

A Proposed Moderation Model of Socially Prescribed Perfectionism and Mattering to Predict
Maladjustment in First-Year University Students

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Abstract

Emerging adulthood (ages 18-29) is recognized as a stage associated with unique developmental needs and transitions. Moving from high school to university is one life transition that demands for multiple adjustments and leaves emerging adults at risk for maladjustment (e.g., experiencing psychological or academic distress). As such, it is important to examine explanatory models of factors that predict and prevent maladjustment in first-year university students. The current study tested a moderation model to explain maladjustment in first-year university students. It was proposed that socially prescribed perfectionism would be associated with greater maladjustment (operationalized in the current study as poor psychological well-being, depressive symptoms, and academic distress), and mattering (i.e., feeling important and significant to others) would be associated with lower maladjustment. Moreover, it was hypothesized that mattering would be a significant moderator of the relationship between socially prescribed perfectionism and maladjustment. First-year university students ($N = 152$) at Lakehead University completed a series of self-report measures assessing socially prescribed perfectionism, mattering, psychological well-being, symptoms of depression, and academic distress. As expected, hierarchical regression analyses showed that socially prescribed perfectionism was a predictor of greater maladjustment, while mattering was a predictor of lower maladjustment. Further, mattering significantly moderated the association between socially prescribed perfectionism and depressive symptoms such that, low levels of mattering strengthened the relationship and high levels of mattering diminished the relationship. However, mattering did not significantly moderate the link between socially prescribed perfectionism and psychological well-being or academic distress. The results suggest the need for university institutions to consider mattering as a target to enhance university student well-being and academic success.

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A Proposed Moderation Model of Socially Prescribed Perfectionism and Mattering to Predict
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Emerging adulthood (ages 18-29) has been identified as a transitional period of life associated with unique developmental needs (Arnett, 2000, 2015). Earlier theoretical contributions alluding to this separate stage of development have been evidenced by Erikson's work (1950, 1968) that acknowledged *prolonged adolescence* as a time of role experimentation with the goal of finding a role within society. Additionally, Keniston (1971) theorized that there was a developmental period of role experimentation that existed between adolescence and young adulthood, represented by conflict between the self and society. More recently, Arnett (2015) has added to these previous contributions and defined emerging adulthood as a developmental stage set in between the late teens and late twenties, characterized by more opportunities for freedom than experienced throughout adolescence. However, adult status, often associated with events such as marriage and parenthood, is not yet achieved.

Emerging adulthood is considered a distinct period of time where young adults are beginning to engage in exploration while simultaneously experiencing feelings of anxiety and uncertainty about the future (Arnett, 2015). Emerging adults often show more independence than adolescents and may leave the family home, however, they might not be entirely stable especially in domains of marriage and work. A few key features of emerging adulthood include identity exploration, lack of stability, focus on the self rather than others, feeling in transition between adolescence and adulthood, and feelings of optimism (Arnett, 2015). Emerging adulthood is also a vulnerable stage of life, correlated with the peak prevalence of psychiatric disorders (Adams, Knopf, & Park, 2014; Davis, 2003; Eisenberg, Gollust, Golberstein, & Hefner, 2007; Liu, Stevens, Wong, Yasui, & Chen, 2019; Stallman, 2008; Tanner et al., 2007).

The Transition to Post-Secondary School

The developmental stage of emerging adulthood coincides with the period of time in which individuals typically enter post-secondary education (Arnett, 2000). This transition often demands for adjustments in several life domains, including academics, finances, social relationships, and living accommodations (Andrews & Wilding, 2004; Arnett, 1994; Eisenberg et al., 2007; Gall, Evans, & Bellerose, 2000; Henin, 2016; Liu et al., 2019; Misra, McKean, West, & Russo, 2000; Stallman, 2008). This is evidenced by larger course loads, increasing financial pressures due to the cost of tuition and living accommodations, separation from established friendships and social support, and moving away from home. Exposure to as few as 1-2 stressful events (e.g., academics, family problems, finances) is associated with a nearly twofold increase in suicidal ideation in university students (Liu et al., 2019). Therefore, individuals entering post-secondary education are not only confronted with a unique developmental stage of life, but also a transition associated with adjustments in other aspects of life that can have a significant impact on well-being.

Academic distress. University students seem to experience stress specific to the academic setting itself, such as tight assignment deadlines, high course loads, managing several projects and exams, and difficulties with instructors (Pluut, Lucian Curseu, & Ilies, 2015; Stallman, 2010; Rayle & Chung, 2007). Across the literature examining university and college students, the stress or daily hassles experienced within the academic environment are associated with symptoms of depression and anxiety, university program dropout rates, and academic performance (American College Health Association, 2016; Arthur & Hayward, 1997; Brandy, Penckofer, Solari-Twadell, Velsor-Friedrich, 2015; D'Angelo & Wierzbicki, 2003; Lester, 2014; Liu et al., 2019; Rayle & Chung, 2007; Vaez & Laflamme, 2008). Misra and colleagues (2000)

examined stress and responses to stress among university students and found that the high stress levels observed in students were most often due to academic pressures. Although not statistically significant, the results suggested that the first-year university students experienced greater levels of stress compared to students in their later years of university (Misra et al., 2000). The first-year university students also experienced stress related specifically to the changes and conflicts associated with university life and experienced the highest levels of emotional, cognitive, and physiological reactions to stress compared to senior students. As first-year university students begin their university endeavour, they are separated from their well-established social support system that may have been left behind at the family home, and they may have not yet developed adaptive coping mechanisms to deal with academic distress (Brandy et al., 2015; Misra et al., 2000). Therefore, first-year university students likely have fewer resources to combat the stress and anxiety associated with university work and are particularly vulnerable to difficulties with adjustment.

Gall and colleagues (2000) advanced previous trends within the literature and confirmed that university students experience the greatest amount of distress as they enter university. The researchers conducted an exploratory study examining adjustment in different life domains such as academic, dating, and living arrangement across the first year of university (Gall et al., 2000). As students entered university, they reported the greatest level of distress across various life domains and largest negative impact on well-being in comparison to later on in the first year of university. It appears that the combined pressures associated with emerging adulthood and the transition to university life has a significant impact on the well-being of young adults.

Psychological distress. The psychological well-being of university students is considered an international public health concern (Eisenberg et al., 2007; Liu et al., 2019; Stallman, 2010).

For example, research surveys report prevalence estimates for depressive disorders ranging from 10% to 85% in university students (Auerbach et al., 2018; Eisenberg et al., 2007; Ibrahim, Kelly, Adams, & Glazebrook, 2013). Additional survey data reveals that 7.2-16.5% of college students report a lifetime prevalence of suicidal thoughts and behaviours (Mortier et al., 2018), and within an undergraduate sample, 24% report suicidal ideation and 9% report suicide attempts in the previous year (Liu et al., 2019). The prevalence rates of psychological distress in university students is greater than those reported for the general population (Ibrahim et al., 2013; Stallman, 2008, 2010). According to the American College Health Association's (ACHA, 2016) assessment of health trends and behaviours among post-secondary institutions in Canada, approximately 90% report feeling overwhelmed, approximately 60% report feeling hopeless, approximately 74% report feeling sadness, and approximately 65% report feelings of anxiety at some point within the previous 12-month period. It is apparent that distress and symptoms of mental illness, such as anxiety and depression, are a prevalent concern for Canadian post-secondary students that may further impact academic performance.

The psychological distress experienced by university students has been linked to impairments in the ability to work and study that can further perpetuate psychological distress in university students (Stallman, 2008, 2010). Andrews and Wilding (2004) looked at symptoms of depression and anxiety and adverse life experiences in university students a month prior to entering university and during the second year of university, and found that 29% of the university students that entered university without symptoms, developed mild anxiety or depression by the second year of university. Moreover, relationship and financial difficulties experienced in the second year (reported by 20-29% of the students) were associated with greater levels of depression, and both depression and financial difficulties had a negative impact on

exam performance (Andrews & Wilding, 2004). The research findings converge upon the significant interplay between daily stressors and maladjustment in university students, and the impairment it can have on academic achievement, especially for those in their first year.

It is clear that the first year of university is a volatile and stressful time for emerging adults, illustrated by the presence of maladjustment (e.g., psychological and academic distress). Thus, it is critical to understand factors that increase or mitigate negative outcomes that can occur during this stage of life (Henin, 2016). In addition, developing explanatory models can inform targeted prevention and intervention strategies for first-year university students (Misra et al., 2000; Smith et al., 2018). The proposed study will examine socially prescribed perfectionism and mattering as two such factors, with socially prescribed perfectionism proposed as a factor associated with maladjustment and mattering proposed as a factor that mitigates the risk for maladjustment.

Perfectionism

Perfectionism is a multidimensional personality trait represented by striving for unrealistically high standards and is often associated with fear of failure and an all-or-none style of thinking (Flett & Hewitt, 2002; Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt, Flett, & Mikail, 2017). The conceptualization of perfectionism has varied across the literature, however most researchers seem to agree on some important features, including its multidimensional structure that includes both intrapersonal and interpersonal dimensions (Blankstein, Lumley, & Crawford, 2007; Flett & Hewitt, 2002). For example, Frost and colleagues (1990) proposed that perfectionism consists of features that are personal, such as imposing high standards on the self, doubts about the quality of one's performance, adverse reactions to mistakes, and obsessions with precision and organization. Frost et al. (1990) also highlighted features of perfectionism that

are interpersonal, including parental expectations and criticisms that are valued by perfectionists. More specifically, individuals that are highly perfectionistic may set excessively high standards for oneself, perceive minor flaws as absolute failures, and experience ongoing fears about making mistakes. Perfectionists may experience feelings of uncertainty surrounding their quality of task completion and engage in negative self-evaluations and assumptions related to parental approval. The feeling that one's parents have set unrealistic standards paired with the failure to meet such standards is perceived as a loss of parental love for perfectionists (Frost et al., 1990). The overemphasis on organization, neatness, and orderliness, can be observed in everyday life, such as home and work (Frost et al., 1990).

Other researchers such as Hewitt and Flett (1991) have empirically identified dimensions of perfectionism that are: directed towards the self (self-oriented), perceived to be inflicted on the self from others (socially prescribed), and imposed on others (other-oriented). More specifically, self-oriented perfectionism comes from within the self, such that the individual forms his/her own set of expectations to be perfect and experiences a hypersensitivity to perceived failure and critical self-evaluations (Hewitt & Flett, 2002). Socially prescribed perfectionism is an interpersonal dimension reflected by the perception of unrealistic demands from others and belief of an inability to meet such demands and thus there is a focus on the perceived failure to meet the high standards of others. Other-oriented perfectionism is also an interpersonal dimension of perfectionism that is displayed by a strong urge for others to be perfect, including, romantic partners, employees, and children. Within the other-oriented domain, the unrealistic expectations and evaluation are directed at others and may be interpreted by others as overly critical. Although perfectionism has been defined in various ways, there is consistency across the literature that perfectionism is not merely setting high standards but includes

pathological components, such as overconcerns for mistakes, preoccupations with precision, critical evaluations of the self, and interpersonal sensitivity, that have been associated with psychological disturbances (Frost et al., 1990; Flett & Hewitt, 2002; Hewitt & Flett, 2002; Limburg, Watson, Hagger, & Egan, 2017; Smith et al., 2016). Given a documented rise in socially prescribed perfectionism in the current generation of college students (Curran & Hill, 2019), it was particularly relevant to look at the relationship between socially prescribed perfectionism and maladjustment in the current study.

