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# Repetitive negative thinking styles and first-semester academic performance: psychological risk and resilience among low-income college students.

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REPETITIVE NEGATIVE THINKING STYLES AND FIRST-SEMESTER  
ACADEMIC PERFORMANCE: PSYCHOLOGICAL RISK AND RESILIENCE  
AMONG LOW-INCOME COLLEGE STUDENTS

by

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A Dissertation Submitted to the Faculty of the College of Arts and Sciences of the  
University of Louisville in Partial Fulfillment of the Degree of

Doctor of Philosophy  
in Clinical Psychology

Department of Psychological and Brain Sciences  
University of Louisville  
Louisville, KY

December 2018

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A Dissertation Approved on:

May 23, 2018

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## DEDICATION

To my son, Cristopher Aidan Duncan, who sacrificed many walks in the park, trips to the store, outings at the mall, and hours of quality time. I love you so much my big boy...this is for you!

## ACKNOWLEDGMENTS

I would like to express my deepest appreciation and gratitude to my dissertation chair, Dr. Richard R. Lewine, for adopting me. Your guidance and mentorship along the way is the reason I can successfully fulfill this requirement and see this degree to completion. It was your integrity and commitment to your role as a clinician and mentor that beamed brightest during times of turmoil. Your feedback was thought-provoking and encouraging, while also prompting a self-evaluative reflection that would result in useful adjustments and personal growth. I was truly fortunate to have had this opportunity to work with you in both clinical work and research, and I am forever grateful for what I have learned because of our time working together.

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Thank you ALL for the contributions each of you made during my years of study at the University of Louisville.

## ABSTRACT

### REPETITIVE NEGATIVE THINKING STYLES AND FIRST-SEMESTER ACADEMIC PERFORMANCE: PSYCHOLOGICAL RISK AND RESILIENCE AMONG LOW-INCOME COLLEGE STUDENTS

Darlene M. Davis

May 23, 2018

College students face significant mental health and academic challenges their first academic year. The college transition period can be stressful. In addition, students are increasingly endorsing anxious and depressive symptoms. Depressive and anxious symptoms are linked to repetitive negative thinking styles that present in college students, which contributes to academic interference. The first year of college can be challenging for students who are unable to adjust and adapt. Students who struggle and feel overwhelmed by life stressors experience psychological disruption that interferes with academic performance.

Growing up in poverty has been associated with lower grade point averages and poorer graduation rates in low-income college students. Low-income college students also tend to have poorer psychological well-being when compared to their same-aged peers. Campus retention programs give support for students from impoverished backgrounds to counter the negative influence of poverty on academic



outcomes. While many programs address academic challenges, few programs address the mental health needs of low-income college students. This research aimed to explore the relationship between mental health factors (emotional distress, repetitive negative thinking styles) and academic performance in low-income college students arriving to college, with further exploration of the unique relationship between repetitive negative thinking styles and academic performance while accounting for emotional distress among low-income college students. Lastly, the study aimed to investigate the overlapping of repetitive negative thinking styles.

Participants for the study were recruited from a university retention program for students from families meeting the U.S. poverty threshold. Students completed a study packet that collected demographics data, academic history, mood symptoms, repetitive negative thinking styles, first-semester academic performance, and other student characteristics. Hypotheses were that repetitive negative thinking styles would co-occur and were related to and predicted first-semester academic performance. Results of 54 participants include demographic data, group comparisons, and correlations. Findings show no influence of repetitive negative thinking styles on first-semester academic performance. Repetitive negative thinking styles also co-occurred in the absence of emotional distress, with ruminative thinking and worry presenting at rates equivalent to excessive worriers and ruminative thinkers. Future directions and implications are discussed.

*Keywords:* worry, rumination, poverty, college transition, college student retention

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## INTRODUCTION

Poverty is a major hurdle for low-income college students looking to better their lives. Making it to college does not extinguish the reach and influence of poverty as observed in poorer psychosocial well-being and stalled academic progress among low-income college students. Growing up in poverty can impede mental health as low-income students are at an increased risk to experience: traumatic or violent events, chronic illness or death in the family, limited finances or job loss among parents, family addiction, legal issues, and limited social support and unhealthy family dynamics. Given the difficulties students from economically disadvantaged backgrounds may have experienced prior to enrolling in college, it is not surprising that poorer academic outcomes among this group of students has been well-documented.

Attending college is a path of escape from poverty but many students from impoverished backgrounds are not seeing these dreams materialize into opportunity. Retention programs recruit low-income students to offset the influence of poverty on their classroom performance, grade point average, and early departure decisions (Braxton, Hirschy, & McCLEndon, 2004). Difficulties with the transitioning to college, coupled with the influence of mental health challenges, often contributes to academic challenges and completion barriers. Retention programs recruit low-income students to

offset the influence of poverty on their classroom performance, grade point average, and early departure decisions. Program staff support students in navigating social and academic experiences. Programming often entails providing campus activities to ensure students establish healthy social ties and increase their sense of belongingness on the university campus. The academic programming includes academic tutoring services to offset the potential negative effects of under-preparedness. The programming offered for more personal concerns unique to students from impoverished backgrounds include financial stipends or work-study opportunities to offset financial hardship. Despite the mental health challenges stemming from living in poverty, few retention programs appear to offer supportive services that address emotional challenges. It is therefore important as a first step in remediating this issue to examine in detail the potential mental health issues of college students from poverty. College success is not just about academic preparedness, but also about emotional, cognitive, and social well-being while pursuing a college degree.

## **Psychological Vulnerabilities in College Students**

### **College Student Mental Health Crisis**

The college years correspond with the onset of many psychological disorders, suggesting that college students are potentially at greater risk for experiencing mental health challenges compared to youth or older adults. Ten years ago, over half of college students met DSM-IV TR criteria for a current psychological disorder within the past year (Blanco et al., 2008). Today the number of stories about students entering college who report anxiety and depression suggests a potential increase in the prevalence of mental health issues in this population. According to the World Health Organization

(WHO) Global Burden of Disease study, mental health challenges account for nearly half of the overall disease burden for youth and young adults ages 12-24 (Patel, Flisher, Hetrick & McGorry, 2007; WHO, 2002). Epidemiological research has revealed that 11-12% of college students have an anxiety and mood disorder (Grant, Moore, Shepherd & Kaplan, 2003). Eisenberger and colleagues (2007) also found that 15.6% of college students met DSM-IV TR criteria for an anxiety or depressive disorder. The American College Health Association (ACHA) found that students identified depression and anxiety as one of the top ten obstacles to academic success (ACHA, 2005). Despite the prevalence of mental health challenges among college students, only 12-18% of college students are treated (Snyder & Dillow, 2012). Because young adults make up the fastest growing population facing mental health issues in the United States (Twenge et al., 2010; Hunt & Eisenberg, 2009; Kessler et al., 2005), the likelihood increases that college students entering college now have the added burden of managing mental health challenges in addition to the typical stress of college. Given the risk noted for college students, there is a great need for more intervention and support services that address mental health challenges on the college campuses.

### **College Transition Stress**

The college transition period is stressful for first-year students and the overall experience has the potential to serve as a major stressor for college students (Bayram & Bilgel, 2008; Ross, Niebling, & Heckert, 1999). Students are faced with a number of challenges the first few weeks and months of college that involves adjusting to new academic and social expectations and norms. Students who fail to complete college have difficulties adjusting in light of stressors that arise their first year of college (Levits &

Noel, 2006). In addition, students who arrive to college with mental health challenges have less successful transitions during their first academic year (Cooke, Bewick, Barkham, Bradley & Audin, 2006). A study investigating college transitioning and mental illness found that 73% of students entering college, having been previously diagnosed with a mental illness, would experience a mental health crisis during their college matriculation (Fritz, 2014). While many first-year students are at risk of developing or exacerbating mental health challenges during this transitional period, students from impoverished backgrounds are likely at greater risk for experiencing emotional or behavioral difficulties.

### **Poverty-Related Psychological Risks**

#### **Poverty and Mental Illness**

There is a bidirectional relationship between mental illness and poverty, with research findings reflecting the exacerbation of mental illness by poverty and mental illness increasing the risk of becoming impoverished (Lederbogen et al., 2011; Anakwenze & Zuberi, 2013). The negative relationship between mental illness and socioeconomic status among college students has been consistently observed in research, finding a higher risk of mental challenges among students from impoverished backgrounds (Weitzman, 2004). Eisenberg and colleagues (2007) noted a relationship between socioeconomic status and mental health challenges, with students from impoverished backgrounds having the highest prevalence of anxious and depressive symptoms. In a large-scale annual study examining the prevalence of mental health challenges among college students, low-income status predicted mental illness and was 2 to 3 times more likely to predict suicidal thoughts, anxiety disorders, and major

depression (Eisenberg, Gollust, Golberstein, & Hefner, 2007). Low-income college students tend to have poorer psychological well-being compared to their peers (Roberts, Golding, Towell, & Weinreb, 1999), reflecting emotional and behavioral difficulties. Students who grew up in poverty have expressed feelings of inferiority and helplessness (Frojd, Marttunen, Pelkonene, von der Pahlen, & Kaltialal-Heino, 2006). Engaging in self-harm behaviors, early sexual behaviors, criminal activity, and substance abuse were also frequently reported by students from impoverished backgrounds (Dashiff, DiMicco, Muers, & Sheppard, 2009; McBride, Paikoff, & Holmbeck, 2003; Davis, Banks, Risher, & Grudzinksa, 2004). The mental health challenges strongly associated with poverty do not leave the individual or abruptly stop because the environment changes. Indeed, changing environments is more likely to be another source of stress that is particularly burdensome for those already experiencing the consequences of poverty. For those entering college from poverty, the expected stresses of high school to college transition are likely magnified.

### **Poverty-Related Stressors**

Low-income students are faced with additional stressors related to concerns about financial status and social/academic fit during their college matriculation (McLoughlin, 2014; Roberts, Golding, Towell, & Weinreb, 1999). The emotional burden of financial stress, feeling inadequate, lack of belongingness or isolation, concern over potential academic failure, and questioning of their preparedness and overall potential for success are common concerns that could exacerbate the stress students experience during their college transition (Colyar & Stitch, 2011). Financial concerns related to family survival and family health problems also weigh heavily on the minds of low-income students,

explaining why many students reporting financial struggles report more mental health issues (Eisenberg, Gollust, Golbertstein, & Hefner, 2007). Low-income college students express concerns about having to consider the affordability of on-campus versus off-campus living, commuting, deciding to work while in school, financial responsibilities for family needs, and having enough financial aid to cover education and living while in college (Perna 2010; Perna and Li 2006; Schuh 2005; Wyner, Bridgeland, & Dilulio, 2007; Bean and Metzner 1985; Bozick 2007). Low-income students who notice differences in lifestyle compared to their peers begin to feel like social outcasts, which interrupts identity solidification, contributes heavily to poor class attendance and peer relationships. While each student will respond differently to this pressure, those without effective coping mechanisms will face a greater chance of experiencing challenges during the initial transition and potentially the remainder of their academic career.

The diathesis-stress model of psychopathology provides a useful framework for explaining how mental health challenges are triggered in students from impoverished backgrounds (Monroe & Simons, 1991). The diathesis-stress model proposes that psychological distress is the result of predisposed factors and stressful experiences. Students with higher levels of stress experience significant psychological disruption (Byrd & McKinney, 2012). Because students from impoverished backgrounds are predisposed to mental health challenges, coupling the stress from the college transition with prior poverty exposure creates a framework for the likely development of psychological disturbance among low-income college students their first semester. While it would seem to benefit all students to gauge the mental status of college students upon entry to college, the greater risk among low-income students suggests early identification



of prior and current mental health factors upon entering college would be particularly important for this group.

### **Maladaptive Stress Responses**

Growing up in poverty fosters a pattern of maladaptive stress response that increases the risk that students from impoverished backgrounds will experience mental health and academic challenges. The Responses to Stress Model (Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000) suggests that poverty interferes with the utilization of adaptive stress responses. Students from impoverished backgrounds tend to have a maladaptive stress response of disengagement coping when responding to stress (Gonzales, Tein, Sandler, & Friedman, 2001; Santiago & Wadsworth, 2009). In contrast, students adopting adaptive coping responses during their transition to college had better academic outcomes (Fisher & Hood, 1987) and lower attrition rates (Roberts & White, 1989). Students that employed voluntary, active, problem-focused coping strategies were more likely to adjust better during their college transition and successfully navigated academic difficulties (Aspinwall & Taylor, 1992; Nafziger, 1998; Kariv & Heiman, 2005; see Ryland, Riordan & Brack, 1994 for an alternative view). This would suggest that having appropriate stress responses are important to the academic success of low-income college students.

Coping responses serve the dual functions of reducing stress or managing intense emotions to relieve distress (emotion-focused coping) and resolving or removing the cause of the distress (problem-focused coping) (Lazarus, 1999). Emotion-focused coping responses do not solve the source of the distress but are most useful for facilitating the expression and processing of emotions when faced with circumstances that cannot be

changed (Baldacchino & Draper, 2001; DeGraff & Schaffer, 2008). The focus is placed on one's emotional response to the stressor and self-reflection is used to regain control (Carver, 2011). Common emotion-focused coping responses include venting, acceptance, denial, self-blame, ruminative thinking, worry, and other repetitive thinking styles that contribute to further distress (Lazarus, 1999; Watkins, 2008). Problem-focused coping responses aim to change or adjust the primary stressor and are most useful for facilitating the evaluation of options, gathering information, and taking control of changeable situations. The focus is to reduce or remove the cause of the distress through strategic engagement or avoidant tactics. Some examples of problem-solving coping responses include positive reframing, wishful thinking, denial, mind-wandering, obsessive thinking, worry, and other repetitive thinking styles that facilitate the gathering and evaluation of information (Poczwadowski & Conroy, 2002; Watkins, 2008). Repetitive thinking exists across both emotion-focused and problem-focused coping responses to stress. The function of repetitive thinking serves to make sense of the stressful situation through the integration of information gathered from repetitive thinking and one's personal assumptions and beliefs about self and the world (Horowitz, 1986; Tait & Silver, 1989; Harber & Pennebaker, 1992). Tedeschi and Callahoun (2004) suggested that highly stressful and traumatic experiences damage assumptions and challenges individual beliefs, generating emotional distress. For students experiencing emotional distress, repetitive thinking might be viewed as a viable coping response that could either contribute to college related stress or assist in overcoming academic challenges.

## **Low-Income College Student Retention**

### **Poverty and Academic Outcomes**

Students growing up in impoverished neighborhoods are less academically prepared and are at higher risk of dropping out of school at both the high school and college level. In 2016, the high school dropout rate among persons 16–24 years old was highest in low-income families (9.7%) as compared to high-income families (2.6%; McFarland et al., 2017). Low-income students who successfully complete high school attend college at a lower rate than their high-income peers. In addition, the college completion gap between low-income students and high-income students has widened in the last few decades (Bailey & Dynarski, 2011). It is common for low-income students to make up on average 25% of college students completing four-year degrees, dropping out of college at a higher rate (86%) when compared to their peers (12%) (Snyder & Dillow, 2012; Kena et al., 2015; Radford et al., 2011). College student persistence rates reflect a similar pattern in the general student population and the relationship between low-income and high-income students. During the first year of college at four-year institutions, approximately 25% of the freshman class will not return for sophomore year, and the attrition rate is even lower for low-income students (Reason, Terenzini, & Domingo, 2006; Tinto, 1993). In a national longitudinal study tracking the class of 2011 high school graduates, 79% of low-income students advanced to their second year of college compared to 88% of their peers (Dynarski, Hemelt, & Hyman, 2015). To offer educational attainment as a path to economic/social mobility to low-income college students, retention programs were established nationally on campuses of colleges and universities.

## **Factors Influencing Persistence and Retention**

More recent literature has considered the contribution of individual student characteristics to retention outcomes. Student expectations of college, enrollment status, ethnicity/race and gender, HS academic preparedness and performance, and academic behaviors like study habits influence social and academic integration, which in turn determines departure decisions (Feldman, 1993; Bohman & Luckie, 1993; Braxton, 2000). Recognition of the many contributors to student persistence and retention has led to the development of multiple retention models. According to Tinto's (1975) student retention model and Bean's (1980) model of student attrition, academic and social integration and various individual and environmental background characteristics predict student persistence. According to Tinto's Student Integration Model (1993) involvement in the social and academic community of the institution enhances persistence. How involved and engaged the student is after admission plays an important role in retention, however, the qualities students arrive to campus with are equally significant when considering retention. Bean's Theory of Student Attrition Model (1980,1983) highlights both environmental/institutional factors and the role of students' beliefs and thoughts. The decision to leave school is shaped by institutional/environmental and personal variables that inform beliefs, shaping intentions about attitudes about academic success and intentions about graduation. In his revised model, Bean (1993) emphasized the need to better understand the relationship between student involvement in learning and the impact that involvement has on student persistence. An important contribution of Bean's model is the acknowledgment of non-intellectual factors (Cabarrera, Nora, & Castaneda, 1993).

## **Function of Retention Programs**

Retention programs provide support for low-income students in an effort to improve persistence and retention outcomes (Braxton, Hirschy, & McClendon, 2004; Cope & Hannah, 1975, Summerskill, 1962). Many of the retention programs relied heavily on the retention literature to create programming for their institution. The college student retention literature addressed institutional/environmental factors and individual characteristics as primary contributors to persistence and student departure. Earlier research determined that institutions providing access to quality support and sense of belongingness influenced student retention (Astin, 1977). Purposeful involvement might include feeling supported by faculty members, completing service learning programs, participating in a learning community or joining a fraternity/sorority. Environmental factors that heavily influenced student satisfaction and the likelihood of continuing at the institution included prestige of and accessibility to faculty, residence facilities, available majors or programs of study, financial aid, and student body involvement with the institution (Astin, 1993; Kuh, Shuh, & Whitt, 1991). Students taking part in academic and extracurricular activities, connecting to life on campus had a stronger link to their institution.

