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Investigating the income academic achievement gap: an exploration of the roles of mindfulness and self-concept clarity in low-income college students.

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INVESTIGATING THE INCOME ACADEMIC ACHIEVEMENT GAP: AN
EXPLORATION OF THE ROLES OF MINDFULNESS AND SELF-CONCEPT
CLARITY IN LOW-INCOME COLLEGE STUDENTS

By

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B.S., Centre College, 2013
M.Ed., Vanderbilt University, 2016

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A Dissertation Approved on

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DEDICATION

To my Pappaw, Bobby Lee Hunt, who has always encouraged me and told me I can be

whatever I want to be when I grow up. Your curiosity, grit, and innovative spirit have

proven to me that our greatest skills are cultivated through life experience and not

necessarily taught in school.

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ABSTRACT

INVESTIGATING THE INCOME ACADEMIC ACHIEVEMENT GAP:
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The purpose of the current study was to examine whether linguistic patterns
previously associated with trait mindfulness and self-concept clarity in low-income
college students' application essays are associated with academic performance and
psychosocial variables. The aims of the study were as follows: 1) Explore relations
between linguistic markers that have been previously associated with higher
mindfulness/self-concept clarity and GPA and 2) Explore relations between linguistic
markers that have been previously associated with higher mindfulness/self-concept
clarity and anxiety/depression. Participants were 54 undergraduate students in the
Cardinal Covenant program (a scholarship program for students from low-income
families) who began college in the fall of 2016. The analyses revealed that none of the
hypothesized correlations between linguistic markers previously associated with
mindfulness/self-concept clarity and GPA or anxiety/depression were significant. The
correlation between linguistic markers associated with trait mindfulness and fall 2016
GPA approached statistical significance ($r = -.230$, $p = .115$), albeit in the opposite
direction than was hypothesized. The lack of significant findings may have been
impacted by several factors, including small sample size and spring 2020 GPA being

unreflective of students' academic abilities due to the pandemic. Future avenues for research exploring psychosocial variables that help low-income students succeed in college, specifically through examining cognitive and affective styles revealed in students' college admissions essays, are discussed.

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INTRODUCTION

The income achievement gap (IAG), a term for the discrepancy between low-income students' and high-income students' academic performance, is evident during education in childhood and adolescence (grades K-12) and persists into higher education (Reardon, 2013; Bailey & Dynarski, 2011). There is considerable evidence that college students from low-income families are less likely than students from middle or high-income families to succeed academically in higher education (Sanchez, 2013). The gap between low-income and high-income students' academic achievement in college is still present even when students' ACT scores and high school GPAs are controlled for (Sanchez, 2013). This suggests that factors beyond students' level of pre-college academic achievement and academic preparation for college are contributing to the difference between low socioeconomic status (SES) and high SES students' academic performance. It should be noted that the terms low SES and low-income will be used interchangeably throughout this paper and a discussion on definitions of terms such as low SES, low-income, and poverty begins on page 2.

Researchers have posited several factors that may hinder low-income students' academic achievement in college, including but not limited to struggles with emotional experiences, identity management, self-perception, and motivation (Jury et al., 2017). In contrast to examining why low-income students experience such struggles, this dissertation examines the IAG through a different lens: what contributes to low-income students' academic success? While there has been some research on the factors that may

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contribute to low-income college students' vulnerability to performing below the academic level of their middle and high-income peers, little research has been conducted on the qualities/factors that academically successful students from low-income families already possess that help them to overcome the IAG.

This dissertation investigates linguistic patterns previously associated with trait mindfulness and self-concept clarity (SCC) in low-income college students' application essays, and their relationship to academic performance and psychosocial variables. Further examination of whether these traits are related to academic performance would give evidence for/against implementing mindfulness-based interventions, and other interventions that may increase mindfulness and SCC, in low-income college populations. Over time, successful efforts to support low-income college students may help play a part in ending the cycle of poverty.

Low SES and Academic Performance

The IAG is a term that describes how children, adolescents, and emerging adults who grow up in low SES families are less likely to perform well academically in school (e.g., have a high GPA, graduate) than their middle and high SES peers. Research on achievement gaps have primarily focused on income, race/ethnicity, and gender as factors that contribute to gaps in academic performance. As stated by Casillas et al. (2011), studies have indicated that college students from certain marginalized subgroups, such as students from low-income families or Black or Latino students, are less likely to perform well academically than their more privileged peers even when they enter college with the same level of high school academic achievement (Carpenter et al., 2006; Bailey & Dynarski, 2011; Robinson & Lubienski, 2011).

According to the Report on the APA Task Force on Socioeconomic Status (2007), SES is usually defined and measured using one or a combination of the following factors: education, income, or occupational status. SES's "fundamental conceptualization involves access to resources," as noted by the APA Task Force (p. 5). The definition of poverty, as compared to SES, is slightly more clearly defined in the literature. In the United States, poverty guidelines are issued annually by the Department of Health and Human Services. These guidelines change from year to year, and vary based on family or household size. According to the Department of Health and Human Services, in 2018 a family of four was determined to be living below the poverty line if their total household income was $25,100 or less.

The discrepancy between the academic performance of low SES versus middle and high SES students appears to be present in higher education as well as elementary school, middle school, and high school (Reardon, 2013). A longitudinal study by Bailey and Dynarski (2011) found a four percent increase in college completion for low-income students born around 1980 compared to students born in the early 1960s. Interestingly, the authors found an 18% increase in college completion for their peers from high-income families, indicating a stark difference in an increase in college completion between students from high-income families versus college students from low-income families. There is also evidence of a substantial difference between low SES and mid or high SES college students' grades, even when controlling for students' high school academic achievement and ACT scores. The ACT Research Report Series (Lorah & Ndum, 2013) is one of several studies that provides evidence for the existence of this phenomenon occurring in the context of higher education. In this study, researchers

analyzed trends in the gap between low SES and middle/high SES students' first-year

college course grades in English Composition I, College Algebra, social science courses,

and Biology over the span of 11 years. The study included data on over 330,000 first-year

college students' course grades from 1998 to 2009. These students were enrolled in 101

colleges, 89% of which were public institutions and 11% of which were private

institutions. Sixty eight percent of the sample attended a 4-year institution, and the other

32% attended a 2-year institution. Students self-reported their family income when they

registered for the ACT, and this information was used to group students into two income

levels: less than or equal to $30,000 or more than $30,000. Students were identified as

"successful" in a course if they obtained either a B or higher grade or C or higher grade in

the courses (based on the difficulty of the course). The researchers found that after

controlling for ACT scores and high school GPA, low-income students were still less

likely to succeed in all four courses than their higher income peers. The gaps in course

success between low- and higher-income students increased over time for English

Composition I and social science courses. It is important to note that these increasing

gaps over time may be due to economic inflation and the fact that there is an ever-

growing gap between the income levels of people with low SES and high SES, which

leads to bigger discrepancies between each group's level of access to resources.

However, if this increase in the gap between each SES group's course success was due

solely to economic inflation, we would expect to see increasing gaps in success for all

four courses and not just English Composition I and social science courses. This may

indicate that difference in social class and access to resources may have more of an

impact on students' language and communication styles, as opposed to skills in math or science that are necessary for success in College Algebra and Biology courses.

Given the evidence for the gap in academic achievement between low-income and high-income students, a next logical step in helping ameliorate this problem is to explore factors that may contribute to this gap. Many practical factors impact low-income students' ability to succeed in college (e.g., having to work part-time or full-time jobs to afford college, the added stress of having to take care of siblings/parents/grandparents financially, etc.). Importantly, psychosocial factors relating to growing up in poverty, such as increased risk of mental health problems, may also play a role in these students' academic success or failure. Before discussing the psychosocial factors involved in low-income students' academic success in college, we must first consider how growing up in a low SES environment impacts psychological development and the potential development of psychopathology.

Risk Factors for Mental Health Problems in Low-Income Populations

Growing up in a low-income family may in some cases contribute to psychological distress that can negatively impact individuals' academic performance as an emerging adult. According to US Census data in 2011, 25% of American children spend all or part of their childhood growing up in poverty. Living in poverty "implies suffering a scarcity of economic resources and exposure to an additional burden of difficulties such as social exclusion, poor housing, neighborhoods with higher crime rates, and low occupational status" (Van de Gucht, et al., 2015, p. 1042). Research indicates that the combination of these stressors takes a toll on the mental health of individuals living in poverty, and sometimes results in the development of symptoms of

psychological distress and/or psychopathology. In a meta-analysis of 55 studies that reported at least one marker of SES and mental health outcomes for children and adolescents aged four to 18 years old, Reiss (2013) found that low SES youth were two to three times more likely to develop mental health problems than their peers. Reiss (2013) also found that the amount of time that children or adolescents' SES remains low is positively associated with rates of mental health problems.

Poverty also appears to be related to mental health outcomes present in adolescence, emerging adulthood, and adulthood. A study by Aschan et al., (2013) using a sample of individuals aged 16 and older found that socioeconomic status is negatively associated with number of suicide attempts. A meta-analysis of 51 depression prevalence studies found that people with low SES had significantly higher odds of being depressed, suggesting socioeconomic inequality in the pervasiveness of depression (Lorant et al., 2003). Poverty-related stress is significantly related to symptoms of anxiety and depression as well as social problems (Santiago et al., 2011). In youth, low SES is associated with higher levels of aggression (Molnar et al., 2008), hostility, perceived threat, and discrimination (Chen & Paterson, 2006). Among adolescent samples, low SES is also associated with emotional and behavioral difficulties, including social problems, delinquent behavior symptoms, and attention deficit/hyperactivity disorder (DeCarlo Santiago et al., 2011; Russell et al., 2016; Spencer et al., 2002).

While there are many risk factors that contribute to poverty-related stress, the links between low SES and negative mental health outcomes are not entirely clear. One factor that may contribute is stress in response to lack of resources. Economically disadvantaged adults face a continuous struggle to meet their own basic needs (e.g., food,

adequate housing, clothing) and, in many cases, the needs of their families. This environment of constant uncertainty of whether or not the individual will be able to meet their own needs or the needs of their family may lead to stress and worry about the future, potentially contributing to poor mental health outcomes.

Low SES is also related to illicit drug use and binge drinking in adolescents (Newacheck et al., 2003). Reliance on unhealthy coping mechanisms may contribute to the development of mental health problems. A higher incidence of traumatic experiences may also predispose economically disadvantaged individuals to poor mental health. Low SES is a significant predictor of abuse and neglect, with families who are exposed to substance use exhibiting the highest rates (Ondersma, 2002). People living in poverty are also more likely to be victims of violence, with low SES individuals who are also a racial or ethnic minority at greatest risk of victimization (Pearlman et al., 2004).

Given the evidence for the relationship between SES and symptoms of psychological distress, it is important to further dissect what aspects of living in poverty contribute to poor mental health outcomes. Duration of time children spend in poverty and development of learned helplessness may all contribute to symptoms of poor mental health in emerging adulthood. Evans and Cassels (2014) examined the relationship between these factors and externalizing and internalizing symptoms in a longitudinal study. The study followed a total of 196 participants, half of whom were children from low-income households and half of whom were children from families with income-to-needs ratios two to four times the poverty line beginning at a mean age of nine years and ending at a mean age of 17 years. Evans and Cassells (2014) found that time spent in poverty from birth to age nine predicted externalizing symptoms and learned helplessness

in emerging adulthood regardless of current financial situation. Mediation analyses also revealed that the relations between duration of time spent in poverty up to age nine and externalizing symptoms and learned helplessness were partially mediated by psychosocial (violence, family turmoil, child separation from family) and physical (noise crowding, substandard housing) risk factors experienced during adolescence. These findings suggest that these psychosocial and physical risk factors may be mechanisms through which childhood poverty impacts externalizing symptoms and learned helplessness in emerging adulthood. Without these mediating factors, the relation between time spent in poverty during childhood and externalizing symptoms and learned helplessness may not be as strong.

College is fraught with potential stressors regardless of a student's background, and adding stressors related to low SES status on top of the "college experience" leaves these students more vulnerable to developing psychological disorders. This vulnerability to psychological distress may negatively interfere with low SES students' academic achievement in college, and thus is important to consider when further examining the IAG. When developing interventions for improving low SES students' college graduation rates and academic performance, researchers should take into consideration the relationship between exposure to risk factors of poor mental health, potential psychological distress, and academic achievement in low-income college students.

Psychological and Sociological Factors that Contribute to the IAG

Researchers have proposed psychological factors that may contribute to the IAG in college students, many of which are related to either the impact of poverty on psychological development or to low-income students' struggle to navigate the existing

social class structures within the academic environment of higher education. In a paper by Jury et al. (2017), the authors reviewed the literature published within the last 20 years on psychological, social, and cultural factors that may contribute to the IAG in higher education. The authors then reviewed three different types of interventions (self-affirmation, difference-education, and goal reframing) that have been implemented with low SES college students that are aimed at helping reduce social class achievement gaps in higher education. Overall the findings suggest that low SES college students are more likely than high SES college students to struggle academically due to: "(1) emotional experiences (e.g., emotional distress, well-being); (2) identity management (e.g., sense of belonging); (3) self-perception (e.g., self-efficacy, perceived threat); and (4) motivation (e.g., achievement goals, fear of failure)." Jury et al. (2017) asserted that low SES college students might experience these psychological barriers as a consequence of higher education/academia having a culture that was created by high SES individuals and therefore puts low SES students at a disadvantage. Specifically, "According to sociologist Pierre Bourdieu and his colleagues, the university system sustains the reproduction of social inequalities by promoting attitudes, speech, behaviors, and knowledge that are more congruent with the practices of high SES families than of low SES families" (cited by Jury et al. 2017, p. 29; Bourdieu et al., 1990). For example, as stated by Jury et al. (2017), "universities tend to promote cultural norms of independence (e.g., "pave your own path") rather than interdependence (e.g., "be part of a community")" (p. 33). This preference towards independent values may be reflective of the fact that individuals in positions of power in higher education are predominately White, and White Americans are typically more individualistic (Barker & Carman, 2000; Hayward & Kemmelmeier,

2007) whereas Americans who are people of color tend to be more collectivistic (Coon & Kemmelmeier, 2001). Students from middle or high SES families tend to come from cultural backgrounds with norms that match or are similar to those present in higher education and therefore do not experience these psychological barriers, thus creating (or at the very least contributing) to the income academic achievement gap.

One theory that is sometimes referenced when discussing possible causes for the IAG is Bourdieu's hypothesis that existing social class structures are maintained within higher education through low-income students having different conceptualizations of cultural capital and habitus than high-income students, and the existing high SES cultural norms within university settings (Bourdieu, 1977, 1990, 1994). According to Walpole (2003) "cultural capital refers to specialized or insider knowledge which is not taught in schools, such as knowledge of high culture, and the education credentials" (p. 49). As conveyed by Walpole (2003), "social capital is comprised of contacts and memberships in networks which can be used for personal and professional gain (Horvat, 2000)." Habitus describes people's perceptions of what opportunities exist for them and ideas about appropriate responses when it comes to seizing these opportunities, both of which are heavily influenced by an individual's cultural background (Walpole, 2003).

According to the Bourdieuian framework, low-income students who enter higher education can become successful in elevating their social class status by changing their habitus to model that of high-income students. This change in habitus so that it is in alignment with that of the social/cultural norms of high SES people will then allow low-income students to gain more social and cultural capital that is necessary for elevating one's class status. Based on their habitus, a high SES college student may believe that 1)

they are able to attain financial success in a variety of fields, and should not settle for a job after college that pays them less than what they believe that they are worth based on what they consider "normal" within their most likely high SES family and friends, and 2) in order for them to be "successful" and get a high-paying job after college, they must network with individuals who are already well-established in the field that they hope to enter. This high SES student, based on their habitus, may then have a higher chance of obtaining the social and cultural capital necessary for maintaining their position within the upper middle class, because their habitus is consistent with the social and cultural norms that exist within this social class.

