The Effects of a Course-Based Mindfulness Intervention on College Student Perfectionism, Stress, Anxiety, Self-Compassion, and Social Connectedness

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Abstract
Rising perfectionism within post-secondary students could be a reason for their mental health challenges. Recent attention is being given to mindfulness-based interventions as a promising avenue for mitigating high perfectionism and improving socio-emotional well-being. The objective of this study was to examine the impact of 8 weeks of a mindfulness course (compared to a non-meditating control group). Variables of interest were mindfulness, multidimensional perfectionism (self-oriented, other-oriented, and socially prescribed), stress, anxiety, self-compassion, and social connectedness. Students self-enrolled into a mindfulness class at a college in Alberta, Canada ($n = 15$). The experimental sample included ages 18-54 ($M = 25.27$, $SD = 11.47$) and were 96.7% female. A control group was recruited from first- and second-year psychology classes ($n = 30$), ages ranging from 17-38 ($M = 21.70$, $SD = 5.36$) and 70% identifying as female. Students completed in person surveys near the beginning of the term and again after 8 weeks. ANOVAs, paired samples t-tests, and linear regression analyses indicated that college students practicing mindfulness evidenced lower perfectionism (self-oriented and other-oriented types), stress, and anxiety, along with higher mindfulness and self-compassion. Perplexing results suggest two routes to social connection, as both the mindfulness and control groups increased in social connection, although for the control group, it seems this was motivated by higher stress and self-criticism. Findings from the current study are impressive (given the small sample size and the high stress time of the post-test). Integrating mindfulness curriculum can enhance socio-emotional well-being for post-secondary students.

Keywords: Anxiety, Mindfulness, Multidimensional Perfectionism, Self-Compassion, Social-Connectedness

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Introduction

Researchers such as Curran and Hill (2019), and Raeis and associates (2019) are pointing to rising rates of perfectionism in post-secondary students as playing a role in their challenges with adjustment to post-secondary education. Social and economic effects of the COVID-19 pandemic have only exacerbated these problems, with students feeling more anxious and socially isolated than they were before the pandemic (e.g., Copeland et al., 2021; Flett, 2021; Labrague, 2021; Patterson et al., 2021; Verma et al., 2021; Tasso et al., 2021; Elharake et al., 2022). Given the current situation, it is of value to incorporate mental health enhancing practices into the curriculum. Flett (2021) points to cultivating mindfulness as one way to combat the rising mental health concerns in young people.

Mindfulness is characterized by an attitude of acceptance, patience, curiosity, gratitude, warmth, and love (Siegel, 2007). Mindfulness meditation utilizes the breath as the focal point of awareness; by focusing on the breath, one disengages from thoughts and feelings entering the mind (Feldman et al., 2010). Dr. Jon Kabat-Zinn established the Mindfulness Based Stress Reduction (MBSR) program in 1979, which has demonstrated effectiveness in the treatment of chronic pain, anxiety, and depression (Shapiro et al., 2005; Kabat-Zinn, 2013; Stahl & Goldstein, 2019). Some have investigated the impact of similar programs on the well-being of students.

Caldwell and associates (2010) examined the effects of a mindfulness course on 166 college students and found that throughout the 15-week semester participants improved in levels of mindfulness, perceived stress, sleep quality, self-regulatory self-efficacy, and mood. Similarly, Bamber and Kaenzle Schneider (2016) conducted a review and synthesis of research on the effects of mindfulness on levels of stress and anxiety in college students. Their review indicated that in most studies, mindfulness was associated with lower anxiety (33 of 40 studies) and lower perceived stress (25 of 34 studies) in college students.

Curran and Hill (2019) conducted a meta-analysis on perfectionism levels between the years of 1989 and 2016 and found that multidimensionality has been steadily increasing over time in American, Canadian, and British college students. Lunn and colleagues (2023) compiled a meta-analysis examining the relationship between perfectionism and symptoms of obsessive-compulsive disorder (OCD), depression, and anxiety among young people (ages 6 – 24): the studies reviewed pointed to a relationship between perfectionism and symptoms in OCD, depression, and anxiety, which they argue underscores the need for interventions aimed at reducing perfectionism and its potential negative consequences in youth.