**Social Integration.** Many retention programs provide staff support to assist students with navigating the campus experience, facilitate campus activities to ensure students establish healthy social ties and increase a sense of belongingness on the university campus, offer academic tutoring and services to offset the potential negative effects of under-preparedness. Some programs offer stipends or work-study opportunities to offset financial hardship. Low-income students attending college typically are the

“high achievers” from their high school, but typically have limited family support. While prior high school academic performance positions low-income college students for college success, the influence of poverty interferes with the family’s ability to provide financial support or assist students in their navigation of the college experience. Low-income students are said to lack the cultural capital necessary to successfully navigate college. Cultural capital is described as the behaviors, skills, and knowledge one uses to improve social status, a resource that their higher-income peers have access to when they enter college (Bourdieu, 1973; Lin, 2017). As a result, many retention programs offer summer programs that allow students to build relationships with peers and staff prior to the start of the college year. Students participating in bridge retention programs have felt a stronger sense of belongingness among their peers, closer connection with staff, and a stronger connection to the institution, with other benefits including improvement in academic performance and student persistence (Osterman, 2000).

**Academic Integration.** Retention programs focus heavily on degree completion outcomes, often monitoring and measuring academic performance, using course grades and term/cumulative grade point averages. Tutoring and academic advising have served as staples in retention programs, offered to low-income students as methods to ensure passing grades on exams, maintain mandated grade point averages, and influence overall academic performance. While low-income students might enter college perceiving themselves as “high-achievers”, feelings of underpreparedness may emerge when required to complete college-level assignments. Feeling underprepared might trigger concern, negative self-evaluation, and create stress around being a student. The concern and stress could have an immediate and long-term impact in situations like passing an

exam or deciding the level of commitment students have to their academic goals, career goals, and the institution (Demetriou & Schmitz-Sciborski, 2011). Despite considerable attention to improving retention outcomes over the past two decades, little progress has been made in closing the achievement and retention gap among low-income college students (Braxton, 2000; Braxton, Hirschy, & McLendon, 2004). Unfortunately, few programs attend to experiences that center around individual concerns about the college transition, responses to stress when arriving to campus, or stressors that arise during their matriculation that likely influence academic performance and the student's ability to respond appropriately to the new challenges faced during the academic year. Examining individual psychological characteristics in low-income college students, including emotional and cognitive stress responses, that might influence social integration and academic integration, as measured by academic performance, within the university system is useful for understanding and ensuring academic success and positive student retention outcomes.

### **Repetitive Negative Thinking Styles in College Students**

Repetitive thinking is a cognitive process involving attentive, repetitive or frequent thoughts about the world and one's experiences, thoughts, and concerns that have both an adaptive and maladaptive quality (Watkins, 2008; Segerstrom, Stanton, Alden, & Shortridge, 2003). According to the literature, adaptive properties of repetitive thinking include the ability to process upsetting events, plan/prepare, and engage in recovery-focused symptom exploration, an important part of adjustment, healing, and recovery; whereas, other forms of repetitive thinking were associated with the manifestation and maintenance of depressive/anxious symptoms and poor trauma

recovery (Ingram, 1990; Nolen-Hoeksema, 2000; Ehring & Watkins, 2008; Topper, Emmelkamp & Ehring, 2010; Watkins, 2008). Some models of repetitive thinking suggest interference in cognitive and emotional processes, resulting in negative emotions and mood disturbance (Segerstrom, Roach, Evans, Schipper, & Darville, 2010; Segerstrom, Stanton, Alden, & Shortridge, 2003) Other models propose promotive aspects that lend to cognitive and emotional processing (Segerstrom, Stanton, Alden, & Shortridge, 2003). An extensive literature review completed by Watkins (2008) revealed two possible consequences of engaging in repetitive thinking, constructive and unconstructive. Constructive repetitive thinking was conceptualized as a cognitive coping response useful during both problem-solving and trauma recovery processes, and unconstructive repetitive thinking was characterized as maladaptive, excessive, uncontrollable, emotion-focused processing of intrusive, negative thoughts that contribute to emotional distress (Watkins, 2008). While descriptions of unconstructive experiences seem to outweigh the reporting of constructive experiences, it is important to note how repetitive thinking styles can result in both outcomes.

The difference in the experience of constructive and unconstructive consequences of repetitive thinking styles is based on emotional responses (Watkins, 2008). Emotional distress in response to repetitive negative thinking styles is an example of an unconstructive consequence, while averting or reducing the likelihood of stress would be an example of a constructive consequence. For example, worry as a constructive cognitive process reflects an engagement in problem-solving, however, worry becomes unconstructive when it results in high levels of anxiety (Davey, Hampton, Farrell & Davidson, 1992). Valence and purpose are qualities that encompass the form of repetitive



negative thinking styles and related emotional responses that determine the constructive and unconstructive outcome (Evans & Segerstrom, 2011; Segerstrom, Stanton, Alden, & Shortridge, 2003). Segerstrom and colleagues (2003) described the quality of valence as a major component contrasting the thought content of repetitive thoughts and purpose as the component contrasting the intent behind engaging in repetitive thought. The valence quality is best explained as the difference between negative thought content that contributes to negative emotions and mood and positive thought content that contributes to positive emotions and mood. Searching and solving describes the purpose quality of repetitive thinking styles. Segerstrom and colleagues (2010) found negative valence and searching purpose were associated with depression and poorer psychological wellness.

### **Functions of Repetitive Negative Thinking Styles**

**Worry.** Worry has been conceptualized as a response to anxious arousal about an anticipated threat (Borkovec, 1994). As anxious anticipation builds, levels of emotional distress increase in individuals who worry. Worry offers a sense of safety and security for individuals who use this repetitive negative thinking style. Reviewing and thinking through possible solutions leads to experiencing relief from distress about feared catastrophic outcomes (Borkovec, Robinson, Pruzinsky, & DePree, 1983). For example, high performing students with concerns about grades might spend hours a day thinking and planning ways to avoid or prevent upsetting a teacher out of fear of failing the course. The feared catastrophic outcome (“I am going to fail school”) due to concerns about external factors (upsetting the teacher, negative interactions with the teacher) is coupled with concerns about external outcomes (poor academic study habits) that can have a negative impact on other external factors (failing a course). Alternatively, worry

has been shown to have facilitative properties that would avert negative emotional reactions to stress (Jansson-Frojmark, Lind, & Sunhead, 2012). Tallis & Eysenck (1994) noted how worry functioned as an “alarm” that interrupts behaviors, promotes awareness of potential threats, and triggers preparatory and adaptive behaviors to reduce potential threats. Worry facilitates an engaging process of mental problem-solving for an individual experiencing uncertainty of an outcome. For example, high performing students with concerns about grades might also review their past exam scores and map out their future exam schedule, adjusting their study scheduled accordingly depending on their past exam scores and the scores needed to achieve the expected course grade.

Cognitive theorists emphasize content and biases in cognitive processes as important contributors to the etiology and maintenance of pathological worry (Beck, 1985; Wells, 1995). Biases in attention, memory and interpretation of information are highlighted as key areas of cognitive interference in worriers (Beck & Clark, 1997; Eysenck, 1984). In a review of the literature on attentional biases, both anxious youth and adult participants were more likely than non-anxious participants to selectively attend to threat-related stimuli (Pulliafico & Kendall, 2006; Suarez-Morales & Bell, 2006). Pathological worriers consistently displayed attentional bias toward threat-related words and images. In a study investigating attentional bias and worry in college students, worriers did not attend differently to threat-related or non-threatening words (Koven, Heller, Banich & Miller, 2003). The authors proposed that focus on performance of the task would distract from the content of the words, resulting in an equally slowed response to the stimuli. Also, worriers struggled with decision-making and perceived more environmental threats (Pratt, Tallis, & Eysneck, 1997; Dalgeish, Taghavi, Seshat-Doost,

Moradi, Yule & Canterbuty, 1997). At various stages of information processing, worry engages different cognitive processes separate from what is triggered during emotional processing. Feelings of fear and apprehension at the affective level co-occur with poor concentration and difficulty controlling/blocking thoughts at the cognitive level (Beck et al, 1985; Barlow, 2004). Therefore, it would appear that more research is needed to further understand performance and worry, considering emotional and cognitive responses separately.

**Obsessive Thinking.** Obsessive thinking is motivated by the need for certainty in individuals endorsing obsessive-compulsive symptoms (Salkovski, 1999). Obsessive thinking is rarely discussed separately from compulsive behaviors in the literature, making it difficult to fully understand it as a cognitive process. Individuals become anxious and depressed when exploring the meaning behind the content of their intrusive thoughts, which increases their level of distress. Obsessing provides a false sense of safety and emotional relief from the distress and individuals persist in the reviewing of past and future concerns and behaviors in search of certainty (Clark & Claybourne, 1997). For example, an obsessive student might hold a belief that he will fail the semester and might experience these thoughts throughout the semester. These thoughts trigger his concerns about failure and he spends a significant amount of time thinking about the possibility of failing. He evaluates his past and current behaviors, while planning future behaviors that would ensure he is successful and help him avoid doing anything that would lead to future failure. The feared catastrophic outcomes (being a failure) are due to internal factors (believing he is an inadequate student or a failure), with internal outcomes

(that he is responsible for his failure) having a potentially negative impact on both internal (disappointment, shame) and external factors (poor academic performance).

**Ruminative Thinking.** Ruminative thinking regulates emotional distress from depressive and anxious symptoms (Nolen-Hoeksema, 2000). Individuals who ruminate seek to gain mental control and emotional relief, responding to their experience of emotional distress and unpleasant thoughts about their emotional discomfort. For example, a psychologically distressed student, whose performance is comparable to those of her peers, might spend a large amount of time thinking of herself as “failure of a student” and how poorly she feels due to her perceived inadequacies. She ruminates seeking to understand the relationship between what she believes and how she feels in search of a solution because she fears failing out of school. Fear of a catastrophic outcome (failing out of school) maintained by internal factors (depressive and anxiety symptoms about feeling bad and a possible failure), with added concerns about external outcomes (failing the exam), can negatively impact external (poorer academic behaviors) and internal (poor mood and negative beliefs about self) factors. On the other hand, Martin and Tesser (1996) conceptualized ruminative thinking as a cognitive process that assists with goal attainment linked to personal aspirations. Students who aim to end their academic year with above average academic performance might engage in ruminative thinking focused on the theme of earning an A on class projects, assignments, and exams to ensure they pass the course. Students with a ruminative thinking style would experience passive and repetitive thoughts about their concern of not reaching their goal of passing the course and any circumstance that might result in the student failing to earn

an A, serving as a constant reminder for the student to align daily behaviors with their goal.

### **Co-occurring Repetitive Negative Thinking Styles**

Researchers use the term *repetitive negative thinking* to capture the transdiagnostic nature of cognitive coping responses noted across anxiety and mood disorders (Topper, Emmelkamp & Ehring, 2010; Ehring & Watkins, 2008; Harvey, Watkins, Mansell, & Shafran, 2004). Ruminative thinking was originally proposed as a repetitive negative thinking style solely associated with major depressive disorder (Cox, Enns, Walker, Kiernisted, & Pidlubny, 2001), but recent literature suggests an equivalent relationship with anxious symptoms (Comer et al, 2004; Harrington & Blankenship, 2002). In addition, high comorbidity of anxiety and depression further supports the idea that ruminative thinking represents a transdiagnostic characteristic (Olatunji, Naragon-Gainey & Wolitzky-Taylor, 2013). Due to the similarities among worry, obsessive thinking, and repetitive negative thinking, distinguishing these cognitive processes has proven challenging for researchers and clinicians alike. To date, no comparison of all three repetitive negative thinking styles has been explored in one study, creating a major gap in the repetitive negative thinking and related clinical and treatment literatures.

**Worry and Ruminative Thinking.** Worry and ruminative thinking differ in frequency, content of thoughts and their focus on perceived threat (Fresco, Frankel, Mennin, Turk, & Heimberg, 2002). However, both ruminative thinking and worry are associated with reduced cognitive control (Beckwe, Deroost, Koster, Lissnyder, & Raedt, 2014). Worry is an ongoing, trait-like cognitive process, whereas, ruminative thinking is a response to distress. Brinker and Dozois (2009) proposed that ruminative thinking

could also represent a trait-like tendency, but more research is needed. Catastrophic outcomes related to daily life activities are the focus of worry, which could explain why individuals might use this cognitive style more often than ruminative thinking. Worry might also seem more like a typical response to dealing with everyday concerns compared to focusing on negative feelings and negative outcomes when engaged in ruminative thinking. Ruminative thinking occurs in a narrower context, with the content focused on distress linked to a specific situation. The primary focus is on the meaning of the distress itself and other factors contributing to the distress. Although it is possible to be in distress multiple times throughout the day, specific thoughts linked to the situation would have to appear frequently in order to trigger rumination at a frequency equivalent to that of worry. The ability to alleviate the distress is an important factor and when the distress does not dissipate, it becomes the focus of rumination. Unlike worry, ruminative thinking has a dual focus for relief of both emotional and situational outcomes.

Worry and ruminative thinking have been consistently presented as separate but notably similar cognitive processes (Calmes & Roberts, 2007). However, inconsistent findings reflecting weaker relationships between worry and ruminative thinking can be attributed to the differences in measurement of worry across studies (van Rijsoort, Emmelkamp, & Vervaeke, 1999). The two most commonly administered instruments of worry, the Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger & Borkovec, 1990) and the Worry Domains Questionnaire (WDQ; Tallis, Eysenck, & Matthews, 1992), measure different constructs of worry. The Penn State Worry Questionnaire was developed to measure pathological worry or trait-like characteristic observed via cognitive processes generally implemented across time and situation. The

Worry Domains Questionnaire was developed to assess more common aspects of worry by measuring content of everyday concerns like finances, future goals, relationships, worry and confidence. Comparing rumination to content of worry, as measured by the Worry Domains Questionnaire, instead of the process of worry, as measured by the Penn State Worry Questionnaire, across studies would explain the difference in the strength of relationships. Content of worry could vary greatly depending on individual differences in college students. Student A from a low socioeconomic background might have concerns about her financial stability despite having a fellowship and stipend, whereas, Student B is an honors student with concerns of failing. Because content can trigger different levels of emotional distress, it is likely that comparing content to the measurement of process contributes to inconsistent findings in the literature. A more consistent measure to compare among the students are the repetitive, uncontrollable cognitive processes. Because process is more consistent and relevant when investigating repetitive negative thinking styles, it would seem best to compare worry measured as a process using the Penn State Worry Questionnaire than as content using the Worry Domains Questionnaire.

**Obsessive Thinking and Worry.** Worry and obsessive thinking differ in frequency and content of thought, while sharing similar concerns of catastrophic outcomes (Tallis & de Silva, 1992; Langois, Freeston, & Ladouceur, 2000a). Both worry and obsessive thinking are indicators of potential trait-like cognitive responses. The function of thinking styles is to gain relief from distress about the unknown or the potential for negative future events (Turner, Beidel, & Stanley, 1992). Content of thought is an important diagnostic feature of both worry and obsessing. Individuals who worry tend to focus on everyday concerns. While individuals who obsess can also focus on

everyday concerns (e.g. health, family), the content of obsessions are typically reflective of inappropriate thoughts and their significance (Salkovski, Richards, & Forrester, 1995). For example, worry and obsessive thinking can arise over concerns about academic performance on an exam. Worriers will have concerns of failing the course, despite, for example, having passed a similar exam with an A average in the course. Obsessive thinking will involve concerns about the future, expanding to fears of failing out of school, never attaining long-term career goals, and ending up lonely and homeless. Further review of the importance and personal responsibility of the individual also consumes a significant amount of mental energy. Unlike obsessing, worry seems to be a more of generalized persisting process versus having a specific focus. When obsessing, the focus is on the potential for things to become increasingly worse and individuals experience a downward trajectory leading to potential negative and catastrophic outcomes. However, individuals who worry might begin with one specific thought that broadens, causing a widening of the focus and increases the uncertainty about the possibility of a catastrophic outcome.

Worry and obsessive thinking are distinctly different but moderately related thinking styles (Langlois, Freeston, & Ladouceur, 2000a; Langlois, Freeston, & Ladouceur, 2000b). However, no literature exists comparing worry and obsessive thinking separate from compulsive behaviors in the literature. Common measures of obsessive-compulsive symptoms include the Maudsley Obsessive Compulsive Inventory (MOCI; Rachman & Hodgson, 1980) and the Padua Inventory-Revised (PI-R; Burns, Koertge, Formea, & Sternberger, 1996). The most current measure of obsessive-compulsive symptoms, the Obsessive-Compulsive Inventory-Revised (OCI-R; Foa et al.,



2002), offers an opportunity to investigate the pure cognitive process of obsessing via the Obsessing subscale. The OCI-R Obsessing Subscale is the only known measure of obsessive thinking that does not focus on obsessive-intrusive thought content (see Table 1).

Collecting data from self-report measures of worry and obsessive thinking might also hinder our ability to clarify differences between worry and obsessive thinking. Individuals might find it difficult to answer the questions, “when am I obsessing vs. when am I worrying?” if they do not see the processes as different. The language on self-report measures of repetitive negative thinking styles can lead to confusion. For example, item two on the Penn State Worry Questionnaire reads “my worries overwhelm.” When completing the questionnaires, an obsessive individual might conflate obsessing with worry. On the other hand, the Obsessing Subscale items seem very similar to worry. The item reads “I find it difficult to control my own thoughts” and “I frequently get nasty thoughts and have difficulty getting rid of them.” Similar diagnostic criteria for worry is uncontrollability and individuals who obsess about “nasty thoughts” can be subjective, leaving the potential for measurement of worry instead of obsessing using two of the three items on the subscale. Although the Obsessing Subscale is an adequate measure of an obsessive-symptom dimension, it has not been used solely to investigate obsessing as a repetitive negative cognitive style. More research is needed to clarify distinctive characteristics of the cognitive processes of worry and obsessing as cognitive styles. An assessment tool that measures the different characteristics of obsessive thinking, namely the cognitive process, would help grow this body of literature.

**Ruminative Thinking and Obsessive Thinking.** Ruminative thinking and obsessive thinking are cognitive response strategies that occur each time thoughts and feelings related to a specific negative situation arise. Individuals with obsessive and ruminative thinking styles to understand their experience and find meaning behind their distress. While the content of ruminative thinking is individualized, focusing on the distress and contributing factors, obsessing can occur over a multitude of different types of inappropriate thoughts. The analysis of the experience and the handling of negative thoughts differ when using these thinking styles. Individuals who have a ruminative thinking style openly approach their thoughts seeking to understand them, those who obsess would prefer to avoid their thoughts and seek evidence to prove the thoughts are inaccurate. In individuals who have obsessive thinking styles, the content of the thought is less significant than its meaning and significance. The most distressing part of obsessive thinking is its ego-dystonic nature. The thoughts suggest the individual is a bad person or a person responsible for a negative outcome. Those who ruminate focus on the distress they are experiencing and the contributing factors maintaining their distress. There is little focus on what the thoughts mean about the individual, just a focus on the potential negative outcome.