Perfectionism and maladjustment. Research on various dimensions of perfectionism within educational contexts suggests that there is a link between perfectionism and psychological maladjustment and academic achievement difficulties in university students (Chang, 2000; Hibbard & Davies, 2011; McGrath et al., 2012). Hibbard and Davies (2011) sought to examine the specific facets of perfectionism that were related to adjustment difficulties in a cross-sectional study of university students. Concern over mistakes, doubts about one's ability to complete a task, and parental criticism were significant predictors of measures of psychological maladjustment in students, such as reduced self-esteem and greater depression and loneliness. More recently, Smith, Saklofske, Yan, and Sherry (2017) found that perfectionism was a significant predictor for depression, anxiety, and stress in undergraduate students using a cross-sectional study design. Concern over mistakes and doubts about actions significantly predicted depression, anxiety, and stress in undergraduate students beyond the influence of latent factors such as neuroticism (Smith et al., 2017). Researchers have confirmed similar trends for perfectionism in samples of first-year college students. The cross-sectional study conducted by Wimberley and Stasio (2013) suggested that dimensions of perfectionism, including concern over mistakes, doubts about actions, and parental criticism and expectations, predicted

heightened scores on measures of depression and anxiety. These findings highlight that perfectionistic tendencies (stemming from intrapersonal and interpersonal sources) in the university student population might help explain psychological maladjustment observed within this population.

Arthur and Hayward (1997) found evidence that elevated socially prescribed perfectionism is not only related to elevated symptoms of psychological maladjustment, but can also significantly impact academic achievement in first-year post-secondary students. More specifically, the researchers conducted a survey and found support for a significant main effect for socially prescribed perfectionism, suggesting that greater levels of socially prescribed perfectionism were associated with greater emotional distress (i.e., depression and anxiety) during the first few weeks of university, and lower academic performance (i.e., grade point average) at the end of the first semester. These findings suggest that higher levels of perfectionism experienced interpersonally, expressed by the need for approval from others, has a significant impact on the emotional well-being and academic achievement outcomes for first-year post-secondary students.

Longitudinal studies observing relationships between perfectionism, stress, and depression across the first year of university have provided a better understanding of student adjustment to the university setting (e.g., Levine, Milyavskaya, & Zuroff, 2020). More specifically, Levine and colleagues (2020) studied self-critical perfectionism, a dimension of perfectionism that includes both intrapersonal (e.g., striving for unrealistic expectations, obsessing over mistakes) and interpersonal (e.g., worrying about criticism from others) features. The researchers showed that for those presenting with higher self-critical perfectionism, depressive symptoms and stress influenced one another, leading to increases in both outcomes

across the transition to university. Levine and colleagues (2020) concluded that individuals higher in the self-critical dimension of perfectionism may be particularly vulnerable to the transition to university given their susceptibility to experiencing stress and depressive symptoms in an additive manner. The research suggests that perfectionism is a factor implicated in the development and maintenance of psychological maladjustment among first-year university students (Hewitt & Flett, 1991).

Researchers have also used longitudinal study designs to test more complex models, such as reciprocal relations with self-critical perfectionism (a latent variable including measures of socially prescribed perfectionism, self-criticism, concerns over mistakes, and doubts about actions) and depression in undergraduate students (e.g., McGrath et al., 2012; Sherry et al., 2014). This conceptualization of self-critical perfectionism differed from Levine et al.'s (2020) description of the term by including socially prescribed perfectionism. McGrath and colleagues (2012) found support for reciprocal relations, suggesting that self-critical perfectionism influenced depressive symptoms, and depressive symptoms influenced self-critical perfectionism over time. However, Sherry and colleagues (2014) found evidence for a unidirectional relationship between self-critical perfectionism and depression. Sherry and colleagues (2014) concluded that these mixed findings might be best explained by a moderation model, an area for further research and the premise of the current study.

Over the past few decades, researchers have attempted to explain the consistent link between perfectionism and maladjustment. The initial approach focused on a *diathesis-stress model* of perfectionism, which suggested that perfectionism was a risk factor for psychological maladjustment triggered by life stress (Hewitt & Flett, 1993; Hewitt & Flett, 2002; Hewitt et al., 2017). The diathesis-stress model proposed that life stressors act as mediators or moderators of

the relationship between perfectionism and psychological maladjustment (Hewitt & Flett, 1993; Hewitt & Flett, 2002). Hewitt and Flett (2002) expanded on this initial model and proposed that there are various stress pathways that influence the perfectionism-maladjustment relationship. Consequently, research studies found support for more integrative models with processes such as coping style, social support, life stressors, and social problem solving skills identified as factors that influence the relationship between perfectionism and psychological maladjustment (Blankstein et al., 2007; Chang, 2002; Hewitt & Flett, 1993). For example, the combination of perfectionism and maladaptive coping was associated with greater risk for psychological distress (Dunkley, Zuroff, Blankstein, 2003; Hewitt & Flett, 1993; Hewitt & Flett, 2002).

Hewitt and colleagues (2017) noted that it is a continuous challenge determining the specific pathways (mediation or moderation) that contribute to the association between maladjustment and perfectionism. Additional research examining factors that moderate this relationship is needed to better understand when and for whom this relationship exists (Blankstein et al., 2007). For instance, socially prescribed perfectionism is linked to maladjustment consistently, however not all university students with elevated socially prescribed perfectionism experience maladjustment. It is critical to understand factors that alter this relationship and put university students at greater risk for maladjustment. Hewitt and colleagues (2017) describe socially prescribed perfectionism as a reflection of unmet interpersonal needs that includes the need to matter to others. Thus, the interaction between feeling that one has failed to meet the expectations of others and that one does not matter to others may produce elevated maladjustment in university students.

Perfectionism social disconnection model. As mentioned previously, researchers have recognized a consistent link between perfectionism and adverse outcomes, such as depressive

symptoms, which has led to the advent of the *perfectionism social disconnection model* (Hewitt et al., 2017; Hewitt, Flett, Sherry, & Caelin, 2006; Smith et al., 2018). The model provides a theoretical explanation for the relationship between interpersonal dimensions of perfectionism (e.g., socially prescribed perfectionism, perfectionistic self-presentation) and depressive symptoms. The basic tenets of the social disconnection model pose that interpersonal components of perfectionism lead to depressive symptoms via two mechanisms that include interpersonal discrepancies and social hopelessness. Hewitt and colleagues (2017; Hewitt et al., 2006) suggest that individuals with high levels of socially prescribed perfectionism display an excessive need for acceptance from others and are driven to meet perceived demands of perfection from others (e.g., achieving outstanding grades) in order to attain approval and social connection. However, they feel as if they fail to meet the expectations of others (i.e., interpersonal discrepancies) and confirm fears of rejection that leads to marked distress and suicidal behaviour. It is proposed that a schema is formed that projects concerns about the ability to fit in with others into the future (i.e., social hopelessness) that can contribute to depressed mood and feelings of loneliness.

Research evidence lends support to the perfectionism social disconnection model (e.g., Blankstein et al., 2007; Chen, Hewitt, & Flett, 2015; Chen et al., 2012; Roxborough et al., 2012). More generally, socially-prescribed perfectionism is consistently associated with hopelessness and suicide ideation (e.g., Blankstein et al., 2007; Hewitt et al., 2006; O'Connor & Forgan, 2007; Smith et al., 2018). Further, consistent with the social disconnection model, Roxborough and colleagues (2012) examined the relationship between interpersonal components of perfectionism such as socially prescribed perfectionism and perfectionistic self-presentation in youth, and found that it was mediated by social hopelessness. Smith and colleagues (2018) added to

previous findings and tested the social disconnection model in a longitudinal study with university students, and found that socially prescribed perfectionism that was assessed at baseline indirectly predicted depressive symptoms five months later, through interpersonal discrepancies and social hopelessness. In comparison, when self-oriented perfectionism and other-oriented perfectionism were entered into this same model, the results were nonsignificant. The findings of this study highlight the relevance of socially prescribed perfectionism in explaining symptoms of depression in university students through social hopelessness. The implications of these research findings are further complicated by the recent increase in socially prescribed perfectionism in college students compared to previous generations (Curran & Hill, 2019). The current generation of students are more likely than ever before to perceive social contexts as increasingly demanding, feel judged more harshly, and display perfection in order to receive approval from others. This rise in socially prescribed perfectionism paired with a sense of social disconnection suggests that emerging adults may find it increasingly difficult to cope and may be more susceptible to maladjustment when transitioning to university. In contrast, emerging adults who feel significant to others may be better able to cope with the maladjustment experienced (Flett, 2018; Flett & Zangeneh, 2020) in response to perceived social pressures to be perfect, and thus mattering to others may buffer this relation.

Mattering in Post-secondary Students

Schlossberg (1989) was the first to highlight the relevance of mattering (i.e., feeling significant to others) in college and university settings (Flett, 2018; Rosenberg, 1979). More generally, Schlossberg (1989) recognized that individuals going through life transitions commonly feel as if they do not matter – that they are not significant or important to others. Throughout the experience of entering university there is a concern about the new role and

specifically, whether one will matter in that new role. Schlossberg (1989) theorized that situations that evoke marginality, such as entering university, provoke feelings about mattering. Flett (2018) adds to this notion by expressing that students entering university and college environments may easily feel invisible and insignificant to others among thousands of other students.

Mattering is a distinct psychological construct central to the well-being of individuals (Flett, 2018; Flett, Goldstein, Pechenkov, Nepon, & Wekerle, 2016; Rosenberg & McCullough, 1981). Rosenberg and McCullough (1981) initially conceptualized mattering as both a feeling and a motivator of behaviour. To feel that one matters includes feeling noticed by others, feeling significant to others, feeling that others rely on you, feeling that others are emotionally invested in you, and feeling that you are missed by others when you are absent (Rosenberg, 1985; Rosenberg & McCullough, 1981). These feelings have a powerful influence on behaviour (Rosenberg & McCullough, 1981). Beginning from a young age, mattering to others serves as an underlying motivation to seek out connections with others to enhance a sense of interconnectedness (Elliot, 2009; Flett, 2018).

When considered conceptually and empirically, mattering is distinguishable from related constructs such as belongingness, social support, and self-esteem (Flett, 2018; Flett, Khan, & Su, 2019; Rosenberg & McCullough, 1981; Taylor & Turner, 2001). Beginning with Rosenberg and McCullough's (1981) initial examination of mattering, a relationship between mattering and emotional distress (such as anxiety and negative affect) in adolescents was partly explained by self-esteem. However, when self-esteem was controlled for, the influence of low levels of mattering on emotional distress remained strong, independent of self-esteem, suggesting that mattering is an independent construct related to emotional distress. Taylor and Turner (2001)

conducted a cross-sectional and a longitudinal assessment of the relationship between mattering and depression, and the inter-relationships between mattering and other personal attributes and social resources (e.g., mastery, interpersonal dependency, social support) in a community sample of adults. The factor analyses showed that mattering was distinct from the other constructs, loading on a separate factor from mastery, interpersonal dependency, and social support. Additionally, there was a stable relationship between mattering and depression over time when the other constructs were controlled for, suggesting that mattering is an independent construct. Conceptually, Flett (2018) makes a clear distinction between mattering and belongingness, by highlighting that one can belong to a large group, yet feel invisible or insignificant within the group. Thus, mattering is considered a unique construct that accounts for unique variance in outcome variables and is not a redundant protective factor among other predictor variables.