Walpole (2003) examined this theory in a longitudinal study following 12,376 students who first entered college in 1985. Students reported their participation in college activities relating to their habitus and social, cultural, economic, or academic capital, including "contact with faculty; time spent working, studying, volunteering, or in student groups and intercollegiate athletics; and college GPA" as well as their families' income, final level of educational attainment (e.g., bachelor's degree, master's degree, doctoral degree, etc.) and educational aspirations (Walpole, 2003). The data were collected when the participants entered college, and then at four years and nine years after baseline data collection. The participants attended 209 four-year college institutions across the United States. Participants' SES was determined using parental income, parental educational attainment, and parental occupational prestige. These factors were combined by researchers to create an SES variable with a "normal distribution and frequency," although the author did not go into detail about how this variable was calculated and if certain markers of SES had more weight than others within this variable. Walpole (2003)

then utilized the lowest ($n = 2{,}417$) and highest ($n = 2{,}475$) quintiles of SES when analyzing the data. Data analysis revealed that low SES students "have lower incomes, lower levels of educational attainment, and lower levels of educational aspirations than their peers from higher social strata nine years after college entry" (Walpole, 2003, p. 63). Low SES students were more likely to attend graduate school if they reported that they worked on a professor's research project, talked to faculty outside of class, or participated in athletics.

Within the aforementioned longitudinal study, Walpole (2003) presents graduate school attendance as a marker of attainment of academic or economic capital that is indicative of upper-middle class or high SES status. He describes choosing graduate school attendance as a dependent variable because "in a Bourdieuian framework, capital accumulated in educational settings is converted to maximize social and economic profits, and attending graduate school would be both a conversion of previously accumulated capital and a reinvestment to continue capital accumulation" (Walpole, 2003, p. 53). However, graduate school attendance may be more or less indicative of an investment to accumulate economic capital based on what type of degree the student is pursuing. For example, pursing a graduate degree in pharmacy may give students an opportunity to make more money and belong to a higher social class as compared to students pursing a graduate degree in art history. Unfortunately, Walpole (2003) did not analyze the data in a way that indicated graduate students' degree that they were pursuing (e.g., masters, doctoral) or area of study. Including this information in the study would have given more insight into the relation between SES, efforts to accumulate social,

cultural, economic, or academic capital during college, and continued investment in accumulating capital post college graduation.

Ultimately, this study raises questions about the relationship between college students' SES, their habitus, and their economic success and position in the social class hierarchy following college. Given low SES and high SES students' differences in habitus, and the fact that habitus that is consistent with high SES is more advantageous within higher educational settings, it is not surprising that there is evidence of an IAG both in undergraduate academics and in the percentage of students who attempt to obtain a graduate degree. Deeply ingrained aspects of social class differences, and the potential for low SES students to feel disadvantaged because of these differences, likely also contributes to the "psychological barriers" to academic performance in college (i.e., emotional experiences, identity management, self-perception, and motivation) as outlined by Jury et al. (2017). Differences in habitus between low SES and high SES students, combined with resulting psychological barriers due to being forced to navigate a culturally different environment, create a complex web of obstacles for low SES college students to overcome. More thorough investigation of these factors and how they intersect with one another could help determine what factors should be targeted when creating interventions to help low SES college students perform well academically.

Interventions for Increasing Academic Performance in Low-Income College Students

Despite the evidence for the IAG in college students, to date there are only a few published intervention studies for improving college retention and academic performance in low-income students. As outlined in Jury et al. (2017), three different types of

interventions targeted towards raising academic performance in low SES college students have been successful, including difference-education interventions, values affirmation interventions (self-affirmation intervention, Jury et al., [2017]) and goal reframing interventions.

Difference Education Intervention

Stephens et al. (2014) examined the effects of a difference-education intervention on academic performance and tendency to seek college resources in first-generation (FG) and continuing-generation (CG) freshman college students. In total, 59.10% of the FG students received Pell grants and were thus considered low-income, whereas only 8.64% of CG students were considered low-income. Students attended discussion panels ($N =$ 168; 86 women, 82 men) and then completed an end-of-year survey to assess outcomes. Twenty-one participants did not complete the survey and were thus excluded from the sample. The sample was racially and ethnically diverse (45.5% of FG students identified as White, and 51.85% of CG students identified as White) and diversity did not differ significantly according to generation status. Participants were randomly assigned to a difference-education intervention ($n = 75$; intervention group) or a "standard panel" intervention ($n = 72$; control group). Both the difference-education intervention and the "standard panel" intervention met one time for one hour one month prior to the start of the academic year. During both conditions, junior and senior college students from diverse social class backgrounds served as a panel where they each answered questions about their college experience and what helped them succeed in college. The difference between the two conditions was that the panelists in the intervention condition spoke about their social class background (e.g., being a FG college student or being a CG

college student) and how this impacted their college experience, as well as how their background informed how they learned to successfully navigate college life. At the end of the academic year, 66 FG students and 81 continuing education students completed the study's final survey. The researchers found that after controlling for race and ethnicity, gender, income, highest (per student) SAT scores, and high school GPA, there was a significant gap of .30 GPA points between FG and CG students in the control group, but there was not a significant difference between FG and CG GPAs in the intervention group. The researchers reported that the achievement gap in the intervention group was 63% smaller than in the control group. FG students in the intervention group sought out college resources more often than FG students in the control group, although the difference was not statistically significant. Finally, the tendency to seek out college resources significantly mediated the relationship between Generation Status X Intervention Condition interaction and cumulative GPA.

Values Affirmation Interventions

Values affirmation interventions encourage individuals to identify and affirm their own core values. During this type of intervention, individuals are asked to participate in writing assignments in which they identify their core values and then elaborate upon why these values are important to them. Researchers postulate that when students are able to identify and reflect on their core values, threats to their identity become less salient, thus making cognitive resources more available which in turn makes it easier for students to attend to academic tasks (Cohen & Sherman, 2014). In a longitudinal study by Tibbetts et al. (2016), researchers implemented a values affirmation intervention in FG and CG college students and then analyzed how intervention group versus control group

assignment, as well as generation status and interdependent versus independent word usage, related to college GPA three years later. Students were randomly assigned to either a values affirmation intervention or a control condition. In the values affirmation intervention, students were asked to circle two or three of their most important values out of a list of values (e.g., belonging to a social group, career, independence, learning and gaining knowledge, etc.) and then write about why they held those values. In the control condition, students were asked to choose two or three values from the same list that are the least important to them and then write about why they might be important to someone else. Writing exercises were administered twice for both conditions and then coded for independent and interdependent themes using the Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2001). Students participating in the study ($N = 798$; 644 CG students, 154 FG students) were predominately White (61 students identified as non-white) and female (478 women, 320 men). Follow-up GPAs were collected three years post intervention and included 638 CG students ($n = 315$ in control condition; $n = 323$ in values affirmation condition) and 150 FG students ($n = 74$ in control condition; $n = 76$ in values affirmation condition).

Tibbetts et al. (2016) found that FG college students wrote more about interdependence than CG students, but that there was not a significant difference between FG and CG students' writing about independent themes. Female students wrote significantly more often about interdependence than males. The researchers reported that three years after the intervention FG students in the values affirmation condition had significantly higher post-intervention grades ($M = 3.16$, $SD = 0.58$) than FG students in the control condition ($M = 2.98$, $SD = 0.70$). Students who participated in the value

affirmation intervention wrote significantly more about independent themes during the intervention than students in the control group. Using an indirect effects analysis for moderated mediation, Tibbetts et al. (2016) found that writing about independent themes mediated the relationship between intervention/control group membership and end of semester course grade (in the biology class where the intervention took place) for FG students but not for CG college students. Tibbetts et al. (2016) reported that students who wrote more about independent themes had higher end of semester grades in the biology course.

Two aspects of this study should be more closely critiqued: the authors use of FG or CG status as a proxy for SES, and the conclusions the author drew about students who write more about independent values during the values affirmation exercise. First, as stated by Tibbetts et al. (2016), several studies have found a strong relationship between parental education and social class (Jackman & Jackman, 1983; Pascarella & Terezini, 1991; Snibble & Markus, 2005; Stephens et al., 2012). However, FG status does not necessarily indicate that a student is from a low-income family, nor does CG status indicate that a student is from a middle or high-income family. The usage of family income or parent occupational status to determine participants' social class would have given more insight into relationship on the use of values affirmation interventions in hopes of bridging the IAG. Second, Tibbetts et al. (2016) hypothesized that students who write more about their independent values during the values affirmation task may have cultural values that are more closely aligned to high SES culture of academic environments and are therefore less vulnerable to distress due to "cultural mismatch" within this environment. However, it is possible that CG college students may perform

better than FG students academically because they have an idea of what sort of values are most prized by administrators in the context of college and not because they actually hold more independent values. This knowledge of how to "work the system" to one's advantage by performing actions relating to values that are culturally normative may be passed down to CG students via their parents.

Goal Reframing Intervention

In a study by Smeding and colleagues (2013), researchers tested the impact of goal reframing on academic performance in low and high SES students from a large French university. Smeding and associates (2013) proposed that mastery-oriented assessment practices (i.e., education to improve students' skills and knowledge) are more likely to reduce stereotype threat for low SES students than selection-oriented assessment practices (i.e., education aimed at increasing exam performance and academic achievement). Researchers coded student SES utilizing parents' occupational status using data from the Institut National de la Statistique et des Etudes Economiques (the French equivalent of the American Census Bureau). For example, students with parents whose occupational status was listed as "labor worker" or "unemployed" were coded as low SES, whereas students with parents whose status was listed as "teacher" or "manager" were coded as high SES. The fact that SES was determined without any other information, such as family income, should be kept in mind.

Through a series of three studies, Smeding et al. (2013) explored the impact of mastery versus selection assessment orientation on exam performance in low and high SES students. The first study compared students' exam grades ($N = 246$; 88% women) from a test with mastery-oriented instructions and learning goals during instruction to

exam grades from a traditional test. Students in the mastery-oriented condition were told that the assessment "had been designed to improve the quality of learning, help them in the learning process through regular work, and increase and consolidate their knowledge" and were given a list of mastery-oriented goals at the end of each class on which they were given a short assessment in the following class (Smeding et al., 2013, p. 2). Grades from the mastery-oriented assessment were significantly higher than grades from the traditional assessment. During the second study, course instructors asked students ($N =$ 233; 88% women) to set mastery-oriented goals for themselves and then answered questionnaire items that indicated their level of mastery-oriented thinking (for example, "I want to learn as much as possible from this class"). Smeding and colleagues (2013) found that mastery-oriented thinking positively predicted students' final exam grades. It is important to note that this mastery-oriented questionnaire had not been assessed for its reliability or validity. Finally, in the third study students ($N = 97$; 86% women) were randomly assigned to two groups: a mastery-oriented group in which exams were presented as an opportunity to help students' training and learning, or a selection-oriented group in which exams were presented as a way to select the most competitive students. High SES students in the selection-oriented group had significantly higher exam scores than low SES students. While this achievement gap between low SES and high SES students was reduced in the mastery-oriented group, the difference between low SES and high SES students' exam scores was not significant. Exam scores for low SES students were significantly higher in the mastery-oriented group than in the selection-oriented group.

While the findings reported by Smeding and colleagues (2013) are encouraging in their support of goal reframing interventions for closing the gap between low SES and high SES college students' academic performance, important demographic information is missing from their study. The authors did not report on the race or ethnicity of the students in their sample. Smeding et al. (2013) also used parent occupational status as a measure of SES and this method of quantifying SES may not capture the amount of resources available to participants throughout their lifetimes.

Identity and Interventions for Bridging the IAG in College Students

As illustrated in the studies outlined above, many empirically supported IAG intervention studies for college students target mechanisms relating to low SES students' identity and/or the mismatch between facets of these students' identity/values and the high SES values that are emphasized in higher education. During difference education interventions junior or senior college student peers from low-income families are assembled in a panel on which members speak about how coming from a low SES background has impacted their college career, as well as how their background has served as a strength in specific instances throughout college. Stephens and colleagues (2014) hypothesized that difference education interventions are effective at increasing academic performance in FG students because they, "provide FG students with a framework to understand how difference matters, thereby equipping them with the psychological resources they need to effectively transition to college and improve their academic performance" (p. 944). While it is possible that difference education interventions are helpful because they offer practical tips for students to help them navigate college, they may also be helpful because they acknowledge the cultural difference between FG and

CG students and encourage first year FG students to think more deeply about their own identity. Difference education interventions may also positively impact FG students' academic achievement because they illuminate the fact that FG students have shared experiences of tension or distress due to a mismatch in their own cultural norms and the cultural norms of higher education. Acknowledgment and validation of a shared cultural background, and the struggles associated with coming from that background and entering a challenging new environment with different cultural norms, likely contributes to the positive impact of difference education interventions.

Similar to difference education interventions, values affirmation interventions also encourage students to reflect on their identity and personal beliefs. While difference education interventions may stimulate introspection about identity by allowing first year first generation/low-income students to listen to a panel talk about their experiences making their way through college as people with marginalized identities, values affirmation interventions do so by asking students to reflect through writing on their personal values and why they are meaningful to them. Goal reframing interventions are unique in that rather than encouraging individuals to reflect upon their values or identity in relation to their context (i.e., college) in hopes that this will decrease their level of distress around navigating the environment and increase cognitive resources allowing them to perform better academically, they change the environment to be less independent values-focused.

Ultimately, the existing literature suggests that interventions for strengthening students' relationship to their values and identity and/or changing the academic environment so that it expresses less independent value-focused expectations towards

students, may be helpful for bridging the IAG in college students. More research is necessary in order to determine what protective factors relating to identity may be underlying mechanisms of change in these interventions. One potential protective factor that may guard against poor academic performance in low-income college students that is unreflective of their true efforts or abilities is self-concept clarity (SCC).

Researchers must also consider how current interventions for closing the IAG may possibly perpetuate stigma surrounding low SES students' ability to perform well in college. The current literature features interventions that target low SES and FG students, which may unintentionally highlight the existence of the IAG and further stigmatize the individuals that these interventions are aiming to help. Though the current literature is in its infancy, mindfulness-based interventions may be an effective alternative to existing intervention approaches for closing the IAG in college. Mindfulness-based interventions are easily universally targeted towards college students of all SES backgrounds because unlike the interventions mentioned above, they do not focus on cultural differences or values differences between low and high SES students. Mindfulness (i.e., nonjudgmental present moment awareness) may help students become more aware and accepting of their own identity and sense of self and this in turn may positively impact academic outcomes. Increased mindful awareness may also help low SES students become more aware and nonjudgmental of themselves if/when their identity and values are not congruent with the high SES culture of academia described within the Bordieuian framework. An exploration of the roles of mindfulness and SCC in low-income college students' academic performance may help determine the focus of future interventions aimed to bridge the IAG.

Self-concept Clarity Defined

Campbell et al. (1996) define SCC as "the extent to which the content of an individual's self-concept is clearly and confidently defined, internally consistent, and temporally stable" (p. 141). In other words, SCC reflects the clarity and consistency of a person's understanding of themselves. SCC does not necessarily reflect the accuracy about a person's beliefs about themselves, but rather the certainty and stability of these beliefs (Wicklund & Eckert, 1992). Campbell's SCC Scale (SCCS; Campbell et al., 1996), the most commonly used questionnaire for measuring SCC, includes items such as "My beliefs about myself often conflict with one another," "I spend a lot of time wondering about what kind of person I really am," and "It is often hard for me to make up my mind about things because I don't really know what I want." The SCCS has demonstrated high internal consistency and test-retest reliability (Campbell et al., 1996). SCC is positively associated with self-esteem, agreeableness, internal state awareness, and negatively associated with neuroticism, chronic self-analysis, and a ruminative form of self-focused attention (Campbell et al., 1996).

