and general psychological well-being in high-achieving university students (N = 83). Using a lab paradigm, we hypothesized those higher in discrepancy would 1) experience greater task-related state anxiety, 2) invest more time in study tasks, 3) report higher overall anxiety and lower psychological well-being, and that 4) these relationships would remain significant even after taking covariates into account. Results of this preliminary study suggest individuals with elevated discrepancy do not spend more time working than other high-achievers, yet experience greater task-related and overall anxiety, and poorer psychological well-being.

1. Introduction

Academic stress is associated with rising mental health difficulties, such as anxiety and depression, among university students (Barker, Howard, Vallemaire-Krajden, & Galambos, 2018; Bayram & Bilgel, 2008; Nonterah et al., 2015). In order to address these concerns, it is important to better understand individual characteristics that adversely interact with academic environments, impacting students’ well-being. Research consistently demonstrates that one such characteristic is perfectionism, a personality trait characterized by setting high performance standards and engaging in overly-critical self-evaluations (Damian, Stoeber, Negru-Subtirica, & Baban, 2017; Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). Data suggest university students are exhibiting higher levels of perfectionism compared to previous generations, possibly due to increased competition in academic and economic environments, and this trait has been linked to heightened stress reactivity, depression, and academic burnout (Chang, Lee, Byeon, Seong, & Lee, 2016; Curran & Hill, 2019; Flett, Nepon, Hewitt, & Fitzgerald, 2016).

Perfectionism is generally conceptualized as a multidimensional construct, and various models of the trait exist, each with its own unique dimensions, labels, and measures (for a review see: Stoeber & Otto, 2006). Although debate remains over which dimensions comprise perfectionism, it is generally agreed that perfectionism involves both perfectionistic strivings (i.e., setting exceedingly high standards or expectations for oneself) and perfectionistic concerns (i.e., a tendency toward self-critical evaluations, and a focus on discrepancy between expectations and actual performance; Rice, Richardson, & Tueller, 2013; Stoeber & Otto, 2006). Discrepancy, or the perception of persistent failure to meet one’s own high standards, has proven a robust indicator of a higher order self-critical factor of perfectionism representing perfectionistic concerns (Blankstein, Dunkley, & Wilson, 2008; Rice, Gnilia, Davis, & Ashby, 2019). Discrepancy has also been associated with a number of adverse psychological outcomes, including depression, low self-esteem, anxiety, stress, alcohol-related problems, and disordered eating (Canning et al., 2020; Gokley et al., 2018; Maricuțoiu, Măgurean, & Tulbure, 2019; Paulson & Rutledge, 2014; Sherry, Mackinnon, Macneil, & Fitzpatrick, 2013).

Despite considerable research on discrepancy, gaps in the literature remain. First, the majority of research concerning this trait has been correlational, making it unclear how discrepancy affects emotional experiences relevant to university students, such as state anxiety in relation to academic work (e.g., Abdollahi & Abu Talib, 2015; Gnilia, Ashby, & Noble, 2012). Thus, it is necessary to clarify the processes
related to the distress and interference reported by students high in discrepancy. Second, few studies to date have investigated the relationships between perfectionism dimensions and time spent on tasks. Those that exist have employed different methodologies and perfectionism measures, and yielded varied results regarding which dimensions (perfectionistic strivings/setting high standards vs. perfectionistic concerns/discrepancy) are linked to time inefficiency (i.e., Ishida, 2005; Rheaume et al., 2000; Stoebert, Chesterman, & Tarn, 2010; Stoebert & Eysenck, 2008). This relationship merits further investigation because students with self-critical perfectionistic tendencies generally fail to experience satisfaction with their performances (Chen, Hewitt, Flynn, Ko, & Flett, 2020; Levine, Werner, Capaldi, & Milyavskaya, 2017), which could lead to excessive time and effort spent on tasks. Long hours working can then result in undesirable consequences such as sleep deprivation and difficulty maintaining academic performance (Nagai-Manelli et al., 2012).

A third limitation of extant research is the limited number of studies exploring how students who experience greater discrepancy between their expectations and actual performance perceive their overall psychological well-being more broadly, an important indicator of a person's general mental health, happiness, and contentment with life (Medvedev & Landhuis, 2018). Studies on this topic to date suggest those endorsing higher discrepancy report lower life satisfaction and happiness, and struggle more with the search for meaning in life (e.g., Chan, 2012; Suh, Gnlik, & Rice, 2017). Further research is warranted to confirm and expand upon these findings. Finally, there is little focus in the literature on discrepancy in high-achieving individuals (Fletcher & Neumeister, 2012). This may represent a unique population who performs well yet suffers internally from anxiety and negative affect. This population merits additional study because perfectionism in high-achievers often goes untreated, or is even reinforced (Moifield & Parker Peters, 2018). Taken together, it is clear further investigation is needed to examine the role of discrepancy as a risk factor for certain adverse outcomes among university students.