The literature distinguishing ruminative and obsessive thinking is limited. A previously used measure of obsessive-compulsive symptoms, the Padua Inventory-Revised (PI-R), had a “rumination” subscale suggesting it was considered a symptom dimension of Obsessive-Compulsive Disorder (Burns, Koertge, Formea, & Sternberger, 1996). Like the Obsessing subscale on the Obsessive-Compulsive Inventory-Revised, items of the Padua Inventory-Revised Rumination scale attempted to capture the

cognitive aspect of obsessive-compulsive symptoms (Foa et al., 2002). Upon revision, the measurement of obsessing was categorized by content of thought with no assessment of the cognitive process on the Padua Inventory-Washington State University Revision (Burns, Koertge, Formea, & Sternberger, 1996). Given the clear conceptual differences between these two constructs, and the absence of literature comparing the two repetitive thinking styles, more empirical research examining the distinction between the two is warranted. In addition, obsessive-compulsive symptoms and depression are highly comorbid, increasing the potential for higher correlations between rumination and obsessing (Shams, Foroughi, Esmaili, Amini, & Ebrahimkhani, 2011; Vivan et al., 2014). To account for the significant overlap of depressive symptoms and rumination, Treynor and colleagues (2003) removed 11 items using terms related to depression or sadness. The shortened version of the Ruminative Response Style (RRS) was validated and found to be a cleaner measure of rumination absent of potential overlap with depressive symptoms (see Table 1). More research is needed exploring the potential overlap of ruminative thinking with other repetitive negative thinking styles.

### **Academic Interference and Repetitive Negative Thinking Styles**

Worry, obsessive thinking, and ruminative thinking are repeatedly noted among college students as a major mental health challenge. The high frequency of repetitive thinking styles reflects the presence of potential maladaptive stress responses and has been shown to exacerbate emotional distress (Topper, Emmelkamp & Ehring, 2010). Worry, obsessive thinking, and ruminative thinking only provide temporary relief of emotional distress, but continued use reinforces the belief that ongoing use across life domains would result in lasting relief. Repetitive negative thinking styles are also linked

to heightened self-consciousness, self-injurious behaviors, problematic drinking, negative affect, difficulty with concentration and problem-solving, social deterioration, and less life satisfaction (Ehring & Watkins, 2008; Nolen-Hoeksema, 2000; Harvey, Watkins, Mansell, & Shafran, 2004; Segerstrom, Tsao, Alden, & Craske, 2000; Davey, 1994; Paolini, Yanex, & Kelly, 2006; Pruzinski & Barkovec, 1990; Ciesla, Dickson, Anderson, & Neal, 2011; Hoff & Muehlenkamp, 2009; Zawadzki, Graham, & Gerin, 2013; Grabe et al., 2000; Goracci et al., 2007), all of which are psychological concerns commonly identified in college students. Students who report the presence of repetitive negative thinking styles are ultimately at risk for significant mental challenges given their link to the development and maintenance of anxious and depressive symptoms.

**Worry and Academic Performance.** While the anxiety literature consistently indicates interference with academic functioning due to anxious symptoms and worry, it appears the impact of the thinking style of worry on academic performance is less clear (Gentes & Ruscio, 2014; Siddique, Lasalle-Ricci, Glass, Arnkoff, & Diaz, 2006). Levels of emotional distress due to worry played a significant role in a study examining academic functioning in pathological worriers (or students with Generalized Anxiety Disorder), high worriers (did not meet criteria for Generalized Anxiety Disorder), and non-worriers (Gentes & Ruscio, 2014). Pathological and high-worriers perceived more academic interference than non-worriers, however, there were no significant group differences in grade point average. In a different study, worry was not predictive of grade point average in first-year law students, but negatively impacted academic functioning (Siddique, LaSalle-Ricci, Glass, Arnkoff, & Diaz, 2006). Students who worried experienced negative thoughts during exams and had lowered expectations of their end of

the year academic performance. However, worry played a facilitative role in promoting academic preparation in those students (Siddique, LaSalle-Ricci, Glass, Arnkoff, & Diaz, 2006). Findings suggest that emotional distress in worriers does not account for changes in grade point average, but negatively impacts academic behaviors. Instead, worry facilitated preparatory approach behaviors that could lead to improved academic outcomes. However, students frequently using the cognitive style worry could increase their vulnerability for cognitive difficulties and interference.

**Obsessive Thinking and Academic Performance.** There are few studies in the obsessive-compulsive symptoms literature investigating academic performance, however, the notion has been proposed that obsessive-compulsive disorder (OCD) is associated with above average intellectual functioning (Zohar et al., 1992; Peterson, Pine, Cohen & Brock, 2001). A meta-analysis on IQ in individuals with OCD revealed average intellectual functioning, noting small effect sizes for FSIQ and VIQ and a moderate effect size for PIQ (Abramovitch, Anholt, Raveh-Gottfried, Hamo & Abramowitz, 2017). Due to the limited contemporary empirical data examining traditional IQ and academic performance, researchers have focused on other measures of cognitive performance. These measures of cognitive performance have not translated or been directly linked to academic functioning and performance measures specific to the academic setting. There is some evidence that obsessive-compulsive symptoms negatively impact academic functioning, but the contribution of obsessing alone is unclear. Similar to the other thinking styles, the emotional distress is what researchers measure and analyze when examining the relationships between symptoms and academic functioning. Additionally, research investigating the relationship between obsessive-compulsive symptoms and

academic performance in college students is sparse, with even fewer studies focusing on obsessing alone or grade point average.

Research examining obsessive-compulsive symptoms and academic outcomes show symptom-related interference in academic performance (Mrdjenovich et al., 2007; Piacentini, Bergman, Keller & McCracken, 2003; Piacentini, Peris, Bergman, Chang & Jaffer, 2007). Mrdjenovich and colleagues (2007) found college students who endorsed obsessive-compulsive symptoms had lower exam scores and grade point averages than college students with no symptoms. In school-aged children, parents and students noted obsessive-compulsive symptom interference in school functioning (Piacentini, Bergman, Keller & McCracken, 2003). Students had difficulties concentrating on work, doing homework, writing in class and completing in-class assignments. Almost half of their parents (47%) were equally concerned with the student's difficulty concentrating on work. These disturbances are clearly linked to symptoms interference in concentration and academic tasks, but in these studies the attribution to both obsessive and compulsive symptoms make it difficult to examine the unique impact of obsessive thinking alone.

In an attempt to understand the impact of obsessive-compulsive symptoms on cognitive abilities, researchers investigated the neuropsychological performance of individuals with OCD (Kuelz, Hohagen, Woderholzer, 2004; Greisberg & McKay, 2004). While students with Obsessive-Compulsive Disorder were found to have above average levels of intelligence (Knolder, 1987), obsessive-compulsive symptoms contribute to under-performance in areas of nonverbal memory, planning, and processing speed, while less conclusive findings highlighted problems in areas of set-shifting, response inhibition, visuospatial functions and working memory in individual adults with OCD (Abramovitch

& Cooperman. 2015). In a study investigating the state and trait aspects of cognitive deficiencies, under-performance in set-shifting, spatial working memory, response inhibition, and nonverbal memory were observed in recovered OCD patients (Rao, Reddy, Kumar, Kandavel, & Chandrashekar, 2008). In a cross-sectional study comparing test performance, similar findings of deficits in set-shifting and response inhibition were observed in both symptomatic and remitted OCD patients (Bannon, Gonsalvez, Croft, & Boyce, 2006). The few studies examining neuropsychological functioning among youth with OCD were comparable to the findings in the adult literature. Youth with OCD had impaired verbal delayed memory, set-shifting, cognitive flexibility, concentration, processing speed, and planning, but there were no differences in the areas of verbal fluency, working memory, word recall, attention, and figure recall when compared to control groups (Andres, Boget, Lazaro, Penades & Morer, 2007; Ornstein, Arnold, Manassis, Mendlowitz, & Schachar, 2010; Vivan, Rodrigues, Wendt, Bicca, Braga & Cordioli, 2014). A meta-analysis using 36 articles revealed inconclusive findings across studies with small effect sizes reflecting no consistent cognitive deficiency (Abramovitch et al., 2015). Although it appears there are no neurocognitive differences among students with and without OCS, youth and parents reported school impairment due to OCS (Piacentini, Bergman, Keller & McCracken, 2003; Piacentini, Peris, Bergman, Chang & Jaffer, 2007). As such, college students with obsessive thinking and compulsive behaviors are susceptible to experience similar academic impairment.

**Ruminative Thinking and Academic Performance.** Emotional distress and ruminative thinking were shown to negatively influence academic behaviors. In college students, emotional distress linked to depressive symptoms negatively affected academic

functioning, while ruminative thinking contributed to cognitive difficulties. Yet, few of these studies explored the direct relationship between ruminative thinking and academic performance. Additionally, emotional distress and ruminative were analyzed individually in much of the literature, eliminating further investigation of the unique relationship. There is also a considerable amount of literature on cognitive functioning and mood disturbance, with inconsistent findings indicating varying performance patterns on neuropsychological tests among depressed participants with ruminative thinking styles (Basso & Bornstein, 1999; Cassens, Wolfe, & Zola, 1990; McDermott & Ebmeier, 2009; Rohling, Green, Allen & Iverson, 2002; Castenada Tuulio-Henriksson, Marttunen, Suvisaari, & Lönnqvist, 2008). In an experimental study comparing clinical and control groups, depressed students performed worse when required to allocate cognitive resources to complete probing and tracking tasks (Levens, Muhtadie & Gotlib, 2009). Depression was also a major contributor in student withdrawals from their university in the middle of their academic term (Meilman, Manley, Gaylor, & Turco, 1992). However, another experimental study found no difference in performance between depressed and non-depressed participants when ruminative processes were minimized during the task (Watkins & Brown, 2002). Similarly, an investigation of depressive symptoms and executive functioning deficits in college students found that depressive symptoms did not predict changes in executive functioning (Letkiewicz et al., 2014). Similar to anxiety, information processing biases contribute to the etiology and maintenance of depressive symptoms (Beck & Clark, 1997). In a review of the empirical literature on cognitive theory and depression, support was shown for cognitive biases of depression contributing to attentional biases (Haaga, Dyck, & Ernst, 1991). Students using ruminative thinking



styles took longer to complete academic tasks and had difficulty concentrating (Rosobas, Jimenez, & Garcia-Buades, 2016; Lyubomirsky, Kasri, & Zehm, 2003). Despite the conflicting response patterns on performance tasks related to depressive symptoms, associations between tasks and rumination consistently reflect the underlying contribution of cognitive difficulties linked to this cognitive style (Levens, Muhtadie & Gotlib, 2009). Rumination is reflective of emotional distress combined with deliberate cognitive processing, which likely consumes a significant amount of mental energy. The potential interference linked to both emotional distress and repetitive negative thinking further highlights the need to disentangle affective and cognitive processes.

**Academic Performance as an Outcome Variable.** Due to the lack of consensus on terminology used to operationalize academic performance or its measurement, comparing findings across studies using college student samples has proven difficult. In some studies grade point average was used to measure academic performance/achievement, while other studies substituted other measures of academic performance/achievement for grade point average. Commonly used substitutions included academic-related tasks (i.e., tests, exams, in class assignments), cognitive tasks (i.e., subscales on achievement or aptitude batteries), and neuropsychological tasks (i.e., Stroop task, Trail Making Test). Despite the limitations to using grade point average as a measure of academic performance (Cassady, 2001; Betts & Morell, 1999; Kuncel, Crede, & Thomas, 2005), academic institutions and educators accept grade point average as a measure of academic performance and success and is the most commonly used measure in the literature. Thus, examining the impact of cognitive styles on grade point average will provide useful information to academic institutions interested in fostering academic

success. Regrettably, the relationship between repetitive negative thinking styles and academic related (assignments, exam) and cognitive tasks is less clear, and how they directly impact grade point average is unknown.

### **Study Purpose**

This study focuses on how emotional distress and repetitive negative thinking styles among low-income college students affect academic performance. Students from impoverished backgrounds arrive at college having endured challenging and stressful life experiences, creating a vulnerability to academic difficulties and mental health challenges during their matriculation. These students also have poorer psychological well-being and face significant psychological risks (Roberts et al., 1999). Coupled with the negative impact of growing up in poverty, mental health challenges in low-income students have the potential to exacerbate an already stressful experience and interfere with academic success. Given how the first-year college period is a major life transition for young adults, attending college can be both exciting and anxiety-provoking. Having to face increased responsibilities, new experiences, and academic challenges can be overwhelming for the average college student. Low-income college students might experience additional emotional distress because the transition might create additional challenges around mental health and academic success. Low-income students often experience stressors related to social status and academic fit as they navigate the collegiate transitional period (McLoughlin, 2014; Roberts, Golding, Towell, & Weinreb, 1999). The emotional burden of financial stress, feeling inadequate, lack of belongingness or isolation, concern over potential academic failure, and questioning of their preparedness and overall potential for success are common concerns that could

exacerbate stress associated with transitioning (Colyar & Stitch, 2011). The success of their transition during the first semester can lay the groundwork for their remaining collegiate experience both socially and psychologically. As such, this study seeks to explore emotional and cognitive responses during the college transition period among low-income students that might affect their first-semester academic performance.

Retention programs have aimed to address barriers to academic success and improve retention outcomes among low-income students. Attempts at alleviating the barriers to academic success and improving retention outcomes among low-income students has resulted in the successful graduation of many low-income students. However, despite efforts to improve academic outcomes, low-income students continue to have the lowest graduation rates, lower persistence rates, and lowest grades when compared to their middle and high-income peers. One area overlooked in the retention literature for low-income college students has been the relationship between psychological challenges and academic factors. It can be argued that low-income students might arrive to college with mental health challenges and coping responses experienced through repetitive negative thinking styles, having already learned to navigate traumatic, violent, or unstable life experiences in their youth. Upon investigating repetitive thinking styles and emotional distress in low-income college students, the literature revealed increased emotional distress and possible tendencies for overlapping repetitive thinking styles. Negative academic outcomes were also associated with emotional distress, but less is known about how repetitive thinking styles influence academic performance. Repetitive negative thinking styles existing prior to transitioning to college could influence student first-semester academic performance.

Cardinal Covenant is a program at the University of Louisville that serves to support low-income students with a family income at or below the 150% federal poverty level. Cardinal Covenant covers financial needs and other challenges faced by low-income students during their college matriculation. Low-income students are awarded funding to cover the direct costs (tuition, housing, learning materials) of their college education. Students applying for the Cardinal Covenant program must meet the necessary criteria for general admission to the University of Louisville and remain eligible for Pell Grant funding. Cardinal Covenant program provides campus activities, staff support, and a first-semester course to equip students with the necessary skills to be successful students. Cardinal Covenant staff recently contracted with the university psychological services center to provide mental health services to meet the psychological needs of low-income college students. In the interest of identifying potential mental health challenges among students entering the university, information on poverty-related experiences, repetitive negative thinking styles, and mood symptoms were collected. Using the information reported by the first-year students participating in the Cardinal Covenant program, this study explored the presence of repetitive negative thinking styles, their relationship to emotional distress, and their influence on first-semester grade point average.

### **Study Aims**

The primary aims of this study are to:

- **Explore the relationship between repetitive thinking styles and first-semester academic performance** among low-income college students to gain a clearer understanding of the relationship between repetitive negative thinking styles

(worry, obsessive thinking, and ruminative thinking) and first-semester academic performance. This will serve to elucidate the significance of cognitive stress responses upon entering college and first-semester academic performance among low-income college students, which also highlights potential targets for program resources, interventions, and recommendations for retention program staff.

- **Examine how repetitive thinking styles and emotional distress influence first-semester academic performance** in low-income college students. Despite extensive literature investigating academic interference due to emotional distress due to anxious and depressive symptoms in college students, less is known about how repetitive negative thinking styles and emotional distress combined influence first-semester academic performance in low-income college students. This will serve as one way to explore how the low-income students are presenting to college, recognizing their level of emotional distress and the prevalence of repetitive negative thinking styles present during their first semester transition to college and the combined influence on first-semester academic performance.

The secondary aims of this study are to:

- **Explore the prevalence of co-occurring repetitive thinking styles** in low-income college students. Despite extensive literature investigating anxiety and depressive symptoms and the relationship to repetitive negative thinking styles in college students, less is known about the prevalence of co-occurring repetitive negative thinking styles. A preliminary examination of co-occurring repetitive thinking styles in low-income college students will serve to underscore the need

for considering the severity of overlapping interference associated with repetitive negative thinking styles.

- **Investigate the unique influence of each repetitive negative thinking style on first-semester academic performance** in low-income college students.

Repetitive negative thinking styles that overlap indicate the presence of unique cognitive responses that will likely have a different impact on first-semester academic performance. This will serve to highlight the uniqueness of each repetitive negative thinking styles, while establishing the importance of considering the direct contribution of each repetitive negative thinking style to the greater experience of emotional distress and first-semester academic performance when investigating the college transition period for low-income college students.

These study aims translate to the following hypotheses:

### **Specific Hypotheses**

#### **Hypothesis 1:**

Repetitive negative thinking styles will negatively correlate with first-semester GPA.

#### **Hypothesis 2:**

Repetitive negative thinking styles will independently predict first-semester GPA after accounting for emotional distress.

#### **Hypothesis 3:**

Low-income students will endorse the use of more than one repetitive negative thinking style.

#### **Hypothesis 4:**

Repetitive negative thinking styles ruminative thinking, obsessive thinking, and worry will individually and uniquely predict first-semester GPA.

## METHODS

### Sample

#### Population and Sample Selection

This study was approved by the University of Louisville (UofL) Institutional Review Board. UofL is a midwestern university that has a 22,000-student population, with 3,584 students classified as freshmen in Fall 2016. The Cardinal Covenant (CCOV) program was started in 2007 for low-income Kentucky families. Participants were recruited from the Fall 2016 incoming class of the CCOV Program. All CCOV participants were first-time, first-year students at the University of Louisville. Students 17-years-old and younger were excluded due to the need for parental consent. Recruitment occurred in collaboration with Cardinal Covenant program staff who agreed to grant researchers access to data collected at the mandatory early arrival program orientation held before the classes began on campus.