Although Schlossberg (1989) highlighted the importance of examining mattering in individuals going through transitions such as entering university, few have actually examined mattering in first-year university students. Rayle and Chung (2007) observed a link between perceived academic stress (e.g., meeting tight deadlines for assignments) and mattering in first-year university students; they found that the perception of mattering to the university was the most prominent predictor of academic stress levels. The researchers suggested that the first year of university is a particularly stressful time due to academic commitments, financial hardships, and poor time management, which may further be affected by the perception of mattering to others, such as the university. Fulfilling the need to matter is essential to the psychological well-being of post-secondary students (Flett et al., 2019). Flett and colleagues (2019) suggest that an enhanced sense of mattering can be protective, while degraded feelings of mattering can lead to anxiety and depression, as well as suicidal tendencies.

Mattering and maladjustment. As mentioned previously, low levels of mattering have been implicated in the development and maintenance of depression, as people who feel they do not matter to others may make negative self-appraisals that become internalized (Flett, 2018; Rosenberg & McCullough, 1981; Taylor & Turner, 2001). A negative self-concept, which has been identified as a key feature in depression, may be formed through repeated exposure to others who fail to demonstrate that they care (Beck, 1967). Further, it has been theorized that an individual who continues to feel insignificant across interpersonal relationships and then projects the negative self-appraisal into the future will likely develop a form of social hopelessness that may lead to depression (Flett, 2018).

The link between mattering and depression has been supported empirically in both community and university student samples (e.g., Dixon & Kurpius, 2008; Flett, Burdo, & Nepon, 2020; Rosenberg & McCullough, 1981; Taylor & Turner, 2001). Dixon and Kurpius (2008) conducted a cross-sectional study examining the relationship between depression, college stress, self-esteem, and perceived mattering to friends and parents in undergraduate students, and found further support for the link between mattering and depression. Specifically, perceived mattering to friends and parents and self-esteem were significant negative predictors of depression. Additionally, the researchers found that mattering, self-esteem, and stress explained 50% of the variance in symptoms of depression. Dixon and Kurpius (2008) concluded that mattering and self-esteem serve as protective factors for clinical outcomes such as depression in students, and that these protective factors could be introduced in student counselling for those experiencing depression.

Flett and colleagues (2016) evaluated the influence of feelings of not mattering to others on aspects of psychosocial adjustment (e.g., loneliness and social anxiety) in university students.

The group of researchers found that lower levels of mattering were associated with greater levels of loneliness and social anxiety in university students, even after controlling for personality dimensions such as extraversion and neuroticism. Similarly, Flett and colleagues (2020) found evidence suggesting that mattering was a unique negative predictor of depressive symptoms in university students, after controlling for other predictor variables such as insecure attachment, rumination, and self-criticism. The cross-sectional study findings showed that low mattering may underscore adverse mental health outcomes in university students. Perhaps more importantly, these findings suggest that mattering appears to be a powerful resource that may serve as a protective factor for psychological maladjustment. However, the literature remains scarce on the protective role of mattering. The current study aimed to address the limited literature and evaluate mattering as a moderating factor that buffers the relationship between perfectionism and maladjustment.

Researchers examining mattering and mental health outcomes in university students have drawn attention to the clinical implications of mattering. For example, Misra and colleagues (2000) and Rayle and Chung (2007) emphasize that mattering has serious implications for improving stress management practices at universities, and suggest that finding ways to improve mattering (e.g., increasing social support networks) may help students cope better with academic stress and psychological maladjustment. While the initial findings are promising, it seems that mattering has been overlooked as a factor that could improve university program practices and further enhance university student well-being (Flett, 2018; Flett et al., 2019; Schlossberg, 1989). There is a need for additional research in this area to delineate the risk and protective factors involved with student maladjustment (Misra et al., 2000). The examination of a moderation

model will address this need and provide a better understanding of which students are at risk (e.g., elevated socially prescribed perfectionism and low sense of mattering) for maladjustment.

Perfectionism and Mattering

Researchers continue to highlight the importance of understanding the factors that contribute to and protect against mental health concerns and distress in university students (Dixon & Kurpius, 2008). Consequently, researchers have proposed examining the role of perfectionism in conjunction with mattering to explain the development of psychological maladjustment in university students (e.g., Flett, 2018). Flett, Galfi-Pechenkov, Molnar, Hewitt, and Goldstein (2012) initiated research on the association between perfectionism and mattering in first-year university students. In particular, they investigated the link between dimensions of perfectionism, mattering to others, and depressive symptoms in first-year university students and found that mattering was negatively correlated with symptoms of depression, socially prescribed perfectionism, and perfectionistic self-presentation. Additional analyses highlighted that mattering was a significant partial mediator of the relationship between perfectionism, a latent variable composed of socially prescribed perfectionism, perfectionistic self-presentation, and perfectionistic cognitions, and symptoms of depression. The university students high in interpersonal dimensions of perfectionism experienced more depressive symptoms partly because they felt as if they did not matter. The researchers suggested that those with socially prescribed perfectionism may feel interpersonally insignificant through feelings of failure to meet the expectations of others. The recurrence of these experiences over time may result in feeling as though they will never meet the unrealistic standards of significant others, which may further contribute to depression (Flett et al., 2012).

In further support of the association between perfectionism and mattering as a useful explanation for features of depression, Cha (2016) conducted a series of studies in Korea using a community sample that examined whether the social disconnection model could be extended to Korean culture. Cha (2016) confirmed that self-esteem and mattering were significant partial mediators of the relationship between socially prescribed perfectionism and depression. In additional analyses when both self-esteem and mattering were entered into the model, the results showed that mattering to others and self-esteem were both significant mediators when entered into the model in that order, whereas the indirect effects of mattering and self-esteem considered separately were not significant. Cha (2016) suggests that the significant mediation model aligns with theoretical underpinnings of the social disconnection model, such that those high in socially prescribed perfectionism are particularly vulnerable and experience a sense of not being important to others which may negatively impact self-esteem, further leading to symptoms of depression. Flett (2018) concluded that the initial support for mattering as a mediator suggests that feeling significant to others can buffer the relationship between perfectionism and maladjustment. The current study expanded on this notion and investigated whether mattering is better conceptualized as a protective factor that moderates the perfectionism-maladjustment relationship, such that heightened feelings of mattering diminishes this relationship.

Current Gaps in the Literature

The literature consistently highlights that first-year university students are at risk for maladjustment, manifested by poor psychological well-being, symptoms of depression, as well as academic difficulties reflected by academic distress and poor academic performance (ACHA, 2016; Andrews & Wilding, 2004; Auerbach et al., 2018; Eisenberg et al., 2007; Gall et al., 2000; Ibrahim et al., 2013; Liu et al., 2019; Misra et al., 2000; Rayle & Chung, 2007; Stallman, 2008,

2010). However, less is known about factors that contribute to the development of these negative outcomes. It is crucial to understand factors that increase or mitigate negative outcomes that can occur during this transitional stage of life, as explanatory models can inform targeted prevention and intervention strategies for first-year university students (Dixon & Kurpius, 2008; Misra et al., 2000; Smith et al., 2018).

While perfectionism has been identified as a risk factor for maladjustment across the literature (e.g., Blankstein et al., 2007; Hewitt & Flett, 1991; Hewitt et al., 2006; Hibbard & Davies, 2011; O'Connor & Forgan, 2007; Smith et al., 2017; Smith et al., 2018; Wimberley & Stasio, 2013), the role of mattering as a protective factor is less understood (Flett, 2018; Flett et al., 2019). Initial studies have observed the effects of mattering as a mediator between perfectionism and depression (e.g., Cha, 2016; Flett et al., 2012). Further research is needed to expand on these initial findings and better understand the role of mattering among the relationship between perfectionism and maladjustment. Mattering has been conceptualized and assessed empirically as a mediator thus far, which provides answers surrounding how or why the perfectionism-maladjustment relationship occurs with findings suggesting that perfectionists experience depression because they feel they do not matter. However, mattering may better explain when or for whom the perfectionism-maladjustment relationship occurs, as a moderator, which remains to be examined. For example, it may be that socially prescribed perfectionism contributes to maladjustment specifically among those who feel they do not matter. The identification of moderators within relationships between predictors and outcomes provides more complex information in terms of the conditions or circumstances of an effect and helps to advance the sophistication of explanatory models in the field of psychology (Frazier, Tix, & Barron, 2004; Hayes, 2013).

It is recognized that the supporting literature (Cha, 2016; Dixon & Kurpius, 2008; Flett et al., 2012; Flett et al., 2016; Hibbard & Davies, 2011; Roxborough et al., 2012; Smith et al., 2017; Wimberley & Stasio, 2013) has been reliant on cross-sectional research that is inherently limited by design. The use of cross-sectional research limits the ability to interpret causality and directionality among the findings. However, cross-sectional research does provide a framework for explanatory models that support the interpretation of observed relationships from which future research can expand on, and will support the assessment of an explanatory model for the relationship between socially prescribed perfectionism and maladjustment in the current study.

Current Study

The objective of the current study is to address the scarcity of research examining the role of mattering as a protective factor for first-year university students, a group who are vulnerable to psychological and academic maladjustment. More specifically, I proposed a moderation model to examine mattering to others as a moderator of the relationship between socially prescribed perfectionism and psychological well-being, depressive symptoms, and academic distress during the first year of university. To my knowledge, this is the first study to examine mattering as a moderator of the relationship between socially prescribed perfectionism and maladjustment.

An examination of a moderation model with mattering will allow for a comparison of goodness of fit with previous mediation models tested within the literature. Thus, a secondary purpose for this study was to determine whether mattering fit the data better as a moderator of the relationship between perfectionism and maladjustment, rather than a mediator. The model comparisons will provide a better understanding of the function of mattering within the context of perfectionism and maladjustment, particularly during the first year of university. For example, if the moderation models have better fit than the mediation models, I can conclude that mattering

alters the strength of the relationship between socially prescribed perfectionism and maladjustment. The study findings may inform practices at university institutions to support prevention and intervention strategies for psychological and academic distress in first-year university students such that, improvements in levels of mattering may serve as a resource to help diminish the relationship between socially prescribed perfectionism and maladjustment.

Hypotheses

Based on past research (Arthur & Hayward, 1997; Blankstein et al., 2007; Chang, 2000; Hewitt et al., 2017; Hewitt et al., 2006; Hibbard & Davies, 2011; Levine et al., 2020; McGrath et al., 2012; O'Connor & Forgan, 2007; Roxborough et al., 2012; Sherry et al., 2014; Smith et al., 2017; Smith et al., 2018; Wimberley & Stasio, 2013), I expected that socially prescribed perfectionism would be associated with poorer psychological well-being and greater depressive symptoms and academic distress. In contrast, I predicted that mattering would be linked to enhanced psychological well-being and reduced symptoms of depression and academic distress (see Dixon & Kurpius, 2008; Flett et al., 2020; Rosenberg & McCullough, 1981; Taylor & Turner, 2001). Moreover, I proposed that mattering would be a significant moderator of the relationship between socially prescribed perfectionism and psychological well-being, depressive symptoms, and academic distress (see Cha, 2016; Dixon & Kurpius, 2008; Flett et al., 2012; Flett et al., 2016; Rosenberg & McCullough, 1981). I hypothesized that: 1) greater levels of mattering would diminish the relationship between socially prescribed perfectionism and psychological well-being; 2) greater levels of mattering would diminish the relationship between socially prescribed perfectionism and symptoms of depression; and 3) greater levels of mattering would diminish the relationship between socially prescribed perfectionism and academic distress.