While the SCCS appears to be a reliable measure, the items on the questionnaire do not give insight into anything about an individual's self-concept other than whether it is clear and consistent. The measure reflects whether an individual has a blurry, unstable, or unsure sense of who they are, but does not give any information as to whether this instability is distressing to the individual which arguably is the crux of why low SCC relates to symptoms of psychopathology. In the event that an individual has low SCC, the SCCS does not indicate whether this is due to conflicting beliefs about identity, or a lack of sense of identity. Likewise, if an individual has high SCC, the SCCS does not detect

whether the individual has a stable and consistent positive self-concept, or a stable and consistent negative self-concept.

Although understudied, SCC is a psychological factor that appears to be positively related to academic performance in college students (Gadbois & Sturgeon, 2011; Thomas & Gadbois, 2007). SCC may be a particularly relevant resilience factor for low-income students because of the new culture into which they are entering. As previously mentioned, the Bourdieuian framework asserts that academia is a culture that was created for high SES people by high SES people. First time college students from low-income backgrounds are not only going to college for the first time, but they are also being required to learn how to navigate a totally different set of cultural rules and expectations than those that are characterized in a low SES setting. Students who have a clearer and more consistent idea of who they are may be better able to withstand the acculturation process that low SES students go through, as well as the classism that low SES students may face when attending college, while still remaining confident about who they are as a person. Likewise, students with low SCC may spend valuable time and energy trying to re-conceptualize their identity as they are indoctrinated into a new culture and thus have fewer mental resources to allocate towards academic achievement.

There is also evidence that SCC mediates the relation between certain stressful life events and subjective well-being (Ritchie et al., 2011). Ritchie and colleagues (2011) examined three mediation models in three separate participant samples in which SCC mediated the relationship between what the authors conceptualized as stress-related variables (stressful life events, meaninglessness, and self-discontinuity) and subjective well-being. Neuroticism was controlled for in all three of the models. The first study

recruited 292 participants via the Internet from the UK (49.7%), the US (45.2%), and Canada (2.4%). SCC fully mediated the relationship between stressful life events and subjective well-being. The second study was conducted with 127 undergraduate participants from the US. Within this sample, SCC partially mediated the relation between meaninglessness (i.e., "the degree to which individuals perceive life as meaningless") and subjective well-being. The third study was conducted in an undergraduate sample ($N = 77$) from a university in the UK. During the final study the authors found that SCC partially mediated the relationship between self-discontinuity ("the extent to which individuals perceive their present self as similar to or different from their past self" (p. 502) and subjective well-being. In all three of the studies the stress-related variable was negatively related to SCC, and subjective well-being and SCC were positively related to subjective well-being. The authors also tested three mediation models in which the three stress-related variables mediated the relation between SCC and subjective well-being, with all three models not being significant. These analyses suggest that stressful life events, meaninglessness, and self-discontinuity may lead to an unclear sense of self, which may in turn lead to diminished subjective well-being. Given the apparent role SCC plays in the relation between these factors, particularly stressful life events and well-being, SCC may play an important protective role in the relationship between stressful obstacles that low-income college students may face and their psychological well-being.

Self-concept Clarity Across Age and SES

An important consideration when contemplating the role of SCC as a potential protective factor for academic performance in low-income college students is how the

construct functions across different stages of development, specifically emerging adulthood. Likewise, an understanding of the relationship between SCC and SES is necessary for conceptualizing what role it might play in low-income college students' academic success. SCC appears to have a curvilinear relationship with age such that SCC increases from young adulthood to midlife, but then begins to decrease after middle age. Na and colleagues (2018) examined the relationship between SCC, age, and SES, as well as subjective well-being and related variables in an economically diverse group of adults. The participant group consisted of 375 adults ages 20 to 89 (mean age = 58.63, *SD* = 17.23) from the Dallas-Fort Worth area. Participants were excluded for the following reasons: "body mass index (BMI) > 35, loss of consciousness greater than ten minutes, radiation/chemotherapy within the last five years, various diseases (e.g., epilepsy, multiple sclerosis, Parkinson's, or major psychiatric disorders), excessive alcohol or caffeine consumption, blood pressure > 160/90, and unprescribed/illegal drug use" (p. 953), and scoring less than 25 on the Mini Mental State Examination (MMSE; Folstein et al., 1975). As the participants were considerably mentally and physically healthy, they may not represent the general population. Social class index was calculated based on years of formal education and occupational prestige. Within this sample, SCC was positively correlated with social class, age, age squared, education years, occupation, life satisfaction, and mental health. The positive association between social class and SCC was still significant even after controlling for demographic variables. SCC was more strongly associated with life satisfaction and mental health for upper middle-class participants than for working-class participants. The authors noted that these findings

clearly show that "one's self-related processes are substantially influenced by socio-cultural contexts" (p. 957).

Self-concept Clarity and Academic Performance

SCC appears to influence factors relating to academic performance in undergraduate college students. Thomas & Gadbois (2007) examined the relationship between SCC, self-esteem, academic self-handicapping, academic performance, and other learning-related variables in 161 undergraduate students in three psychology courses. The authors described academic self-handicapping as thoughts or behaviors that give students an excuse that does not directly blame them that explains why they performed poorly academically (e.g., procrastinating on a project, blaming failure to study on uncontrollable external circumstances). Academically self-handicapping has previously been associated with low academic performance (e.g., Midgley et al., 1996, Urdan, 2004, etc.). The sample was predominately white (92.5%) and female (801%). Participants completed self-report measures prior to their midterm exam, with the exception of one measure (a post-mid-term questionnaire that required students to make attributions about their performance on the midterm) which was completed after the exam. The authors found that SCC was negatively related to academic self-handicapping, and greater self-handicapping was related to lower mid-term exam performance. SCC was also positively correlated with self-esteem and negatively correlated with test anxiety. Interestingly, mid-term performance was negatively associated with lower SCC. The authors reported that the midterm grades in this sample were "higher than typical exam grades" and there was a "lower than typical failure rate," and that the lack of variability in exam scores may have contributed to the unexpected negative correlation

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between SCC and exam scores. The authors mentioned that "future research examining students with a broader range of abilities might reveal a different pattern or relationships, particularly with reference to SCC" (p. 113).

The History of Mindfulness and the "Self"

Traditional Buddhist philosophy asserts that the purpose of mindfulness is to guide the individual to realizing and accepting impermanence, insubstantiality, and suffering (Hanh, 1999). Essentially, the Buddhist context from which mindfulness was taken teaches that there is no "self," and that all beings are intrinsically connected. Buddhist doctrine maintains that all beings are part of *samsara*: "an endless cycle of birth, aging, sickness, and death" in which there is no true boundary between one living thing and another. As illustrated in this passage by Pema Chodron in *No Time to Lose, A Timely Guide to the Way of the Bodhisattva*, Buddhist philosophers assert that suffering is intrinsically tied to clinging to the "self," as perceiving separation between one living being and another is an illusion in and of itself that serves to protect the ego (Chodron, 2007, p. 322): "All the harm with which this world is rife, All fear and suffering that there is, Clinging to the "I" have caused it!"

Given the context from which mindfulness comes from, one may speculate that individuals who are mindful have a less clear sense of self due to the fact that mindfulness is intended to lead the individual to the realization that the self is insubstantial and impermanent. However, as discussed below, extant research reports the opposite to be true.

Mindfulness Defined

Another psychosocial trait that may help protect low-income students from performing poorly academically is trait mindfulness. Kabat-Zinn (1990), in his book *Full-Catastrophe Living*, further breaks down the foundation of mindfulness practice into seven components: non-judging, patience, beginner's mind, trust, non-striving, acceptance, and letting go. Mindfulness practice is when an individual focuses on the present without judgment (Kabat-Zinn, 1994) (e.g., mindfulness meditation, yoga, etc.), whereas trait mindfulness, otherwise known as dispositional mindfulness, indicates how much an individual incorporates these ways of being into their everyday life (Brown & Ryan, 2003). Researchers often define trait mindfulness using the following qualities: 1) the tendency to observe internal and external experiences, 2) describe and differentiate emotional experiences, 3) act with awareness, 4) be nonreactive to distressing thoughts and feelings, and 5) take a nonevaluative stance towards one's inner experience (Baer et al., 2006). Trait mindfulness is positively associated with positive mental health outcomes such as life satisfaction, self-esteem, and optimism (Brown & Ryan, 2003). Studies examining trait mindfulness have also revealed significant negative associations between the construct and symptoms of depression, anxiety, and stress-related symptoms (Kang & Whittingham, 2010), neuroticism (Giluk, 2009), difficulties in emotion regulation (Baer et al., 2006; Coffey et al., 2010), cognitive reactivity (Raes et al., 2009), and experiential avoidance (Baer et al., 2004). There is also evidence that trait mindfulness is negatively related to stress reactivity, as demonstrated by Bullis et al. (2014). Bullis and colleagues (2014) observed the relationship between trait mindfulness and stress reactivity and distress in individuals who engaged in a task requiring them to suppress their stress response while they inhaled 15% CO_2-enriched air for 90 seconds.

The researchers found that factors associated with trait mindfulness, such as the ability to provide descriptions of observed experiences and skillfulness at restricting attention to the present moment, predicted less stress reactivity and distress during the task (Bullis et al., 2014).

Research suggests that individuals who engage in mindfulness-based practice have higher trait mindfulness scores than individuals who do not have a mindfulness practice. In a study by Brisbon and Lowery (2011) advanced practitioners of yoga with more than five years of yoga experience were found to have significantly higher trait mindfulness scores than beginner practitioners of yoga with under five years of yoga experience. A meta-analysis of 39 mindfulness-based intervention studies, 13 of which were mindfulness meditation studies, found that trait mindfulness significantly increased from pre- to post-mindfulness meditation intervention, although the effect size of this relationship was modest ($r = 0.37$, $d = 0.73$; Eberth & Sedlmeier, 2012). While the extant research suggests that people who engage in a mindfulness practice are more likely to score high on a measure of trait mindfulness, it should be noted that it is possible for individuals who do not participate in a formal mindfulness practice to score high in trait mindfulness.

A common criticism of self-report questionnaires used to measure trait mindfulness is that an individual must have self-awareness, an aspect of the construct itself, in order to accurately identify and report how mindful they are. This makes trait mindfulness a difficult construct to measure. Another factor that complicates the measurement of this construct is that as an individual begins a mindfulness practice such as meditation or yoga, the individual may become more aware of the times where they

are unaware or judgmental of their own thoughts, physical sensations, or emotions. This could lead to people who practice mindfulness to rate certain aspects of their trait mindfulness (e.g., the tendency to observe internal and external experiences, acting with awareness, etc.) as lower than when they began practicing, because they have become more cognizant of the times where their attention is wandering away from the present moment or when they are taking a judgmental stance on their own experience.

The type of mindfulness practice and the cultural and/or spiritual significance of the practice may also have an impact on an individual's self-reported trait mindfulness. A study by Christopher et al. (2009) assessed the applicability of Western measures of trait mindfulness in Thai Theravada Buddhist monks as compared to college students from Thailand (a country with a predominately Buddhist culture) and America. The researchers found that the Thai Theravada Buddhist monks scored lower than the American college students on the Observing, Judgment, and Describing subscales of the Kentucky Inventory of Mindfulness Skills (KIMS). These findings may be due to the fact that Thai Theravada Buddhist monks practice a variety of styles of meditation (e.g., loving kindness, contemplating death) with the intention of accepting the transient nature of existence rather than to reduce stress or symptoms of depression or anxiety (Christopher et al., 2009). These findings suggest that both the intention of the mindfulness practice and the cultural background of the individual may impact scores on trait mindfulness questionnaires. These influential factors should be considered when interpreting mindfulness self-report data.

Trait Mindfulness and Self-concept Clarity

Research supports the significant, positive association between trait mindfulness and SCC (Dummel, 2018). This may be due to the fact that trait mindfulness is related to an awareness of thoughts, emotions, and physical sensations and encourages self-reflection and insight (Vago & David, 2012). Furthermore, Hanley and Garland (2017) report that SCC mediates the relationship between trait mindfulness and psychological well-being in a sample of emerging adults. These findings suggest that SCC is a mechanism through which trait mindfulness positively impacts psychological well-being in this particular age group.

Hanley and Garland (2017) examined two hypotheses using structural equation modeling: "a) dispositional mindfulness would be positively associated with SCC; and b) the association between dispositional mindfulness and psychological well-being would be statistically mediated by SCC" (p. 335). The participant sample consisted of 1,089 university students (75% female) who were recruited online. Participants filled out all surveys/questionnaires online. The authors found that dispositional mindfulness had a significant positive direct effect on SCC and psychological well-being and SCC had a significant direct relationship with psychological well-being. SCC significantly mediated the relationship between dispositional mindfulness and psychological well-being. In this model, 26% of the variance in psychological well-being and 25% of the variance in SCC was accounted for. In the second model, all mindfulness facets (observing, describing, acting with awareness, non-judging, and non-reacting) were significantly associated with SCC. Observing was the only mindfulness facet that was negatively related to SCC. SCC partially mediated the relationship between each mindfulness facet and psychological well-being and the model accounted for 39% of the variance in psychological well-being

and 40% in SCC. The authors posit that dispositional mindfulness may lead to greater awareness and acceptance of the narrative self and that this in turn may lead to greater psychological well-being.

Trait Mindfulness and SES

Examining trait mindfulness as a protective factor for academic achievement in low-income college students requires asking whether trait mindfulness accurately assesses low-income emerging adults' level of mindfulness. As highlighted in the Christopher et al. (2009) article, cultural norms and values likely have an impact on how individuals interpret and answer questions on mindfulness measures. While conceptually it does not make sense for groups of people to differ in terms of levels of mindful awareness because of cultural background, cultural factors could potentially obscure the measurement of this construct by influencing the way individuals interpret or feel comfortable answering questionnaire items.

Unfortunately, there is a dearth of literature on the psychometric properties of trait mindfulness measures in low-income adult populations. There is also a lack of economic diversity in the majority of the mindfulness-based intervention literature. Despite the breadth of physical and psychological disorders treated by mindfulness-based interventions, these studies lack diversity in terms of the socioeconomic status of participants. The current mindfulness-based intervention literature features data collected from participant samples made up primarily of healthy, highly educated, young and middle-aged working adults (Klatt et al., 2009; Lloyd et al., 2013), adolescents, and students (Raes et al., 2013; Regehr et al., 2013). In order for future research to explore whether trait mindfulness is protective against poor academic performance in low-income

college students, researchers must investigate whether socioeconomic cultural factors influence the measurement of trait mindfulness within this population.

Mindfulness-based Interventions and Academic Performance in College Students

While there is extensive literature on the impact of mindfulness-based interventions on psychosocial variables and many such interventions have been implemented in undergraduate samples, few studies have reported on the impact of mindfulness-based interventions on academic performance. There is, however, some evidence supporting the positive effects of mindfulness-based interventions such as Acceptance and Commitment Therapy (ACT)/ACT-based therapies and mindfulness meditation on academic performance in undergraduate participants. A study by Chase et al. (2013) examined the impact of an online academic goal setting program and an online academic values program based on ACT concepts on academic performance in undergraduate college students. The researchers did not report any measures of SES for the sample, so it is unclear from what income level or social class the students came. Chase and associates (2013) collected the students' cumulative GPA pre-intervention, (spring '09), post-intervention, and follow-up (fall '09) and found that students who participated in the academic values program significantly increased their GPA as compared to waitlist controls and students who did not respond to recruiting invitations. The researchers also reported that there was no significant change in GPA for the goal setting group. There is also promising evidence supporting the impact of ACT programs on graduate student academic performance. A study by Paliliunas et al. (2018) examined the effects of an ACT program tailored for graduate students and found that participants in the ACT group had significantly higher academic performance, psychological

flexibility, and ratings of the importance of education-related values compared to the control group.