#### Measures

Data are derived from the completion of the following documents and self-report questionnaires:

#### Student Characteristics

**Demographics.** The demographics form was used to collect basic personal, contact, family, social, and academic information including name, sex/gender, birthdat

age, phone number, email address, maternal education, family income, number of credit hours enrolled, titles of the courses for the first semester, student employment status, housing, and campus involvement. Course grades, ACT scores, high school grade point average (HS GPA), and program majors were collected from the University transcript at the end of the first semester of the academic year.

**Student Academic Expectations.** Student academic expectations were also assessed using Item 42 of the Beginning College Survey of Student Engagement (BCSSE) (*What do you expect most of your grades will be during the coming year? Select only one.*), assessing the student's personal expectation of academic performance as measured by grades.

**Course Load Adjustment.** Course load adjustment reflects the student's attempt at adjusting their course load by requesting to withdraw or receive an incomplete for a course. Course load adjustment data was collected from the University transcript at the end of the first semester of the first academic year. First-semester grade point average (Term GPA) Withdrawals (W) are noted on transcripts when a request is submitted to cancel course enrollment before a pre-determined deadline. Withdrawal eliminates the inclusion of the course grade in the calculation of Term GPA. Incompletes (I) are noted on transcripts when an extension is granted to complete course requirements beyond the semester schedule. Incomplete status allows for the inclusion of the course grade in the calculation of the Term GPA.

**Academic Standing.** Official transcripts provided participant academic standing status determined by Term GPAs (Osborne, 1997). Good academic standing was assigned to participants with a GPA of 2.0 or higher. Dean's List was awarded to students



with a GPA of 3.5 or higher. Academic Warning was assigned to participants with a GPA below 2.0.

### **Independent Variables**

**Repetitive Negative Thinking Styles.** Self-report measures of repetitive negative thinking styles in both the full version and brief version were included for future comparison. The results and discussion section will focus on the full version of measures of repetitive negative thinking styles for this study.

**Worry.** The most commonly used measure of worry is the Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990). The 16-item scale was designed to assess the frequency and associated ability to control worry. The Penn State Worry Questionnaire is a measure of the process of worry and its severity level, not content as measured by the Worry Domains Questionnaire (WDQ). The measure was scored on a likert scale (1=not at all typical to 5=very typical) and total scores are calculated by adding all items. Shorter forms of the Penn State Worry Questionnaire have proposed to measure the severity of “trait worry”. The PSWQ-Brief (PSWQ-B), a five-item factor analytically derived measure was proposed as a screener, consisting of items 4, 5, 6, 12, and 13 of the PSWQ (Topper, Emmelkamp, Watkins & Ehring, 2014). **Reliability and Validity:** There is strong empirical support for high internal consistency, convergent and divergent validity of the Penn State Worry Questionnaire in clinical and control group and first-year students (Fresco, Heimberg, Mennin & Turk, 2002; Stober, 1995; van Rijsoort, Emmelkamp, & Vervaeke, 1999; Topper, Emmelkamp, Watkins & Ehring, 2014). The Penn State Worry Questionnaire-Brief version showed strong internal consistency (.90) in first-year students. **Factor Structure:** Factor analytic studies of the Penn State Worry

Questionnaire consistently support a two-factor solution of worry and absence of worry. Factor analytic studies of Penn State Worry Questionnaire-Brief revealed a single factor (Crittendon & Hopko, 2006; Topper, Emmelkamp, Watkins & Ehring, 2014).

***Obsessive Thinking.*** The Obsessive-Compulsive Inventory-Revised (OCI-R) Obsessing Subscale is the only known measure of obsessing as a cognitive process. The Obsessing Subscale consists of three of the eighteen items on the Obsessive-Compulsive Inventory-Revised, measured on a 5-point likert scale (0= “not at all” to 4= “extremely”). The Obsessing Subscale score was calculated by summing items 6, 12 and 18. Item 6 reads *I find it difficult to control my own thoughts.* Item 12 reads *I am upset by unpleasant thoughts that come into my mind against my will.* Item 18 reads *I frequently get nasty thoughts and have difficulty in getting rid of them.* There are multiple measures of Obsessive-Compulsive Disorder (OCD) symptom dimensions but no other known measure of obsessive thinking.

The original Obsessive-Compulsive Inventory was created to assess the heterogeneous content of obsessions and compulsions (Foa, Kozak, Salkovskis, Coles, & Amir, 1998). The Obsessive-Compulsive Inventory-Revised is an 18-item self-report measure that yields a profile of distress over the past month for each obsessive-compulsive symptom area in the six subscales: washing, checking, ordering, obsessing, hoarding, and neutralizing. It has been shown to have good to excellent internal consistency, convergent validity, and test-retest reliability. The Obsessive-Compulsive Inventory-Revised provides an assessment of distress due to obsessive thought content and types of compulsive behaviors in adults with obsessive cognitive styles (Foa et al., 2002).

***Ruminative Thinking.*** The Ruminative Response Scale (RRS) was developed based on Nolen-Hoeksema's Response Style Theory. The subscale of the Response Style Questionnaire (RSQ; Nolen-Hoeksema & Morrow, 1991) is a 22-item tool assessing the frequency of engagement in thinking and behaviors when feeling sad or depressed on a 4-point likert scale (1=almost never to 4=almost always). Total scores are calculated by summing all 22 items. This measure has been frequently used to assess depressive ruminative thinking while also being linked to anxiety (Armey et al., 2009; Burwell & Shirk, 2007; Schoofs, Hermans, & Raes, 2010; Treynor et al., 2003).

One major criticism of the Ruminative Response Scale was the use of several items that focused on depressive content. Many researchers suggested depressive terms like "sad" made it difficult to distinguish depressive symptoms from self-focus and introspection (Conway, Csank, Holm & Blake, 2000; Cox, Enns & Taylor, 2001; Segerstrom, Tsao, Alden & Craske, 2000). In response to this critique, Treynor and colleagues (2003) proposed the elimination of those items strongly associated with depression. Two subscales emerged from the remaining 10 items: Reflection and Brooding. The Reflection Subscale consists of items 7, 11, 12, 20, and 21 of the RRS. The Brooding Subscale consists of items 5, 10, 13, 15, and 16. Topper and colleagues (2014) proposed the Ruminative Response Scale-Brief version as a potential screener, using items 1, 3, 14, 15 and 19. ***Reliability and Validity:*** The Ruminative Response Scale was shown to have adequate internal consistency and convergent validity among college students (Schoofs, Hermans, & Raes, 2010; Topper, Emmelkamp, Watkins, & Ehring, 2014). ***Factor Structure:*** Factor analytic studies on the Ruminative Response

Scale support a two-dimensional model of rumination: Reflection and Brooding (Schoofs, Hermans, & Raes, 2010).

**Emotional Distress.** Self-report measures of anxiousness and depressed mood were assessed to represent emotional distress. The results and discussion section will focus on the combination of anxiousness and depressed mood as a reflection of emotional distress.

**Anxiety.** The Beck Anxiety Inventory (BAI; Beck, 1990) is one of the most commonly used measures of anxiety. The 21-item self-report instrument was designed to assess the severity of anxiety symptoms and discriminate anxiety from depression in adolescents and adults. The age range for the measure is 17 to 80 years. Each item on the Beck Anxiety Inventory is a simple description of a symptom of anxiety measured on a 4-point likert scale (0 = none to 3 = frequently) (Beck, 1990). Total scores were calculated by adding all 21-items, ranging from 0 to 63. While content resembles symptoms of panic attacks and it appears that panic and anxiety may be confounded when using this measure (Cox, Cohen, Dorenfeld, & Swanson, 1996), there is evidence indicating that this measure accurately assesses emotional distress due to anxious symptoms. Considering many are limited in their knowledge of various repetitive thinking styles, the BAI serves as an adequate measure of emotional distress due to anxious symptoms including panic symptoms. Therefore, distinguishing between panic and general anxiety symptoms is not necessary to examine the level of emotional distress in college students for this study. **Reliability:** The internal consistency of the BAI was shown to be adequate in a meta-analytic study, ranging from .81 to .95 in nonclinical samples (Bardoshi, Duncan, & Erford, 2016). **Factor Structure:** The original validation

study shows two factors: Somatic and Affective symptoms. However, factor analytic studies show a range between one and six factors underlying the 21-item measure. Methodological issues, namely small samples that were underpowered, resulted in the cautionary view of results. The consensus of the literature is the two first-order dimensions, Somatic and Subjective, and one second-order dimension of Anxiety.

**Depression.** An upgrade to the Beck Depression Inventory, BDI-II, is a widely used 21-item self-report instrument designed to measure the severity of depressive symptoms over the past two weeks. The age range for the measure is 17 to 80 years. The items correspond to the diagnostic criteria for depressive disorders in the DSM-IV, rated on a 4-point likert scale (0=none to 3=frequently). Total scores are calculated by adding all 21 items, ranging from 0 to 63. **Reliability:** The internal consistency of the Beck Depression Inventory-II was shown to be adequate in a meta-analytic study, ranging from .91 to .93 in nonclinical samples (Erford, Johnson & Bardoshi, 2016). **Factor Structure:** Both the Beck Depression Inventory and Beck Depression Inventory-II validation studies in college students found two dimensions. The original BDI had Somatic-Affective and Cognitive dimensions, while the BDI-II had Cognitive-Affective and Somatic dimensions. In a recent study, the BDI-II two dimensions were upheld in a college student sample (Storch, Roberti, & Roth, 2004)

### **Dependent Variable**

**Academic Performance.** Grade Point Average (GPA) (Cassady, 2001) is a calculated average of letter grades earned in school following a 0.0 to 4.0 scale. Grade point average is based on course grades and calculated to reflect overall performance during the semester/academic year.

***Term Grade Point Average.*** Term grade point average (Term GPA) was collected from the University transcript at the end of the first semester of the first academic year and serves as the measure of *academic performance* for this study.

### **Data Collection**

Participants received information about the purpose of the study, potential for risks and benefits for participation, confidentiality, procedures for collection of completed packets, and guidelines for discontinuing participation. Participants were given a study packet that included the consent form, demographics form, self-report questionnaires, and the resource sheet that provided contact information for campus mental health services. Participants were assigned a packet ID number by program staff. First-semester transcripts were accessed via the internal records program, printed, and assigned a transcript ID. A separate participant ID was created based on paired packet and transcript ID numbers.

### **Statistical Analyses**

#### **Descriptive Statistics**

Mean total scores and standard deviations were computed for each questionnaire. Internal consistency for subscales and entire measures were calculated and reported for each questionnaire. The mean for subscales, total scores, age, HS GPA, ACT scores, and Term GPA were also calculated. The frequency of gender, program majors, course enrollment by subject, academic standing, first-semester grades, course load adjustments, campus social activities, employment status (on/off-campus), maternal education, housing, student academic expectations were displayed to reflect sample characteristics.

**Group Comparisons.** Sample mean scores were compared to the mean scores of normative and related college student samples on measures of thinking style and emotional distress. Independent t-tests were calculated to examine group differences between the current sample and community, control, and student samples on measures of anxiety symptoms, depressive symptoms, worry, obsessing and rumination.

**Correlations and Regression.** Pearson correlations were calculated to examine first-order relationships among emotional distress, thinking styles and academic performance. Total scores of questionnaires measuring repetitive thinking styles (worry, rumination, obsessing), emotional distress (depression, anxiety), and academic performance were added as variables for analyses. Stepwise linear regression was used to determine a model that best predicted first-semester academic performance (Term GPA) when considering the contribution of HS GPA, ACT scores, repetitive thinking styles (ruminative thinking, obsessive thinking, worry) and emotional distress (depression symptoms, anxiety symptoms). The model would retain only those predictor variables that were found to contribute statistically to a single model that predicts first-semester academic performance (Term GPA) (Thompson, 1995; Huberty, 1989).

## RESULTS

### **Student Characteristics**

#### **Sample**

Fifty-four first-year Cardinal Covenant students were eligible and completed packets. One student returned the packet incomplete, and the remaining 15 students were ineligible due to minimum age requirements. Female students ( $n=33$ ) represented 61.1% of the sample, and 18.06 ( $SD=.302$ ) was the mean age. The sample was predominately White (57.4%), with Black and Multiracial students equally represented (13.2%). Asian/Pacific Islanders made up 9.3% of the sample and Hispanic/Latinx students made up 5.6% of the sample. One student (1.9%) declined to report race/ethnicity on the demographic form.

Histograms and Q-Q Plots were used to visually assess the distribution of academic performance, emotional distress, and repetitive thinking styles. The Term GPA appeared negatively skewed with one outlier. BAI and BDI scores appeared positively skewed with four outliers. RRS, RRS-Brief, RRS-Subscales, OCI-R and OCI-Obsessing scores appeared positively skewed with six outliers. PSWQ and PSWQ-Brief scores appeared normally distributed with no observed outliers. Shapiro-Wilkins test, used to further examine the normality and homogeneity of variance, supported the findings of non-normality. The significant Shapiro-Wilkins test scores for all variables, except the



PSWQ and PSWQ-B, did not warrant the rejection of the null hypothesis that variables were normally distributed.

### **Academic Outcomes**

The HS GPA (M=3.66; SD=.412) and ACT scores (M=25.89; SD=3.593) suggested, as expected, that the students were high achieving prior to attending college. Six students completed dual-credit coursework in high school, entering the university with an A average and course credit. All students were registered as full-time students, with over half (56.8%) enrolled for 15 or more credit hours, with course enrollment ranging from 5-7 courses during their first semester. At the end of the first semester the average GPA was 2.86 (SD=.957). Of the 54 students, 64.8% (n=35) reported receiving scholarships, grants and employment as their primary source of income, while 22.2% (n=12) reported relying on their parent/guardians for income while attending college. Seven (13%) students participating in the study resided with their parent/relative/guardian, while students residing with their peers made up 83.3% of the sample. Students were planning to engage in various social activities when the semester began (see Table 2).

### **Student Expectations**

According to responses on the Beginning College Survey of Student Engagement (BCSSE), 69.8% (n=37) of the students expected to earn grades of A or A- during their first year of college. No students reported the expectation of earning a D or F during the current academic year. At the end of the first semester, 72.2% (n=39) of students were in good academic standing and 27.8% (n=15) received an academic warning. Course load adjustments were utilized by 25% (n=14) of students who were granted requests for Withdrawals and/or Incompletes. All students re-enrolled in courses at full-time status for the following semester.

## Emotional Distress

### Symptom Severity

**Anxiety.** Of the 54 students completing the BAI, 46.2% endorsed minimal symptoms of anxiety, 16.6% endorsed mild symptoms, 14.8% endorsed moderate symptoms, and 14.8% endorsed severe symptoms of anxiety.

**Depression.** Of the 54 students completing the BDI, 77.7% endorsed minimal symptoms, 1.8% endorsed mild symptoms, 7.4% endorsed moderate symptoms, and 3.7% endorsed severe symptoms of depression.

Mean scores on the BAI and BDI-II reflected mild symptoms of anxiety ( $M=14.08$ ;  $SD=14.713$ ) and minimal symptoms of depression ( $M=8.20$ ;  $SD=8.982$ ). The BAI and BDI had high internal consistency in this low-income college student sample ( $\alpha=.96$  and  $\alpha=.92$ ). Low-income student mean total scores were lower on both the BAI when compared to the Lovibond & Lovibond (1995) first-year student sample scores ( $M=9.15$ ;  $SD=7.410$ ), and the BDI-II when compared to the Steer & Clark (1997) student sample scores ( $M=11.86$ ;  $SD=8.060$ ,  $t(212)=1.391$ ,  $p=.166$ ). The BAI scores were statistically different  $t(769)=4.268$ ,  $p < .001$ , but the BDI-II scores were not statistically different. Pearson correlation analyses were computed to examine the relationship between BAI and BDI-II total scores. As expected, there was a positive significant relationship between BAI and BDI-II total scores among low-income college students,  $r(53) = .739$ ,  $p > .0001$ .

### Population Statistics Comparison

Severity of anxiety and depressive symptoms among low-income college students were compared to the American College Health Association-National College Health

Assessment Fall 2016 report, which showed 29.6% of students reporting “overwhelming anxiety” and 15.4% of students reporting “depression that was difficult to function.”

Twenty-three percent of the ACHA-NCHA sample were 18 years old, 29.9% were first-year undergraduates, and 93.5% were full-time students. Of the present sample of 18-year-old, first-year low-income college students, 29.6% endorsed moderate-severe symptoms of anxiety and 10.7% endorsed moderate-severe symptoms of depression.

Anxiety symptom interference among low-income college students was comparable to the national sample of their peers; however, depressive symptoms did not appear to rise to the level of academic interference in the study sample.

### **Repetitive Negative Thinking Styles**

#### **Group Comparisons**

**Worry.** PSWQ mean scores were computed ( $M=52.58$ ;  $SD=14.031$ ) and compared to scores from both a community sample (van Rijsoort et al., 1999) and college student sample (Belzer et al., 2002). PSWQ mean scores in the present sample were higher than both the community ( $M=43.14$ ;  $SD =12.020$ ) and student sample ( $M=48.87$ ;  $SD= 13.950$ ) scores. PSWQ-B mean scores were also computed ( $M= 16.25$ ;  $SD=5.076$ ) and compared to other first-year students (Topper, Emmelkamp, Watkins, & Ehring, 2014). Consistent with PSWQ scores, PSWQ-B scores were also indicative of excessive worry. The PSWQ and PSWQ-B had high internal consistency in this low-income college student sample ( $\alpha=.94$  and  $\alpha=.87$ ). An independent sample t-test was computed to compare mean scores, not assuming normality or homogeneity of variance. The present sample PSWQ scores were significantly different from the

comparable student sample scores ( $t=3.622$ ,  $p < .001$ ), but not significantly different from community sample scores ( $t=0.746$ ,  $p=0.456$ ).

**Obsessive Thinking.** Computed OCI-R mean scores ( $M=9.46$ ;  $SD=9.146$ ) and OCI-Obsessing subscale scores of 1.54 ( $SD=2.250$ ) were compared to scores of the control sample in the validation study (Foa et al., 2002) and a college student sample (Hajcak, Huppert, Simons & Foa, 2004). The OCI-R mean score fell below the clinical cut-off score of 21 (Foa et al., 2002). OCI-R Obsessing subscale scores were lower in low-income students when compared to both the control ( $M=2.86$ ;  $SD=2.720$ ) and another college student sample ( $M=2.92$ ;  $SD= 2.820$ ). Both the OCI-R and OCI-Obsessing Subscale had high internal consistency ( $\alpha=.86$  and  $\alpha=.79$ ). An independent sample t-test was computed to compare mean scores, not assuming normality or homogeneity of variance. Low-income student OCI-Obsessing scores were significantly different from the validation sample scores ( $t=3.437$ ,  $p<.001$ ) and the student sample scores ( $t=3.084$ ,  $p<.001$ ).