This study sought to further explore the relationships between the discrepancy facet of perfectionism, time spent on academic tasks, task-related and overall anxiety, and general psychological well-being in a sample of high-achieving undergraduate university students. Using a lab paradigm, it was hypothesized that individuals higher in discrepancy would 1) experience greater task-related state anxiety, 2) invest more time in completing study tasks, 3) report higher overall anxiety and lower psychological well-being, and that 4) these relationships would remain significant even after taking covariates into account.

2. Method

2.1. Participants

83 undergraduate students with a GPA of 3.5 or above were recruited via the Sona system, a cloud-based participant management software. Participants included 48 females, 34 males, and one individual who identified as non-binary, ranging in age from 18 to 27 (M = 18.72, SD = 1.22). The majority of participants identified as either Asian/Pacific Islander (55.4%) or White (37.3%). Additionally, 3.6% identified as Hispanic/Latino, 1.2% as Black/African-American, 1.2% as Native American/American Indian, and 1.2% identified as a not-listed race.

2.2. Procedure

Study procedures were approved by the university institutional review board and all participants provided informed consent prior to engaging in study procedures. Participants were run individually, first completing a lab paradigm followed by a series of questionnaires. For the lab paradigm, participants engaged in two tasks: summarizing an easier, but longer reading (Task A); and summarizing a more difficult, but shorter reading (Task B). Task order was randomized and counterbalanced across participants. Task A was drawn from the 2016 eighth grade English Language Arts section of the Massachusetts Comprehensive Assessment System (MCAS) exam. Task B was taken from a reading comprehension sample from the Educational Testing Service's Graduate Record Examinations (GRE) website. Before each task, it was emphasized that the participant could spend as little or as much time as they needed to complete the task, and that response accuracy, quality, and comprehensiveness would be evaluated. Participants were told they were selected to participate due to exceptional academic performance, and that the purpose of the study was to better understand how intelligent, high-performing students synthesize information. This deception was utilized to add pressure to perform well and elicit any perfectionistic thought processes (e.g., Eum & Rice, 2011). The amount of time the participant spent on each task was recorded. Directly following each task, the participant completed the State-Trait Anxiety Inventory (STAI). After finishing both tasks, the participant completed self-report questionnaires (see Measures) on an iPad using Qualtrics, a website designed for research data collection. Finally, participants were debriefed.

2.3. Measures

The state anxiety subscale of the State-Trait Anxiety Inventory Form Y (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) was employed to gauge participants' present state of anxiety at several points during the lab paradigm. The STAI consists of 20 items describing transitory feelings (e.g., "I am tense") that are rated on a four-point intensity scale from 1 (not at all) to 4 (very much so). Scores range from 20 to 80, with higher scores indicating greater anxiety. This measure has demonstrated high internal consistency (α = 0.92; Barnes, Harp, & Jung, 2002).

Following the lab task participants completed the remaining self-report questionnaires. Perfectionism was assessed using the Almost Perfect Scale-Revised (APS-R; Slaney, Rice, Mobley, Trippi, & Ashby, 2001), which contains three subscales of perfectionism: discrepancy, standards, and order. The discrepancy subscale assesses tendency to critically evaluate one's performances; the high standards subscale evaluates tendency to set high standards for oneself; the order subscale assesses propensity toward order and organization. Subscale scores are calculated by summing relevant items, with higher scores indicating stronger presence of the perfectionism dimension. The APS-R subscales show good internal reliability (α > 0.82; Slaney et al., 2001). To assess psychological well-being, the psychological subscale of the Abbreviated World Health Organization's Quality of Life Questionnaire (WHOQOL-BREF; Skevington, Lotfy, & O'Connell, 2004) was utilized. Internal reliability for this subscale is adequate (α = 0.81; Skevington et al., 2004). The Overall Anxiety Severity and Impairment Scale (OASIS; Norman, Hami Cissell, Means-Christensen, & Stein, 2006) was employed to assess anxiety frequency, intensity, and interference in a person's life. The total score is calculated by summing all items, with higher scores indicating greater anxiety severity and functional impairment. The OASIS has shown adequate internal consistency (α = 0.80; Norman et al., 2006). To measure general stress, the stress subscale of the abbreviated Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995) was utilized; higher scores represent greater stress. The stress subscale has high internal reliability (α = 0.90; Henry & Crawford, 2005). The neuroticism subscale of the Big Five Inventory (BFI; John & Srivastava, 1999) was used to measure the personality trait of neuroticism, or the degree to which a person tends to experience the world as distressing or threatening. The neuroticism subscale has demonstrated high internal consistency (α = 0.82) and test-retest reliability (ICC = 0.93; Arterberry, Martens, Cadigan, & Rohrer, 2014). Cronbach's alpha for self-report measures ranged from 0.79 (order) to 0.98 (discrepancy) in this study sample.
to detect correlations of at least 0.30 and $f^2$ of 0.097.