Meditation interventions may also be beneficial for improving academic success in college students. While many meditation intervention studies have been implemented in undergraduate populations, there is very little research on these interventions' impact on academic performance likely due to the fact that these interventions are often aimed to reduce stress and psychological symptoms of distress (e.g., symptoms of depression, anxiety, fatigue, etc.) rather than to improve academic performance. However, mindfulness meditation's stress reducing and attention enhancing effects may have a positive influence on college students' academic performance. One of the first studies reporting on the impact of meditation on academic performance in college students by Hall (1999) examined the relationship between meditating for ten minutes before and after hour-long study sessions on cumulative college GPA in African American college students. A measure of SES was not reported when describing the sample. Hall (1999) reported that at the end of the semester the cumulative GPA for the meditation study group ($M = 2.93$) was significantly higher than the control group (study sessions without the meditation component) ($M = 2.48$). Cumulative GPA for the meditation group increased pre- to post-intervention (pre-intervention $M = 2.77$).

Trait Mindfulness and Academic Performance

Radel et al. (2009) conducted a study of academic performance following either a lecture in which "controlled motivation" words (e.g., obligation, forced, ought, etc.) or "autonomous motivation" words (e.g., interested, desire, free, etc.) were subliminally primed in the slide show. At the beginning of the semester students filled out

dispositional mindfulness questionnaires and at the end of the semester students

participated in the lecture with the experimental manipulation. After the 60-minute

lecture, students completed a quiz on the lecture material. The researchers found a

significant interaction between the priming conditions and mindfulness on quiz

performance (when controlling for students' final exam grade in the class). The priming

condition predicted quiz performance when mindfulness was low, but not when it was

high. Students with low mindfulness performed more poorly on the controlled motivation

condition than the autonomous motivation condition. These results suggest that more

mindful individuals may be less affected by controlled/autonomous messages when

learning. Students who have low mindfulness may be more sensitive to messages

influencing their motivational orientation and controlled motivational learning messages

(e.g., "You have to get a good grade," or "I am obligated to learn this material") may be

more detrimental to these students' grades than autonomous motivational learning

messages.

Mindfulness-Based Interventions for Low-Income Students and Academic

Performance

Very few studies have reported on the effects on academic performance of

mindfulness-based interventions among low-income college students. One such study by

Sandoz et al. (2017) describes the effects of an ACT intervention study on low-income

freshman college students whose first semester GPAs ranged from .26 to 2.25 (median

GPA was 1.84). The participants ($N = 14$) were part of a "selective academic support

program for in-state students with academic merit (i.e., standardized test scores in the 50th

percentile and high school GPA of 3.2 or higher), who are from low-income families" (p.

73-74). These students were considered low-income based on the fact that their Free Application for Federal Student Aid (FAFSA) determined that they had a "significant financial need" for covering the cost of college. These students participated in a group ACT intervention that "consisted of an initial half-day workshop and six optional two-hour booster sessions provided weekly for four weeks, then bi-weekly for another four weeks" (p. 74). Students attended 1 to 7 sessions (median number of attended sessions = 4). The authors found that pre- to post-intervention, on average student's GPA increased .68 points (Cohen's d=.92). Compared to the rest of freshman students at this university who earned a 2.25 or below during their first semester ($n = 852$), 85.7% of participants in the ACT intervention improved their GPA the next semester whereas 61.3% of the non-intervention students improved. The authors reported that psychological inflexibility (a way of thinking that ACT challenges) post-intervention was significantly negatively correlated with post-intervention GPA. There was a significant interaction between importance of education values and consistency of education values on GPA, where importance significantly predicted GPA only when consistency was low and consistency significantly predicted GPA only when importance was low; this interaction predicted 80% of the variance in post-intervention GPA.

The LIWC, College Admissions Essays, and Academic Performance

One way that researchers have begun to investigate cognitive and affective styles that play a part in college students' success is through examining the relationship between students' writing styles in college admissions essays and their academic performance. College application essays are a useful tool for examining students' writing styles as they reflect their ways of thinking and expressing themselves, and, in the case of

certain linguistic patterns, can predict students' academic performance down the line. Pennebaker et al. (2014) examined over 50,000 admissions essays from a sample of 25,975 college students who were enrolled at a large state university. Participants were first year students from years 2004 – 2007. Students applying to the university were asked to complete two admissions essays and were allowed to pick from a list of 6 – 8 topics. The essay prompts asked applicants to write about people or events in their life that shaped their goals for the future. Pennebaker et al. then coded each document using the Linguistic Inquiry and Word Count (LIWC), a coding system that analyzes text by calculating percentages of words used from different word categories (e.g., personal pronouns, prepositions, etc.). The LIWC has 370 discrete word categories in total. Pennebaker et al. examined the usage of function words (i.e., articles, prepositions, personal pronouns, impersonal pronouns, auxiliary verbs, adverbs, conjunctions, negations) in application essays. The researchers used a categorial – dynamic index (CDI) to create a standardized factor score for each participant using factor loadings. Essays with a high CDI score used more articles and prepositions and fewer personal pronouns, impersonal pronouns, auxiliary verbs, adverbs, conjunctions, and negations. This style of writing reflects categorical descriptions and more formal language, whereas writing that receives a low CDI score reflects a more narrative or dynamic style of writing. Pennebaker et al. found that high CDI scores were significantly positively associated with GPA throughout all four years of college. CDI scores were also positively associated with having higher college board scores, being male, and having parents with more years of education.

There is also evidence that certain LIWC variables used in application essays are associated with academic performance in low-income college students. A study by Lewine et al. (2019) examined the relationship between specific LIWC variables in college application essays and GPA when divided by sex and family income, in the same group of participants as this dissertation. The participants were recruited from a scholarship program for students from low-income families who also meet certain pre-college academic performance and standardized testing requirements. Lewine et al. (2019) chose 17 LIWC variables, all of which had been previously associated with academic performance and convey students' affective style, cognitive style, and motivation. Men and women had statistically different percentages on three of the LIWC variables; women wrote more social words, while men wrote more positive emotion words and risk words. Word count was significantly correlated with fall 2016 GPA for both men and women, but it was positively associated for men and negatively associated for women. The usage of tentativeness words was significantly positively correlated to GPA and the usage of reward words was negatively correlated to GPA in women. These gender differences found between usage of LIWC categories and gender differences in relationships between word usage and academic performance imply that women and men are reinforced for different ways of thinking and writing.

In another study by Lewine et al. (2022), researchers examined the relationship between LIWC analysis of application essays and enrollment versus dropout status in the same cohort of low-income students. Lewine et al. (2022) found that by the students' 4th year of college, 13 of the original 54 students were no longer enrolled in the university. The researchers reported that this cohort had a higher retention rate than that of the entire

university for students who had entered year 2014. The following LIWC variables were examined related to enrollment/dropout status: analytic, clout, and authentic. Authentic words were found to be used significantly more in application essays written by students who remained enrolled versus students who had dropped out. This finding suggests that low-income students who have a more authentic way of expressing themselves, through their writing or perhaps verbally in academic settings, are more likely to succeed academically in college than their counterparts who write less authentic words.

Mindfulness and LIWC Variables

Limited research exists examining the relationships between LIWC variables specifically and trait mindfulness. Moore and Brody (2009) conducted a study with undergraduate students in which participants were first asked to fill out a demographic questionnaire and the KIMS. The undergraduate participants were then randomly divided into two groups, one group where researchers asked them to write about a past traumatic experience and a second group where they were asked to write a "non-emotional" description of what they did the previous day. Participants were asked to come back two more times after the initial writing session, and participants in the traumatic events group were asked to write about traumatic experiences again while participants in the daily events group were asked to write about how they planned to spend their time during the current day and the next day. Researchers sent the participants the KIMS via email 4 weeks after the third writing session, and asked them to consider "the last few weeks" when responding. Moore and Brody (2009) found that in both conditions an increase in present tense words from the first to the third narrative was associated with increased Accept without Judgment subscale scores baseline to post-task. Researchers also found

that in both conditions increases in future tense words were associated with increased

Observe subscale scores, and that increases in past tense and future tense words predicted

an increase in Describe subscale scores.

Collins et al. (2009) conducted a study with participants in a mindfulness-based

relapse prevention program for alcohol and other drug use. When participants reached the

final session of their program, researchers gave them a participant feedback form that

asked them four open-ended questions about their experience (e.g., "What did you get out

of coming [to the mindfulness-based relapse prevention group], if anything?"). The

answers to these questions were coded for mindfulness language words generated by an

expert panel of mindfulness and substance-abuse researchers. The mindfulness language

words reflect the experience of being in a mindful state of awareness, as well as

challenges that one faces when developing a mindfulness practice. Collins et al. (2009)

found that mindfulness language was negatively associated with use of past tense words,

anger words, impersonal pronouns, and positively associated with use of insight words,

affect and body related words.

Both studies described above demonstrated similar relationships between the use

of present tense and mindfulness. Moore and Brody (2009) found that an increase in

present tense from writing sample 1 to 3 was associated with an increase in the KIMS

subscale score of Accept without Judgment, while Collins et al. (2009) found that present

tense words were associated with mindful language. While the two studies found similar

relationships between the use of present tense and mindfulness, Moore and Brody (2009)

and Collins et al. (2009) had somewhat disparate findings about past tense and

mindfulness. Moore and Brody (2009) found that an increase in past tense words from

writing sample 1 to 3 was associated with an increase in the KIMS subscale score of Describe, while Collins et. al found that past tense usage was negatively associated with mindful language. It is possible that Moore and Brody (2009) found this positive relationship between past tense and mindfulness because some of their participants were asked to write about a traumatic experience that had happened to them prior to the study. Given that the participants wrote about a traumatic experience on three separate occasions it makes sense that these writing exercises may have served as an exposure to the participants' thoughts and emotions related to their trauma. As the participants' negative emotions around their traumatic experiences subsided somewhat, it might have made it easier for them to be more mindful and in turn have higher Describe scores. Given the conditions of the study, it does not seem that the relationship between use of past tense and mindfulness would generalize outside of the context of writing about trauma.

Mindfulness is defined as nonjudgmental present-moment awareness (Kabat-Zinn, 1994), thus, in the context of writing, individuals who are high in trait mindfulness may use more of the present tense as opposed to the past tense or future tense. Moore and Brody's (2009) findings regarding the future tense were also counter-intuitive to this idea, as they reported that an increase in use of future tense was related to an increase in Observe and Describe scores. It is possible that through asking some participants to reflect on a past traumatic experience and others to reflect on what they did the previous day or what they plan to do that day or the next, participants practiced observing and describing and therefore began doing this more throughout their everyday life between the first and third writing exercises. Cross-sectionally it is unclear as to whether there was

a relationship between the KIMS and use of future tense, as this was not reported in the study. There are no other studies in the current literature that examine the relationship between the use of future tense and trait mindfulness scores cross-sectionally.

SCC and LIWC Variables

To date, few studies have examined the relationship between writing patterns as coded by the LIWC and participants' levels of SCC. Slotter et al. (2010) explored self-concept content change and changes in self-concept clarity in a group of individuals who had recently gone through the breakup of a romantic relationship. Researchers collected 76 different Internet diaries from various online public sources. Forty-six of the diary entries were written by women and 30 were written by men. The diary entries examined were about a recent breakup (n = 28), a recent career change (n = 26), or other topics that did not reflect any life change (n = 22). The authors of the diary entries ages ranged from 18 to 56 years. Participants' SCC was measured by coding terms in the diary entry marking confusion (e.g., using words such as confuse, uncertain, disorganize, etc.) and then rated these words on a scale of 1 to 7 (1 = *not at all* to 7 = *extremely*) with regard to how relevant the word was to the participant's self-concept. The coders demonstrated an interrater reliability of $\alpha = .89$. Researchers coded the diary entries using the LIWC, which includes an emotional distress variable. Slotter et. al found that low SCC in the participants predicted more emotional distress (as coded by the LIWC).

Study Aims and Hypotheses

The current study examined whether linguistic markers in low-income students' college essays that are correlated with higher mindfulness and/or SCC predict their academic performance and well-being. As reviewed in the introduction, linguistic

patterns in college essays (as measured by the LIWC) predict academic performance in both general college student populations and in low-income college students alike (Pennebaker et al., 2014; Lewine et al., 2019, Lewine et al., 2022). If linguistic markers correlated with mindfulness and SCC in college essays are predictive of academic performance, this may indicate that students with higher SCC and mindfulness at the time of their college application are more successful in school. Likewise, if this relationship exists it may suggest that students who have a writing style and/or cognitive style that reflects high mindfulness and SCC attain higher grades in college. These linguistic markers may also be negatively associated with symptoms of psychological distress in this population, making it easier for students who are higher in SCC and trait mindfulness to navigate stressors and in turn helping them perform better in school.

While the current study is not an intervention study, examining these potential risk factors and protective factors may further advance the IAG intervention literature by isolating mechanisms through which interventions can positively influence low-income college students' academic performance. By investigating what factors help contribute to academic success in low-income college students, this study will contribute to a body of literature that informs efforts towards helping low-income college students perform well academically.

AIM 1: Explore relations between linguistic markers that have been previously associated with higher mindfulness/self-concept clarity and GPA

Research indicates that individuals who are more mindful have higher SCC (Dummel, 2018; Hanley & Garland, 2017) and higher academic performance when primed with controlled motivational messages (Radel et al., 2009), and that students with

higher SCC have lower levels of traits that predict low academic achievement, such as academic self-handicapping (Thomas & Gadbois, 2007). Given the relationship between mindfulness and SCC and academic performance, low-income college students who write admissions essays with more linguistic markers of SCC and mindfulness may have higher academic performance.

Hypothesis 1: Linguistic markers that have been previously associated with high mindfulness (more present tense words, more insight words, more affect words, less past tense words) will predict high fall 2016 cumulative GPAs.

Hypothesis 2: Linguistic markers that have been previously associated with low SCC (more negative emotion words) will predict low fall cumulative 2016 GPAs.

Hypothesis 3: Linguistic markers that have been previously associated with high mindfulness (more present tense words, more insight words, more affect words, less past tense words) will predict high spring 2020 cumulative GPAs.

Hypothesis 4: Linguistic markers that have been previously associated with low SCC (more negative emotion words) will predict low spring cumulative 2020 GPAs.

AIM 2: Explore relations between linguistic markers that have been previously associated with higher mindfulness/self-concept clarity and anxiety/depression

Given the demands placed on low-income students to acclimate and adapt to a stressful and unfamiliar cultural environment, SCC may help protect against the negative impacts of classism and resulting psychological distress. Likewise, low-income students with higher trait mindfulness may be better equipped to cope with the stress of adjusting to independent values-oriented expectations, potential perceived classism, and the demands of undergraduate life. Thus, low-income college students who write admissions

essays with more linguistic markers of SCC and mindfulness may have fewer symptoms of depression and anxiety.

Hypothesis 5: Linguistic markers that have been previously associated with high mindfulness (more present tense words, more insight words, more affect words, less past tense words) will predict low BAI.

Hypothesis 6: Linguistic markers that have been previously associated with low SCC (more negative emotion words) will predict high BAI.

Hypothesis 7: Linguistic markers that have been previously associated with high mindfulness (more present tense words, more insight words, more affect words, less past tense words) will predict low BDI-II.

Hypothesis 8: Linguistic markers that have been previously associated with low SCC (more negative emotion words) will predict high BDI-II.

METHODS

Participants

The participants consisted of a group of 54 university students in the Cardinal Covenant (CCOV) program who were from the class of fall 2016 (57 CCOV students were recruited, but 3 students were under the age of 18 and therefore ineligible for the study per the IRB protocol). Our sample was then narrowed to 48, as pre-admission essays were only available for 48 students. All students accepted into the CCOV program were at 150% of the federal poverty level or lower. The CCOV program provides complete financial assistance to the students and fully covers tuition, room, board, and textbooks. The application requirements for the CCOV program are as follows: applying to the University of Louisville, submitting an additional essay, 20 or above ACT composite score, 2.5 or above High School GPA, being a Kentucky resident, completing FAFSA, having a complete financial aid file, and meeting certain grant requirements (Pell Grant, CAP Grant, and Kentucky Educational Excellence Scholarship). Participants were recruited for the study during the CCOV program orientation held in the fall of 2016, and researchers collected baseline data from the participants during said orientation. College academic performance information, including the cumulative GPAs from fall of 2016 and spring of 2020 used in this study, was collected at a later date.