**Ruminative Thinking.** Mean scores for the RRS ( $M=41.68$ ,  $SD =14.660$ ) were computed and compared to another student sample ( $M=51.77$ ,  $SD=9.390$ ) (Brinker & Dozois, 2009), with low-income students scoring significantly lower,  $t=6.315$ ,  $p<.001$ . The present sample RRS-Reflective ( $M=8.89$ ;  $SD=4.156$ ) and RRS-Brooding ( $M=10.20$ ;  $SD=4.021$ ) subscale scores were compared to community sample subscale scores (Treyner, Gonzalez, & Nolen-Hoeksema, 2003). Low-income student RRS-Reflective subscale scores were significantly lower, ( $t=2.133$ ,  $p=.030$ ), and RRS-Brooding subscale scores were higher ( $t=1.916$ ,  $p=.055$ ). An independent sample t-test was computed to compare mean scores, not assuming normality or homogeneity of variance. Reflective

subscale scores were lower than community sample scores ( $M=9.83$ ,  $SD=4.160$ ), but not statistically significant,  $t= 1.474$ ,  $p=.141$ . However, the Brooding subscale scores in the community sample were lower ( $M=9.40$ ,  $SD=2.960$ ) and statistically different,  $t= 2.131$ ,  $p=.003$ . The RRS, RRS-B, RRS-Brooding and Reflective Subscales all had high internal consistency in this low-income college student sample, with alpha coefficients ranging from .76 to .95.

### **Summary**

PSWQ scores among low-income students were comparable to the community sample but significantly higher than their same-aged peers. OCI-R scores reflected a mild severity level of obsessive-compulsive symptoms, with OCI-R total scores and Obsessing subscale scores appearing significantly lower than scores noted in the validation sample and a comparable student sample. Ruminative thinking and reflective subscale scores were lower in low-income students compared to student and community samples, but Brooding subscale scores were significantly higher in low-income students.

## **Predicting Low-Income Student Academic Performance**

### **Correlations**

Pearson correlations were computed to measure the relationship strength of repetitive negative thinking styles, emotional distress, and academic performance.

PSWQ, RRS, OCI-Obsessing, BAI, and BDI scores were not significantly correlated with Term GPA. The correlation values between all three repetitive negative thinking styles and Term GPA were close to zero, ranging from  $-.075$  to  $.199$ . RRS, PSWQ, and OCI-Obsessing Subscale scores show a very weak linear relationship with Term GPA.

Similarly, correlation values for BAI scores/Term GPA and BDI scores/Term GPA were

close to zero at .008 and -.075, indicating a very weak linear relationship between BAI/BDI scores and Term GPA. As expected, emotional distress was significantly correlated with repetitive negative thinking styles at a p-value of .001, suggesting a strong positive linear relationship. The correlation values of BAI scores and PSWQ, OBS-Obsessing, and RRS scores were moderate to strong, ranging from .565 to .733. Correlation values of BDI scores and PSWQ, OBS-Obsessing, and RRS scores were moderate to strong, ranging from .588 to .642. Table 3 shows the correlation matrix for the RRS, PSWQ, OCI-Obsessing Subscale, BDI scores, BAI scores and academic outcomes.

Non-significant and very weak correlations between repetitive negative thinking styles and academic performance suggest ruminative thinking, worry, and obsessive thinking were not influential in explaining first-semester grade point averages. Similarly, non-significant and very weak correlations between emotional distress and academic performance suggest symptoms of anxiety and depression had no influence on first-semester grade point averages among low-income college students in this study. Still it appears that significant and moderate to strong correlations among emotional distress and repetitive negative thinking styles suggest a link between anxious and depressive symptoms and worry, obsessive thinking and ruminative thinking styles among low-income college students.

### **Multiple Regression**

Repetitive negative thinking styles and emotional distress were not significantly correlated with Term GPA. As such, no emotional distress and repetitive negative

thinking styles were entered into the regression equation when using the stepwise regression method to predict Term GPA.

### **Co-occurring Repetitive Negative Thinking Styles**

#### **Mean Scores**

Figure 1 shows mean scores of multiple repetitive negative thinking styles present within the current sample compared to mean scores reported in comparative student samples. All measures (brief and long versions) of ruminative thinking, worry, and obsessive thinking were included in the analyses. Repetitive negative thinking styles rumination and worry were shown to co-occur, as both were represented at clinically relevant levels. PSWQ mean scores of 52.58 (SD=14.030) fell above the cut-off score of 50 (Topper, Emmelkamp, Watkins & Ehring, 2014), suggesting excessive levels of the repetitive thinking style worry. The mean score for the PSWQ-B of 16.17 (SD=5.006) also met the proposed cut-off score of 16 (Topper, Emmelkamp, Watkins & Ehring, 2014). Similarly, RRS scores exceeded the proposed cutoff score of 40 (Treyner et al., 2003), indicating the presence of excessive rumination (M=41.68; SD=14.664). The mean RRS-B score of 9.67 (SD=3.507) was also greater than the proposed cut-off score of 9 (Topper, Emmelkamp, Watkins & Ehring, 2014), suggesting elevated levels of ruminative thinking. The mean OCI-R total score of 9.46 (SD=9.146) and OCI-Obsessing subscale score of 1.54 (SD=2.250) fell below the proposed cut-off scores of 21 and 4 (Foa et al., 2002), reflecting minimal levels of obsessive thinking.

#### **Correlations**

Pearson correlations were computed to examine the strength of the relationships among co-occur repetitive negative thinking styles, exploring the limitations of commonly used measures to capture the distinct experience of ruminative and obsessive thinking and worry. . . using scores

on the PSWQ, OCI-R Obsessing Subscale, and RRS scores were significantly with correlations values ranging from .393 to .540. Moderate linear relationships emerged between PSWQ scores and both the OCI-Obsessing Subscale score and RRS score were moderately correlated, while the relationship between PSWQ and OCI-R Obsessing Subscale scores were weak. Table 4 shows the correlation matrices that also includes OCI-R, brief version of the PSWQ, brief version of the RRS, and the RRS Brooding and Reflection subscale scores. As expected, scores calculated from both the brief and full version of measures were significantly correlated. The OCI-R and RRS-Reflecting subscale scores and the OCI-Obsessing subscale and RRS Reflecting subscale scores were the exception. Although significantly correlated, the weak to moderate relationships between the scores suggest the capturing of similar but distinct repetitive negative thinking styles as measured by the PSWQ, OCI-R and RRS.



## DISCUSSION

The purpose of this study was to explore the-psychological vulnerabilities of students from impoverished backgrounds and their influence on academic performance. This study investigated the cognitive and emotional experiences of repetitive negative thinking styles and emotional distress during the college transition period and examined their influence on end-of-semester academic performance. Participants were recruited from the university retention program that was created to provide financial and academic support to students from families who live 150% below the national poverty level. Fifty-four low-income students attended the early arrival program to begin their first semester of college. Students were assessed on repetitive negative thinking styles and emotional distress linked to symptoms of anxiety and depression. Academic performance and other related factors were pulled from the demographic data form completed by the students and transcript data retrieved from the institution. Students entered their first semester of college endorsing repetitive negative thinking styles at a level similar to depressed and anxious individuals who engage in excessive ruminative thinking and worry, while also reporting mild emotional distress consistent with individuals who experience mild physiological, cognitive, and emotional signs of anxiety and depression. In addition, emotional distress had a strong statistically significant positive relationship with repetitive negative thinking styles. At the end of their first-semester, students earned on

average a 2.6 first-semester grade point average. First-semester grade point averages was not influenced by the presence of repetitive negative thinking styles or mild emotional distress reported by students at the beginning of the semester during their college transition period.

Low-income students arrived early to campus to participate in the university retention program geared toward early exposure for at-risk learners from impoverished backgrounds. They adapted to the stressful experience of leaving home and transitioning to college with minimal emotional distress. Upon arriving on campus, students did not describe feeling anxious or depressed but noted experiencing worry and ruminative thinking during this transitional period. Surprisingly, the repetitive negative thinking styles were present in the absence of the expected high level of anxiety and depression typically associated with excessive worry and ruminative thinking. Instead, students arrived on campus expecting to perform well academically and socially. When students were asked what grades they expected to earn their first year of college, over three-quarters of the students carrying a full-time course caseload believed they would obtain an A average at the end of their first academic year. All students were planning to take part in a club, sport, or student campus program, suggesting an active approach to the challenge of being away from home in a new environment by engaging in campus life. Several low-income students expecting minimal financial support from their family managed their own financial situation. Over half of the students relied on grants, scholarships, and on-campus employment to earn money while also enrolled as full-time students. Despite facing the challenges of managing academic responsibilities and the financial burden of attending college, 72.2% of the participants completed their first

semester with a grade point average of 2.0 or greater. On average, students overcame common barriers of mental health and financial challenges, and academic and transitional stressors to earn a B average at the end of their first semester of college.

### **Psychological Resilience and Risk in Low-Income College Students**

Many students from impoverished backgrounds choose college as both a path of escape from scarcity of resources and an opportunity to obtain future financial security. Low-income students enter college having navigated shortages in financial, health, and food needs and living under duress for varying spans of time depending on how long their families have lived in poverty. It was expected that students from impoverished backgrounds, having faced poverty-related challenges prior to attending college, would manifest psychological characteristics that reflected prior hardship (Yoshikawa, Aber & Beardslee, 2012). It was hypothesized that students from impoverished backgrounds attending their first year of college would endorse emotional distress and repetitive negative thinking styles given their past adverse experiences, influencing their first semester academic performance. Counter to expectation, the analysis of results revealed mild emotional distress upon arrival to campus and no observed relationships between all three repetitive negative thinking styles and end-of-semester academic performance.

### **First-Year College Transitioning**

One main finding was the endorsement of low emotional distress among low-income college students at the start of their academic careers. On average, students reported experiencing mild symptoms of anxiety and depressive symptoms over the past two weeks leading up to and the day of their move to campus. The results were inconsistent with literature showing emotional distress among first-year students during the college

transition period (Fisher & Hood, 1987; Schulenberg et al., 2004). In many of the studies investigating emotional distress among students from impoverished backgrounds, study samples were commonly representative of minority or ethnically/racially underrepresented students and students residing in urban and metropolitan impoverished neighborhoods (Rodriguez & Cruz, 2009; Hardaway & McLoyd, 2009). While the current sample was racially/ethnically mixed, White students made up 57.4% of the sample and were from both rural and urban neighborhoods. Research on residents of impoverished neighborhoods suggest both urban and rural environments share similarities in lack of community resources, single-parent family households, and high crime rates, with differences in levels of psychological well-being across racial and gender groups (Amato & Zuo, 1992; Semega, Fontenot, & Kemler, 2017). The differences that exist between rural and urban areas include types of trauma and differences in levels of violence exposure (McCall-Hosenfeld, Mukherjee, & Lehman, 2014). This suggests that residents in rural areas might have different types and levels of trauma exposure, possibly resulting in different psychological responses, risks, and levels of psychological well-being. For example, urban youth are exposed to environments where gun violence, gang violence, and illegal drug activity are rampant in their neighborhoods. Rural neighborhoods are exposed to illegal drug activity, war-related trauma, and intimate partner violence (McCall-Hosenfeld, Mukherjee, & Lehman, 2014). While exposure to both environments pose psychological risks for residents, less exposure to higher levels of violence could manifest differently for rural residents who might present to college with less severe distress. Given the current sample of predominately White low-income college students from both rural and urban

neighborhoods, the difference in exposure could also explain the lower level of distress endorsed in this study.

As expected, low-income students also reported beginning their first academic semester with repetitive negative thinking styles. However, students reported repetitive negative thinking styles and low emotional distress. It is less common for low emotional distress to exist in the presences of excessive worry and ruminative thinking in college students. Mild depressive and anxious symptoms are typically reflective of less intense or fewer symptom endorsements of emotional, behavioral, and cognitive symptoms linked to anxiety and depression. The presence of repetitive negative thinking styles typically indicates the development and/or maintenance of anxious and depressive symptoms, commonly reflected in student endorsement at a higher symptom severity. It was expected that intensity and frequency of repetitive negative thinking styles would match the intensity of emotional distress due to anxious and depressive symptoms in low-income college students, yet levels of emotional distress and intensity of ruminative negative thinking styles did not reflect this relationship in this study.

The unexpected presence of excessive worry and ruminative thinking styles in the absence of moderate or severe anxious and depressive symptoms could be explained from various perspectives. Two possible considerations include the examination of the restriction of range phenomenon and errors of emotional distress measurement in a sample of low-income college students. Restriction of range occurs when methodological factors or sample specific circumstances result in the abbreviated values of one or both variables entered into a correlation. The restriction of range on scores of emotional distress decreased the range of anxious and depressive symptoms available

when exploring the direction and degree of association between emotional distress and academic performance. The items on the BAI and BDI reflect the symptoms associated with anxious or depressive symptoms that are also typically associated with repetitive thinking styles. Many of the items on the BDI-II assessed cognitive experiences linked to concentration difficulty, indecisiveness, suicidal ideation and the BAI assessed somatic but no cognitive representation of anxiety. Many of the items on both measures assessed emotional and behavioral experiences that engage repetitive thinking styles (e.g. guilt, pessimism, fear), but did not directly assess in the same way as the PSWQ, RRS, and OCI-R the feelings of uncontrollability, excessiveness of repetitive thinking styles, or the intrusion of thoughts. As such, students reported on their emotional and behavioral responses when completing the BAI and BDI, indicating lower frequency and intensity of negative emotions, fewer somatic symptoms, and fewer noticeable behavioral changes linked to their mood during this transitional period. The PSWQ, RRS, and OCI-OBS subscale assessed cognitive responses to a negative emotion or the experience of engaging in a repetitive cognitive process related to a negative emotion or situation. An example of the language used to describe the experience of engaging in a repetitive thinking style from the PSWQ reads, “when I am under pressure I worry a lot”. Another example from the RRS reads, “[I] think what am I doing to deserve this?” Students endorsed excessive worry and ruminative thinking styles, experiencing them as separate repetitive thinking styles and unique cognitive experiences. As a group, students reported engaging in two separate repetitive thinking styles that did not create a distressing experience upon entry into college. The presence of multiple repetitive thinking styles at

the frequency reported, absent of emotional distress, suggests thinking styles might represent a distinct experience among low-income college students.

### **First-Semester Academic Performance**

The goal of the current study was to explore the presence of repetitive negative thinking styles among students from impoverished backgrounds, their relationship to emotional distress, and their predictive ability of first-semester academic performance. It was expected that students with repetitive negative thinking styles would face challenges in their academic functioning, negatively impacting their end-of-semester academic performance. However, it appears that repetitive negative thinking styles and academic performance were independent among low-income students. Findings suggest repetitive negative thinking styles appeared to have no influence on their first-semester grades. The correlations between all three thinking styles and end-of-semester academic performance were all close to zero. In addition, 72.2% of students ended their first semester with a 2.0 grade point average or higher, despite 81.1% of students reporting moderate to high worry and 52.8% endorsing ruminative thinking. Students beginning their academic year with excessive worry and ruminative thinking styles were expected to have failing grades due to the interference of their repetitive negative thinking styles. It was hypothesized that poor grades among low-income college students with worry and ruminative thinking styles would represent the unconstructive consequences noted by Watkins (2008). Instead, good academic standing occurred in the presence of repetitive negative thinking suggesting unexpected constructive consequences of worry and ruminative thinking styles. Roach and colleagues (2010) found evidence for individual differences in responses to situations that influence the valence and purpose of repetitive negative

thinking styles. For students from impoverished backgrounds with worry and ruminative thinking style, the negative content of thought may be present upon arrival to campus, but the purpose behind why and how students engaged in repetitive negative thinking styles resulted in no psychological interference, allowing for academic success.

Study results suggest worry and ruminative thinking among low-income college students were likely beneficial during their first academic semester. According to Evans & Segerstrom (2011), unconstructive consequences are a combination of negative valence and searching purpose qualities, resulting in depressive symptoms and impaired daily functioning. Excessive worry and ruminative thinking among low-income college students would suggest the presence of negative valence and searching purpose qualities, typically coinciding with high emotional distress and poorer functioning. However, mild levels of emotional distress and average academic functioning suggests a different combination of repetitive negative thinking style qualities in low-income college students. Positive valence and solving purpose among low-income students would reflect their focus on “personal successes and individual harmony” and the certainty of academic success based on their adaptability and planning, likely developed prior to entering college.

Study findings also align with the literature on resilience among low-income college students. Resilience is defined as the ability to successfully adapt despite facing challenges or threatening circumstances (Howard & Johnson, 2000). Referencing the diathesis-stress framework, Monroe & Simmons (1991) noted how resilience exists when stressors do not activate psychological distress or result in psychopathology or functional impairment. An alternative combination of repetitive negative thinking style qualities,



negative valence and solving purpose, would align with the proposed resilience paradigm. The negative valence among low-income student would likely reflect poverty-related and academic concerns likely present both pre- and post-college transition. Despite the presence of negative thoughts, students from impoverished backgrounds approaching these concerns, motivated by the solving purpose, adjusted accordingly during the semester to remain on track with their intended goal of graduation. Low-income students were adaptive during their college transition period, as evidenced by their mild levels of emotional distress.