Further, I expected that mattering would have a superior fit as a moderator rather than a mediator.

Method

Participants

First-year university students ($N = 167$) attending Lakehead University in Thunder Bay, Ontario were recruited for the study. Given that the emerging adulthood age range (18-29) was of particular interest for the current study, 14 students outside of this age range were excluded from the sample. Upon inspection of the data, one multivariate outlier was identified and removed (Tabachnick & Fidell, 2001), resulting in a final sample of 152 students (114 female participants) with a mean age of 19 years ($SD = 2.15$). A detailed description of the data cleaning procedure is provided in the results section. The university students identified primarily as White (70.8%) and others identified as Asian (16.0%), Black (6.3%), or Other (6.9%). Participants were recruited through a larger study examining the impact of an iPhone App on resilience and well-being in university students at Lakehead University. Recruitment for the larger study occurred through a variety of methods, including posters (see Appendix A) displayed around the Lakehead University Thunder Bay campus, through SONA (Lakehead University's online psychology student recruitment system), and social media accounts, such as Facebook and Instagram. The eligibility criteria for the proposed study required participants to speak and read fluently in English and to have access to their own iPhone. The larger study involved data collection at three time points (across four weeks). Data for the current study was obtained at the initial time point.

Measures

Socially prescribed perfectionism. The short-form of the socially prescribed perfectionism subscale (Cronbach alpha = .75; Stoeber, 2018) from the Multidimensional

Perfectionism Scale (MPS; Hewitt & Flett, 1991; Hewitt, Habke, Lee-Bagglely, Sherry, & Flett, 2008; see Appendix B) was used as a measure of socially prescribed perfectionism. The subscale contains five items rated on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Researchers have confirmed that the short-form version of the MPS reflects similar psychometric properties of the full scale MPS (Hewitt et al., 2008; Stoeber, 2018). For example, there is evidence for strong correlations between Hewitt et al.'s (2008) socially prescribed perfectionism short-form and other measures of socially prescribed perfectionism, with correlation coefficients between .86 and .93 (Stoeber, 2018). Stoeber (2018) also indicated support for validity of the socially prescribed perfectionism subscale, reflected by significant correlations with conceptually relevant personality characteristics such as neuroticism ($r = .30$), workaholism ($r = .30$), and inflexibility ($r = .27$). The ratings for each item are summed to obtain a total subscale score, with higher subscale scores indicating greater perceived interpersonal pressures to be perfect. A sample item from the socially prescribed perfectionism subscale includes, "People expect nothing less than perfection from me".

Mattering. The General Mattering Scale (GMS; Rosenberg & McCullough, 1981; see Appendix C) was used to assess mattering. The GMS is a 5-item scale, and each item has four rating options (1 = *A lot*, 2 = *Somewhat*, 3 = *A little*, 4 = *Not at all*) to indicate endorsement of each item over the previous two weeks. The scores for each item were reverse scored and an average score was obtained, with greater scores reflecting greater levels of perceived mattering (Flett, 2018). A sample item includes, "How important do you feel you are to other people?". Previous research has reported a Cronbach's alpha of .78 and interitem correlations ranging from .28 to .54 (Schieman & Taylor, 2001; Taylor & Turner, 2001). Factor analyses have indicated that items on the mattering scale are distinct from items on a measure of social support,

evidenced by separate factor loadings (Taylor & Turner, 2001). Confirmatory factor analysis conducted by Schieman and Taylor (2001) revealed factor loadings ranging from .63 to .80, indicating that the scale items are represented by one factor.

Psychological well-being. Two subscales from the short-form version of the Ryff Psychological Wellbeing Scale were included as a measure of psychological well-being (Morozink, Friedman, Coe, & Ryff, 2010; Ryff, 1989; see Appendix D). Ryff (1989) found initial evidence for validity and reliability of the original version of the scale reflected by significant correlations with measures of positive functioning such as life satisfaction, affect balance, and self-esteem ($r_s = .25$ to $.73$). Further, Ryff (1989) found significant intercorrelations between the subscales ($r_s = .32$ to $.76$) and significant factor loadings, suggesting that the dimensions of the scale are related but they are also distinct and explain additional variance. The shortened subscales used for the current study included purpose in life and personal growth, each based on the original scale and composed of seven items (Cronbach alphas of $.67$, and $.75$ respectively; Aghababaei & Błachnio, 2015). Each item is rated on a 6-point rating scale ranging from 1 = *strongly disagree* to 6 = *strongly agree*. A sample item for the purpose of life subscale includes “I have a sense of direction and purpose in life”. An example item for the personal growth subscale is: “I have the sense that I have developed a lot as a person over time”. Higher scores on the purpose in life subscale indicate a greater sense of directedness and having objectives for life. As for the personal growth subscale, higher scores are associated with a greater sense of self-knowledge and viewing the self as constantly growing and expanding.

Depressive symptoms. The Patient Health Questionnaire (PHQ-9; Spitzer, Kroenke, & Williams, 1999; see Appendix E) is a 9-item scale assessing the severity of depressive symptoms and the extent to which individuals have been bothered by symptoms of depression in the past

two weeks using a 4-point rating scale (0 = *not at all*, 1 = *several days*, 2 = *more than half of the days*, 3 = *nearly every day*). The scale has excellent internal reliability, evidenced by a Cronbach's alpha of .89 (Kroenke, Spitzer, & Williams, 2001). Higher scores on the PHQ-9 reflect more severe levels of depressive symptoms (Kroenke, Spitzer, Williams, & Löwe, 2010). The PHQ-9 has good sensitivity and specificity in identifying depressive disorders (Kroenke et al., 2010). For example, Kroenke and colleagues (2001) found evidence of sensitivity of 88% and specificity of 88% for major depressive disorder in clinical populations. Researchers have also found support for construct validity reflected by associations between greater depression severity as reported on the PHQ-9 and deficits observed on measures of physical and social functioning, as well as reported disability days (Kroenke et al., 2001; Spitzer et al., 1999).

Academic distress. The Inventory of College Students' Recent Life Experiences (Kohn, Lafreniere, & Gurevich, 1990; see Appendix F) is a 49-item scale that was used in the current study to assess academic distress. The scale was created to assess various aspects of college stress including developmental challenges, time pressures, academic alienation, romantic problems, annoyances, social mistreatment, and problems with friendships. Kohn and colleagues (1990) reported on the internal consistency and validity of the scale, with Cronbach's alpha values of .88 to .89 and a significant correlation of .67 with a measure of perceived stress. Item-factor analysis indicated seven distinct factors that aligned with the seven dimensions of the scale (Kohn et al., 1990). In the current study, participants were asked about their experiences in the previous two weeks and rated the extent of their experience on a 4-point rating scale (1 = *not at all part of my life*, 2 = *only slightly part of my life*, 3 = *distinctly part of my life*, 4 = *very much part of my life*). A sample item found on the scale includes, "Not enough time to meet your

obligations”. For the current study, the item scores were summed to obtain a total score, with higher total scores reflecting greater levels of academic distress.

Procedure

Participants were asked to attend a study session for the iPhone App study. Upon arrival, participants were provided with an information letter (see Appendix G) that included information about the larger study. The informed consent process took place in accordance with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2; Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada, 2014) and Lakehead University’s Research Ethics Board. Once informed consent (see Appendix H) was obtained, participants were introduced to the iPhone App and given instructions for downloading and using the App. At the end of the session, participants were asked to complete a package of paper-and-pencil self-report questionnaires that included measures relevant for the current study (see Appendix B-F), among other questionnaires included for use in the iPhone App study. Participants were compensated for their time by receiving either two bonus marks toward a psychology course or \$30 cash. The iPhone App study involved additional follow-up assessments, whereas the hypotheses for the current study aimed to evaluate only the cross-sectional data obtained at the baseline study session.

Statistical Analyses

Separate moderated multiple regressions were conducted using IBM SPSS Statistics¹ (IBM Corp, 2017) to test each of the study hypotheses according to the framework outlined by Aiken and West (1991). Prior to estimating the model, the predictor (i.e., socially prescribed perfectionism) and moderator (i.e., mattering) were centred and then multiplied to create the

¹ The moderated multiple regressions were also evaluated using Hayes (2013) PROCESS to ensure consistency across the analyses.

socially prescribed perfectionism by mattering interaction term (Aiken & West, 1991; Anguinis & Gottfredson, 2010; Tabachnick & Fidell, 2001). Centring variables in the regression equation reduces issues with multicollinearity among the variables (Cohen, Cohen, West, & Aiken, 2003). For each hypothesis, the centred terms were entered into a hierarchical multiple regression in order to predict the study outcomes. Each hierarchical multiple regression included two steps (Aiken & West, 1991; Cohen et al., 2003; Holmbeck, 1997). In step one, the centred predictor and moderator were included in the regression equation, without the interaction term. In step two, the interaction term was entered.

I expected a significant interaction between socially prescribed perfectionism and mattering to predict the specified outcome variables (i.e., psychological well-being, depressive symptoms, and academic distress) in first-year university students. Statistically significant interactions were followed by simple slopes analysis and plots for further interpretation (Cohen et al., 2003; Frazier et al., 2004). This was achieved by plotting the regression of the outcomes on socially prescribed perfectionism at different levels of the moderator (Cohen et al., 2003; Frazier et al., 2004; Holmbeck, 1997).

As a secondary analysis, model comparisons were performed to evaluate the differences in model fit between hypothesized moderation models and mediation models previously tested in the literature (e.g., Cha, 2016; Flett et al., 2012). First, Hayes (2013) PROCESS was used to test for the significance of the competing mediation model, by evaluating the indirect effect from the model. Thereafter, the significant moderation and mediation models were evaluated using MPlus (Muthén & Muthén, 1998-2017) to obtain the Akaike information criterion (AIC; Akaike, 1987), an index of fit used to explore comparisons across models (Burnham & Anderson, 2002; Hoyle & Panter, 1995). The AIC is intended for comparison between competing models and can be

used to rank models to determine the better fitting model, with smaller values indicating better model fit and parsimony (Burnham & Anderson, 2002).

Results

Data Cleaning

The amount of missing data were minimal (0.6-1.2% across scale items). A non-significant Little's MCAR test (Little, 1988; Osborne, 2013) showed that the data were missing completely at random for measures of socially prescribed perfectionism, mattering, psychological well-being, and depressive symptoms. However, Little's MCAR test was significant for the measure of academic distress, suggesting that the data may not be missing completely at random. The tests were followed up with an observation of missing patterns in SPSS (Tabachnick & Fidell, 2001). The overall summary of missing values and missing value patterns showed that minimal data were missing and there were no distinct patterns of missing data. Expectation maximization was used to generate estimated values for missing data. Expectation maximization has been documented as a useful approach superior to listwise, pairwise, and mean substitution methods, when there is a small proportion of missing data. (Acock, 2005; Hedderley & Wakeling, 1995; Musil, Warner, Yobas, & Jones, 2002; Osborne, 2013).