An *a priori* power analysis using G*Power based on the largest proposed analysis (Pearson correlation, two tailed test) determined that at least 84 participants are needed for the study. Effect size was set to .3 and power was set to .8.

Measures

Linguistic Inquiry and Word Count (LIWC)

The Linguistic Inquiry Word Count (LIWC) is a measure that codes text and divides it into different type of language/speech patterns. The LIWC coding system includes approximately 370 variables. Prior to the beginning of this dissertation, researchers who used the CCOV dataset coded students' admission essays using 17 different LIWC variables. These 17 LIWC variables were chosen because previous research found that they were correlated with academic performance and reflect cognitive style, affective style, and motivation (Lewine et al., 2019).

Of the LIWC variables related to SCC and trait mindfulness discussed in the introduction, five were included in the 17 LIWC variables available: negative emotion words, present tense words, insight words, affect words, past tense words. Negative emotion words (e.g., hurt, ugly, nasty) have a corrected internal consistency α of .55, present tense words (e.g., today, is, now) have a corrected internal consistency α of .66, insight words (e.g., think, know) have a corrected internal consistency α of .84, affect words (e.g., happy, cried) have a corrected internal consistency α of .57, and past tense words (e.g., ago, did, talked) have a corrected internal consistency α of .64 (Pennebaker et al., 2015). In the present study, negative emotion words were utilized as linguistic markers that have been previously associated with lower SCC. To best capture linguistic markers that have been previously associated with higher mindfulness, a composite score was made by adding together present tense words, insight words, and affect words and subtracting past tense words to create a total score.

As discussed in the introduction, present tense is theoretically aligned with mindfulness and two studies found that it was associated with mindfulness. Past tense was found to be positively and negatively associated with mindfulness in two previous studies, but theoretically makes sense to be negatively associated with mindfulness. Because there is evidence that past tense is negatively associated with mindfulness (Collins et al., 2009) it was subtracted from the mindfulness sum score. Future tense is theoretically not associated with mindfulness, but was found to be associated with two KIMS subscales in a previous study. Given that it is not theoretically associated with mindfulness and there are no studies that have found it to be negatively associated with mindfulness, it was not included in the analyses.

Beck Depression Inventory-II (BDI-II)

The BDI-II is a self-report questionnaire that may be used to identify the intensity and severity of both physical and psychological symptoms of depression. The questionnaire consists of 21 groups of statements where participants are asked to pick out the statement that best describes how they have been feeling for the past two weeks. For example, item number 1 is labeled "Sadness" and asks participants to choose between the following options: "0 – I do not feel sad.", "1 – I feel sad much of the time.", "2 – I am sad all the time.", or "3 – I am so sad or unhappy that I can't stand it." The BDI-II has been shown to demonstrate good reliability in samples of college students (α = .89; Steer & Clark, 1997, α = .92; Beck et al., 1996). The BDI-II has also shown good internal consistency in college students with diverse ethnicities. Carmody (2005) found that the BDI-II had a Cronbach coefficient α of 0.916 in a group of 502 college students who were 10% African American, 7% Asian American, 22% Hispanic, 2% Native American,

and 59% White. The BDI-II demonstrated excellent reliability ($\alpha = .92$) in this dissertation's sample.

Beck Anxiety Inventory (BAI)

The BAI is a 21-item self-report questionnaire that may be used to identify cognitive, emotional, and physical symptoms associated with anxiety. The measure asks the participant to rate how much they have experienced each of the 21 symptoms in the last month on a Likert scale of 0 (Not at all) to 3 (Severely – it bothered me a lot). The BAI has been found to have good reliability in college students ($\alpha = .90$; Osman et al., 1997). Similar to the Osman et al. (1997) study, the BAI's reliability in this dissertation's sample was $\alpha = .96$.

Academic Performance

Cumulative GPAs from the fall of 2016 and the spring of 2020 were utilized to measure students' academic performance. College GPA is a predictor of career success and a common measure of undergraduate academic performance (Tan, 1991).

Demographic Form and Other Baseline Measures in Longitudinal Study

CCOV students participated in a longitudinal study that gathered data on psychosocial variables that may contribute to academic performance and overall well-being during college. All students who participated in the study were asked to complete a demographic form that asked questions about each participant's name, age, student ID number, birthdate, gender/sex, race/ethnicity, phone number, and email address. The demographic form also asked participants about their primary source of income, high school GPA, SAT/ACT score, course load (part time/full time status and number of hours), course enrollment, titles of their courses, extracurricular activities, employment,

housing, and source and amount of family gross income. Participants were also asked to complete other baseline measures that were part of the longitudinal study, including questionnaires on perceived stress, life stressors, traumatic experiences, resilience, worry, rumination, and OCD symptoms.

Procedure

Researchers attended the CCOV orientation in fall of 2016 and collected baseline data from CCOV students who were willing to participate in the study and met IRB inclusion criteria. Participants were given information about the purpose of data collection, potential risks and benefits of participating in the study, confidentiality, how completed packets would be collected, and guidelines for discontinuing participation. Participants were then given a packet including an informed consent document and baseline measures to fill out. Participants were given as much time as needed to fill out measures and were asked to return the packets to the researchers before leaving the orientation. The baseline measures in the packet included a demographic form (detailed above) and questionnaires on perceived stress, anxiety, depression, life stressors, traumatic experiences, resilience, worry, rumination, and OCD symptoms.

Researchers obtained permission from participants to utilize participants' university admissions materials, including their admissions essays. All CCOV applicants are required to write an admissions essay answering the following questions: (1) How will receiving the CCP (college support program) impact your ability to go to college? (2) How will receiving the CCP impact your future? These essays were scanned, submitted to Optical Character Recognition, and then converted to Word documents for computer analysis using the LIWC.

Participants granted the researchers permission to view and analyze their future university transcripts. Participants were notified that they could withdraw researchers' ability to access their academic records at any time. Researchers gathered participants' cumulative GPAs from fall of 2016 and spring of 2020 using the students' transcripts. All data was de-identified for analysis per the IRB requirements.

Statistical Analyses

Relations between linguistic markers that have been previously associated with higher mindfulness/self-concept clarity and GPA

Correlational analyses were used to determine if low-income students who wrote essays with more linguistic markers that have been previously associated with mindfulness/self-concept clarity have higher cumulative fall 2016 and spring 2020 GPAs.

Relations between linguistic markers that have been previously associated with higher mindfulness/self-concept clarity and anxiety/depression

Correlational analyses were used to determine if low-income students who wrote essays with more linguistic markers that have been previously associated with mindfulness/self-concept clarity have lower BAI and BDI-II scores.

RESULTS

Demographic Characteristics

Identifying

All demographic characteristics discussed in this section are reported in more detail (percentage of sample and number of participants or median and standard deviation are reported for each characteristic) in Table 1. Thirty-three participants reported they were female, 19 reported they were male, and two reported they were genderfluid. Thirteen percent of the sample reported they were African American/Black, 9.3% reported they were Asian/Pacific Islander, 5.6% reported they were Hispanic/Latino, 14.8% reported they were multiracial, and 57.4% reported they were White/European.

Social

Participants were asked what their primary source of income was and 22.2% reported that it was from their parent or guardian, while 64.8% reported that they were their primary source of income (through scholarships, grants, or work). 85.2% of participants reported they lived with other students, 3.7% reported they lived alone, and 11.1% reported they lived with parents, relatives, or guardians. When asked about their household income earned by their parent/guardian/family, 37% participants reported their household income was less than $9,999, 27.8% reported it was $10,000 - $19,999, 25.9% reported it was $20,000 - $39,999, and 1.9% reported it was $40,000 - $59,999. 24.1% of participants reported their parent/guardian/family's primary source of income was disability, 53.7% reported it was employment, 1.9% reported it was inheritance, 1.9% reported it was

public assistance, and 7.4% reported the source was not listed on the demographic form.

Academic

The median high school GPA reported by participants was 3.8, and the median ACT score reported was 25. The median number of college credit hours for the current semester reported was 16. Participants were asked if they participated in extracurricular activities, and 3.7% reported they were an athlete, 9.3% reported they were a fraternity or sorority member, 14.8% reported they were an honors student, 11.1% reported they were in a service organization, and 11.1% reported they were in an extracurricular activity that was not listed. 79.6% of participants reported they worked on campus and 20.4% of participants reported they worked off campus. Participants were asked how many hours they worked on and off campus and their answers were as follows: 11.1% reported they worked 1 – 10 hours per week on campus, 50% reported they worked 11 – 20 hours per week on campus, 1.9% reported they worked more than 30 hours per week on campus, 11.1% reported they worked 1 – 10 hours per week off campus, 7.4% reported they worked 11 – 20 hours per week off campus, and 1.9% reported they worked more than 30 hours per week off campus.

AIM 1: Explore relations between linguistic markers that have been previously associated with higher mindfulness/self-concept clarity and GPA

All aim 1 analyses can be found in Table 2. Analyses revealed that there was not a significant positive correlation between linguistic markers that have been previously associated with high mindfulness (present tense words + insight words + affect words – past tense words) and fall 2016 cumulative GPA ($r = -.230$, $p = .115$). While the correlation between these two variables did not yield a p-value of less than .05, the p-

value for this relationship was .115 and thus could be considered to be approaching significance. Interestingly, the relationship between linguistic markers associated with mindfulness and fall 2016 GPA was negative and therefore suggests that CCOV students who use words associated with mindfulness in their application essay were less likely to be academically successful during their first semester in college. There was not a significant positive relationship between linguistic markers previously associated with mindfulness and spring 2020 GPAs ($r = .141, p = .399$).

Linguistic markers that have been previously associated with low SCC (negative emotion words) were not significantly negatively correlated with fall 2016 GPA ($r = -.065, p = .659$). Likewise, linguistic markers that have been previously associated with low SCC were not significantly correlated with cumulative spring 2020 GPAs ($r = .151, p = .366$).

AIM 2: Explore relations between linguistic markers that have been previously associated with higher mindfulness/self-concept clarity and anxiety/depression

All aim 2 analyses can be found in Table 3. All correlations between linguistic markers in CCOV students' application essays that have been previously associated with higher mindfulness/SCC and anxiety/depression were non-significant. Linguistic markers that have been previously associated with high mindfulness (present tense words + insight words + affect words – past tense words) were not significantly negatively associated with BAI ($r = -.133, p = .378$). There was not a significant negative relationship between linguistic markers that have been previously associated with mindfulness and BDI-II ($r = .027, p = .858$).

The correlation between linguistic markers that have been previously associated with low SCC (negative emotion words) and BAI was not significant ($r = .090$, $p = .551$). There was not a significant negative relationship between linguistic markers that have been previously associated with low SCC and BDI-II ($r = .082$, $p = .586$).

Post-hoc Analyses

Correlations between linguistic markers previously associated with mindfulness and outcome variables

In order to further investigate the approaching significant correlation between linguistic markers that have been previously associated with high mindfulness (present tense words + insight words + affect words – past tense words) and fall 2016 cumulative GPA, as well as linguistic markers previously associated with mindfulness and the other outcome variables, post-hoc analyses were conducted. Correlations between each linguistic marker included in the mindfulness marker sum score (present tense words, insight words, affect words, and past tense words) and each outcome variable (fall 2016 cumulative GPA, fall 2020 cumulative GPA, BAI, and BDI-II) were investigated. All correlations were non-significant, however three correlations had p-values slightly over .05 but below .1; there was an approaching significant positive relationship between insight word usage and BAI ($r = .254$, $p = .088$), an approaching significant negative relationship between affect word usage and fall 2016 cumulative GPA ($r = -.261$, $p = .074$), and an approaching significant positive relationship between present tense word usage and fall 2020 cumulative GPA ($r = .301$, $p = .067$).

Several of the exploratory correlations were found to not be statistically significant. Present tense word usage was not significantly associated with BAI ($r = -$

.194, $p = .196$), BDI-II ($r = -.112$, $p = .459$), or fall 2016 GPA ($r = -.211$, $p = .149$).

Insight word usage was not significantly associated with BDI-II ($r = .226$, $p = .131$), fall

2016 cumulative GPA ($r = .161$, $p = .273$), or fall 2020 cumulative GPA ($r = -.062$, $p =$

.713). Affect word usage was not statistically significantly related to BAI ($r = .102$, $p =$

.498), BDI-II ($r = .148$, $p = .326$), or fall 2020 cumulative GPA ($r = -.111$, $p = .508$). Past

tense word usage was not statistically significantly related to BAI ($r = .207$, $p = .168$),

BDI-II ($r = .011$, $p = .940$), fall 2016 cumulative GPA ($r = .089$, $p = .546$), or fall 2020

cumulative GPA ($r = -.023$, $p = .896$).

Scatterplots of a priori analyses

Scatterplots of the eight a priori analyses were examined and are featured in

Tables 5 through 12. Two of the scatterplots revealed non-linear patterns between

variables. The scatterplot of the correlation between linguistic markers previously

associated with mindfulness sum score and fall 2016 cumulative GPA (Table 9) showed

that students who wrote fewer linguistic markers previously associated with mindfulness

had fall 2016 GPAs around 3.0 whereas students who wrote more linguistic markers

previously associated with mindfulness had much greater spread in their Fall 2016

cumulative GPAs, which ranged from 0.0 to 4.0 on this end of the spectrum. Because of

this the scatterplots on Table 9 resembles a funnel, where the narrow tip of the funnel is

towards the left side of the graph where students wrote fewer linguistic markers

previously associated with mindfulness and the broad end of the funnel is on the right

side of the scatterplot where students wrote the most linguistic markers previously

associated with mindfulness.

The second scatterplot that revealed a non-linear pattern was the scatterplot depicting the relationship between negative emotion words and fall 2020 cumulative GPA (Table 12). Similar to the scatterplot featured in Table 9, the scatterplot depicting the relationship between negative emotion words and fall 2020 cumulative GPA was funnel-shaped but the broad end of the funnel was on the left side where students wrote fewer negative emotion words and the narrow end of the funnel was on the right side where students wrote more negative emotion words. The scatterplot shows that students who wrote fewer negative emotion words had greater spread in their fall 2020 cumulative GPAs and had GPAs between around 2.2 and 3.95, whereas students who wrote more negative emotion words had GPAs that hovered around 3.5.

DISCUSSION

The purpose of this study was to examine the associations between linguistic markers previously associated with mindfulness and SCC, academic performance, and psychosocial variables. There were no statistically significant correlations between linguistic markers related to mindfulness and GPA, depression, or anxiety. Likewise, there were no statistically significant relationships between linguistic markers related to SCC and GPA, depression, or anxiety. There was one correlation in the group of analyses, between linguistic markers associated with trait mindfulness and fall 2016 GPA, that approached statistical significance ($r = -.230$, $p = .115$), suggesting that linguistic markers in the CCOV students' college application essays that have been previously associated with mindfulness may be negatively related to academic performance. Interestingly, this correlation is in the opposite direction than was hypothesized. If there is in fact a relationship between these variables, this suggests that students who write more present tense words, insight words, and affect words, and fewer past tense words in their college essays may perform worse academically in college. These possible relationships were examined in the post-hoc analyses, which are discussed in the paragraph below. As mentioned in the procedure section, CCOV applicants were asked to answer the following questions in their college application essays: "(1) How will receiving the CCP (college support program) impact your ability to go to college? (2) How will receiving the CCP impact your future?" This may imply that college essay prompts require students to write more past tense words and less present tense words,

insight words, and affect words, and that students who write their essays using more "mindful" language may be less likely to perform well in school because they did not demonstrate that they were able to successfully address the essay prompts. Another interpretation of this "approaching significant" result is that low-income students who are more mindful may perform more poorly academically because they are more focused on the present moment, which may be particularly stressful and overwhelming given the stressors that low-income college students often face.