### **Psychological Vulnerabilities**

While the presence of co-occurring repetitive negative thinking styles should result in increased emotional distress hypothesized to induce academic interference, student end-of-semester academic performance was not impacted. In addition to repetitive negative thinking styles, 65.4% of students reporting mild anxious distress and 90.2% reporting mild distress due to depressive symptoms. Findings reflected mild emotional distress in low-income college students who were expected to have an elevated distress level considering their prior poverty-related stress exposure and this college transition period. The relationship between emotional distress and repetitive thinking styles was consistent with previous literature, yet the absence of a relationship with first-semester academic performance was inconsistent. In previous literature, academic performance was measured using exam scores, course grades, and cumulative end-of-year grade point average. Those measures of academic performance have different time frames associated with their measurement which changes the potential relationship. It was hypothesized that repetitive thinking styles would have a unique contribution

independent of emotional distress to grade point average in low-income college students. When tested in a prediction model, repetitive thinking styles and emotional distress were not entered into the equation given the lack of significant correlation with first-semester grade point average. Findings were again inconsistent with previous literature that anxiousness and depressive symptoms, worry, ruminative thinking, and obsessive thinking influenced academic performance. As such, further investigation is needed to better understand the experience of low-income students who endorsed repetitive negative thinking styles, while also noting little to no emotional distress, who ended their first semester of college in good academic standing at the end of the first semester. While repetitive negative thinking styles were expected to represent cognitive responses that would contribute to academic interference, it would seem that repetitive negative thinking styles had no influence on academic performance in this brief period of academic performance measurement. It is possible that in this unique sample of low-income students, there exists a potential contributor not addressed in this study.

### **Repetitive Negative Thinking Styles**

#### **Prevalence of Co-occurring Repetitive Negative Thinking Styles**

Low-income students reported excessive worry compared to other college students. The endorsement of worry among low-income students was similar to community samples, but less prevalent when compared to their same-aged peers. Obsessive thinking was not endorsed by low-income students at the same rate as worry and ruminative thinking, seemingly more prevalent among students from impoverished backgrounds. Students reported worry and ruminative thinking at a rate endorsed by individuals meeting criteria for anxiety disorders and clinical depression. In addition, the

significant relationships among worry, obsessing, and rumination reflected the similarities in experiences of repetitive negative thinking styles but also indicated noticeable experiential differences noted by low-income students. The instrument used to measure obsessing was a three-item subscale from a large assessment tool of obsessive-compulsive symptoms. While the obsessing subscale has been shown to accurately assess obsessive thinking in individuals with obsessive-compulsive symptoms, it has not been tested in students as an isolated assessment of obsessive thinking alone. It is also possible that students struggle to identify or differentiate other anxiety-related cognitive processes, like worry, from obsessing. The OCI-R Obsessing subscale has rarely been used outside of the context of obsessive-compulsive symptoms. Also, there is no assessment tool that solely assesses the thinking style obsessing. As such, accurately identifying the presence of obsessive thinking among other thinking style given the measurement limitations was a challenge. Worry can serve in a negative or positive way as a repetitive thinking style because it functions as a review of current problems and future negative impact of the problem. Low-income students who have the goal of earning all As and being academically successful might see college as an obstacle or challenge. To overcome this challenge, the student might feel obligated to anticipate potential negative outcomes and prepare to navigate them in hope of acquiring the expected grade and obtaining success during the academic year. Students from low-income backgrounds might endorse repetitive negative thinking styles more than the average student because they might perceive themselves as being at a disadvantage. Students with ruminative thinking style less often compared to their peers, with brooding occurring more often when compared to individuals in the community. While obsessing has been commonly observed among

college students, this thinking style was not observed at a high level among low-income college students.

The presence of excessive repetitive negative thinking styles typically indicates excessive cognitive processing. It would seem likely that two repetitive negative thinking styles might reflect the potential for cognitive overload, contributing to poor psychological functioning and interference in academic performance (Gorin & Embretson, 2006; Miller, 2011). The presence of worry alone pulls on various cognitive functions and adding ruminative thinking would seem to suggest that repetitive negative thinking styles activated at stressful periods throughout the semester can be time consuming when both are present throughout the first semester. It is possible that the presence of repetitive negative thinking styles at certain transitional periods might not trigger emotional distress in the same way as other stressful experiences. Because change and uncertainty are common occurrences, the transition to college may not spark the level of distress expected in low-income students that is often observed in the average college student. However, it is unclear whether the repetitive negative thinking styles change over the semester or situationally arise based on the presence of other stressors.

### **Distinct Repetitive Negative Thinking Styles**

All three repetitive thinking styles were present among low-income students at the start of their first-semester. It was hypothesized that low-income college students would endorse more than one repetitive thinking style given their vulnerability to emotional distress and maladaptive stress responses. It was also expected that repetitive negative thinking styles that represent very similar cognitive processes and experience, would co-exist, representing distinct repetitive negative thinking experiences. This was confirmed

in the analysis of the relationship between each repetitive negative thinking style. While the relationship between worry and ruminative thinking was moderately strong, the correlation value was not high enough to indicate that repetitive thinking styles was a single cognitive process. Consistent with previous literature, students endorsed frequent utilization of the worry and ruminative thinking styles. While all three repetitive thinking styles were present at varying rates, compared to the reported experiences in the community and among college students, low-income student patterns of endorsing repetitive negative thinking styles were different.

The Cognitive Appraisal Theory posits that individuals exposed to stressful encounters determine stress responses based on their evaluation of the relevance of responses to their well-being (Lazarus & Folkman, 1984; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). Students applying voluntary coping strategies to situations they perceived outside of their control noted less relief academically (Lazarus & Folkman, 1984; Schnider, Elhai & Gray, 2007). Where highly driven low-income students might respond adaptively during college transitional stress because they believe they will be academically successful their first semester, those overwhelmed by financial stress or social challenges might have a maladaptive stress response and begin isolating and avoiding other experiences that seem challenging like courses or campus activities. If the students determine their academic or personal well-being is challenged, the stress response would align with the goal of managing/regulating the stressful encounter in a way that prevents further harm or improves opportunities for gain (Anshel, Kim, Kim, Chang, & Eom, 2001; Lazarus, 1991). In the experience of transitioning to college low-income students have repetitive thinking styles that reflect their challenging experiences

that can either assist or deter their adjusting during the semester to ensure academic success. In the absence of emotional distress during a stressful situation suggests that repetitive negative thinking styles were adaptive for some students and maladaptive for others.

### **Limitations and Future Directions**

While the present study offers useful information about relevant psychological risk and resilience factors among low-income college students, there are several limitations that must be acknowledged. There were restrictions posed by the sample used in the study. The recruitment for the study sample focused only on first-year students who applied for a scholarship/retention program. The recruitment of first-semester students participating in the CCOV retention program automatically restricted the number of potential participants in the study. It was expected that students in the CCOV program would represent a very small percentage of the incoming first-year student population at the university, reflecting students from low-income backgrounds. However, the criteria excluding participants under 17 years old resulted in a smaller than expected sample size. While it was necessary because of developmental differences and inability to consent without parental permission, the smaller than expected sample contributed to the underrepresentation of varying experiences among low-income college students. Other factors worth attending to for future research would seek to purposefully explore neighborhood differences, specifically exploring differences between urban and rural backgrounds. Though a central finding of the study was low-income students experienced mild emotional distress, future studies might seek a larger sample to capture multiple symptom severity levels among low-income students and explore the relationship with

academic performance. Additionally, the sample used in the current study was restricted to low-income students applying for a specific scholarship/program and the majority of the sample was female (61.1%). Further studies might include a larger sample of first-year incoming low-income students, including the general student population. Exploring gender differences in academic performance, emotional distress, and repetitive negative thinking styles has been well documented in the literature but falls outside of the scope of the study. Therefore, addressing these limitations would allow for further exploration of gender differences in academic challenges and psychological risk factors not addressed in this study.

A limitation the study attempted to address in the design was the assessment of multiple repetitive negative thinking styles in the same study. To account for the limitation of distinguishing repetitive negative thinking styles discussed in previous studies, students completed measures of worry, obsessive thinking, and ruminative thinking. While the measures of worry and ruminative thinking were useful, measurement of obsessive thinking using the 3-items from a measure of obsessive-compulsive symptoms was questionable. To date, there are no known measures of obsessive thinking and future studies might work to create a tool that captures this repetitive thinking style in students.

In future studies among low-income students, researchers should explore the relationship between repetitive negative thinking styles and academic performance at the end of each academic year. While there appears to be no significant relationship between repetitive negative thinking styles and first-semester academic performance, the study succeeded in showing the presence of repetitive negative thinking styles in a group of

students from impoverished backgrounds. Future studies might capture repetitive negative thinking styles at the end of their first semester to investigate the relationship between academic performance and college transition. In addition, the end of the academic year grade point average would allow for the exploration of repetitive negative thinking styles as students' progress through college. Examining the changes across both variables might elucidate the relationship between repetitive negative thinking styles and academic performance among first-year low-income college students.

Despite entering school with excessive worry and ruminative thinking, it remains unclear whether participation in the retention program served as a potential buffer for the level of emotional distress experienced during their first semester. Therefore, adding a comparison group would assist in observing the trajectory of college transitioning and repetitive negative thinking styles among college students. Also, it would appear that some students were able to maintain good academic standing, while others were placed on academic probation. Further exploration of group differences in student characteristics, repetitive negative thinking styles, emotional distress, and other relevant factors could shed light on what contributes to academic success among low-income students.

## **Implications**

### **Research on Students from Impoverished Backgrounds**

As suggested by Watkins (2008), constructive consequences of worry and ruminative thinking would involve “adaptive preparation and anticipatory planning” that would allow an individual to “progress toward the unattained goal”. When investigating the outcomes of students from impoverished backgrounds, there is an assumption made about the negative and disruptive effects of poverty on adjustment and performance. The



acknowledgement of the skill set students growing up in poverty develop and enter college settings with is infrequent. Like the constructive consequences of worry and ruminative thinking, these skills are typically learned out of necessity. These skills include learning practical living and adjustment behaviors used to navigate typical and challenging experiences for survival and daily living. For example, many low-income students attending college have learned how to shop for and cook their own meals. Young adults growing up in poverty also learn to navigate circumstances, connecting with resources to make the best out of a situation. Creativity often stems from “making do” with what is available given economic limitations and doing without resources that others might deem a necessity. Students participating in the retention program may have experienced less emotional distress in the presence of repetitive negative thinking styles because they had fewer concerns about their financial responsibilities. It is possible that strengths of students from impoverished backgrounds emerged and were reflected in their academic success because money was not a target of their worry. Alternative views of strength when thinking about students from impoverished backgrounds would lend to different hypothesized relationships between poverty and study outcomes, resulting in increased focus on strength-focused research questions.

### **Services for Low-Income College Students**

The strong relationship between emotional distress and repetitive thinking styles warrants observation in this group given their psychological vulnerabilities. It is apparent that students entering college with repetitive thinking styles might not experience emotional distress at the beginning of their first semester and most will progress through their first semester academically successful. Still it might be worth monitoring student emotional distress as the transitional period extends into the semester and other stressors

related to social and academic integration materializes during their matriculation. Most college students from low-income backgrounds are typically high-achievers. High achievers expect to have high grade point averages and overall successful academic careers. When low-income students are faced with academic challenges, it is expected that academic pressures might overwhelm and negatively impact their academic outcomes. While expected, not all low-income students succumb to the pressures and excel academically. Ongoing monitoring of repetitive thinking styles and levels of emotional distress might lend to our understanding of the types of psychological risks faced by low-income students, highlighting their approach to challenges during their first-year transition. Findings would suggest there is a need for an active and intentional focus on mental health challenges among low-income college students, like emotional distress and repetitive negative thinking styles. An ideal approach would be to capture a baseline measurement of mental health factors at the beginning of the academic year for monitoring as a part of programming in the same way academic and social factors were collected in this study. This approach allows for the observation of stressors throughout the semester and the potential to capture changes in stress reactions during the academic year to provide necessary interventions at important periods. This approach is equivalent to how the CCOV program has currently organized the academic and social needs of low-income college students. For example, the CCOV program makes it mandatory for students to arrive early to campus before the semester began, which provided important supports for students. Students were encouraged to complete their packet which provided a baseline on psychological factors filed by CCOV for future reference. Early arrival to campus also ensured immediate staff contact with students. Students were able to get

acclimated to the university campus and staff were also able to get a sense of student needs. Staff were able to direct students in the right direction to address their concerns before students were tasked with beginning their academic career and assist as the semester progressed. Using baseline information, programs could immediately connect students with mental health resources who report repetitive negative thinking styles. The referral to mental health services would function as an adjunctive support for students from impoverished backgrounds. The retention program staff who aim to address other academic and social concerns would contribute to the early identification of at risk students, which aligns with the focus of retention programs that provide supports for incoming low-income students. For example, participation in the CCOV program likely helped students navigate some of the transitional stressors often experienced when starting college, serving to possibly minimize emotional distress that could have activated repetitive negative thinking styles in an ineffective way. The program also required a course during the first-semester that taught students how to access campus, social, and academic resources. To address mental health concerns, CCOV staff added drop-in services for one hour a week, made available to students feeling overwhelmed or facing a crisis. This type of programming attempted to normalize and provide support for low-income college students during the transitional period and promote adequate adjustment to the college life

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## APPENDIX A

Table 1

*Standardized Measures of Repetitive Negative Thinking Styles*

<b>Ruminative Responses Scale (RRS; Nolen-Hoeksema, 1991)</b>	<b>Penn-State Worry Questionnaire (PSWQ; Meyer et al., 1990)</b>	<b>Obsessive-Compulsive Inventory- Revised (OCI-R; Foa et al., 2002)</b>
@1. think about how alone you feel	1. If I do not have enough time to do everything, I do not worry about it	1. I have saved so many things that they get in the way
2. think “I won’t be able to do my job if I don’t snap out of this”	2. my worries overwhelm me	2. I check things more often than necessary
@3. think about your feelings of fatigue and achiness	3. I do not tend to worry about things	3. I get upset if objects are not are not arranged properly
4. think about how hard it is to concentrate	<b>*4. many situations make me worry</b>	4. I feel compelled to count while I am doing things
<b>+5. think “what am I doing to deserve this?”</b>	<b>*5. I know I should not worry about things, but I just cannot help it</b>	5. I find it difficult to touch an object when I know it has been touched by strangers or certain people
6. think about how passive and unmotivated you feel	<b>*6. when I am under pressure, I worry a lot</b>	<b>*6. I find it difficult to control my own thoughts</b>
<b>*7. analyze recent events to try to understand why you are depressed</b>	7. I am always worrying about something	7. I collect things I don’t need
8. think about how you don’t seem to feel anything anymore	8. I find it easy to dismiss worrisome thoughts	8. I repeatedly check doors, windows, drawers, etc.
9. think “why can’t I get going?”	9. As soon as I finish one task, I start to worry about everything else I have to do	9. I get upset if others change the way I arranged things

+10. think “why do I always react this way?”	10. I never worry about anything	10. I feel I have to repeat certain numbers
*11. go away by yourself and think about why you feel this way	11. When there is nothing more I can do about a concern, I do not worry about it any more	11. I sometimes have to wash or clean myself simply because I feel contaminated
*12. write down what you are thinking and analyze it	*12. I have been a worrier all my life	*12. I am upset by unpleasant thoughts that come into my mind against my will
+13. think about a recent situation, wishing it had gone better	*13. I notice that I have been worrying about things	13. I avoid throwing things away because I am afraid I might need them later.
@14. think “I won’t be able to concentrate if I keep feeling this way.”	14. Once I start worrying, I cannot stop	14. I repeatedly check gas and water taps and light switches after turning them off
@+15. think “why do I have problems other people don’t have?”	15. I worry all the time	15. I need things to be arranged in a particular way
+16. think “why can’t I handle things better?”	16. I worry about projects until they are done	16. I feel that there are good and bad numbers
17. think about how sad you feel		17. I wash my hands more often and longer than necessary
18. think about all your shortcomings, failings, faults, mistakes		*18. I frequently get nasty thoughts and have difficulty in getting rid of them
@19. think about how you don’t feel up to doing anything		
*20. analyze your personality to try to understand why you are depressed		
*21. go someplace alone to think about your feelings		
22. think about how angry you are with yourself		

Note: RRS: @ - Ruminative Response Scale-Brief, \* - Reflection Subscale, + - Brooding Subscale; PSWQ: \* - Penn State Worry Questionnaire-Brief Version; OCI-R: \*OCI-Obsessing Subscale

## APPENDIX B

Table 2

*Demographic and Student Characteristics (N=54)*

<b>Characteristics</b>	<b>N</b>	<b>%</b>
<b>ACADEMIC</b>		
<b>Academic Standing</b>		
Academic Warning	14	25.9
Dean's List	15	27.8
Good Standing	39	72.2
<b>Academic Adjustments</b>		
Withdrawals	13	24.1
Incompletes	4	7.4
<b>Repeated Courses</b>		
Yes	5	9.3
No	49	90.7
<b>Majors</b>		
Art	1	1.9
Biology	9	16.8
Business	5	9.3
Chemistry	4	7.4
Criminal Justice	3	5.6
Education	1	1.9
Engineering	10	18.5
History	1	1.9
Mathematics	1	1.9
Music	2	3.7
Nursing	4	7.4
Physics	1	1.9
Political Science	2	3.7
Psychology	5	9.3
Social Work	2	3.7
Sociology	1	1.9
Undecided	2	3.7

**SOCIAL****Housing***On-Campus*

Roommate	46	85.2
No Roommate	2	3.7

*Off-Campus*

Parents/Relatives	6	11.1
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**Income***Family Income*

Less than \$9,999	20	37.0
\$10,000-19,000	15	27.8
\$20,000-39,000	14	25.9
\$40,000-59,000	1	1.9
No Response	4	7.4

*Parent Income Source*

Disability	13	24.1
Employment	29	53.7
Inheritance	1	11.1
Public Assistance	1	1.9
No Response	4	9.2

**Employment***On-Campus*

1-10 hours a week	15	27.8
11-20 hours a week	27	49.9
30+ hours a week	1	1.9

*Off-Campus*

1-10 hours a week	5	9.3
11-20 hours a week	4	7.4
30+ hours a week	1	1.9

**Extra-Curricular Activities**

Athletics	2	3.7
Greek Organizations	5	9.3
Honor Students	8	14.8
Service Organizations	6	11.1
Other (Band, Social Justice, Religious)	6	11.1

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APPENDIX C

Table 3

*Mean Scores and Intercorrelations of Academic Variables, Emotional Distress and Repetitive Negative Thinking Styles*