Thirty-nine univariate outliers were identified outside of the z score range (± 3.29 , $p < .001$; Tabachnick & Fidell, 2001). Upon further inspection, the outliers seemed to be a valid representation of the population of interest (Tabachnick & Fidell, 2001) and were thus retained in the sample. No variable transformations were performed to avoid issues with the interpretation of transformed variables (Tabachnick & Fidell, 2001). Given the significant impact that multivariate outliers can have on regression analyses, the probability estimates for Mahalanobis

distance were assessed on the chi-square distribution to check for multivariate outliers (Tabachnick & Fidell, 2001). There was one probability estimate below .001 that was of concern and was removed from the dataset, as recommended by Tabachnick and Fidell (2001).

Assumptions of normality, non-multicollinearity, linearity, and homoscedasticity were tested. Skewness and kurtosis values proved to stay below 1 and frequency histograms and P-P plots suggested that the data had minimal skewness or kurtosis (Osborne, 2013; Tabachnick & Fidell, 2001). An examination of a correlation matrix revealed that none of the correlations were extremely high (e.g., .90 and above) and therefore multicollinearity was not a concern (Tabachnick & Fidell, 2001). Visual inspection of bivariate scatterplots and residual scatterplots indicated that the linearity and homoscedasticity assumptions were met (Tabachnick & Fidell, 2001).

Descriptive Statistics

The means, standard deviations, and alpha reliabilities for the scales are summarized in Table 1. The scale means and standard deviations for the current study are consistent with research using similar samples (e.g., Brandy et al., 2015; Durand-Bush, Mcneill, Harding, & Dobransky, 2015; Flett et al., 2012; Garlow et al., 2008; Hewitt et al., 2008; Keum, Miller, & Inkelas, 2018; Kohn et al., 2012; Nealis, Sherry, Sherry, Stewart, & Macneil, 2015; Sarafino & Ewing, 1999; Young, Fang, & Zisook, 2010). The Cronbach alpha reliabilities for the scales were adequate, $>.70$ (Cortina, 1993; Taber, 2018; Tavakol & Dennick, 2011).

The bivariate correlations between the scales are presented in Table 2. All of the variables were significantly correlated. Socially prescribed perfectionism was negatively correlated with mattering, purpose in life, and personal growth, and positively correlated with academic distress and depressive symptoms. Mattering was positively related to purpose in life

and personal growth and negatively related to academic distress and depressive symptoms. The significant correlations among the outcome variables showed that purpose in life and personal growth were negatively correlated with depressive symptoms and academic distress, and depressive symptoms and academic distress were strongly and positively correlated.

Table 1

Means, Standard Deviations, and Cronbach Alpha Values for Study Variables

Scale	<i>M</i>	<i>SD</i>	α
Socially Prescribed Perfectionism	20.26	6.41	.77
Mattering	3.01	.56	.73
PWB: Purpose	32.66	5.72	.76
PWB: Personal Growth	34.51	5.27	.76
Depressive Symptoms	9.45	5.98	.88
Academic Distress	97.94	22.60	.93

Note. PWB = Psychological Well-being.

Table 2

Bivariate Correlations of the Study Variables

Variable	1	2	3	4	5	6
1. Socially Prescribed Perfectionism	---	-.21*	-.22**	-.31**	.36**	.37**
2. Matting		---	.42**	.36**	-.38**	-.23**
3. PWB: Purpose			---	.67**	-.47**	-.30**
4. PWB: Personal Growth				---	-.44**	-.36**

5. Depressive Symptoms	---	.71**
6. Academic Distress		---

Note: PWB = Psychological Well-being

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

Moderated Multiple Regression Analyses

Psychological well-being. Hierarchical multiple regression analysis² indicated that socially prescribed perfectionism was not a significant predictor of purpose in life, whereas mattering was a significant positive predictor (see Table 3). The socially prescribed perfectionism by mattering interaction term was not significant. For personal growth, socially prescribed perfectionism was a negative predictor and mattering was a positive predictor in the first step of the model (see Table 3). However, the socially prescribed perfectionism by mattering interaction term was not significant.

Depressive symptoms. The hierarchical multiple regression analysis² showed that socially prescribed perfectionism was a positive predictor and mattering was a negative predictor of variance in depressive symptoms (see Table 3). The interaction between socially prescribed perfectionism and mattering was significant in predicting symptoms of depression. Statistical testing of the simple slopes indicated that the positive relationship between socially prescribed perfectionism and depressive symptoms was significant at low levels of mattering ($-1 SD$, $B = .41$, $SE = .10$, $p < .001$). However, the relationship between socially prescribed perfectionism and depressive symptoms was not significant at high levels of mattering ($1 SD$, $B = .13$, $SE = .10$, $p = .18$). As displayed in Figure 1, high levels of mattering diminished the relationship between socially prescribed perfectionism and symptoms of depression.

² The results for the moderated multiple regressions remained consistent in PROCESS, however hierarchical regressions were reported to allow for interpretation of the hypothesized predictors.

Academic distress. The hierarchical multiple regression analysis² revealed that socially prescribed perfectionism was a significant positive predictor and mattering was a significant negative predictor of variance in academic distress (see Table 3). However, the interaction term including socially prescribed perfectionism and mattering was not significant.

Table 3

Summary of Moderated Regression Analyses

Steps and Predictors	<u>PWB: Purpose</u>		<u>PWB: Personal Growth</u>		<u>Depressive Symptoms</u>		<u>Academic Distress</u>	
	ΔR^2	<i>B</i> (<i>SE</i>)	ΔR^2	<i>B</i> (<i>SE</i>)	ΔR^2	<i>B</i> (<i>SE</i>)	ΔR^2	<i>B</i> (<i>SE</i>)
Step 1	.20**		.19**		.22**		.16**	
SPP		-.12 (.07)		-.20 (.06)*		.27 (.07)**		1.20 (.27)**
Mattering		4.03 (.77)**		2.95 (.71)**		-3.41 (.79)**		-6.46 (3.09)*
Step 2	.01		.00		.02*		.01	
SPP X Mattering		.12 (.12)		-.01 (.11)		-.25 (.12)*		-.59 (.49)

Note. *B* = unstandardized B; SPP = Socially prescribed perfectionism; PWB = Psychological Well-being.

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

² The results for the moderated multiple regressions remained consistent in PROCESS, however hierarchical regressions were reported to allow for interpretation of the hypothesized predictors.

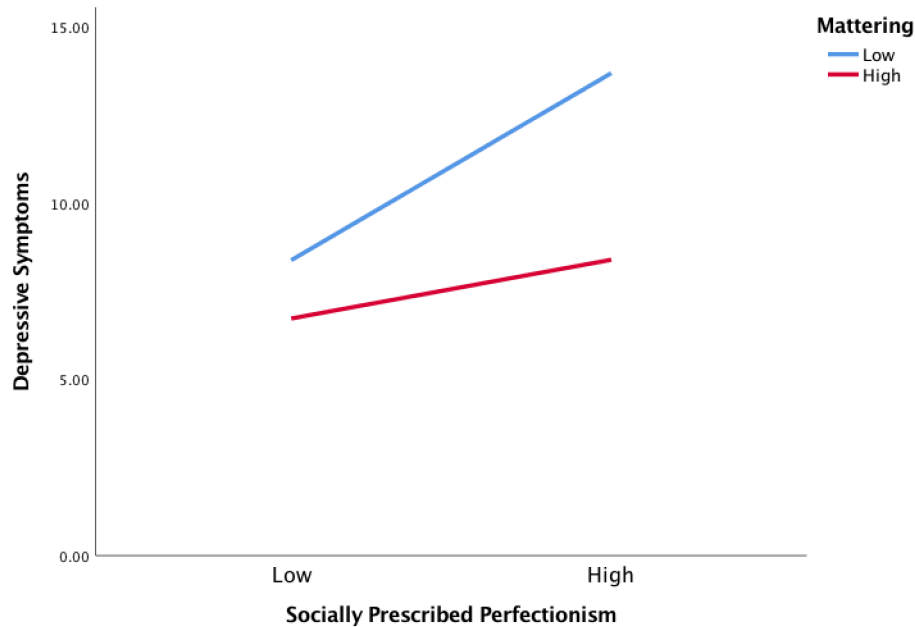


Figure 1. Moderation effect of mattering on the relationship between socially prescribed perfectionism and depressive symptoms.

Model Fit Comparison

Mattering was entered into a mediation model for socially prescribed perfectionism and depressive symptoms to confirm the best model fit for the data. There was evidence for a significant indirect effect of socially prescribed perfectionism on depressive symptoms through mattering ($ab = .06$), indicated by a 95% bootstrapping confidence interval excluding zero (.01 to .13). The index of mediation (i.e., completely standardized indirect effect) was .07 (95% CI [.01, .13]), suggesting that depressive symptoms increase by .07 standard deviations for every standard deviation increase in socially prescribed perfectionism through mattering.

Next, a comparison of the model of fit was conducted to evaluate the degree of parsimony across the mediation and moderation models (Burnham & Anderson, 2002; Hoyle & Panter, 1995) by evaluating the respective models in MPlus. The AIC for the significant

moderation model was 941.31. The AIC for the significant mediation model was 1196.76. The AIC value for the moderation model was smaller, suggesting that it had a superior fit compared to the mediation model. Burnham and Anderson (2002) suggest that the larger the AIC difference between models, the more support there is for the superior model. More specifically, an AIC difference greater than 10 indicates substantial support for superiority.

Discussion

The aim of the current study was to test hypothesized explanatory moderation models with mattering as a moderator of the relationship between socially prescribed perfectionism and maladjustment in first-year university students. It was expected that socially prescribed perfectionism would predict greater maladjustment (evidenced by poorer psychological well-being and greater symptoms of depression and academic distress) and mattering to others would predict lower maladjustment. In addition, it was hypothesized that there would be a significant interaction between socially prescribed perfectionism and mattering, such that feeling important to others would buffer the relationship between the need to be perfect and psychological and academic distress. The analyses confirmed that socially prescribed perfectionism was associated with poorer psychological well-being and greater symptoms of depression and academic distress, while a sense of mattering was associated with improvements in psychological well-being, depressive symptoms, and academic distress. Mattering to others was not a significant moderator for purpose in life, personal growth, or academic distress. Although, the hypothesized moderation model for depressive symptoms was supported. Further interpretation of a simple slopes plot for this model showed that as mattering increased, the relationship between socially prescribed perfectionism and depressive symptoms diminished. In addition, the hypothesized

moderation model had superior model fit compared to a mediation model proposed by past research (e.g., Cha, 2016; Flett et al., 2012).