Post-hoc analyses of the correlations between each component of the linguistic markers previously associated with mindfulness sum score and the outcome variables revealed that there were no significant relationships. However, the correlations between insight word usage and BAI ($r = .254$, $p = .088$), affect word usage and fall 2016 cumulative GPA ($r = -.261$, $p = .074$), and present tense word usage and fall 2020 cumulative GPA ($r = .301$, $p = .067$) all had p-values of less than .1. While these correlations are non-significant, they suggest that the relations between insight word usage and BAI and affect word usage and fall 2016 cumulative GPA are in the opposite directions than was hypothesized and has been reported in prior literature. If there is a relationship between insight word usage and BAI, post-hoc analyses indicate that students who write more insight words in their college application essays have higher anxiety. It is possible that this correlation is in the opposite direction as predicted because writing more insight words might be related to perseveration or "over thinking," and thus students who have higher anxiety may be more likely to write more insight words in their college application essays. Likewise, affect word usage was negatively related to fall 2016 cumulative GPA which is the opposite of what was hypothesized. This result may

be indicative of less emotional writing being more rewarded in higher education. It appears that the relation between present tense word usage and fall 2020 cumulative GPA is in the same direction as hypothesized, which is consistent with the existing literature.

Scatterplots of the eight a priori analyses were also created post-hoc, and revealed that the correlation between linguistic markers previously associated with mindfulness sum score and fall 2016 cumulative GPA (Table 9) and the correlation between negative emotion words and fall 2020 cumulative GPA (Table 12) both appear to create visible non-linear patterns. The correlation between linguistic markers previously associated with mindfulness sum score and fall 2016 cumulative GPA was the only correlation in the a priori analyses that approached statistical significance. Given the funnel shape of the scatterplot, it is possible that there is a non-linear relationship between the two variables where students who write less linguistic markers previously associated with mindfulness tend to have GPAs close to 3.0, whereas students who write more linguistic markers previously associated with mindfulness have much more variability in their fall 2016 cumulative GPAs and have GPAs that range from 0.0 to 4.0. Because this relationship appears to be non-linear, it is understandable that this correlation was non-significant. The scatterplot of the correlation between negative emotion words and fall 2020 cumulative GPA revealed a similar non-linear relationship as the one depicted in Table 9, however flipped in the opposite direction. Given the funnel shape of the scatterplot, it appears that students who write less negative emotion words in their college essays have more variability in their fall 2020 cumulative GPAs (ranging from around 2.2 to 3.95) whereas students who write more negative emotion words have less range in their GPAs and their fall 2020 cumulative GPAs are typically around 3.5.

A potential complicating factor of this dissertation to consider is the CCOV program's inclusion criteria in regard to determining students' low-income status. There is a lack of clarity of the definitions for low SES and low-income in the literature and studies vary widely in how these variables are defined and assessed. While education, income, and occupational status may give some insight into an individual's access to resources, they do not necessarily capture the full complexity of what resources they may or may not have access to. For example, a college student may come from a family with two parents and one sibling that has a total household income of $27,000 a year. This student may live on a farm in a rural area in a house that their family owns. Utilities may be inexpensive where they live, and the student and their family may have food that they grow on the farm that helps cut grocery costs. Another student at the same university may come from a family of four with a household income of $27,000 a year but may live in an urban area with a high cost of living and less access to resources. In this case, evaluating each students' SES based solely on household income would not capture the full scope of each student's social class and access to resources. Similarly, the CCOV students who participated in this study were selected based on their families' yearly household incomes which may not fully capture each students' social class and access to resources.

There were several factors that may have contributed to this dissertation's lack of significant findings. First, researchers have not yet examined whether there is a relationship between high SCC and academic performance or mindfulness and academic performance in low-income college students specifically. As detailed in the introduction, there is evidence that SCC is negatively related to academic self-handicapping in college students (Thomas & Gadbois, 2007). Research on the relationship between SCC and

academic performance as defined by college GPA is lacking, and the relationship

between these two variables in a low-income college student population has not yet been

explored. If there is not a relationship between SCC and academic performance in low-

income college students, it would be reasonable to hypothesize that there may not be a

significant positive relationship between linguistic patterns associated with SCC in

college application essays and college GPA in low-income college students. There is

considerably more evidence that there is a connection between mindfulness and academic

performance in college students, but there is also scarce evidence of this relationship in

low-income college student populations. Multiple mindfulness-based intervention studies

have demonstrated that these interventions help improve academic performance in

college students (Chase et al., 2013; Paliliunas et al., 2018; Hall, 1999). There is evidence

that individuals who are higher in trait mindfulness are less affected by

controlled/autonomous messages when learning (Radel et al., 2009). One study by

Sandoz et al. (2017) has examined the impact of a mindfulness-based intervention for

low-income college students on academic performance, but the relationship between trait

mindfulness specifically and academic performance in low-income students is unknown.

While there is perhaps more evidence leading one to conclude that trait mindfulness is

positively related to academic performance in low-income college students, if this

conclusion is not correct this could explain why there is not a significant relationship

between linguistic markers associated with mindfulness and academic performance in

this dissertation's findings.

Second, it is unknown if college students' SCC and trait mindfulness scores are at

all related to linguistic patterns in their college admissions essays. While there are studies

that have found relationships between SCC and linguistic patterns in writing, and trait mindfulness and linguistic patterns in writing, it is unknown if this generalizes to this type of writing prompt and set of circumstances. The current literature exploring the relationships between trait mindfulness and linguistic patterns and SCC and linguistic patterns does so utilizing writing samples either written by participants in a study setting or gathered posthoc from participants' blog writings. When participants are asked to journal for ten minutes in a study setting, or are journaling about previous experiences on their personal blog/social media, they are likely writing in a much different style than they would if they were writing their college entrance essay. It is possible that people feel more at ease when journaling or writing on social media, and that these types of writing reflect individuals' thought patterns and cognitive styles better than college admissions essays. While someone writing a journal entry in a study setting has an audience of researchers who will read their writing later, and people writing social media or blog posts are writing for the audience of friends/family/strangers, a high school student writing a college application essay is writing for the audience of college admissions staff who will read their work and then determine if they are worthy of receiving full scholarship to college. The pressure of the latter audience and high-stakes circumstances may cause applicants to write in a way that does not reflect their true way of thinking, therefore weakening the relationship between their linguistic patterns and their SCC and trait mindfulness. Applicants also often have other students or teachers look over their application essays to help them edit before submitting them, in which case students' essays may reflect their editors' writing styles more so than their own. In contrast, there is evidence that linguistic patterns in college application essays as coded by the LIWC are

significantly related to college academic performance in both the general college population and in low-income students (Pennebaker et al., 2014; Lewine et al., 2019; Lewine et al., 2022). These findings give more credence to the predictive power of linguistic patterns in college application essays for students' college performance. These findings suggest that the way students write their college application essays likely reflect their cognitive and affective styles, allowing them to be predictive of their academic success or failures in both their first and final years of college.

Third, a sum score of linguistic markers for mindfulness (e.g., present tense words, insight words, affect words, and past tense words) was used rather than examining the relationship between each marker and each dependent variable (e.g., 2016 GPA, 2020 GPA, BDI, BAI). This was done to reduce the number of statistical analyses performed and in turn reduce the risk of Type 1 error. However, using a sum score can cause significant findings to be washed out because if some linguistic markers are significantly correlated to certain outcome variables in this dataset but others are not (or are related to the outcome variables, but in the opposite direction than hypothesized) this can cause non-significant results even when there are significant relationships present. For this reason, post-hoc analyses examined the relationship between each linguistic marker previously associated with mindfulness separately and each semester GPA, BDI, and BAI, providing a more granular look at the relationship between each linguistic marker and each academic performance variable or psychosocial variable. Post-hoc analyses revealed that none of these linguistic markers were significantly correlated to certain outcome variables in this dataset.

Fourth, there was a lack of variability in fall 2020 cumulative GPAs which may have contributed to the analyses using this outcome variable being non-significant. As is reported in Table 2, the standard deviation for fall 2016 cumulative GPA was 0.92 and the median was 2.93, whereas the standard deviation for fall 2020 cumulative GPA was 0.50 and the median was 3.20. Given that the students' GPAs in fall 2020 are all much closer together than in fall of 2016, this makes differences between fall 2020 cumulative GPAs much more miniscule which causes correlations to be more difficult to detect with the dissertation's restricted sample size.

Fifth, the sample size was smaller than necessary to reach adequate power for the statistical analyses conducted. This dissertation's sample size was 48 (54 students were eligible for the study but application essays were only available for 48 students), whereas the sample size needed as calculated by G*Power analysis was 84). Because of this dissertation's small sample size, it is possible that if there are significant relationships between variables but the effect sizes are small this will cause the correlations to not be statistically significant. All possible CCOV students were recruited for this sample. The students in the CCOV program were selected based on their residency in Kentucky, academic achievement in high school, standardized test scores, and their family's SES. While this group of students is limited in size, it is unique in that it is comprised of students from low-income families who are provided full academic scholarship along with room and board. Studying this group of students provides valuable information on what may be helpful for supporting college students from low-income families, and what may help their psychosocial well-being as well as their academic performance in college.

Sixth, there is some criticism over the use of measures of trait mindfulness which were used in previous studies identifying relationships between trait mindfulness and linguistic patterns in participants' writing. Researchers have raised concerns over the use of trait mindfulness or dispositional mindfulness measures, as practicing mindfulness makes you more aware of moments where you are being judgmental or not focusing on the present moment, thus making one rate themselves as less mindful on said self-report measures. These potential shortcomings of trait mindfulness self-report measures must be taken into consideration when reviewing the literature on mindfulness and linguistic patterns coded by the LIWC.

Seventh, two of the analyses examined the relationship between linguistic markers and participants' spring 2020 GPAs. Although all GPAs utilized in this study were cumulative, it is undeniable that the semester of spring 2020 was an anomaly and may not accurately represent students' true academic abilities. The Coronavirus Disease 2019 pandemic caused schools and universities to swiftly switch from in-person classes to online with no warning or preparation. This created an unpredictable environment for students, in their personal lives as well as their academic lives. For a prolonged period of time, lockdown required that only essential workers go to work and interface with the public, which likely caused new financial stressors for CCOV students as many of them were working while attending college before the pandemic. Stress caused by fear about COVID-19, potential job loss, quarantine, and suddenly changing classes from in-person to online likely impacted the grades of CCOV students in the spring semester of 2020. This, in turn, may have weakened any relationship between linguistic markers of SCC and mindfulness and grades at this time.

Several next steps could be taken to answer some of the questions that have been raised throughout the discussion. A logical next step to this dissertation's findings is to measure students' trait mindfulness and SCC and investigate whether students' linguistic patterns in their application essays are in fact related to their levels of mindfulness and SCC. Collecting these data would also allow researchers to determine whether trait mindfulness and SCC are related to academic performance in this population. Researchers could also ask participants to complete measures of financial stress and perceived classism in the university environment, which would then allow researchers to investigate whether financial stress/classism is negatively correlated with CCOV students' academic performance. Researchers could then determine, through mediation analyses, whether SCC mediates the relationship between financial stress/classism and academic performance, and also whether mindfulness mediates the relationship between financial stress/classism and academic performance. By answering these questions, researchers would be able to gather more information on whether financial stress and classism are risk factors that hinder low-income students' academic performance in college. Furthermore, answering these research questions could determine whether trait mindfulness and SCC are protective traits that help low-income college students succeed academically while potentially experiencing stressors such as financial stress and classism in the university environment. While it is imperative that low-income college students receive financial support through scholarship programs such as the CCOV program, as demonstrated by the retention rates in the CCOV program which were better than the rest of the university (Lewine et al., 2022), it is also important that these students receive other types of support that help mitigate other non-financial stressors. If

researchers are able to identify potential protective factors, such as mindfulness or SCC, this will give insight into what types of supports may help low-income college students thrive academically.

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TABLES

Table 1. Demographic characteristics

Characteristic		Frequency (*n*) or median (*SD*)
Sex/Gender	Female	61.1% (33)
	Male	35.2% (19)
	Genderfluid	3.7% (2)
Ethnicity	African American/Black	13% (7)
	Asian/Pacific Islander	9.3% (5)
	Hispanic/Latino	5.6% (3)
	Multiracial	14.8% (8)
	White/European	57.4 % (31)
Primary Source of Income	Parents/Guardian	22.2% (12)
	Self (Scholarship/Grants/Work)	64.8% (35)
Housing	Lives alone	3.7% (2)
	Lives with other students	85.2% (46)
	Lives with parent(s), relative(s), or guardian(s)	11.1% (6)
Annual household income of parent/guardian/family	Less than $9,999	37.0% (20)
	$10,000 - $19,999	27.8% (15)
	$20,000 - $39,999	25.9% (14)
	$40,000 - $59,999	1.9% (1)
Primary source of income for parent/guardian/family	Disability	24.1% (13)
	Employment	53.7% (29)
	Inheritance	1.9% (1)
	Public assistance	1.9% (1)
	Not listed	7.4% (4)
Extracurricular activities	Athlete	3.7% (2)
	Fraternity/sorority member	9.3% (5)
	Honors student	14.8% (8)
	Service organization	11.1% (6)
	Not listed	11.1% (6)
Work on campus/off campus	On campus	79.6% (43)
	Off campus	20.4% (11)

Work hours per week	On campus	1 – 10 hours/week	27.8% (15)
		11 – 20 hours/week	50.0% (27)
		More than 30 hours/week	1.9% (1)
	Off campus	1 – 10 hours/week	11.1% (6)
		11 – 20 hours/week	7.4% (4)
		More than 30 hours/week	1.9% (1)
High school GPA			3.8 (.4)
ACT score			25.0 (3.6)
Credit hours			16.0 (1.4)

Table 2. Descriptive statistics and correlations for aim 1

Variable	*n*	*M*	*SD*	1	2	3	4
1. **Linguistic markers of mindfulness**	48	14.04	3.54	.			
2. **Linguistic markers of SCC**	48	0.92	0.60	.	.		
3. **Fall 2016 Cumulative GPA**	54	2.93	0.92	-0.23	-0.07	.	
4. **Spring 2020 Cumulative GPA**	41	3.20	0.50	0.14	0.15	.	.

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

Table 3. *Descriptive statistics and correlations for aim 2*

Variable	*n*	*M*	*SD*	1	2	3	4
1. Linguistic markers of mindfulness	48	14.04	3.54	.			
2. Linguistic markers of SCC	48	0.92	0.60	.	.		
3. BAI	52	14.08	14.71	-0.13	0.09	.	
4. BDI-II	51	8.20	8.98	0.03	0.08	.	.

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

Table 4. *Correlations between components of mindfulness sum score and outcome variables*

Variable	*n*	*M*	*SD*	1	2	3	4	5	6	7	8
1. Present tense words	48	10.54	2.20	.							
2. Insight words	48	2.30	0.79	.							
3. Affect words	48	4.51	1.18	.							
4. Past tense	48	3.32	1.91	.	.	.	.				
5. BAI	52	14.08	14.71	-0.19	0.25	0.10	0.21	.			
6. BDI	51	8.20	8.98	-0.11	0.23	0.15	0.01	.			
7. Fall 2016 Cumulative GPA	54	2.93	0.92	-0.21	0.16	-0.26	0.09	.			
8. Spring 2020 Cumulative GPA	41	3.20	0.50	0.30	-0.06	-0.11	-0.02	.	.	.	.