4. Results

There were no significant differences in study variables analyzed based on gender or race/ethnicity (see Table 1). Therefore, demographic variables were not used as co-variates in any analyses conducted. Participants reported an average score of 49.36 (SD = 21.19) on the APS-R discrepancy subscale and 39.57 (SD = 8.77) on the standards subscale. These scores are within one standard deviation of those reported in other studies using undergraduate samples (e.g., Slaney et al., 2001)

4.1. Primary outcomes

Correlational analyses revealed that only the discrepancy subscale of the APS-R was significantly correlated with task-related anxiety following both reading summary tasks (see Table 2). Contrary to our prediction, discrepancy did not correlate with time spent (in minutes) completing summary tasks (Time A: $M = 10.61$, SD = 5.62; Time B: $M = 12.87$, SD = 6.63). Given discrepancy was associated with task-related anxiety following each reading task, it was subsequently included in hierarchical regression analyses. Results can be seen in Table 3. The first hierarchical regression indicated discrepancy did not account for a significant proportion of the variance in state anxiety following reading A (shorter, more difficult reading). When added to the model, it accounted for about 1% of the variance (with the overall regression model predicting approximately 42%). For reading B (longer, easier reading), step 1 accounted for roughly 42% of the variance, and the addition of discrepancy in step 2 accounted for an additional 5% of the variance, which reached statistical significance.

4.2. Secondary outcomes

To investigate the relative importance of discrepancy (APS-R_D) in predicting overall anxiety (OASIS) and psychological health (WHOQOL_psyn), correlational analyses and hierarchical regressions were run. Discrepancy was significantly associated with overall anxiety and psychological well-being (see Table 2). The first hierarchical regression revealed neuroticism and stress predicted approximately 68% of the variance in overall anxiety, and the addition of discrepancy did not account for significantly more variance. Neuroticism and stress
explained roughly 55% of the variance in psychological well-being, with the addition of discrepancy accounting for approximately 8% additional variance, which was a significant change in r-square. Results are displayed in Table 3.

5. Discussion

The primary goal of this study was to investigate the relationships between the discrepancy dimension of perfectionism, time spent on academic tasks, task-related state anxiety, and overall anxiety and psychological well-being in high-achieving university students. This preliminary study is one of the first to examine the relationships among these constructs using experimental manipulation, providing initial insights into how discrepancy interacts with goal-directed behavior and affects both task- and emotion-related outcomes.

Consistent with our first hypothesis, discrepancy was positively associated with state anxiety in response to both reading summarization tasks. This finding is consistent with literature suggesting individuals higher in discrepancy experience greater academic test-related anxiety (Aran & Furlan, 2016; Eum & Rice, 2011). Contrary to our second hypothesis, participants higher in discrepancy did not spend more time completing summary tasks. Given the study sample consisted of university students with a GPA of 3.5 or above at a competitive private university, it is possible this population has developed effective time-management skills in order to continue performing well academically while managing heavy course loads, regardless of whether or not they endorse discrepancy. It is also possible all participant times were relatively high since the sample was comprised solely of high-achievers, who may devote more effort and time to their work in general. Findings from this study supported our third hypothesis; discrepancy was positively associated with overall anxiety and negatively associated with psychological well-being. These results are consistent with previous literature linking discrepancy to difficulties with mental health functioning and clinical symptoms (for reviews, see: Limburg, Watson, Hagger, & Egan, 2017; Maricuoiou et al., 2019).

Finally, hierarchical regressions predicting task-related anxiety, overall anxiety, and psychological well-being while controlling for neuroticism and stress partially confirmed our fourth hypothesis, revealing discrepancy explained an additional proportion of the variance in state anxiety following one of the tasks and in psychological well-being, but not in overall anxiety. Because overall anxiety, stress, and neuroticism are closely related constructs that overlap in content, it is perhaps unsurprising that discrepancy did not account for additional variance in overall anxiety when controlling for stress and neuroticism (e.g., Uliazezk et al., 2009). Further, research has demonstrated strong correlations and considerable overlap between the constructs of discrepancy and neuroticism, which may provide an alternative explanation for these results (Smith et al., 2019; Stricker, Buecker, Schneider, & Preckel, 2019). Discrepancy remained a significant predictor of state anxiety following the longer, easier reading, but not the shorter, more difficult reading. This finding may suggest individuals high in discrepancy experience more anxiety when faced with a greater quantity of work (e.g., longer homework assignments or exams), even when that work is less challenging. Further research is warranted to replicate these findings.