Perfectionism can be divided into three differentiated groups, including self-oriented perfectionism (SOP), other-oriented perfectionism (OOP), and socially prescribed perfectionism (SPP) (Hewitt & Flett, 1991; Hewitt & Flett, 1993). SOPs have exceptionally high standards of themselves and are highly self-critical when they fail to reach perceived perfection (Stoeber, 2014; Stoeber, 2015). OOPs are highly critical of others if they do not reach the set perfectionistic standards (Stoeber, 2014; 2015). SSPs believe that if they are not perfect or do not strive for perfection, others will be critical of them (Stoeber, 2014).

In addition to the negative intrapersonal effects of perfectionism (e.g., anxiety), researchers are also finding perfectionism is associated with adverse interpersonal outcomes such as social anxiety, disconnection, hostility, and loneliness (e.g., Mohammadian et al., 2018; Hewitt et al., 2020; Wang et al., 2022).

Short and Mazmanian (2013) tested university students' levels of mindfulness, multidimensional perfectionism, worry, rumination, and positive and negative affect. They found that students with high levels of mindfulness were lower in SPP, stress, anxiety, depression, and negative affect. Short and Mazmanian's study (2013) was a one-time testing period without a control group, making it difficult to surmise whether individuals significantly changed over time. Vidic and Cherup (2019) investigated the effects of a 7-week mindfulness-based relaxation class on 35 college students' levels of stress, resilience, self-efficacy, and perfectionism in comparison to a control group of 36. Results revealed enhanced resilience and self-efficacy as well as lower stress for the mindfulness group after the intervention. However, no significant results were revealed for the effect of mindfulness on perfectionism. Conversely, James and Rimes (2018) evaluated 8 weeks of mindfulness-based therapy compared to cognitive behaviour therapy on perfectionistic post-secondary students and found that the mindfulness group experienced superior benefits such as lower levels of perfectionism and stress, as well as greater self-compassion. The helpful effects of mindfulness for reducing the negative impacts of perfectionism persisted at the 10 week follow up (James & Rimes, 2018).

Self-compassion involves three components: 1) giving kindness toward oneself; 2) seeing our own experiences as a greater human experience; and 3) maintaining a balanced awareness regarding painful thoughts and feelings (Neff, 2003; Neff, 2011). Research has indicated that increased levels of self-compassion decrease levels of self–criticism, stress, anxiety, neuroticism, neurotic perfectionism, and depression (Neff, 2003; Neff et al., 2007). Centeno and Fernandez (2019) found that college students participating in a mindfulness program evidenced greater scores on self-compassion as compared to a class that did not participate in the mindfulness intervention. Serrao and colleagues (2022) investigated the effects of 12 weeks of mindfulness on 23 college students' levels of, stress, anxiety, and self-compassion as compared to a control group of 21 students. Those in the mindfulness condition evidenced lower levels of perceived stress however, in this study no differences were found between the mindfulness group and the control group on measures of anxiety and self-compassion.

The Current Study

Research suggests that mindfulness has intrapersonal benefits on college students, such as decreasing stress and anxiety while improving mood. Evidence, however, is mixed when it comes to the impact of mindfulness on levels of perfectionism and self-compassion (e.g., Serrao et al., 2022). Furthermore, little research exists on the interpersonal benefits of mindfulness in college students, such as its ability to enhance social connectedness. Therefore, the objective of the current study was to add to this body of research by exploring the effects of 8-weeks of a mindfulness course on college students' levels of mindfulness, multidimensional perfectionism (SOP, OOP, and SPP), stress, anxiety, self-compassion, and social connectedness (compared to a non-meditating control group).