Table 5. Scatterplot of correlation between linguistic markers previously associated with mindfulness sum score and BAI
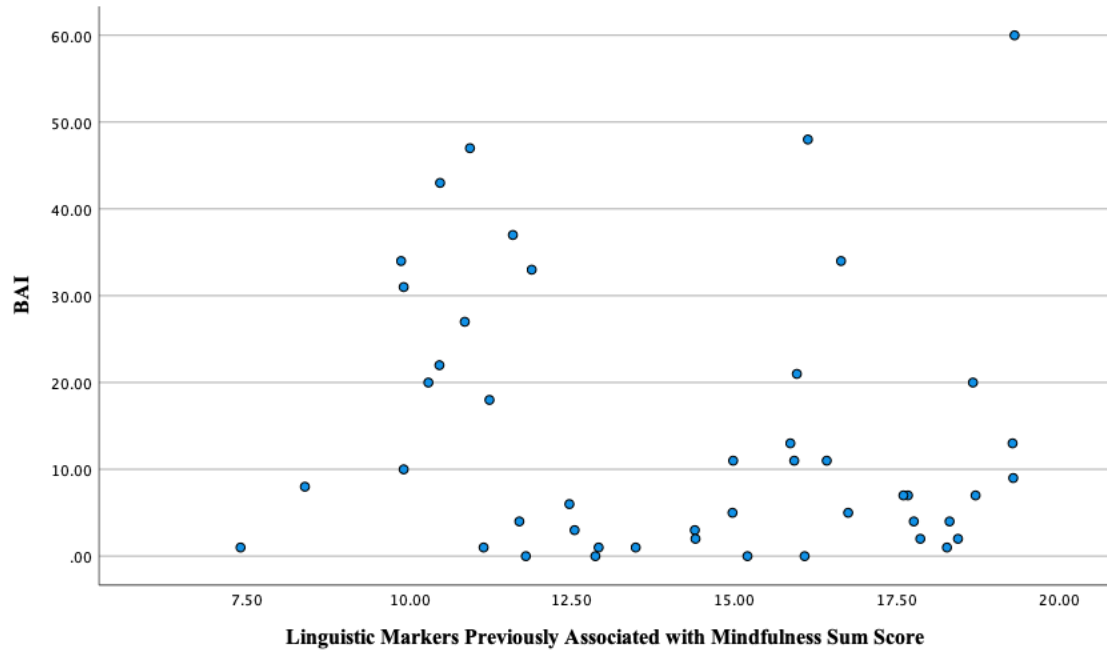

Table 6. Scatterplot of correlation between linguistic markers previously associated with mindfulness sum score and BDI-II
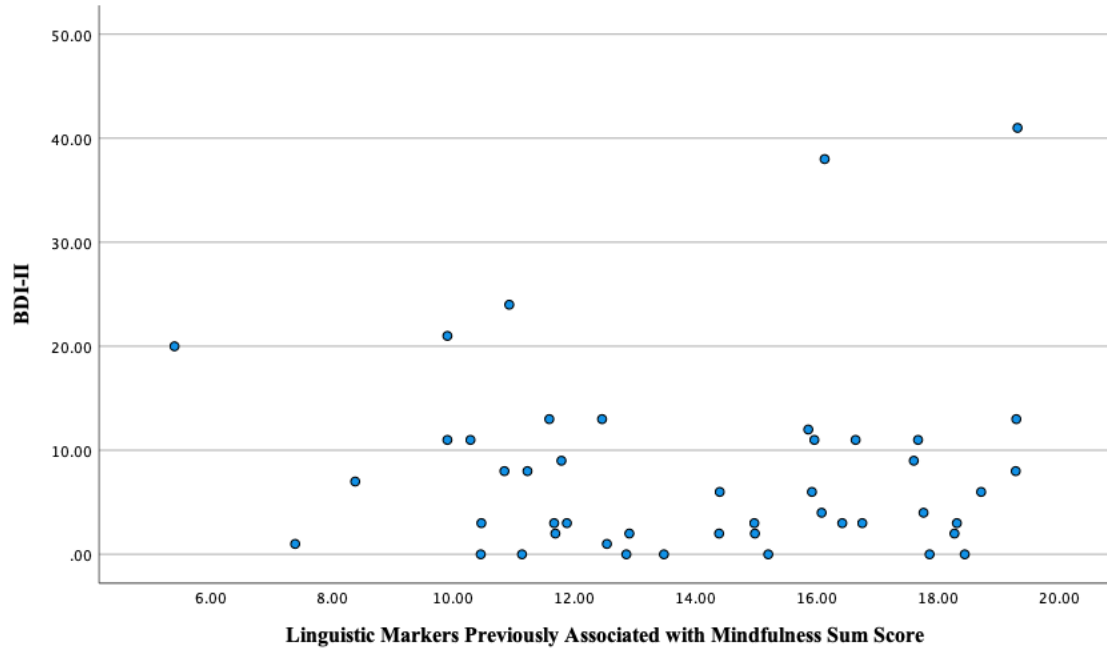

81

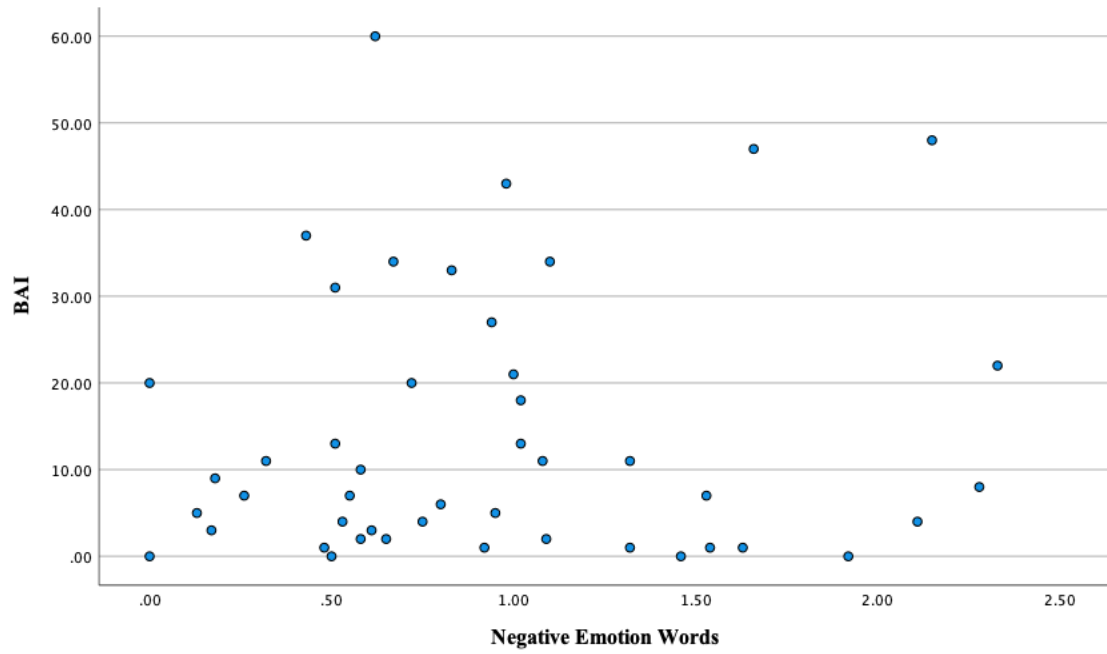*Table 7. Scatterplot of correlation between negative emotion words and BAI*

Table 8. Scatterplot of correlation between negative emotion words and BDI
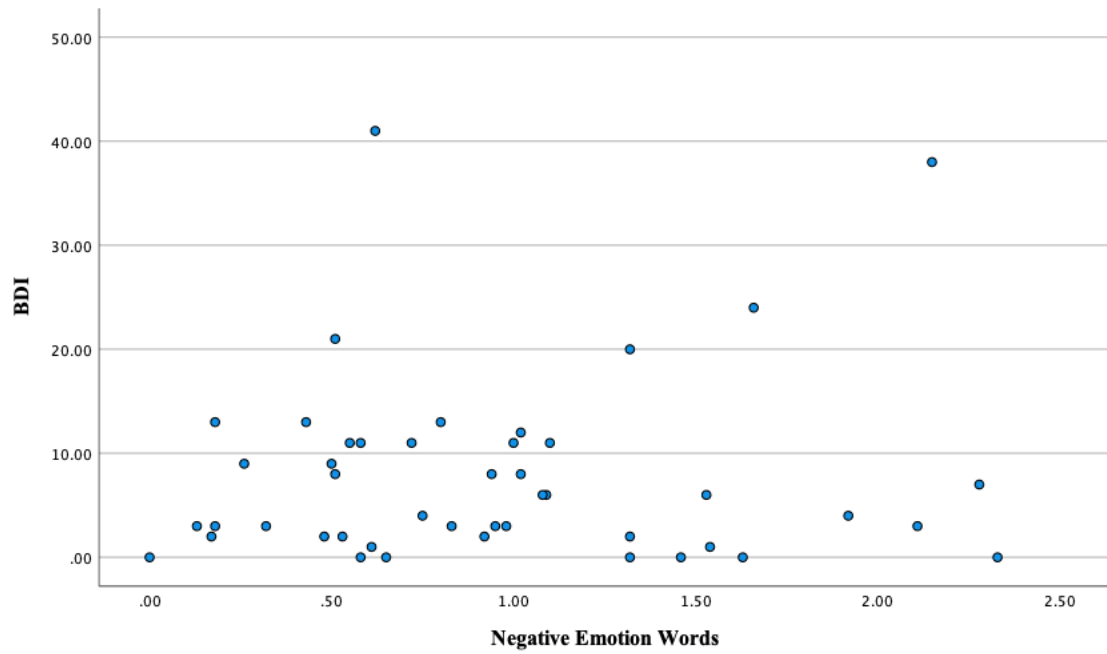
Table 9. Scatterplot of correlation between linguistic markers previously associated with mindfulness sum score and fall 2016 cumulative GPA
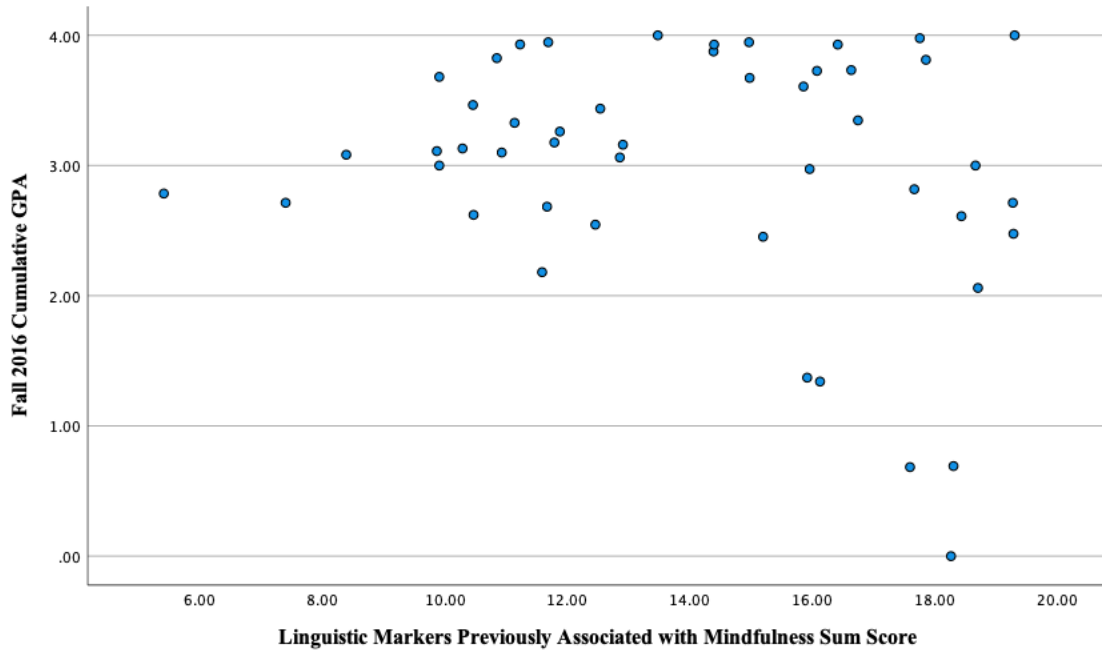

Table 10. Scatterplot of correlation between linguistic markers previously associated with mindfulness sum score and fall 2020 cumulative GPA
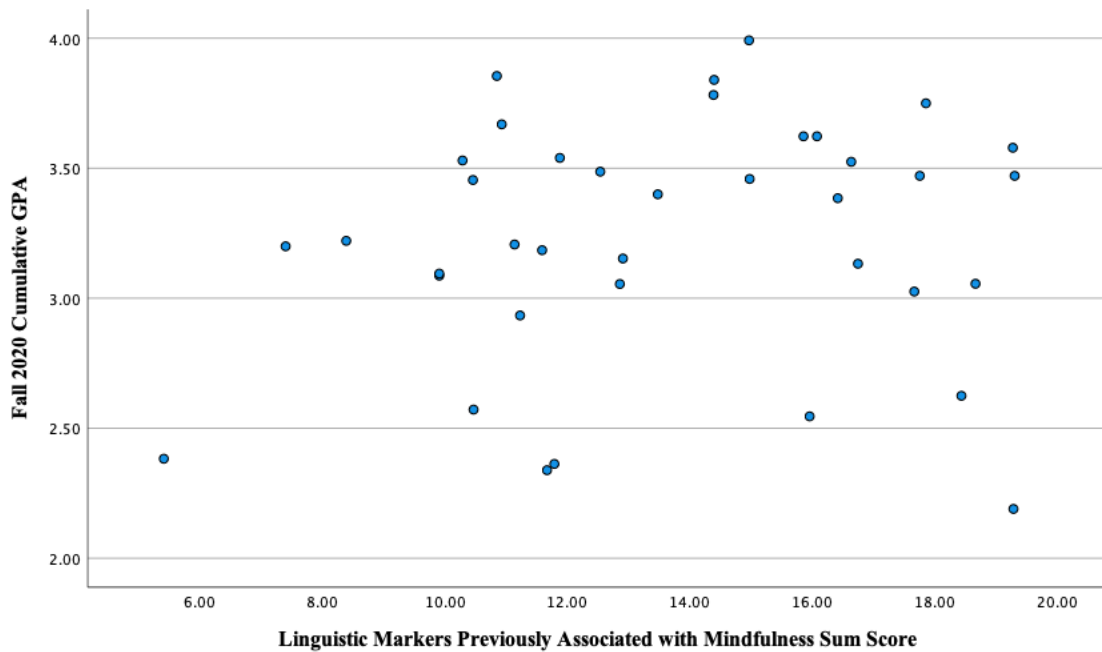
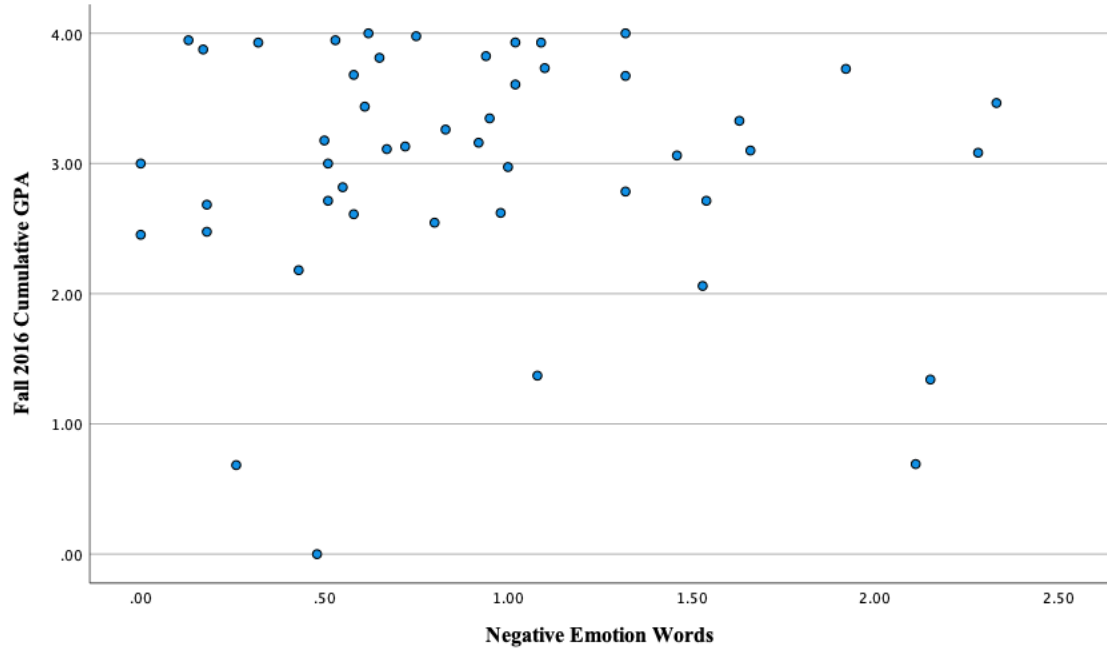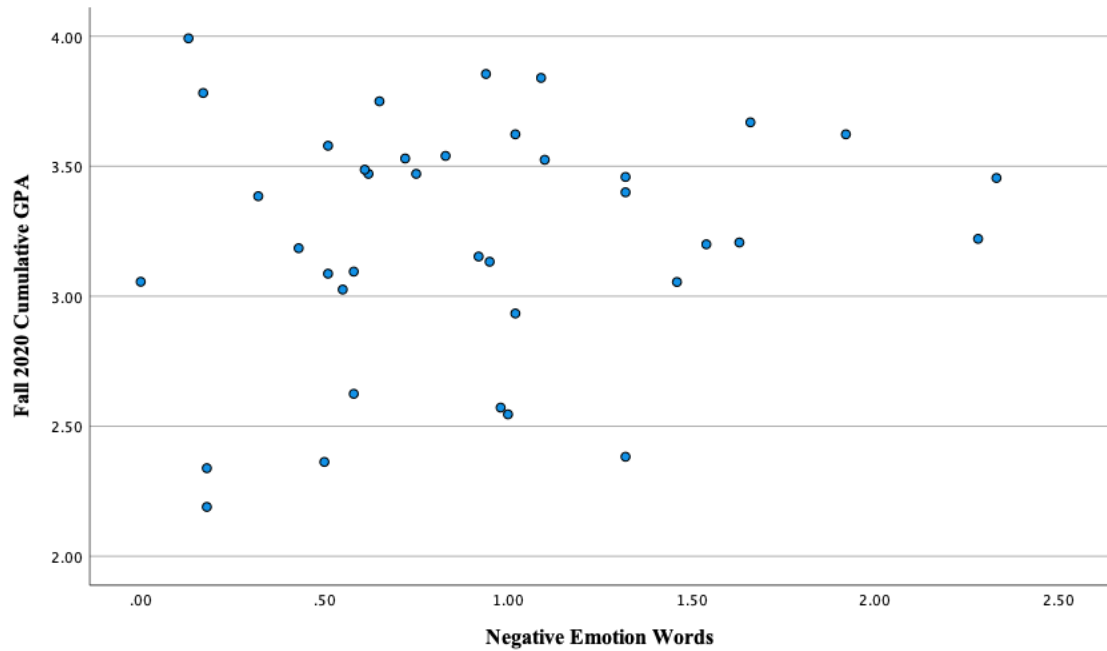*Table 11. Scatterplot of correlation between negative emotion words and fall 2016 cumulative GPA*