	HS GPA	ACT Scores	Term GPA	BAI	BDI	PSWQ	OCI-R OBS
ACT Scores	.051						
Term GPA	.130	.039					
BAI	-.008	.103	<b>.008</b>				
BDI	-.003	-.001	<b>-.075</b>	.738**			
PSWQ	-.044	-.054	<b>.199</b>	.565**	.588**		
OCI-R OBS	-.213	.038	<b>.042</b>	.733**	.595**	.419**	
RRS	-.097	.107	<b>-.075</b>	.587**	.642**	.540**	.393**
<i>M</i>	<b>3.66</b>	<b>25.89</b>	<b>2.86</b>	<b>14.08</b>	<b>8.20</b>	<b>52.58</b>	<b>41.86</b>
<i>(SD)</i>	<i>(0.412)</i>	<i>(3.593)</i>	<i>(0.957)</i>	<i>(14.713)</i>	<i>(8.982)</i>	<i>(14.031)</i>	<i>(14.660)</i>

*Note:* \*- $p < .05$ ; \*\*- $p < .001$ ; Mean scores and standard deviations are listed in the last row of the table; ACT Scores = American College Testing Scores, BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, HS GPA = High School Grade Point Average, PSWQ = Penn State Worry Questionnaire, RRS = Ruminative Response Survey, OCI-OBS = OCI-R Obsessing Subscale, Term GPA = First-Semester Grade Point Average

APPENDIX D

Table 4

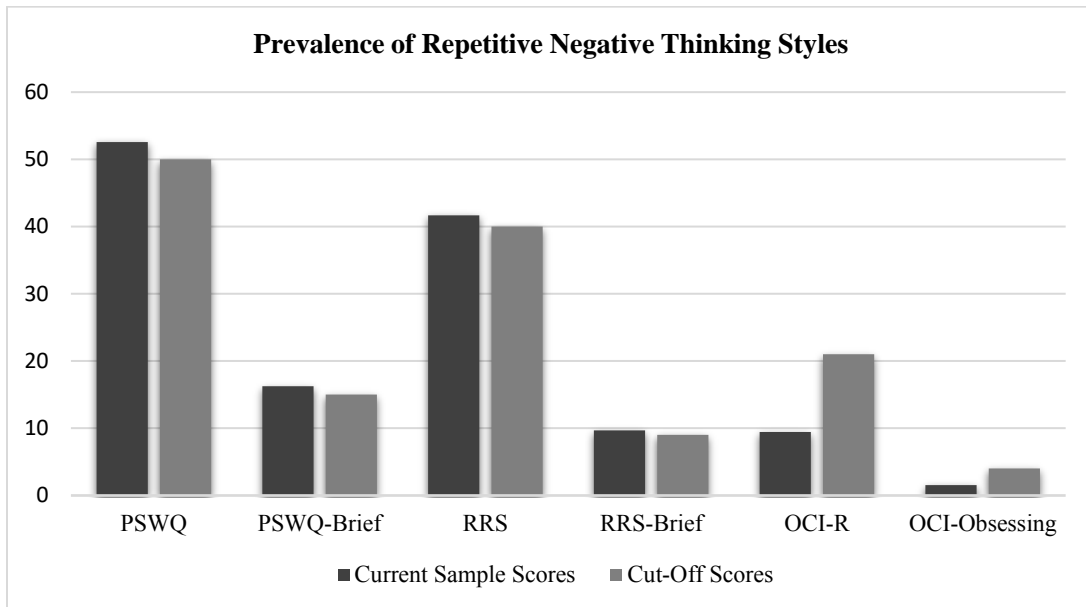
*Correlation Matrix for Emotional Distress and Repetitive Negative Thinking Styles*

	BDI	PSWQ	PSWQ-B	RRS	RRS-B	RRS-Reflective	RRS-Brooding	OCI-R	OCI-Obsessing
BAI	.738** (.000)	.565** (.000)	.447** (.001)	.587** (.000)	.609** (.000)	.389** (.005)	.593** (.000)	.659** (.000)	.733** (.000)
BDI		.588** (.000)	.482** (.000)	.642** (.000)	.675** (.000)	.389** (.004)	.665** (.000)	.580** (.000)	.597** (.000)
PSWQ			.947** (.000)	<b>.540**</b> (.000)	.632** (.000)	.341* (.012)	.539** (.000)	.407** (.003)	<b>.419**</b> (.002)
PSWQ-B				.469** (.000)	.545** (.000)	.294* (.033)	.431** (.001)	.344* (.012)	.366** (.007)
RRS					.921** (.000)	.854** (.000)	.937** (.000)	.215 (.123)	<b>.393**</b> (.004)
RRS-B						.691** (.000)	.875** (.000)	.271* (.047)	.507** (.000)
RRS-Reflective							.716** (.000)	-.005 (.974)	.099 (.474)
RRS-Brooding								.271* (.047)	.456** (.001)
OCI-R									.676** (.000)

*Note:* \*- $p < .05$ ; \*\*- $p < .001$ ; *Note:* BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, PSWQ = Penn State Worry Questionnaire, PSWQ-B: Penn State Worry Questionnaire- Brief Version, RRS = Ruminative Response Survey, RRS-B = Ruminative Response Survey-Brief Version, RRS-Reflective = Ruminative Response Survey Reflective Subscale, RRS-Brooding = Ruminative Response Survey Brooding Subscale, OCI-R = Obsessive-Compulsive Inventory-Revised, OCI-Obsessing = OCI-R Obsessing Subscale



## APPENDIX E



*Figure 1:* Mean Scores on Measures of Repetitive Negative Thinking Among Low-Income College Students. *Note:* PSWQ = Penn State Worry Questionnaire, PSWQ-Brief: Penn State Worry Questionnaire- Brief Version, RRS = Ruminative Response Survey, RRS-Brief = Ruminative Response Survey-Brief Version, OCI-R = Obsessive-Compulsive Inventory-Revised, OCI-Obsessing = OCI-R Obsessing Subscale

## CURRICULUM VITAE

### Darlene M. Davis

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Oak Park, Michigan 48237  
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#### Education

**University of Louisville**, Louisville, KY **7/2012 – 8/2018**  
Doctoral Candidate in Clinical Psychology.  
**Dissertation**: Repetitive Thinking Styles and Academic Performance: Psychological Risk and Resilience in Low-Income College Students.  
**Dissertation Defense Date**: 5/23/2018  
*\*APA accredited Clinical Psychology Program*

**University of Louisville**, Louisville, KY **7/2012 – 12/2014**  
M.A. in Clinical Psychology.  
**Emphasis**: Life Transitions and Psychosocial Functioning; OCD, Anxiety-Related Clinical Factors and Academic Functioning in Young Adults.

**University of Kentucky**, Lexington, KY **8/2003 – 5/2005**  
M.A. in Rehabilitation Counseling.  
**Thesis**: Recidivism of Juvenile African American Male Youth.

**Kentucky State University**, Frankfort, KY **8/1998 – 5/2002**  
B.A. in Child Development. Whitney Young Honors College.  
Departmental Honors, Magna Cum Laude.  
**Emphasis**: Developmental/Learning Disabilities in Children.

#### Professional License & Certification

**Psychology-Temporary Limited License- Master's**  
License Number: #6301017091  
Issue Date: 6/2017  
Expiration Date: 12/2018  
State: Michigan

**Certified Advanced Alcohol and Drug Counselor**

License Number: #C-03369

Issue Date: 5/2017

Expires: 1/2020

State: Michigan\*

**Licensed Clinical Alcohol and Drug Counselor**

License Number: #170814

Issue Date: 9/2016

Renewal Date: 12/2019

State: Kentucky\*

*Certification in Alcohol and Drug Counseling (CADC) obtained in January 2011 (KY-#1135)*

\*Member of the International Certification & Reciprocity Consortium (IC&RC)

**Clinical Training Experience**

**John D. Dingell VA Medical Center**, Detroit, MI

**9/2017 – Present**

*Interprofessional Mental Health Training*

Clinical Supervisor: Eric F. Miller, PhD

*Acceptance & Commitment Therapy*

Clinical Supervisor: Eric F. Miller, PhD

*Dialectical Behavior Therapy*

Clinical Supervisor: Eileen Bent, PhD

Outpatient/Assessment/Administrative: Facilitates individual and group psychoeducation, process psychotherapy and skills-based individual/group therapy, conducts clinical interviews for service referrals and treatment planning, delivers clinical care for Veterans using evidence-based therapies, provides consultation on behavioral health interdisciplinary treatment teams offering comprehensive patient-centered care, completes comprehensive assessments, conducts program evaluations, and presents educational assessment and psychotherapy case presentations

**Psychological Services Center (PSC)**, Louisville, KY

**7/2012 – 8/2017**

*Psychological Assessment Rotation*

Clinical Supervisor: Bernadette Walter, PhD and David Winsch, PhD

Assessment: Referrals for complete diagnostic and psychological evaluations, Attention-Deficit/Hyperactivity Disorder (ADHD) evaluations, and advanced placement referrals for students attending local schools (Jefferson County Public School, Oldham County Public Schools)

*Integrated Interventions Team*

Clinical Supervisor: Richard Lewine, PhD

Outpatient/Assessment: individual therapy, young adults, major depression, personality disorder, suicidal ideation, self-harm behavior, substance abuse, diagnostic psychological assessment, and referrals for community mental health services

*Children with ADHD and Related Disorders (CARDS) Team*

Clinical Supervisor: Paul Rosen, PhD

Outpatient/Assessment: individual and group therapy, youth (6-13), ADHD assessment and feedback, emotion dysregulation, parent education, organizational skills

*Neuropsychology Team*

Clinical Supervisor: Benjamin Mast, PhD

Outpatient/Assessment: older adults, traumatic brain injury, Alzheimer's/dementia, consultation, multidisciplinary teams, neuropsychological assessment and feedback

**UofL Ambulatory Clinic, Louisville, KY**

**7/2015 – 5/2016**

*Global Health Initiative*

Clinical Supervisor: Rahel Bosson, MD and Monnica Williams, PhD

Primary Care/Assessment: patient/family centered team-based care, refugee health screening, mental health screening, clinical assessment, and case management

**Louisville OCD Clinic, Louisville, KY**

**5/2014 – 6/2015**

Clinical Supervisor, Monnica Williams, PhD

Intensive Outpatient/Assessment: individual and group therapy, Exposure/Response Prevention for youth and young adults, OCD youth therapy group, OCD parent support group

**Central State Hospital, Louisville, KY**

**7/2014 – 6/2015**

Clinical Supervisor: Abbie Stiff Miller, PsyD

Inpatient Psychiatric: severe mental illness, forensic assessment, competency evaluation, low-income population, individual and group therapy, relapse prevention

**Behavioral Wellness Counseling Clinic, Louisville, KY**

**7/2012 – 7/2014**

Clinical Supervisor: Monnica Williams, PhD

Outpatient: youth, young adults, adults, Obsessive-Compulsive Disorder (OCD), Anxiety Disorders, individual and group therapy, parent education, support groups, Exposure and Response Prevention (ERP), CBT, diagnostic assessments

## Teaching Experience

**Teaching Assistant**, Louisville, KY  
*Department of Psychological and Brain Sciences*

**7/2012 – 12/2017**

### ***Introduction to Psychology***

Instructors: Paul DeMarco, PhD, Richard Lewine, PhD, Benjamin Mast, PhD., and Edna Ross, PhD

Graded online papers and classroom exams, prepared exam materials, proctored exams, facilitated review sessions for students following exams.

**Fall 2015, Spring 2016, and Fall 2017**

### ***Abnormal Psychology***

Instructor: Tamara Newton, PhD and Alison McLeish, PhD

Graded assignments, facilitated study sessions before exams, prepared exam materials, proctor exams, facilitated review sessions following exams.

**Fall 2016**

### ***Culturally Informed Primary Care/Mental Health-Clinical Psychology Practicum***

Instructor: Monnica Williams, PhD

Managed course materials via Blackboard, downloaded documents to Blackboard, uploaded assignment grades into Blackboard

**Spring 2015, Summer 2015**

### ***Assessment & Treatment of Black Americans***

Instructor: Monnica Williams, PhD

Read the course manual and supporting literature/articles, created PPT slides for course lectures, and prepared exam materials.

**Spring 2013**

### ***Multicultural Psychology-Writing Course***

Instructor: Monnica Williams, PhD

Read the course manual and supporting literature/articles, created PPT slides for course lectures, graded assignments, facilitated study sessions before exams, prepared exam materials, proctored exams, and facilitated review sessions following exams.

**Fall 2012, Fall 2013**

## Professional Work Experience

**StrongMinds**, Louisville, KY

**8/2011 – 7/2012**

*Behavioral Assistant*, Provided outpatient services for persons seeking treatment for OCD, Post-Traumatic Stress Disorder (PTSD), and mood disorders. Assisted with ERP homework completion, provided psychoeducation on anxiety related disorders and substance use, and offered supportive guidance for clients in treatment (ERP, CBT, Prolonged Exposure (PE)) with a Licensed Clinical Psychologist.

Clinical Supervisor: Monnica Williams, PhD

**Center for Behavioral Health**, Louisville, KY

**6/2011 – 6/2012**

*Counselor.* Provided outpatient services for persons seeking treatment for Opioid Dependence. Facilitated psychoeducational and individual sessions to address common thinking errors and negative behavioral patterns associated with chemical dependency.  
Clinical Supervisor: Leslie Middleton, LCSW

**Central State Hospital**, Louisville, KY **11/2008 – 5/2011**  
*Dual Diagnosis Therapist.* Facilitated psycho educational group sessions, assessed for substance use history, and provided individual therapy for persons with dual-diagnoses (depression, anxiety, bipolar, schizophrenia, PTSD with substance abuse/dependence) in an inpatient facility.  
Clinical Supervisor: Farmer Malone MA, CADC

**Jefferson County Drug Court**, Louisville, KY **10/2007 – 11/2008**  
*Substance Abuse Counselor.* Conducted individual and family sessions, facilitated therapeutic and educational groups, provided clinical case management and crisis intervention services, engaged in court proceedings, coordinated services for placement and follow-up in a court-ordered outpatient substance abuse program.  
Clinical Supervisor: Audrey Walker, CADC

**Office of Vocational Rehabilitation**, Lexington, KY **5/2006 – 9/2007**  
*Rehabilitation Specialist.* Facilitated trainings that assisted consumers in their transition into the community workforce, coordinated services for consumers managing psychological symptoms stemming from mental illness and/or physical disabilities, trained persons on employability and life skills, and spearheaded advocacy efforts to dispel the stigma associated with mental illness and substance abuse.

**Ridge Behavioral Health Center**, Lexington, KY **10/2005 – 05/2006**  
*Mental Health Associate.* Co-facilitated therapeutic and educational groups, modeled healthy behavior and communications styles, and monitored daily activities to maintain an effective milieu conducive for treatment on an inpatient adolescent mental health unit.

**Employment Solutions**, Lexington, KY **10/2004 – 10/2005**  
*Rehabilitation Consultant.* Assessed clients with MR/DD diagnoses to determine specific barriers to work and community involvement associated with symptoms of mental illness or physical disability, provided case management services and community transition services, and provided job training and job placement services to ensure the acquisition of needed work accommodations.

**Bluegrass Rape Crisis Center**, Lexington, KY **2/2004 – 10/2004**  
*Crisis Telephone Counselor.* Counselor for 24- hour suicide and rape victim hotline, provided crisis intervention, education, and counseling to callers, responded to hospital calls to provide support for recent victims of attacks, and maintained knowledge of related referral networks.

### Journal Articles

Chasson, G., Williams, M.T., **Davis, D. M.**, Combs, J. (2017). Missed Diagnoses in African Americans with Obsessive-Compulsive Disorders: The Structured Clinical Interview for the DSM-IV Axis I Disorders (SCID-I). *BMC Psychiatry*, 17, 258.

Williams, M.T., **Davis, D.M.**, Powers, M., Weissflogg, L.O. (2015). Current Trends in Prescribing OCD Medications: Best Practices and New Research. *Directions in Psychiatry*, 34(4), 247-261.

Williams, M. T., Tellawi, G., **Davis, D. M.**, Slimowicz, J. (2015). Assessment and Treatment of Sexual Orientation Obsessions in Obsessive-Compulsive Disorder. *Australian Clinical Psychologist*, 1(1), 12-18.

Sawyer, B., Williams, M.T., Chasson, G., **Davis, D.M.**, & Chapman, L. K. (2015). The Impact of Childhood Family Functioning on Anxious, Depressive, and Obsessive-Compulsive Symptoms in Adulthood among African Americans. *Journal of Obsessive-Compulsive & Related Disorders*, 4, 8-13. doi: 10.1016/j.jocrd.2014.10.004.

Williams, M. T., Malcoun, E., Sawyer, B., **Davis, D. M.**, Bahojb-Nouri, L. V., & Leavell Bruce, S. (2014). Cultural Adaptations of Prolonged Exposure Therapy for Treatment and Prevention of Post-Traumatic Stress Disorder in African Americans. *Behavioral Sciences — Special Issue: PTSD and Treatment Considerations*, 4(2), 102-124. doi:10.3390/bs4020102

Williams, M. T., **Davis, D.M.**, Thibodeau, M., & Bach, N. (2013). Psychometric Properties of the Obsessive-Compulsive Inventory-Revised in African Americans with Obsessive-Compulsive Disorder. *Journal of Obsessive-Compulsive & Related Disorders*, 2(4), 399-405.

### Book Chapters

DeLapp, R. C. T., Williams, M.T., **Davis, D. M.**, & Sawyer, B. (2016). Anxiety and Obsessive-Compulsive Disorder, Chapter 10. In A. Breland-Noble, C. S. Al-Mateen, & N. N. Singh (Eds.), *Handbook of Mental Health in African American Youth*. Springer.

Williams, M. T., Chasson, G. S., & **Davis, D. M.** (2015). Anxiety and Affect in Racially Unmatched Dyads During Evaluation and Assessment. In A. M. Columbus (Ed.), *Advances in Psychology Research*. Volume 108. Hauppauge, NY: Nova Science Publishers.

Williams, M. T., Gooden, A. M., & **Davis, D.M.** (2012). African Americans, European Americans, and Pathological Stereotypes: An African-Centered Perspective. In *Psychology of Culture*, G. R. Hayes & M. H. Bryant, eds., Nova Science Publishers. ISBN-13: 978-1-62257-274-8.

**Davis, D.M.**, Steever, A., Terwilliger, J. M. & Williams, M. T. (2012). The Relationship between the Culture-Bound Syndrome Koro and Obsessive-Compulsive Disorder. In *Psychology of Culture*, G. R. Hayes & M. H. Bryant, eds., Nova Science Publishers. ISBN-13: 978-1-62257-274-8.