Socially Prescribed Perfectionism, Mattering, and Psychological Well-being

Socially prescribed perfectionism was a negative predictor of personal growth in first-year university students, such that students with elevated socially prescribed perfectionism struggled with realizing their potential and recognizing their own growth (Flett, 2018; Ryff, 1989). Those who strive for perfection due to social pressures may be vulnerable to difficulties with personal growth, irrespective of the degree to which they feel they matter to others. This finding is consistent with previous literature showing that socially prescribed perfectionism is associated with poorer psychological well-being (e.g., Chang, 2006). Given that individuals with heightened socially prescribed perfectionism tend to feel that they fail to meet the unrealistic expectations of others, it is likely that these individuals experience difficulties perceiving their own growth and improvement over time (Flett, 2018; Hewitt & Flett, 1991). Additionally, perfectionism has been linked to psychological disturbances, such as depression and anxiety, loneliness and general stress, and reduced self-esteem, all of which may be related to difficulties with perceiving personal growth (Arthur & Hayward, 1997; Hibbard & Davies, 2011; Levine et al., 2020; McGrath et al., 2012; Sherry et al., 2014; Smith et al., 2017; Wimberley & Stasio, 2013).

Mattering to others was a positive predictor of purpose in life and personal growth. It appeared that feeling that one matters is associated with a greater sense of direction and feelings of self-development which aligns with the conceptualization of mattering in the literature. Mattering to others is theorized to play a fundamental role in psychological well-being, especially for university students (see Flett, 2018; Flett et al., 2016; Flett et al., 2019). The

perception that one is important to others based on social exchanges, contributes to the development of identity and a sense of meaning or purpose in life (Elliot, Kao, & Grant, 2004; France & Finney, 2009; Marshall, 2001; Rosenberg, 1985; Taylor & Turner, 2001). For example, a person who perceives others as invested in and reliant on oneself will more likely have a better sense of who one is and where one fits in (Elliot et al., 2004). Such a person would be more likely to invest in oneself and experience a sense of directness in one's life, reflected by setting life goals and planning for the future (Taylor & Turner, 2001).

The relationship between mattering to others and psychological well-being observed in the current study coincides with empirical findings reported in this area. In an undergraduate sample, Marshall (2001) found that mattering to one's mother, father, and friends, were positively correlated to feeling a sense of purpose in life. Mattering to others more generally has also been positively correlated with aspects of psychological well-being including purpose in life, personal growth, positive relations with others, and self-acceptance in university students (Flett, 2018; France & Finney, 2009). Similar findings have been observed in previous research showing that feeling that one does not matter was related to anxiety, depression, ruminative brooding, self-criticism, and self-hate, all of which likely overlap with poor psychological well-being (Dixon & Kurpui, 2008; Flett et al., 2020; Flett et al., 2016; Flett et al., 2019). Although mattering was not a significant moderator of the relationship between socially prescribed perfectionism and psychological well-being as was expected, it does seem to have a meaningful independent role in the psychological well-being of university students (France & Finney, 2009).

The hypothesized moderation models for the psychological well-being outcomes (i.e., purpose in life and personal growth) were not supported. Feeling important to others does not seem to alter the strength of the relationship between socially prescribed perfectionism and

psychological well-being at a statistically significant level. This might suggest that the independent contributions of socially prescribed perfectionism and mattering to others are more important in explaining changes in psychological well-being than an interaction effect. Overall, the significant direct effects suggest that mattering to others may help to enhance psychological well-being, while socially prescribed perfectionism may heighten the risk for difficulties with psychological well-being in first-year university students. Given that the psychological well-being of university students is an international public health concern (Eisenberg et al., 2007; Liu et al., 2019; Stallman, 2010), these results provide a better understanding of factors that may contribute to this problem.

Socially Prescribed Perfectionism, Mattering, and Depressive Symptoms

The hypothesized moderation model for depressive symptoms was supported, with a superior model fit. The first-order effects of the model provided support for socially prescribed perfectionism as a positive predictor and mattering as a negative predictor of symptoms of depression. Further interpretation of the significant interaction via a simple slopes plot, indicated that lower levels of mattering strengthened the positive relationship between socially prescribed perfectionism and depressive symptoms such that, those who believe others demand perfection from them experienced depressed mood, loss of interest in activities, thoughts about death, and difficulties with concentration, sleep, and appetite. Additionally, higher levels of mattering appeared to diminish the relationship between socially prescribed perfectionism and depression, as it became non-significant. Thus, two main findings are apparent: 1) low levels of mattering may have a negative impact on the relationship between socially prescribed perfectionism and depressive symptoms and 2) high levels of mattering may be protective against the socially prescribed perfectionism-depression relationship.

Low levels of mattering. The results suggested that first-year university students who perceived interpersonal demands to be perfect and felt insignificant to others were at a greater risk for symptoms of depression. This finding highlights the destructive nature of both socially prescribed perfectionism and low levels of mattering. Hewitt and colleagues (2017) describe perfectionists as individuals striving to meet exceedingly high personal and social expectations to fulfill the need to matter to others. The social disconnection model outlines that the excessive need for approval from others motivates perfectionistic behaviour that may generate interpersonal discrepancies and feelings of social hopelessness that may contribute to depression (Hewitt et al., 2017; Hewitt et al., 2006). The combination of feeling socially hopeless and not mattering to others may become internalized and result in a negative sense of self and thus have been linked to maladaptive schemas including feeling disconnected socially, flawed, and unloved (Flett, 2018). This negative perception of the self is considered an underlying feature of depression and can lead to significant emotional distress (Beck, 1967, Flett, 2018).

The current study findings advance previous literature that has examined the relations between perfectionism, mattering, and depression (e.g., Cha, 2016; Dixon & Kurpius, 2008; Flett, 2018; Flett et al., 2020; Flett et al., 2012; Hewitt & Flett, 1991; Hewitt et al., 2017; Hewitt et al., 2006; Hibbard & Davies, 2011; Levine et al., 2020; McGrath et al., 2012; Rosenberg & McCullough, 1981; Sherry et al., 2014; Smith et al., 2017; Smith et al., 2018; Taylor & Turner, 2001) by providing evidence for an integrated moderation model. Previous research found evidence that mattering mediated the perfectionism-depression link such that those with a need to be perfect experienced depressive symptoms in part because they felt like they did not matter (Cha, 2016; Flett et al., 2012). The current study expanded on these findings and showed that mattering was a significant moderator such that feeling important and significant to others

changed the strength of the impact that socially prescribed perfectionism has on depressive symptoms. Moreover, when the previously supported mediation model and current moderation model were compared, the moderation model exhibited better fit. The support for the moderation model provides additional information and a better understanding about the conditions under which the socially prescribed perfectionism-depression link occurs. For example, under a condition in which extremely high expectations from others and a sense of not mattering to others is perceived and becomes internalized, there may be a greater vulnerability for emotional distress in first-year university students. In contrast, when there is a deep sense of feeling noticed, valued, and cared for, the relationship impact of socially prescribed perfectionism on depressive symptoms is inconsequential.

High levels of mattering. The findings highlighted within the moderation model suggest that the socially prescribed perfectionism-depression link is malleable and that a sense of mattering may be relevant to positive adjustment for emerging adults transitioning to university. The simple slopes analysis showed that when there was a greater sense of feeling important to others and valued by others, the relationship between socially prescribed perfectionism and depressed mood diminished. This suggests that establishing a sense of mattering to others may be a potential way to cope with the interpersonal pressure to be perfect and the related symptoms of depression (Flett, 2018). For example, if socially prescribed perfectionists entering university were exposed to an environment that demonstrated that they were important and that they matter to other students, faculty, and staff, they may be more likely to experience positive adjustment to the university setting. This finding also supports the recent advocacy for initiatives within university settings to promote a sense of mattering (Flett, 2018; Flett et al., 2019). It seems

important for this need to be addressed as students transition to university. A more detailed description of the implications for university settings is provided below.

Socially Prescribed Perfectionism, Mattering, and Academic Distress

University students are vulnerable to experiencing academic distress especially as they enter university (Brandy et al., 2015; Gall et al., 2000; Misra et al., 2000; Pluut et al., 2015; Rayle & Chung, 2007; Stallman, 2010). The study results suggest that both the desire to be perfect and feeling important to others are implicated in the experience of academic distress. The analysis indicated that those with a heightened belief that others expect perfection of them self-reported struggles to meet personal academic standards, not having enough time to fulfil academic obligations, dissatisfaction with school, and conflicts with significant others (Kohn et al., 1990). Perfectionists may be particularly vulnerable, as they often feel a sense of dissatisfaction and difficulty enjoying their own accomplishments when it comes to performance at school (Hewitt et al., 2017). This finding is consistent with previous research showing a link between dimensions of perfectionism (e.g., concern over mistakes, doubts about actions, and self-critical perfectionism) and general stress in university students (e.g., Levine et al., 2020; Smith et al., 2017). The positive effect suggests that first-year university students high in socially prescribed perfectionism may be vulnerable to stress associated with the academic environment specifically. Given that academic distress is related to university program dropout rates and academic performance (American College Health Association, 2016; Arthur & Hayward, 1997; Brandy et al., 2015; D'Angelo & Wierzbicki, 2003; Lester, 2014; Liu et al., 2019; Rayle & Chung, 2007; Vaez & Laflamme, 2008), those driven by socially imposed expectations may be at heightened risk for difficulties in academic achievement as a result of the academic stress they experience.

The analysis also showed that a greater sense of mattering to others was associated with lower levels of academic distress. This is consistent with past research linking mattering to the university to lower levels of academic distress in first-year university students (Rayle & Chung, 2007). The current study results suggest that feeling significant and important to others more generally, is also linked to diminished experiences of stress in an academic setting, such as time pressures, demands of courses, disliking studies, social isolation, and friendship problems (Kohn et al., 1990). Thus, an enhanced sense of mattering and feeling valued by others may be protective for university students. Flett and colleagues (2019) suggest that when mattering is invoked in the classroom setting (e.g., by encouraging learners to discuss, share, and value the ideas of others), university students will likely feel more willing to engage and participate in classes and will be more successful academically. The current study supports this idea. First-year university students that feel valuable to others are more likely to experience lower levels of stress in the academic setting which may have a positive impact on student retention at universities.

The hypothesized moderation model for academic distress was not statistically significant. This finding suggests that socially prescribed perfectionism and mattering to others may play a more meaningful role as independent predictors than as an interaction effect. It seems that feeling important to others may not significantly influence the direction or strength of the relationship between socially prescribed perfectionism and academic distress.

Implications for University Settings

Previous research has shown that emerging adults transitioning to university are particularly vulnerable to psychological disturbances and academic distress (ACHA, 2016; Andrews & Wilding, 2004; Auerbach et al., 2018; Eisenberg et al., 2007; Gall et al., 2000; Ibrahim et al., 2013; Liu et al., 2019; Misra et al., 2000). The difficulties experienced in response

to the transition to a new environment can have a negative impact on academic performance and student retention (Arthur & Hayward, 1997; Brandy et al., 2015; Rayle & Chung, 2007; Stallman, 2008, 2010; Vaez & Laflamme, 2008). Although emerging adulthood is marked by uncertainty and instability, it is also a stage of life represented by optimism and hope (Arnett, 2006; Denovan & Macaskill, 2017). Emerging adulthood represents an age of possibility and a time for life transformation. Therefore, it is an optimal time to instill positive health and prosocial behaviours to help change the life course of emerging adults (Arnett, 2006; Henin, 2016). A better understanding of risk factors and protective factors that contribute to student adjustment may help to inform prevention and intervention strategies in university settings.