Table 12. Scatterplot of correlation between negative emotion words and fall 2020 cumulative GPA

CURRICULUM VITAE

Natalie Burke

Education

University of Louisville	**May 2022**

Department of Psychological and Brain Sciences
Ph.D. Clinical Psychology
Dissertation: Investigating the Income Academic Achievement Gap: An
Exploration of the Roles of Mindfulness and Self-Concept
Clarity in Low-Income College Students

Vanderbilt University	**May 2016**

Department of Psychology and Human Development
M.Ed. Child Studies, Empirical Research Track

Centre College	**December 2013**

Bachelor of Science, Major: Psychology /Minor: French

Studied abroad Strasbourg, France	**January – May 2012**
Studied abroad Israel, Palestine, and Jordan	**January – February 2011**

Clinical Experience

Doctoral Intern	**July 2020 – June 2021**

Adult Track Doctoral Internship at University of Wisconsin Department of
Psychiatry
- 6-month rotation in psycho-oncology at UW Carbone Cancer Center
- 6-month rotation in out-patient treatment of eating disorders
- Shadowed pediatric endocrinologist at the PATH (Pediatric and Adolescent Transgender Health) clinic
- Co-facilitated adult DBT group
- Provided out-patient therapy to children, adolescents, and adults for a variety of psychiatric concerns
- Provided couples therapy
- Conducted assessments for adults with psychiatric diagnostic concerns

Graduate Student Therapist   **September 2019 – June 2020**
Pain Management Clinic at University of Louisville Hospital
- Conducted intakes assessing physical and mental health concerns
- Assessed patients' current strategies for coping with pain
- Used mindfulness-based interventions, such as Acceptance and Commitment therapy (ACT) and Mindfulness-Based Cognitive Therapy (MBCT), to treat concerns related to pain and mental health
- Consulted with doctors and nurses as part of an interdisciplinary treatment team in order to gather information on patients' medical history and pain-related medical procedures, and to provide information about psychological difficulties that may be interfering with pain relief

Graduate Student Therapist   **January 2018 – June 2020**
Integrated Interventions Team at University of Louisville Psychological Services Center
- Conducted diagnostic assessment interviews and assessed for the impact of culture on presenting concerns utilizing the Cultural Formulation Interview
- Provided psychotherapy from an integrated approach (e.g., Acceptance and Commitment Therapy, Cognitive Behavioral Therapy, Exposure and Response Prevention) to adult clients presenting with a range of mental health concerns and from diverse backgrounds across ethnicity, sexual orientation, gender identity, ability status, and socioeconomic status
- Administered psychodiagnostic assessments such as the Structured Clinical Interview for DSM Disorders, Outcomes Questionnaire-45, Beck Depression Inventory-II, and Beck Anxiety Inventory

Graduate Student Examiner   **August 2017- June 2020**
University of Louisville Psychological Services Center
- Administered psychodiagnostic assessments and intelligence tests in order to assess for DSM-5 diagnoses
- Utilized a variety of instruments including the Millon Clinical Multiaxial Inventory-III, Minnesota Multiphasic Personality Inventory-II, Continuous Performance Test-3, Wechsler Intelligence Scale for Children- Fifth Edition, Wechsler Adult Intelligence Scale- Fourth Edition, Wechsler Individual Achievement Test- Third Edition, Beck Depression Inventory-II, and Beck Anxiety Inventory
- Wrote integrated assessment reports utilizing data from semi-structured interviews, assessment measures, and behavioral observations

Graduate Student Therapist   **July 2017 - December 2017**
Children with ADHD and Related Difficulties Team at University of Louisville
Psychological Services Center
- Conducted intakes with children and parents assessing child's concerns
  related to Attention-Deficit/Hyperactivity Disorder (ADHD), managing
  frustration, and other mental health concerns
- Provided psychotherapy for children with ADHD and related problems with
  psychosocial functioning using evidence-based treatments (e.g., Cognitive
  Behavioral Therapy, Parent-Child Interaction Therapy, behavioral therapy)
- Provided group therapy aimed at increasing child's ability to manage
  frustration for children with ADHD and related problems with regulating
  emotions and their parents

Graduate Student Therapist   **July 2016 - July 2017**
Mindfulness-based Interventions Team at University of Louisville Psychological
Services Center
- Conducted intakes assessing adult clients' psychopathology and related
  distress and impairment
- Provided psychotherapy with adults using mindfulness-based interventions
  (e.g., Cognitive Behavioral Therapy, Parent-Child Interaction Therapy)
- Administered psychodiagnostic assessments such as the Outcomes
  Questionnaire-45, Beck Depression Inventory-II, and Beck Anxiety Inventory

Research Experience

***Thought Disorder, Affect, and Critical Thinking Lab* March 2018 – May 2022**
University of Louisville
Advisor: Richard Lewine, Ph.D.
- Proposed and defended dissertation on self-concept clarity, trait
  mindfulness, and academic performance in low-income college students
- Investigated factors that contribute to academic performance and mental
  health in low income college students
- Examined intersectionality and relationship to mental health

Anxiety and Stress in Kids Lab   **June 2017 – March 2018**
University of Louisville
Advisor: Janet Woodruff-Borden, Ph.D.
- Conducted assessments with children to assess for anxiety and other
  internalizing disorders
- Examined topics related to development of anxiety disorders in children, and
  potential protective factors (e.g., parent trait mindfulness, parenting style)
  that may reduce children's risk of developing an anxiety disorder

Mindfulness and Biobehavioral Research Lab   **July 2016 – June 2017**
University of Louisville
Advisor: Paul Salmon, Ph.D.
- Conducted research on yoga interventions and cortisol in cancer patients, dispositional mindfulness and relationship to physical and mental health outcomes, relationships between affect and gratitude, and associations between mindfulness, self-compassion, and affect
- Completed data analyses using SPSS

Parenting to Increase Positive Affect   **August 2014 – May 2016**
Vanderbilt University
Advisor: Judy Garber, Ph.D.
- Responsible for collecting child psychological questionnaire data (e.g., Positive and Negative Affect Schedule for Children, Screen for Child Anxiety Related Disorders)
- Trained in and responsible for collecting EKG and EEG data from child participants
- Contribute to the development of behavioral coding system for mother-child interactions
- Trainer and reliability standard for coding within a multi-site project
- Responsible for transcribing 100+ parent-child interaction videos and training transcribers within and across sites
- Trained undergraduate research assistants on lab procedures

Independent Psychological Research   **September 2012 – December 2013**
Centre College
Advisor: Mykol Hamilton, Ph.D.
- Collected questionnaire data measuring sexual arousal and affective state in response to violent and erotic audio clips
- Designed abstract, method, procedure, and materials in APA format necessary for IRB proposal and grant writing
- Presented at 2013 RICE Symposium, Centre College

Publications

Hicks, A., Salmon, P., Siwik, C., Phillips, K., Zimmaro, L.A., **Burke, N.**, Albert, C., Fields, O., Dorsel, D., Sephton, S.E. (2019, February). Innate mindfulness is associated with reduced stress, psychological distress and lower sympathetic arousal in undergraduates. *International Journal of Stress Management.*

Zimmaro, L.A.*, **Burke, N.***, Salmon, P., & Sephton, S. (in progress). Yoga interventions in cancer patients: A systematic review of associations with cortisol.

Burke, N., & Lewine, R. (in progress). A systematic review of self-concept clarity and schizophrenia spectrum disorder.

* Denotes co-first authorship

Conference Presentations

Calebs, B. J., **Burke, N.,** & Lewine, R. R. (2019, November). Mental health, stressful life events, and intersectionality in a sample of low-SES college students. *International Society for Traumatic Stress Studies.* Poster to be presented by B. J. Calebs in poster session, Boston, MA.

Burke, N., & Woodruff-Borden, J. (2017, November). Does mindfulness matter: the mediating role of parent mindfulness in the relation between anxious rearing and child worry. *Association for Behavioral and Cognitive Therapies*. Presented in poster session, San Diego, CA.

Burke, N., Hicks, A., Sephton, S., & Salmon, P. (2017, May). Relation of mindfulness and self-compassion to affect in undergraduates. *American Psychological Association Annual Convention*. Presented in poster session, Boston, MA.

Hicks, A., **Burke, N.**, Sephton, S., & Salmon, P. (2017, May). Minding your blessings: gratitude and mindfulness as predictors of positive and negative affect. *American Psychological Association Annual Convention*. Presented in poster session, Boston, MA.

Stewart, J., Hart, E., **Burke, N.**, Brunwasser, S., & Garber, J. (2016, May). Moving from Efficacy to Effectiveness in Depression Prevention Trials: A Dimensional Perspective. *Society for Prevention Research Conference.* Presented in poster session, San Francisco, CA.

Burke, N., Brunwasser, S.M., Stewart, J.M., & Garber, J. (2015, May). Sex moderates the relation of reported intimate disclosure with mothers and depressive symptoms in adolescents. *American Psychological Association Annual Convention*. Presented in poster session, New York City, NY.

Burke, N., Grignon, D., Flynn, C.A., & Garber, J. (2015, August). Relation of dependent stressful life events to depression in offspring of depressed and nondepressed mothers. *Association for Psychological Science Annual Convention.* Presented in poster session, Toronto, ON.

Burke, N., Williamson, W., & Hamilton, M. (2013, March). Violence and sexual arousal. *Centre College Research, Internships, and Creative Endeavors Annual Symposium.* Presented symposium presentation, Danville, KY.

College and University Grant Funds

Burke, N., & Lee, A. (Co-Principal Investigators). Developing mindful-yoga interventions for children: A feasibility study. Graduate Student Grant for Research and Creative Activities College of Arts and Sciences, $1000, 2017.

Community Presentations

Presenter on Psychology and Medicine
Spring 2020
University of Louisville Hospital

- Invited to give four hour-long presentations to University of Louisville Hospital physicians on the following subjects: psychological and behavioral therapies, personality disorders, motivational interviewing, and cognitive distortions in pain

Speaker on Graduate Student Therapist Panel on Family and Culture
November 2018
University of Louisville

- Spoke on how culture and family have played a role in the development and/or maintenance of clients' problems addressed in therapy

Speaker on Graduate Student Therapist Panel on Client Substance Use
March 2019
University of Louisville

- Spoke on management of substance use in therapy and how substance use has played a role in the development and maintenance of clients' problems addressed in therapy

Teaching Experience

Teaching Assistant for Psych Research Methods   August 2019 – June 2020
University of Louisville
Supervisor: Dr. Paul Rosen
- Hold office hours and provide assistance to undergraduate students
- Teach statistics to two lab sections of roughly 25 students
- Invited to guest lecture to class of approximately 75 students on ethical considerations in psychological research
- Grade exams, papers, and other course materials

Teaching Assistant for Intro to Psychology   **March 2019 - July 2019**
University of Louisville
Supervisor: Dr. Barbara Stetson
- Provided assistance to students via email (online course)
- Wrote, presented, and filmed video course content to supplement online course materials
- Graded course materials

Teaching Assistant for Intro to Psychology   **August 2016 - April 2019**
University of Louisville
Supervisor: Dr. Edna Ross
- Created ethics course module using Softchalk software
- Held office hours and administered assistance to undergraduate students
- Proctored 6 exams per semester for two course sections, each with approximately 400 students, graded exam scantrons and uploaded grades to blackboard

Volunteer Experience

UMN Comprehensive Gender Care Pride Booth   **June 2019**
- Assisted in engaging Pride attendees in conversation about services at the University of Minnesota's Comprehensive Gender Care program
- Passed out flags and Pride related gifts

Yoga teacher at Kentucky Refugee Ministries   **February 2017 – April 2017**
- Taught yoga to individuals seeking services at Kentucky Refugee Ministries in Louisville, KY, a center offering a number of relocation services to refugee clients

Bluegrass Rape Crisis Center   **May 2013 – June 2014**
- Trained and certified in Crisis Counseling and Medical Advocacy
- Provided on-call coverage over the phone and face-to-face in the Emergency Room to sexual assault victims
- Counseled clients regarding personal, medical, and legal issues following trauma
- Directed clients to other non-profit and government resources
- Provided legal documentation of client interactions for Bluegrass Rape Crisis Center records

Awards and Certifications
Yoga Teaching Certification, 200 Hours   **March 2017**

Certification in Crisis Counseling and Medical Advocacy **May 2013**

August 2009 – December 2013
- Kentucky Educational Excellence Scholarship
- Centre Award Winner Merit Scholarship
- Centre College Music Scholarship – Violin

Affiliations/Memberships
- Association for Psychological Science, Student Member

Language Skills
- Proficient in written and spoken French

References are available upon request