An unexpected finding from this study was that the standards facet of perfectionism was not significantly associated with any outcome variables investigated. This result is inconsistent with literature indicating setting high standards (i.e., perfectionistic striving) is an adaptive form of perfectionism that negatively correlates with neuroticism and anxiety (e.g., Güde, Schermelleh-Engel, & Klein, 2017; Wang, Yuen, & Slaney, 2009). Researchers have reported inconsistent results regarding the relationships between standards and psychological outcomes, with some researchers finding standards correlated negatively with measures of psychological distress, while others found no significant correlations (Rice, Leever, Christopher, & Porter, 2006 vs. 2019).
Wang et al., 2009). The fact that the APS-R Standards subscale failed to demonstrate any significant relationships with measures of psychological health in this study may call into question the theoretical and practical utility of this “adaptive” form of perfectionism as a stand-alone construct (e.g., Flett & Hewitt, 2006).

Several limitations should be considered when interpreting results of this study. First, the majority of study participants identified as Asian and White university students. The lack of diversity within this sample may restrict the generalizability of results. This was an undergraduate sample, which also restricts generalizability. Second, the study had a relatively modest sample size and was not powered to detect small effect sizes. Thus, it is possible small significant effects exist that were not identified in this study. For more robust and conclusive results, it would be beneficial to replicate this study with a larger sample. Third, the presence of the researcher during laboratory tasks may have created demand characteristics that could have biased results on the time investment portion of the study. Fourth, the readings for summary tasks were not equivalent in length, making it difficult to draw conclusions about the effect of task difficulty on time persistence. Finally, the cross-sectional nature of this study means conclusions cannot be drawn about the direction of the relationship between perfectionism and long-term emotional outcomes.

Further research addressing self-critical perfectionists’ distress levels in response to academic tasks of varied difficulty and length is warranted. Longitudinal study designs can provide additional insight into the stability of the relationship between discrepancy and state anxiety. Additionally, future research may investigate how certain psychological processes (e.g., cognitive flexibility) interact with perfectionism in order to better understand what mechanisms underlie perfectionistic thought processes and behaviors. Such future studies could help clarify treatment targets when designing interventions or working with perfectionistic individuals. Research may also explore the role of perfectionistic self-presentation (PSPS), or the desire to appear perfect to others, which has been linked to adverse outcomes including academic stress (e.g., Cowie, Nealis, Sherry, Hewitt, & Flett, 2018). Studies on PSPS and discrepancy could help elucidate their individual and shared contributions to anxiety and negative emotional outcomes, and clarify the importance of concern for others’ perceptions (e.g., due to the presence of others) in determining how one responds to their own perceived imperfect performance. Finally, research on evidence-based treatment interventions for perfectionism is limited (e.g., James & Rimes, 2018; Rozental et al., 2017). Considering it is common for high-achieving individuals seeking counseling to experience perfectionism as a motivating force in their anxiety (Greenspon, 2014), it would be beneficial to conduct further research focused on interventions that target processes underlying self-critical perfectionism.

Despite the limitations of this investigation, the current findings offer some preliminary practical and theoretical insights for understanding perfectionism in the context of high-achieving students who continue to perform well, but may suffer internally in their efforts to achieve from anxiety and poor psychological well-being. In spite of undesirable consequences of perfectionistic behaviors (e.g., anxiety), these behaviors are often positively reinforced by performance success in school settings (e.g., grades, accolade; Mofield & Parker Peters, 2018). Greenspon (2014) argues that although some perfectionistic students perform well, their personal characteristics must not be construed as adaptive/healthy perfectionism. In other words, the oxymoron of healthy perfectionism fails to distinguish between perfectionism and other personality characteristics perfectionists may also possess, such as the desire and pursuit of excellence. Perhaps high-achieving students suffering from more intense discrepancy tendencies could perform equally well and experience reduced anxiety if they were to learn skills to help them cope when they are unable to meet their exceedingly high standards. While the results of this study are derived from a small, non-clinical sample, they are consistent with other research linking the discrepancy facet of perfectionism with emotional concerns and psychopathologies (Limburg et al., 2017; Maricutoiu et al., 2019). Taken together, these data suggest continuing to explore treatment options for this population through additional research may be beneficial.

Overall, the findings from this preliminary study suggest individuals with elevated discrepancy do not spend more time working on tasks than other high-achievers, yet experience greater levels of task-related and overall anxiety, and poorer psychological well-being. Given perfectionism is prevalent and rising among university students in the United States and globally (Curran & Hill, 2019), it is more important now than ever to understand and address the negative consequences of self-critical perfectionism.

CRediT authorship contribution statement

Madeleine Rassaby: Conceptualization, Methodology, Formal analysis, Investigation, Writing - original draft. Clair Cassiello-Robbins: Formal analysis, Writing - review & editing. Shannon Sauer-Zavala: Supervision, Validation, Resources.

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