In line with existing research, it was hypothesized that participants who practice mindfulness would experience intrapersonal benefits such as a decrease in SOP, OOP, SPP, stress, and anxiety, as well as an increase in mindfulness and self-compassion in comparison to the control group. Furthermore, participants in the mindfulness course were expected to evidence increased social connectedness. To test these hypotheses, the impact of a mindfulness meditation course taught by a certified Mindfulness-Based Stress Reduction (MBSR) practitioner at a community college in Central Alberta, Canada, was evaluated relative to a non-meditating control group. Although the mindfulness course offered ran for a total of 15

weeks, assessments were conducted before and after 8 weeks of mindfulness practice, this is a common timeframe used in many mindfulness courses and studies.

Method

Participants ($N = 45$) were recruited from predominantly first- and second-year undergraduate students at a post-secondary institution in Central Alberta, Canada. Students in the experimental group ($n = 15$) self-selected into an in-person mindfulness class for credit (the course is open to students from various programs). Participants in this group were 18-54 years old ($M = 25.27$, $SD = 11.47$) and 96.7% female (the remaining percent did not select "female", "male", "other", or "prefer not to say"). A control group ($n = 30$) was recruited from first- and second-year psychology classes (also open to students from a variety of programs), ages ranging from 17-38 ($M = 21.70$, $SD = 5.36$) and 70% being female. The sample was predominantly White (over 90%), but this is representative of the lack of ethnic diversity within the region.

The mindfulness course was co-taught by a faculty member who is a long-time mindfulness practitioner (trained by Dr. Jon Kabat-Zinn in MBSR). The instructor incorporated mindfulness meditation, body-scan, loving-kindness, mindful eating, mindful movement, and education about mindfulness and its applications. Participants in both mindfulness and control groups completed a self-report questionnaire at pre–test and again at post-test (8 weeks apart).

Materials

Multidimensional Perfectionism Scale (MPS) (Hewitt & Flett, 1990). The scale is a 45-item self-reported questionnaire that measures the individual's levels of perfectionism on 3 dimensions: self-oriented, other-oriented, and socially prescribed perfectionism with an internal consistency of $\alpha = .88$, $\alpha = .71$, and $\alpha = .81$, respectively (Hewitt & Flett, 1990).

Freiburg Mindfulness Inventory (FMI) (Walach et al., 2006). The FMI is a reliable ($\alpha = .86$) and valid self-reported measure that is highly correlated with the long version $r = .95$ (Walach & et al., 2006). The 14-item short version is on a Likert scale that measures the individual's experience of mindfulness from 1 (rarely) to 4 (almost always) (Walach et al., 2006).

Self-Compassion Scale-Short Form (SCS-SF) (Raes et al., 2011). This scale is a 12-item self-reported measure with a 1 (almost never) to 5 (almost always) Likert scale. This measure has been found to have an internal consistency of $\alpha = .86$ with near perfect correlations with the long version, the Self Compassion Scale (Raes et al., 2011).

Depression, Anxiety and Stress Scale (DASS) (Lovibond & Lovibond, 1995). The DASS is a 42-item questionnaire which includes three self-report scales designed to measure the negative emotional states of depression, anxiety, and stress. Each of the three scales contains 14 items, divided into subscales of 2-5 items with similar content. For the purposes of this study the depression scale was removed. This scale has been found to be both reliable and valid among clinical and non-clinical populations $\alpha = .84$, $\alpha = .87$, respectively (Akin & Centin, 2007).

Social Connectedness Scale-Revised (SCE-R) (Lee, et al., 2001). The SCE-R includes 10 positively worded items and two negatively worded items to complement the initial eight

items (which were also modified to indicate mild deficiencies in the need for belonging). The scale demonstrates adequate internal item reliability α = .92 and is more normally distributed in comparison with the original Social Connectedness Scale since the SCE-R has lower mean item scores, kurtosis, and skewness (Lee, et al., 2001).