### **Conference Posters**

**Davis, D.M.**, Williams, M.T., & Lewine, R.: Academic Interference and Social Functioning Among College Students with Obsessive-Compulsive Symptoms. To be presented at the *25<sup>th</sup> Annual International OCD Foundation Annual Conference*, Washington, DC, July 26-29, 2018.

Warnecke, A.J., **Davis, D.M.**, Manley, K., McKendree, & Lewine, R.: Emotional Obstacles to Academic Success in Stress and Trauma Exposed Economically Disadvantaged Students. Poster presented at the *33<sup>rd</sup> Annual International Society for Traumatic Stress Studies Annual Meeting*, Chicago, IL, November 9-11, 2017.

Debreaux, M., Mier-Chairez, J., **Davis, D. M.**, Heckard, D., Arney, E., Rosen, D., Kanter, J., Skinta, M., & Williams, M. T.: "You are Smart for a Black Guy": A Qualitative Analysis of Experiences of Racial Microaggressions in African American College Students. Poster presented at the *50<sup>th</sup> Annual Association for Behavioral and Cognitive Therapies Conference*, New York City, NY, October 27-30, 2016.

Dowell, J. N., **Davis, D. M.**, & Williams, M. T.. Measuring Disgust Sensitivity and OCD Symptom Dimensions across Ethnic Groups. Poster presented at the *50<sup>th</sup> Annual Association for Behavioral and Cognitive Therapies Conference*, New York City, NY, October 27-30, 2016.

Peña, A., Mier-Chairez, O., **Davis, D.M.**, Bosson, R., Exposito, A., Ford, R., Diaz, Y., Carrico, R., & Williams, M. T.: Validation of the Refugee Health Screener-15 (RHS-15) for Cuban Refugees/Entrants. Poster presented at the *National Latino/a Psychology Association Conference*, Orlando, FL, September 29-October 2, 2016.

Ching, T., Williams, M., Olatunji, B. O., Siev, J., Tellawi, G., Ellsworth, M., & **Davis, D.M.**: Importance/Control of Thoughts Moderates the Relationship between Contamination Disgust and Sexual Orientation-OCD Symptoms: Avoiding Sexual Orientation Transformation? Poster presented at the *23<sup>rd</sup> Annual International OCD Foundation Annual Conference*, Chicago, IL, July 29-31, 2016. **Award: Research Poster Scholarship Award Winner.**

**Davis, D.M.** & Williams, M.: Symptom Interference and Academic Functioning in College-Aged Students with Obsessive-Compulsive Symptoms. Poster accepted to the *University of Louisville Graduate Student Regional Research Conference*, Louisville, KY, April 1-2, 2016.



**Davis, D.M.**, Viscusi, J., Pena, A. & Williams, M.T.: Obsessional Belief Patterns and Symptom Dimensions in African Americans with Obsessive-Compulsive Disorder. Poster presented at the *49<sup>th</sup> Annual Association of Behavioral and Cognitive Therapies Conference, African American Special Interest Group (SIG)*, Chicago, IL, November 12-15, 2015.

Ching, T., Johnson, W., Ford, R., Srinivasan, K., **Davis, D.M.**, Williams, M. T., Carrico, R., Coty, M., Batscha, C., Ramirez, J. & Bosson, R.: Refugees at Risk for Mental Health Problems. Poster presented at the *49<sup>th</sup> Annual Association of Behavioral and Cognitive Therapies Conference, African American Special Interest Group (SIG)*, Chicago, IL, November 12-15, 2015.

Johnson, W., Rivera, K., Ford, R., Srinivasan, K., **Davis, D.M.**, Williams, M.T., Carrico, R., Coty, M., Batscha, C., Ramirez, J., & Bosson, R.: Global Health Center: Refugees at Risk for Mental Health Problems. Poster presented at *Research Louisville*, Louisville, KY, October 27-29, 2015.

**Davis, D.M.**, Durrett, E., Leavell-Bruce, S., & Williams, M.: Academic Functioning in Young Adult College Students with Obsessive-Compulsive Behaviors. Poster presented at the *22<sup>nd</sup> Annual International OCD Foundation Annual Conference*, Boston, MA, July 31-August 2, 2015.

DeLapp, R.T., **Davis, D.M.**, Combs, J., & Williams, M.T.: Psychometric Properties of the Disgust Scale-Revised: Preliminary Findings in an African American and European American College Sample. Poster presented at the *48<sup>th</sup> Annual Association of Behavioral and Cognitive Therapies, African American Special Interest Group (SIG)*. Philadelphia, PA, November 21-23, 2014.

Simms, J. V., Sawyer, B., **Davis, D.M.**, Ellsworth, M., Williams, M. T., Leonard, R. C., & Riemann, B. C.: Ethnoracial Differences in Participation and Treatment Duration in a Residential and Intensive Outpatient Program for OCD. Poster presented at the *48<sup>th</sup> Annual Association of Behavioral and Cognitive Therapies Conference, African American Special Interest Group (SIG)*, Philadelphia, PA, November 21-23, 2014.

Durrett, E., Simms, J. V., **Davis, D.M.**, Alvey, H., Chapman, L. K., & Williams, M.: Methodology for Recruitment of African American Families for Anxiety Disorders Research: The CAFÉ Project. Poster presented at the *48<sup>th</sup> Annual Association of Behavioral and Cognitive Therapies Conference, African American Special Interest Group (SIG)*, Philadelphia, PA, November 21-23, 2014.

Tellawi, G., Sawyer, B. A., **Davis, D.M.**, Bruce, S. L., Viscusi, J., Lewis, C., & Williams, M.: Obsessive-Compulsive Disorder and Marital Satisfaction. Poster presented at the *21<sup>st</sup> Annual International OCD Foundation Annual Conference*, Los Angeles, CA, July 17-19, 2014.

**Davis, D.M.**, Sawyer, B., Williams, M.T., Slimowicz, J., & Tellawi, G.: Suicidal Ideation and Dimensions: Ideation Predicting Dimensions. Poster presented at the *34<sup>th</sup> Annual Anxiety and Depression Association of America Conference*, Chicago, IL, March 26-28, 2014.

**Davis, D. M.**, Chasson, G., Combs, J., & Williams, M. T.: The Utility of the SCID in Assessing Obsessive-Compulsive Disorder in African Americans. Poster presented at the *47<sup>th</sup> Annual Association of Behavioral and Cognitive Therapies Conference, African American Special Interest Group (SIG)*, Nashville, TN, November 21-24, 2013.

Sawyer, B. A., Leavell, S., Malcoun, E., Bahojb-Nouri, L. V., **Davis, D. M.**, & Williams, M. T.: Prolonged Exposure Therapy for African Americans with PTSD: Race-Related Trauma and Cultural Adaptations of Treatment. Poster presented at the *47<sup>th</sup> Annual Association of Behavioral and Cognitive Therapies (ABCT) Conference, African American Special Interest Group (SIG)*, Nashville, TN, November 21-24, 2013.

Smith, A., **Davis, D. M.**, & Williams, M. T.: Minority Representation in a Major Mental Health Journal *Depression and Anxiety*. Poster presented at the *47<sup>th</sup> Annual Association of Behavioral and Cognitive Therapies Conference (ABCT)*, Nashville, TN, November 21-24, 2013.

Sawyer, B. A., **Davis, D. M.**, & Williams, M. T.: The Role of Family Functioning on Symptom Severity in Obsessive-Compulsive Disorder. Poster presented at the *47<sup>th</sup> Annual Association of Behavioral and Cognitive Therapies (ABCT) Conference*, Nashville, TN, November 21-24, 2013.

**Davis, D.M.**, Smith, A., Bach, N., Sawyer, B., & Williams, M. T.: Disgust Sensitivity in an African American Sample with OCD. Poster presented at the *20<sup>th</sup> Annual International OCD Foundation (IOCDF) Conference*, Atlanta, GA, July 17-19, 2013.

**Davis, D.M.**, Bach, N., Thibodeau, M., & Williams, M. T.: Validation of the Obsessive-Compulsive Inventory- Revised (OCI-R) in an African American Clinical and Nonclinical Samples. Poster presented at the, *46<sup>th</sup> Annual Association of Behavioral and Cognitive Therapies (ABCT) Conference*, National Harbor, MD, November 15-18, 2012.

**Award: Best Presentation of Research.**

DeLapp, R.C.T., Petrie, J. M., Richards, A. E., **Davis, D.M.**, Bahojb-Nouri, L.V., Buckner, E.V., & Chapman, L.K.: Patterns of fear in African American youth: A factor analysis of the Fear Survey Schedule Children- Revised in a community-based African American youth sample. Poster presented at the *46<sup>th</sup> Annual Association of Behavioral and Cognitive Therapies (ABCT), African Americans in Behavioral Therapy Special Interest Group (SIG)*, National Harbor, MD, November 15-18, 2012.

Duque, G., **Davis, D.M.**, Wetterneck, C. T., & Williams, M. T.: Evaluation of the Psychometric Properties of the Y-BOCS Severity Scale in African-Americans with OCD. Poster presented at the *19th Annual International OCD Foundation Annual Conference*, Chicago, IL, July 27-29, 2012.

**Davis, D.M.**, Steever, A., Terwilliger, J. M., & Williams, M. T.: The Culture-Bound Syndrome Koro as a Form of Obsessive-Compulsive Disorder, Poster presented at the *19th Annual International OCD Foundation Annual Conference*, Chicago, IL, July 27-29, 2012.

**Davis, D.M.**, Williams, M.T., & Chapman, L.K.: Anxiety and Affect in Racially Unmatched Dyads: Implications for a Therapeutic Relationship, Poster presented for the *45th Annual Convention of the Association of Behavioral and Cognitive Therapies*, Toronto, ON, November 10-13, 2011. **Award: Best Presentation of Research**

**Davis, D.M.**, Vines, L., Petrie, J., Chapman, L.K.: Worry Content in an Anxious and Non-Anxious Community Sample of African American Adults. Poster presented at the *31st Annual Anxiety Disorders Association of America Conference (ADAA)*, New Orleans, LA, March 24-27, 2011.

### **Conference Talks**

**Davis, D.M.**, Tellawi, G., Viscusi, J., & Leins, C., & Williams, M.: OCD and Minority Status: Therapeutic Considerations. Panel discussion occurred at the *23rd Annual International OCD Foundation Conference*, Chicago, IL, July 29-31, 2016.

Risson, F., Claiborn, J., Jenike, M., **Davis, D.M.**, Riemann, B., & Pearlman, J.: Maintaining Recovery and Managing OCD. Panel discussion occurred at the *21st Annual International OCD Foundation Conference*, Los Angeles, CA, July 18-20, 2014.

**Davis, D.M.** & Williams, M. T.: African American Special Interest Group: Navigating Professional Issues Faced by Black Psychologists. Talk presented at the *47th Annual Association of Behavioral and Cognitive Therapies*, Nashville, TN, November 21-24, 2013.

Williams, M. & **Davis, D.M.**: Assessment of Obsessive Compulsive Disorder with African Americans. Talk presented at the *31st Annual Anxiety and Depression Association of America Conference*, San Diego, CA, April 4-7, 2013.

### **Lectures/Presentations/Trainings/Workshops**

Training, *Developing a Therapeutic Environment on an Acute Inpatient Mental Health Unit*, Inpatient Mental Health Clinical Team Training, John D. Dingell VAMC, Detroit, MI, 6/2018.

Training, *Building A Supportive Team: Interacting with Veterans and Providers*, Mental Health Clinic Clerk Training, John D. Dingell VAMC, Detroit, MI, 1/2018.

Presentation, *Violence Risk Assessment and Firearm Safety Management*, Mental Health Clinic Psychology Meeting, John D. Dingell VAMC, Detroit, MI, 12/2017.

Training, *Mental Health: What You Need To Know*, Mental Health Clinic Clerk Training, John D. Dingell VAMC, Detroit, MI, 10/2017.

Workshop, *Strategies for Navigating Difficult Dialogue in the Classroom*, Kentucky Psychological Association Spring Academic Conference, Spalding University, Louisville, KY, 4/2017.

Workshop, *Investing in Your Future*, Top Ladies of Distinction/ Top Teens of American, Area V Conference, Galt House, Louisville, KY, 3/2017.

Lecture, *Substance Use Disorders*, Abnormal Psychology (Undergraduate) at the University of Louisville, Department of Psychological and Brain Sciences, Louisville, KY, 11/2016.

Lecture, *Eating Disorders*, Abnormal Psychology (Undergraduate) at the University of Louisville, Department of Psychological and Brain Sciences, Louisville, KY, 10/2016.

Lecture, *Obsessive-Compulsive Disorder*, Abnormal Psychology (Undergraduate) at the University of Louisville, Department of Psychological and Brain Sciences, Louisville, KY, 10/2016.

Lecture, *Developing Self-Discipline & Believing in Yourself*, General Studies (Undergraduate) at the University of Louisville, Arts & Sciences Department, Louisville, KY, 9/2016.

Workshop, *Culturally Competent Mentorship*, P.U.R.E., Inc., Volunteer Orientation, Elizabethtown, KY 7/2016.

Lecture, *Triadic Therapeutic Process: Using an Interpreter*, Cultural Diversity (Graduate) at the University of Louisville, Department of Psychological and Brain Sciences, Louisville, KY 10/2015.

Workshop, *C.O.P.I.N.G. Youth Transition Program*, Delta Sigma Theta Sorority, Inc., EMBODI Program, Louisville, KY 9/2015.

Workshop, *Diagnosis and Assessment of Obsessive Compulsive Disorder*, Center for Mental Health Disparities (CMHD), Louisville, KY, 5/2014.

Lecture, *Substance Related Disorders*, Christian Academy of Louisville (CAL), Louisville, KY, 4/2014.

Workshop, *Mental Health Awareness: The Family & Anxiety Disorders*, Health Fair, 4/2014.

Lecture, *Mental Health Awareness: Teens & Anxiety/Depression & Suicide*, Christian Academy of Louisville (CAL), Louisville, KY, 4/2014.

Workshop, *GRANDFamily Mental Wellness*, KIPDA Annual Conference 2013, Kentuckiana Regional Planning & Development Agency (KIPDA), Louisville, KY, 6/2013.

Workshop, *GRANDFamily Centered Practices: Emotional and Mental Wellness*, KIPDA Annual Conference 2013, Kentuckiana Regional Planning & Development Agency (KIPDA), Louisville, KY, 6/2013.

Lecture, *Substance Abuse in African Americans*, African American Psychology (Undergraduate) at the University of Louisville, Department of Psychological and Brain Sciences, Louisville, KY, 9/2011.

### **Professional and Community Service**

**Committee Member**, *Family Involvement in Veteran Treatment and Professional CEUs Subcommittees*, John D. Dingell VAMC 2018 Mental Health Summit Committee, 8/2017 – Present.

**Committee Member**, *Opioid Crisis Primary Care Physician Program Integration Subcommittee*, John D. Dingell VAMC Preventative Ethics Committee, 8/2017 – Present.

**Vice President**, *Anxiety Disorders Special Interest Group*, Association for Behavioral and Cognitive Therapies, 8/2017 – Present.

**Facilitator**, *Difficult Dialogues*, University of Louisville, Office of Diversity and International Affairs, 10/2016 - 5/2017.

**C.O.P.I.N.G. Economic Empowerment Initiative**, *EMBODI*, Delta Sigma Theta Sorority, Inc., Louisville Alumnae Chapter, 10/2016 – 5/2017.

**Board Member**, *P.U.R.E. Community Program*, P.U.R.E. Inc., 7/2016 – 7/2017.

**Campus Representative**, *Advocacy Coordinating Team*, American Psychological Association of Graduate Students, 8/2015 - 8/2016.

**Cohort Liaison**, *Department of Psychological and Brain Sciences*, University of Louisville Clinical Psychology Program, 8/2015 - 7/2016.

**C.O.P.I.N.G. School Transition Program**, *EMBODI*, Delta Sigma Theta Sorority, Inc., Louisville Alumnae Chapter, 9/2015 – 5/2016.

**Volunteer Discussion Board Designer and Facilitator**, *OCDTypes.com*, Behavioral Wellness Counseling Clinic, 6/2012 – 6/2014.

### **Popular & Alternative Media**

Debreaux, M. & **Davis, D.M.** Self-Compassion and Difficult Relationships: What About Your Friends [and Family]?, *Cultural Competency 101*, 2/2017

Sawyer, B. & **Davis, D.M.** Lens of Compassion: Perspective Taking and Cultural Competency, *Cultural Competency 101*, 11/2016

**Davis, D.M.** Cultural Compassion in Action, *Cultural Competency 101*, 10/2016.

**Davis, D.M.** & Chapman, K.L. Understanding the Relationship between OCD and Distress, *Psychology Today*, 9/2013.

**Davis, D.M.** & McGhee, P. GrandFamilies and Mental Wellness, WLOU Radio, 6/2013.

Chapman, K.L. & **Davis, D.M.** Power to Change Television Show, WAVE-3, "OCD", 11/2012.

### **Ad Hoc Reviewership**

2018 *Journal of Health Care for the Poor and Underserved*

2017 *Journal of Health Care for the Poor and Underserved*

2015 *Current Psychiatry Reviews*

2014 *Cognitive Behavioral Therapy*

2013 *Biomed Central BMC Psychiatry*

2013 *Journal of Obsessive Compulsive Related Disorders* (with Dr. Monnica Williams)

2012 *Addicted Behaviors* (with Dr. Monnica Williams)

### **Professional Memberships**

Association of Behavioral and Cognitive Therapies (ABCT)

Anxiety Disorders Association of America (ADAA)

American Psychological Association (APA)

Association for Psychological Sciences (APS)

Delta Sigma Theta Sorority Inc., Physical and Mental Health Committee

International OCD Foundation (IOCDF)

Society for Research on Adolescence (SRA)

### **Grants/ Fellowships**

Principal Investigator: Dr. Monnica Williams for Darlene M. Davis

Award Dates: 7/2014-6/2015

Source: University of Louisville Commission on Diversity and Racial Equality (CODRE)

Project Title: Academic Accommodations for Young Adults with Obsessive Compulsive Behaviors

Direct Costs: \$1,000

Minority Fellowship Scholar

Research Mentor: Dr. Monnica Williams

Award Dates: 7/2012-6/2014

Source: University of Louisville, School of Interdisciplinary and Graduate Studies

Project Title: Validation of Clinical Instruments Assessing Obsessive-Compulsive Disorders in African Americans; Adaptation of the Post-Traumatic Stress Disorder Treatment Protocol for African Americans