Assessing socially prescribed perfectionism. Findings from the current study add to the limited literature on explanatory models of factors that may contribute to adverse outcomes in first-year university students. The results suggest that students with heightened socially prescribed perfectionism are vulnerable during the transition to university and may experience difficulties with personal growth, depressive symptoms, and academic distress. Therefore, it is important to consider prevention and intervention strategies for individuals high in socially prescribed perfectionism, especially given its rise among college populations internationally (Curran & Hill, 2019).

Accordingly, within university settings, it may be helpful for school counsellors to assess for interpersonal dimensions of perfectionism among distressed students seeking help (Chang, 2006). Assessing for socially prescribed perfectionism will provide counsellors with a better understanding of a student's vulnerabilities that may be contributing to their current distress. If a student were assessed and identified with elevated levels of socially prescribed perfectionism, it may be a potential target for counselling and the sources contributing to a student's

perfectionistic tendencies can be addressed. For example, cognitive and behavioural strategies can be used to identify and challenge perfectionistic thoughts and beliefs (Antony & Swinson, 2009; Beck, 1976).

Promoting a sense of mattering. Based on the study results, a sense of mattering to others may support positive adjustment in first-year university students. Mattering is a unique psychological construct that is essential to the well-being of individuals, especially those going through the transition to university (Flett, 2018; Schlossberg, 1989). The results showed that mattering is related to enhanced psychological well-being, fewer depressive symptoms, and lower levels of academic distress. The findings of the current study suggest that a sense of mattering to others can help to diminish the relationship between socially prescribed perfectionism and depressive symptoms. At the most basic level, there are various ways to show others that they matter, such as investing time and energy into the well-being of others, showing someone that they are needed, providing compassion and appreciation, and acknowledging the achievements of others (Flett, 2018). First-year university students high in socially prescribed perfectionism with a low sense of mattering may be vulnerable to symptoms of depression and may benefit from opportunities and interventions that promote a sense of mattering.

It is evident that some university programs have found success in providing stress management, relaxation, and acceptance and mindfulness training for first-year students, observed through improvements in depressive symptoms and stress levels (Danitz & Orsillo, 2014; Danitz, Suvak, & Orsillo, 2016; Krumrei-Mancuso, Newton, Kim, & Wilcox, 2013; Ramler, Tennison, Lynch, & Murphy, 2016). My results suggest that targeting a sense of mattering may be a useful addition to university programs to help first-year university students thrive as they transition to university. Flett and colleagues (2019) suggest that mattering may be

best promoted in a university setting that puts emphasis on the student's viewpoint. Students need to feel seen and heard. In addition, university campaigns with a meta-message that prioritizes mattering can be used to generate a strong mattering environment that is embraced by faculty, student counsellors, and administrative staff (Flett et al., 2019). Another potential strategy is to create opportunities for volunteer roles and/or peer mentorships that may help students feel that others depend on them, an important aspect of mattering. A university setting that aims to create a community of learners that feel they matter to one another will likely see more engagement among students and greater involvement in university courses (Flett et al., 2019). Overall, it may be beneficial for universities to create and/or adapt programs for students entering university to include strategies that facilitate a sense of mattering to prevent maladjustment and the possible negative long-term effects such as poor academic performance and program dropout (Flett et al., 2019; Flett et al., 2020; Krumrei-Mancuso et al., 2013).

Limitations and Future Directions

The current study is not without limitations. The study was limited by a homogenous (i.e., predominantly White and female) sample, recruited from one small to medium university in northwestern Ontario. Therefore, it is unclear whether the findings will generalize to large and diverse student populations. Flett (2018) suggests that large universities with thousands of students may reinforce a sense of not mattering to others for incoming students that are more likely to feel as if they are just a number to the university. In addition, diversity among the population of first-year university students should be considered. International students that have immigrated to Canada may feel more marginalized and disconnected from a sense of community, and in greater need to feel significant and important to others within the university community (Flett et al., 2019). Since international students were not fully represented in the current sample,

future research should consider using more diverse samples to assess the generalizability of the study findings.

The study method was also heavily reliant on self-report measures which may be subject to bias. Future studies may consider other forms of collecting information that may be more reliable, such as informant reports. University students high in socially prescribed perfectionism, that internalize beliefs that others and/or society as a whole hold unrealistically high expectations, may have a distorted perception of the world (Hewitt et al., 2017). Informant reports from family members or friends may provide more context regarding perceived versus actual expectations posed by others as well as perceived versus actual mattering to others. Given that a cross-sectional design was used without random assignment or experimental manipulation, causality cannot be inferred for the current study. The use of randomized controlled study designs could be used to test mattering as an intervention strategy or adjunct to already existing intervention approaches for university students to determine whether improvements in a sense of mattering to others causes positive adjustment in university students. Future research should consider the use of longitudinal designs to examine the consistency of the current study results and further examine the relations among study outcomes over time. For example, Levine and colleagues (2020) found that for those higher in self-critical perfectionism, depression and stress predicted one another and resulted in greater levels of each over time. There could be similar longitudinal relationships occurring for those high in socially prescribed perfectionism.

Researchers may also want to consider including other measures of interpersonal dimensions of perfectionism that may supplement the current study results in future research. For example, latent variables have been used in the literature as a measure of interpersonal perfectionism (e.g., Sherry & Hall, 2009) that may be relevant to the context of the current study.

In addition, the models that were tested in the current study did not explain all of the variance in the outcome variables. This suggests that there are other variables contributing to the study outcomes. Future research should consider more comprehensive models that include additional variables that may be contributing to adjustment in university students. For example, self-esteem has been shown to be associated with a sense of mattering, perfectionism, and depressive symptoms in university students, and therefore it may play an indirect role in explaining maladjustment in university students (Cha, 2016; Hibbard & Davies, 2011; Rosenberg & McCullough, 1981).

Conclusions

The current study advances the limited literature on models that integrate factors that may increase the risk and mitigate maladjustment among first-year university students. Socially prescribed perfectionism, a trait that is on the rise among college populations, was associated with difficulties adjusting, whereas a sense of mattering to others was associated with improvements in adjustment. Furthermore, feeling important and significant to others appeared to be a protective factor for depressive symptoms in first-year university students. The findings suggest that targeting a sense of mattering in programming for students transitioning to university may be beneficial to enhance the well-being of emerging adults. Additional research is still needed to expand on the current study findings and continue evaluating potential explanatory models. Continued efforts aimed at increasing our knowledge on protective factors for emerging adults that are susceptible to maladjustment is crucial to preserving the well-being of university students.

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Appendix A

Poster Advertisement



iPhone App Research Study



You are invited to participate in a study testing an iPhone App for 1st year undergraduate students. The App is designed to promote resilience by enhancing emotion regulation and cognitive organization skills.

Eligibility criteria:

- 1st year undergraduate student
- Have an iPhone
- Speak/read fluently in English

Participation will involve:

- Downloading and using the App for 4 weeks
- Completing questionnaires* before, during, and after using the App

For participating, you will:

- Receive up to \$90 in VISA gift cards

Principal Investigator:
Dr. Aislin Mushquash
Assistant Professor, Department of Psychology
aislin.mushquash@lakeheadu.ca

To sign up, contact
LU.App.Research@gmail.com

*Some questionnaires ask about difficult experiences and may be hard for some people to think about. Participants are free to skip questions they do not feel comfortable answering. If participants feel upset during the study, we have information available on relevant supports.

Appendix B

Multidimensional Perfectionism Scale (Short-Form):

Socially Prescribed Perfectionism Subscale (Hewitt et al., 2008)

Listed below are a number of statements concerning personal characteristics and traits. Read each item and decide whether you agree or disagree and to what extent. If you strongly agree , select 7; if you strongly disagree , select 1; if you feel somewhere in between, select any one of the numbers between 1 and 7. If you feel neutral or undecided the midpoint is 4.							
						Strongly Disagree	Strongly Agree
1.	Success means that I must work even harder to please others	1	2	3	4	5	6 7
2.	The better I do, the better I am expected to do	1	2	3	4	5	6 7
3.	My family expects me to be perfect	1	2	3	4	5	6 7
4.	People expect nothing less than perfection from me	1	2	3	4	5	6 7
5.	People expect more from me than I am capable of giving	1	2	3	4	5	6 7

Appendix C

General Mattering Scale (Rosenberg & McCullough, 1981)

Choose the rating you feel is best for you over the past 2 weeks and circle the number provided.

	A lot	Somewhat	A little	Not at all
1. How much do other people depend on you?	1	2	3	4
2. How much do you feel other people pay attention to you?	1	2	3	4
3. How important do you feel you are to other people?	1	2	3	4
4. How much do you feel others would miss you if you went away?	1	2	3	4
5. How interested are people generally in what you have to say?	1	2	3	4

Appendix D

Ryff Psychological Well-being Scale (Short-Form) (Morozink et al., 2010)

Please indicate your degree of agreement over the last 2 weeks (using a score ranging from 1 -6) to the following sentences.

	Strongly Disagree	1	2	3	4	5	Strongly Agree
1. In general, I feel I am in charge of the situation in which I live.	1	2	3	4	5	6	
2. I am not interested in activities that will expand by horizons.	1	2	3	4	5	6	
3. I live life one day at a time and don't really think about the future.	1	2	3	4	5	6	
4. The demands of everyday life often get me down.	1	2	3	4	5	6	
5. I think it is important to have new experiences that challenge how you think about yourself and the world.	1	2	3	4	5	6	
6. I have a sense of direction a purpose in life	1	2	3	4	5	6	
7. I do not fit very well with the people and the community around.	1	2	3	4	5	6	
8. When I think about it, I haven't really improved much as a person over the years.	1	2	3	4	5	6	
9. My daily activities often seem trivial and unimportant to me.	1	2	3	4	5	6	
10. I am quite good at managing the many responsibilities of my daily life.	1	2	3	4	5	6	
11. I have a sense that I have developed a lot as a person over time.	1	2	3	4	5	6	
12. I don't have a good sense of what it is I'm trying to accomplish in life.	1	2	3	4	5	6	
13. I often feel overwhelmed by my responsibilities.	1	2	3	4	5	6	
14. I do not enjoy being in new situations that require me to change my old familiar ways of doing things.	1	2	3	4	5	6	
15. I enjoy making plans for the future and working to make them a reality	1	2	3	4	5	6	
16. I have difficulty arranging my life in a way that is satisfying to me.	1	2	3	4	5	6	

17. For me, life has been a continuous process of learning, changing, and growth.	1	2	3	4	5	6
18. Some people wander aimlessly through life, but I am not one of them.	1	2	3	4	5	6
19. I have been able to build a home and a lifestyle for myself that is much to my liking.	1	2	3	4	5	6
20. I gave up trying to make big improvements or changes in my life a long time ago.	1	2	3	4	5	6
21. I sometimes feel as if I've done all there is to do.	1	2	3	4	5	6

Appendix E

Patient Health Questionnaire (PHQ-9; Spitzer et al., 1999)

<i>Over the last 2 weeks, how often have you been bothered by any of the following problems?</i>	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

Appendix F

Inventory of College Students' Recent Life Experiences (Kohn et al., 1990)

Following is a list of experiences which many students have some time or other. Please indicate for each experience how much it has been a part of your life *over the past 2 weeks*. Circle "1" if it was *not at all part* of your life over the past 2 weeks (e.g., "trouble with mother in law – 1"); "2" for an experience which was *only slightly* part of your life over that time; "3" for an experience which was *distinctly* part of your life' and "4" for an experience which was *very much* part of your life over the past 2 weeks.