Results

Comparing the two groups (Mindfulness vs Control) at pre-test, a one-way ANOVA was conducted which showed significant differences in SOP ($F(1,43) = 13.71$, p = .001); the mindfulness group displayed significantly higher SOP ($M = 62.27$, $SD = 11.47$) at pre-test compared to the control group ($M = 72.39$, $SD = 6.87$). Otherwise, the groups were equal across most of the measures and the control group was deemed adequate for comparison in the study.

At post-test a one-way ANOVA was conducted between groups (Mindfulness vs Control), and significant differences were found regarding mindfulness ($F(1,43) = 6.50$, p = .014) and self-compassion ($F(1,43) = 13.56$, p = .001). The mindfulness group displayed higher mindfulness ($M = 42.05$, $SD = 2.43$) and self-compassion ($M = 41.55$, $SD = 6.55$) when compared to the control group, respectively ($M = 37.33$, $SD = 6.94$) and ($M = 33.81$, $SD = 6.70$). Significant differences were also found for SOP ($F(1,43) = 23.33$, p = .001), OOP ($F(1,43) = 13.44$, p = .001), and stress ($F(1,43) = 4.54$, p = .039). The mindfulness group displayed significantly lower SOP ($M = 57.20$, $SD = 12.10$), OOP ($M = 50.00$, $SD = 9.78$), and stress ($M = 10.65$, $SD = 4.49$) compared to the control group, respectively ($M = 79.36$, $SD = 15.55$), ($M = 61.46$, $SD = 15.55$), and ($M = 17.01$, $SD = 11.07$). Furthermore, marginal differences were found in anxiety ($F(1,43) = 3.69$, p = .061). At post-test the mindfulness group was marginally lower in anxiety ($M = 11.00$, $SD = 5.58$), in comparison to the control group ($M = 17.01$, $SD = 11.66$).

Independent sample t-tests within the mindfulness group comparing pre- and post-test revealed that the post-test mindfulness group increased significantly in mindfulness ($M = 42.05$, $SD = 2.43$), and social connectedness ($M = 91.93$, $SD = 7.43$) at post-test compared to pre-test, respectively ($M = 35.44$, $SD = 1.63$), $t(28) = -8.75$, $p < .001$, and ($M = 74.20$, $SD = 6.73$), $t(28) = -6.85$, $p < .001$. Additionally, t-tests revealed that the mindfulness group was significantly lower in OOP ($M = 50.00$, $SD = 9.78$), SPP ($M = 54.67$, $SD = 13.64$), and stress ($M = 10.65$, $SD = 4.49$) at post-test compared to pre-test, respectively ($M = 60.20$, $SD = 8.92$), $t(28) = 2.98$, $p < .006$, ($M = 65.53$, $SD = 5.50$), $t(28) = 2.86$, $p < .010$, ($M = 16.67$, $SD = 8.87$), $t(28) = 2.34$, $p < .029$ (refer to Table 3). Therefore, from pre-test to post-test the mindfulness group demonstrated increased mindfulness and social connectedness, while also showing decreased OOP, SPP, and stress.

Independent samples t-tests within the control group comparing pre- and post-test revealed that the control group was significantly higher in SOP ($M = 79.36$, $SD = 15.55$) and social connectedness ($M = 86.76$, $SD = 20.83$) at post-test, respectively ($M = 72.39$, $SD = 6.87$), $t(28) = -2.45$, $p < .030$, ($M = 70.69$, $SD = 6.46$), $t(28) = -4.037$, $p < .001$. Results indicated a significant decrease in self-compassion for the control group at post-test ($M = 33.81$, $SD = 6.70$), compared to pre-test ($M = 40.77$, $SD = 4.37$), $t(28) = 4.77$, $p < .001$. These results show that the control group increased in SOP and social connectedness, while decreasing in self-compassion from pre-test to post-test.

Discussion

Findings of the current study offer support for the efficacy of mindfulness in reducing perfectionism and its deleterious effects: after 8 weeks of mindfulness practice, the mindfulness group significantly decreased in OOP, SPP, and stress, while increasing in social connectedness. The hypotheses that mindfulness practice would increase mindfulness and self-compassion, as well as reduce stress and anxiety, were supported. At post-test, the mindfulness group demonstrated greater mindfulness and self-compassion and lower stress and anxiety in comparison to the control group.

As people practice mindfulness, they may have decreased unrealistic standards for others (OOP), as well as decreased beliefs that they are required to strive for perfection in response to others' expectations (SPP). It is compelling to argue that with mindfulness practice, these types of perfectionisms decrease, and in turn, individuals increase their ability to experience social connection. Mindfulness may help individuals to initiate and maintain satisfying relationships due to being more observant, less judgmental, perfectionistic, and socially anxious, perhaps enhancing social connections (Block & Wulfert, 2000; Abdollahi et al., 2022; Shofiyah & Sovitrina, 2022).

Given that both the mindfulness group and control group increased in social connection, current findings suggest there could be two pathways to social connection. For the control group, elevated stress (e.g., end of term pressure) might increase self-criticism and decrease self-compassion; promoting social connection through feelings of insecurity and need of validation from others. This route to social connection might be based on a value of others over self or a devaluing of the self, which leads one to place higher value on the needs of others or increase their dependence on others. Unfortunately, these motives for social connection may be routed in lack of self-worth and dependence, which can lead to unhealthy or abusive relational dynamics such as social comparison, competition, neediness, or jealousy (e.g., Yip & Kelley, 2013). Alternatively, mindfulness may allow individuals to increase in social connectedness through a different route that is driven by increased self-compassion. If individuals decrease excessive standards placed on self and others, they may derive a deeper sense of non-contingent self-worth in their nonjudgmental acceptance of self, which they can direct to others as well (Neff, 2011). This form of social connectedness could be driven by a sense of security, stable self-worth, common humanity, and value for both self and others, which would lead to healthier, more balanced relational dynamics (Neff, 2011).

More research is needed to better understand the impact of mindfulness on perfectionism types. For example, individuals with high SOP may be inclined to attach perfectionistic standards onto their mindfulness practice; this contradicts the rationale of mindfulness as a non-striving practice without standards or expectations. Furthermore, individuals with high OOP may utilize being mindful as an unreasonable standard to judge others by (i.e., judging those who do not practice mindfulness or perceiving others as not being mindful enough). Depending on how they approach the practice, mindfulness practice may not be as potentially beneficial for individuals with high SOP since they may not acquire the ability to accept themselves without judgment or hesitation, nor embrace non-striving; and for individuals with high OOP as mindfulness practice may provide more reason to judge others. Thus, mindfulness may potentially feed the negative impacts of SOP and OOP in individuals who are particularly high in these types of perfectionism, which may result in increased anxiety and decreased social connectedness. A larger sample would allow the exploration of how

mindfulness practices differ for those who are high or low in the different types of perfectionism.

Future research could explore more targeted mindfulness interventions aimed at improving the well-being of more at-risk student populations such as Indigenous, LGBTQ2S+, and international students who may need additional support and tools. For example, a recent study by Xiong and associates (2022) researched the effects of a mindfulness-based well-being group on international students' well-being and discovered improvements in trait mindfulness, increased positive mental health, and decreases in perceived discrimination and psychological distress.

Conclusion

The current study investigated intrapersonal and interpersonal effects of a mindfulness class on college students as compared to a control group; specifically, the study explored how mindfulness affects multidimensional perfectionism (SOP, OOP, and SPP), stress, anxiety, self-compassion, and social connectedness. After 8 weeks of mindfulness practice, participants in the mindfulness group scored lower on SOP, OOP, stress, and anxiety; and higher in mindfulness, self-compassion, and social connectedness. Findings suggest practicing mindfulness provides various intrapersonal and interpersonal benefits to students and it is worthwhile to integrate mindfulness curriculum into post-secondary settings.

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