	Not at all part of my life	Only slightly part of my life	Distinctly part of my life	Very much part of my life
1. Conflicts with boyfriend's/girlfriend's/spouse's family	1	2	3	4
2. Being let down or disappointed by friends	1	2	3	4
3. Conflict with professor(s)	1	2	3	4
4. Social rejection	1	2	3	4
5. Too many things to do at once	1	2	3	4
6. Being taken for granted	1	2	3	4
7. Financial conflicts with family members.	1	2	3	4
8. Having your trust betrayed by a friend	1	2	3	4
9. Separation from people you care about	1	2	3	4
10. Having your contributions overlooked	1	2	3	4
11. Struggling to meet your own academic standards	1	2	3	4
12. Being taken advantage of	1	2	3	4
13. Not enough leisure time	1	2	3	4
14. Struggling to meet the academic standards of others	1	2	3	4
15. A lot of responsibilities	1	2	3	4
16. Dissatisfaction with school	1	2	3	4
17. Decisions about intimate relationship(s)	1	2	3	4
18. Not enough time to meet your obligations	1	2	3	4
19. Dissatisfaction with your mathematical ability	1	2	3	4
20. Important decisions about your future career	1	2	3	4
21. Financial burdens	1	2	3	4
22. Dissatisfaction with your reading ability	1	2	3	4
23. Important decisions about your education	1	2	3	4
24. Loneliness	1	2	3	4
25. Lower grades than you hoped for	1	2	3	4
26. Conflict with teaching assistant(s)	1	2	3	4

27. Not enough time for sleep	1	2	3	4
28. Conflicts with your family	1	2	3	4
29. Heavy demands from extracurricular activities	1	2	3	4
30. Finding courses too demanding	1	2	3	4
31. Conflicts with friends	1	2	3	4
32. Hard effort to get ahead	1	2	3	4
33. Poor health of a friend	1	2	3	4
34. Disliking your studies	1	2	3	4
35. Getting "ripped off" or cheated in the purchase of services	1	2	3	4
36. Social conflicts over smoking	1	2	3	4
37. Difficulties with transportation	1	2	3	4
38. Disliking fellow student(s)	1	2	3	4
39. Conflicts with boyfriend/girlfriend/spouse	1	2	3	4
40. Dissatisfaction with your ability at written expression	1	2	3	4
41. Interruptions of your school work	1	2	3	4
42. Social isolation	1	2	3	4
43. Long waits to get service (e.g., at banks, stores, etc.)	1	2	3	4
44. Being ignored	1	2	3	4
45. Dissatisfaction with your physical appearance	1	2	3	4
46. Finding course(s) uninteresting	1	2	3	4
47. Gossip concerning someone you care about	1	2	3	4
48. Failing to get expected job	1	2	3	4
49. Dissatisfaction with your athletic skills	1	2	3	4

Appendix G

Information Letter

Promoting Resilience in Undergraduate Students: Implementation and Evaluation of a Resilience App

Dear Potential Participant:

You are invited to participate in our research study titled: ***Promoting Resilience in Undergraduate Students: Implementation and Evaluation of a Resilience App***. Your participation in this study is entirely voluntary, and whether you choose to participate or not will not impact your academic standing at Lakehead University. Before you decide whether or not you would like to take part, please read this letter carefully to understand what is involved. After you have read the letter, please ask any questions you may have.

PURPOSE

The purpose of this research is to test a smartphone App designed to promote resilience in undergraduate students by supporting the development of emotion regulation and cognitive organization skills. Resilience is defined as a characteristic of an individual and their environment that provides the resources necessary for positive development and wellbeing. Intervening early to support resilience may help students reach their true potential and be a buffer against maladjustment.

The Principal Investigator of the research is Dr. Aislin Mushquash, Assistant Professor, Department of Psychology, Lakehead University. Dr. Christine Wekerle, Associate Professor, McMaster University, is a Co-Investigator. Angela MacIsaac, Shakira Mohammed, Elaine Toombs, Kristy Kowatch, and Jessie Lund are graduate student researchers in the Department of Psychology, Lakehead University under the supervision of Dr. Mushquash. Mary Cassano, Elizabeth Grassia, Kaitlyn Kotala, and Laija Beaulieu are research assistants under the supervision of Dr. Mushquash. This research is supported by funding from the Canadian Institutes of Health Research.

WHAT IS REQUESTED OF ME AS A PARTICIPANT?

This study has 3 parts. A description, the duration, and the associated compensation of each are described below.

	Description	Duration	Compensation
Part 1	You will receive information on the App including its features and how to use it. You will also be asked to complete some questionnaires.	Up to 1.5 hours	\$30 *Or 2 bonus points towards psychology course grade
Part 2	You will be asked to use the App at least twice/day for 4 weeks. You will also be asked to return 2 weeks after Part 1 to complete some questionnaires.	10 min/day + 0.5 hours	\$40 (\$20 for first 2 weeks, \$20 for second 2 weeks)
Part 3	You will be asked to return 4-5 weeks after Part 1 to complete some questionnaires.	0.5 hours	\$20
	Total	6.5 hours	\$90

In addition to description above, some participants will have an opportunity to participate in an interview about their experiences using the App. This would occur during Part 3 and would last approximately 30 minutes. Participants would receive an extra \$10 for completing this interview.

WHAT INFORMATION WILL BE COLLECTED?

We will be collecting information from you during Parts 1, 2, and 3 of the study. Specifically, to determine the impact of the App, the questionnaires during Parts 1, 2, and 3 will ask questions about well-being, resilience, self-compassion, mood/mental health and substance use, emotion regulation, and coping skills. The questionnaires will also ask about difficult experiences you may have had in your life. Some of these questions may be difficult for some people to think about or may cause some temporary distress. You are not required to answer all questions and can feel free to skip questions that you are not comfortable answering. To determine the usability and utility of the App, information will also be collected from you via the App itself. Specifically, we will receive data related to the usage of the App (e.g., which features were accessed, time spent using the App). And finally, information about experiences using the App will be collected from some participants during the interview in Part 3. Interviews will be audio recorded to ensure accurate information is obtained.

WHAT ARE MY RIGHTS AS A PARTICIPANT?

As a participant, you are under no obligation to participate and are free to withdraw at any time without penalty. You have the right to withdraw your data from the study up until the data collection phase of the study is complete. Beyond this point, there will be no way to connect you to your data. Your decision to participate will not affect your academic status. You will be given, in a timely manner throughout the course of the research project, information that is relevant to your decision to continue or withdraw. To withdraw from the study, contact Dr. Mushquash at aislin.mushquash@lakeheadu.ca or (807) 343-8771.

WHAT ARE THE RISKS AND BENEFITS?

There are no known harms associated with participating in the study. However, as mentioned above, some questionnaires will ask about difficult experiences you may have had in your life. Some of these questions may be hard for some people to think about. You are not required to answer all questions and can feel free to skip questions that you are not comfortable answering. Should you feel upset during or after the study, we encourage you to contact any of the following support services:

Lakehead University Student Health and Counselling (807) 343-8361	Thunder Bay Counselling Centre Walk-In Counselling (807) 684-1880	Good2Talk 24-hr Student Helpline 1-866-925-5454	Thunder Bay 24-hr Crisis Response (807) 346-8282
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On the questionnaires, you may also endorse participating in some illegal activity (e.g., underage drinking, drug use). The information that you provide will not be shared with anyone outside of the research team. One exception is the unlikely event that our research records were subpoenaed by a Judge. To mitigate any potential risk of information pertaining to participants' illegal activity being accessed, your name will not be included on the questionnaires. Only a participant ID number will be included. The list linking participant ID numbers to participant names will only be retained for the period of data collection (estimated to be approximately 6-8 months). This list will be kept in a locked filing cabinet in Dr. Mushquash's laboratory. The list will be shredded once the data collection phase of the study is complete.

The primary benefits of the study are for society and for the advancement of knowledge. Specifically, this study will provide information on the utility and usability of the App to support resilience in students transitioning to university.

For participating in the study, you will receive up to \$90. For students in an eligible psychology course, you will receive 2 bonus points towards an eligible psychology course grade + up to \$60. See Table above for more information.

HOW WILL MY CONFIDENTIALITY BE MAINTAINED?

Confidentiality will be maintained throughout the study. You will be provided an ID number at the beginning of the study. All data (questionnaires and the App data) will contain only this ID number. Paper copies of the questionnaires will be kept in a locked filing cabinet and will only be identified by ID number. The list linking your name to your ID number will be kept in a locked filing cabinet in Dr. Mushquash's laboratory. Upon completion of the data collection phase of the study, this list will be destroyed.

WHERE WILL MY DATA BE STORED?

Paper copies of the data will be kept in a locked filing cabinet in Dr. Mushquash's laboratory. App data will be stored on a password-protected server and then a password-protected hard drive. Audio recordings will be stored on a password-protected hard drive. The electronic database (containing data from the paper copies of data and App data) will be stored on a password protected hard drive. In accordance with Lakehead University's policy, data will be retained for at least 5 years following the completion of the research.

HOW CAN I RECEIVE A COPY OF THE RESEARCH RESULTS?

It is anticipated that peer-reviewed journal articles will be published based on the results of this study. Portions of the findings from the study will also likely be presented at national or international scholarly conferences. All findings will be presented in summary form without identifying information of participants. If you would like to receive a summary of the findings following the completion of the study, mark 'yes' on the consent form and indicate your preferred email address. Individual results (e.g., scores on specific questionnaires) will not be made available to participants.

RESEARCHER CONTACT INFORMATION:

Dr. Aislin Mushquash
Assistant Professor
Department of Psychology
Lakehead University

(807) 343-8771

aislin.mushquash@lakeheadu.ca

RESEARCH ETHICS BOARD REVIEW AND APPROVAL:

This research study has been reviewed and approved by the Lakehead University Research Ethics Board. If you have any questions related to the ethics of the research and would like to speak to someone outside of the research team, please contact Sue Wright at the Research Ethics Board at (807) 343-8283 or research@lakeheadu.ca.

Appendix H

Consent Form

Promoting Resilience in Undergraduate Students: Implementation and Evaluation of a Resilience App**MY CONSENT:**

I agree to the following:

- ✓ I have read and understand the information contained in the Information Letter
- ✓ I agree to participate
- ✓ I understand the risks and benefits to the study
- ✓ That I am a volunteer and can withdraw from the study up until the data collection phase of the study is over, and may choose not to answer any question
- ✓ That if I participate in the interview during Part 3, my interview will be recorded to ensure accurate information is obtained
- ✓ That the data will be securely stored in a locked filing cabinet in Dr. Mushquash's laboratory and/or on a password protected hard drive for a minimum period of 5 years following completion of the research project
- ✓ I understand that the research findings will be made available to me upon request
- ✓ That my name will not be included on my questionnaires but will be linked to my participant ID number until the data collection phase of the study is over
- ✓ All of my questions have been answered and I can contact the Principal Investigator with further questions

By consenting to participate, I have not waived any rights to legal recourse in the event of research-related harm.

Name (Please Print) _____

Signature _____

Date _____

I would like to be sent a summary of the results of this study: Yes ___ No ___

If "yes" please provide your e-mail address:
