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Disordered eating, depression, and cognitive vulnerabilities in college women.

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DISORDERED EATING, DEPRESSION, AND COGNITIVE VULNERABILITIES IN
COLLEGE WOMEN

By

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M.Ed., University of Louisville, 2017

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ABSTRACT

DISORDERED EATING, DEPRESSION, AND COGNITIVE VULNERABILITIES IN

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Kelsea Visalli

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This study tests a path model of disordered eating and symptoms of depression derived

from the Hopelessness Theory of Depression (Abramson, Metalsky, & Alloy, 1989). The

model proposes that cognitive vulnerabilities to depression will be associated with

disordered eating behaviors and symptoms of depression in college women. A sample of

undergraduate women (n = 181) completed self-report measures assessing disordered

eating symptoms and symptoms of depression. Findings revealed that one, but not all,

cognitive vulnerability was associated with disordered eating behavior, and that

disordered eating behaviors and symptoms of depression are bi-directionally associated.

Implications and future research directions are discussed.

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION

The proposed study is based on the literature supporting that disordered eating behaviors are a concern in college populations, especially for women (Hoerr, Bokram, Lugo, Bivins, & Keast, 2002; Lipson & Sonneville, 2017; Prouty, Protinsky, & Canady, 2002; Reinking & Alexander, 2005). Further, depressive symptomatology and disordered eating behaviors are commonly associated with one another (Hudson et al., 2007; Johnson et al., 2002; Gitimu et al., 2016; Kurth et al., 1995; Liechty & Lee, 2013; Morris, Parra, & Stender, 2011; Stice, Presnell, & Spangler, 2004; Wildes et al., 2005; Zonnevylle-Bender et al., 2004). While this relationship has been clearly supported in the literature, several gaps exist. First, the Hopelessness Theory of Depression (Abramson, Metalsky & Alloy, 1989), which describes five inferential styles one tends to make when experiencing a negative event, has been studied with disordered eating (Dalgleish et al., 2001; Goebel, Spalthoff, Schulze, & Florin, 1989; Joiner et al., 1995; Mansfield & Wade, 2000; Metalsky et al., 1997; Morrison, Waller, & Lawson, 2006), but the literature is limited and does not examine the entire Hopelessness Theory of Depression. Moreover, all of the studies examining the Hopelessness Theory of Depression and disordered eating behaviors fail to provide racial and ethnic demographics, which is problematic considering the rising percentage of ethnic minority students receiving post-secondary education (Ma & Baum, 2016).

Disordered Eating Behaviors

Disordered eating behaviors are a particular concern for women on college campuses and have the potential to become chronic (Lipson & Sonneville, 2017; Newman, Moffitt, Caspi, & Silva, 1998; Slane, Klump, McGue, & Iacono, 2014; White, Reynolds-Malear & Cordero, 2011). Estimates in the literature suggest that 8-17% of college women meet criteria for eating disorders such as anorexia nervosa, bulimia nervosa, or eating disorders not otherwise specified (Hoerr, et al., 2002; Lipson & Sonneville, 2017; Prouty et al., 2002; Reinking & Alexander, 2005). This is a major concern, as eating disorders have one of the highest mortality rates of any psychological disorder (Arcelus, Mitchell, Wales & Nielsen, 2011; Fairburn et al., 1995; Fichter & Quadflieg, 2016). Eating disorders may emerge following the adoption of compensatory disordered eating behaviors such as skipping meals, restricting calories, using laxatives/nonprescription diet pills, or self-induced vomiting (Clemens, Thombs, Olds, & Gordon, 2008). A recent analytical trend has been the movement from the sole focus on clinical eating disorders to analyzing a range of eating behaviors along a continuum (Mintz & Betz, 1988; Scarano & Kalodner-Martin, 1994; Tylka & Subish, 1999, 2002). Looking at eating pathology on a continuum allows us to understand the gray area between eating behavior that is within normal limits and that of a diagnosable eating disorder. For example, someone who purges one time a week does not meet criteria for bulimia nervosa; however, this individual is still engaging in disordered and unhealthy eating behavior. By assessing different levels of disordered eating behavior, we may better understand the etiology, development, and treatment of clinical and sub-clinical eating disorders as well as identify factors that may intensify sub-clinical symptoms and

put women at risk for later developing clinical eating disorders (Scarano & Kalodner-Martin, 1994; Tylka & Subich, 2002; VanBoven & Espelage, 2006; White, Reynolds-Malear & Cordero, 2011). In addition, prevalence rates of disordered eating tend to be higher than that of eating disorders and range from 13% to as high as 61% in young women (Bishop, Bauer, & Baker, 1998; Büyükgöze-Kavas, 2007; Eisenberg, Nicklett, Roader, & Kirz, 2011; Mintz & Betz, 1988; Schwitzer et al., 2001; Tsai et al., 1998; Tylka & Subich, 1999). Aside from the high prevalence rates of disordered eating behaviors, they are also concerning because of the range of serious psychological and physical health problems to which they are related. These issues include, but are not limited to depression, anxiety, weight cycling, indigestion, dehydration, decreased bone density, thyroid dysfunction, cardiac abnormalities, heart arrhythmias, stroke, and even cardiac arrest (Berg, 1999; Cohen, Kristal, Neumark-Sztainer, Rock, & Neuhouser, 2002; Greenleaf, Petrie, Carter, & Reel, 2009). There is a myriad of negative effects that accompany disordered eating behaviors, thus making this even more relevant to research.

Disordered Eating in College Women

College environments tend to have a high prevalence of women exhibiting disordered eating behaviors (Eisenberg et al., 2011; Hoerr et al., 2002; Mintz & Betz, 1988). In general, larger percentages of women on college campuses report a desire to lose weight, regardless of their current Body Mass Index (BMI; Body Mass Index, 2015). Of 113 college women at a healthy weight (healthy weight will refer to women with BMIs between 18.5 and 24.9), 80% reported trying to lose or control their weight (Malinauskas, Raedeke, Aeby, Smith, & Dallas, 2006). Of these healthy-weight college women, 4%, 8%, and 27% resorted to unhealthy weight loss behaviors such as vomiting,

cigarette smoking, and skipping breakfast with the intention to control/lose weight, respectively (Malinauskas et al., 2006). A large percentage of women in this study self-identified as White (78%), compared to 18% of women who identified as Black and 4% who identified as American Indian, Asian, or Hispanic. In a separate study of 242 college women, eighty-six percent of women surveyed desired to lose weight; however, achieving their goals would have put 17% of the total sample six or more pounds under their suggested minimum BMI (Ash & McClelland, 2001). Further, an overwhelming percentage of women in this study self-identified as White (97%) and affects the generalizability of this study to other populations. Similarly, of 225 female college freshman with average BMI of 22.87 (which is within the healthy recommended range), 94% reported an ideal weight lower than their current weight (Cooley & Toray, 2001). Once again, the sample reflected a primarily White population (95%) and failed to event account for the total racial makeup. In a representative sample of 4,838 U.S. undergraduate students enrolled in 136 two and four-year colleges, over half of the female students (59.8%) reported trying to lose weight, despite only 29% being classified as overweight or obese by BMI (Lowry, Galuska, Fulton, Wechsler, Kann, & Collins, 2000). 72.8% of the enrolled students identified as White, 10.3% identified as Black, 7.1% identified as Hispanic, and 6.1% identified as Asian/Pacific Islander. Tylka and Subich (2002) found that 59% of high school and college women (n = 166) reported skipping meals, 36.7% indicated consuming less than 1,200 daily calories, and 25.9% fasted for 24 or more hours to control their weight. Similar to the earlier studies, the sample predominantly identified as White (90%). White and colleagues (2011) found that the prevalence of disordered eating behaviors in two cohorts of female undergraduates (n

4

= 500, n = 1,500, respectively) significantly increased over time, with 23.4% displaying disordered eating behaviors in 1995 and 32.6% of women displaying disordered eating behaviors in 2008. Similar percentage of participants identified as White, (66% and 62%, respectively). Extraordinarily low percentages of participants identified as Black (0.6% and 2%, respectively). Further, 9.8% and 14% identified as Latino/Hispanic and 15% and 18.5% identified as Asian/Pacific Islander. College athletes endorse similar rates of disordered eating behaviors (n = 204), with 25.5% of women reporting disordered eating behavior, most commonly through over-exercising (25.5%), fasting (15.7%), or vomiting (2.9%; Greenleaf, Petrie, Carter & Reel, 2009). Seventy-five percent of the female student athletes identified as White, 5.4% identified as Black, 12.7% identified as Hispanic, and 1% identified as Asian American/Pacific Islander. The prevalence of disordered eating behaviors present in female college student populations is alarmingly high, and it is certainly concerning that healthy and even underweight women are engaging in maladaptive behaviors geared toward weight loss (Ash & McClelland, 2001; Greenleaf et al., 2009; Lowry et al., 2000; Malinauskas et al., 2006; Mintz & Bentz, 1988; Tylka & Subich, 2002; White et al., 2011).

The tendency for studies to provide statistics from primarily White samples is concerning as this significantly limits the generalizability of findings. It is noteworthy that while the demographic data shows that higher percentages of White individuals attend college (Ma & Baum, 2016; National Center for Educational Statistics, 2014), rising numbers of ethnic minorities have been enrolling as well. Specifically, in 2014, 53% of enrolled students identified as White, 13% identified as Black, 16% identified as Hispanic, 6% identified as Asian/Pacific Islander, and 12% identified as "Other" (Ma &

Baum, 2016). The statistics presented in the current literature lean toward a predominantly White sample and present a concern.

Depressive Symptomatology and Disordered Eating

The association between disordered eating and depressive symptomatology is strongly established in the literature. The National Comorbidity Survey of Adult Households in the U.S. revealed comorbid disordered eating behavior and major depressive disorders in over 1/3 of the sample (n = 9,282), with the mean age of onset occurring between 18 and 21 (Hudson et al., 2007). While the study controlled for race/ethnicity differences, a demographic breakdown was not provided. In a clinical sample, 53% of adolescent and 40% of adult patients (n = 58 and 23, respectively) were diagnosed with anorexia nervosa and comorbid major depressive disorder, respectively (Zonnevylle-Bender et al., 2004). Further, Wildes and colleagues (2005) found that depressed women endorsed more eating disorder symptoms than did women without depression (n = 63). Eight-four percent of the women in the study identified as White, while other ethnicities were not specified. Not surprisingly, the association between depressive symptomatology and disordered eating is present in college women, as well. In a cross-sectional study assessing disordered eating behaviors in 306 college women, those meeting criteria for bulimic symptomatology and patterns of extreme dieting reported more symptoms of depression than women who did not engage in restrictive eating behaviors (Kurth et al., 1995). While the study did not provide data on participants' race/ethnicity, the authors noted the predominantly White sample as a limitation of the study. Additionally, Gitimu and colleagues (2016) found, in their sample of 342 female undergraduates, that those at a higher risk of acquiring an eating disorder

endorsed greater depressive symptomatology. The sample primarily identified as White (n = 80%), while 13% of the women identified as Black, 1.7% identified as Hispanic, and 0.8% identified as Asian/Pacific Islander.

Beyond that, evidence that depressive symptoms predict disordered eating behavior has been provided by numerous studies that followed adolescent girls into adulthood (Johnson, et al., 2002; Liechty & Lee, 2013; Morris et al., 2011; Stice et al., 2002). However, arguments for a bidirectional relationship amongst disordered eating and depressive symptomatology exist in the literature, as researchers have found conflicting evidence regarding the etiology of disordered eating behavior and depression. For example, adolescent girls with depressive symptoms were found to have an increased risk for bulimic symptoms and in the same study (n = 496), bulimic symptomatology was found to increase the risk for depression (Stice, Burton, & Shaw, 2004). The sample had a higher prevalence of White participants (68%), as well as 7% who identified as Black, 18% identifying as Hispanic/Latina, and 2% identifying as Asian/Pacific Islander. In addition, a recent meta-analysis provides compelling support that eating pathology is not only a risk factor for depression but that depression is also a risk factor for eating pathology (Puccio, Fuller-Tysziewicz, Ong, & Krug, 2016). The meta-analysis included 30 studies of adolescent and adult populations, with 13 of the studies finding support for a bidirectional relationship between depression and disordered eating, 18 studies finding depression as a significant predictor of disordered eating, and 5 studies finding disordered eating as a significant predictor of depression. While the study provided detailed information regarding participant age and utilized measures, race and ethnicity were not accounted for or described in the meta-analysis. The discrepancies in the literature

emphasize the importance of understanding the relationships amongst disordered eating, depression, and its relevance to the college population.

Hopelessness Depression and Disordered Eating

While the relationship between depressive symptomatology and disordered eating behavior has been established, the directionality of the relationship remains unclear and the processes underlying the bidirectional relationship between disordered eating and depressive symptomatology are not well understood. It is possible that vulnerabilities of depression are one of those underlying mechanisms. The hopelessness model of depression (Abramson, Metalsky, & Alloy, 1989) is one well-established model outlining such vulnerabilities. Abramson and colleagues (1989) proposed that the development and maintenance of depression can be explained by three types of negative inferences: inferences about why an event occurred (which consists of three attribution styles), inferences about consequences that will happen because of the event (i.e. "Getting along badly with my parents will lead to other negative things happening to me"), and inferences about the characteristics of the self based on the negative event (i.e. "Getting along with my parents does not say anything about me as a person").

In particular, inferences about why an event occurred are composed of three attribution styles. Individuals making negative inferences tend to attribute negative events to global causes that they believe will influence many areas of their life (i.e. "The reason I get along badly with my parents causes issues in all areas of my life," stable causes that they believe will endure over time (i.e. "Getting along badly with my parents will lead to other negative things happening to me", and internal causes viewed as their fault (i.e. "It

is my fault if I am getting along badly with my parents") (Abramson, Metalsky, & Alloy, 1989).

Importantly, global attributions, stable attributions, inferences about the consequences of an event, and inferences about the self, but not internal attributions are associated with depression (see Figure 1; Abramson et. al, 1989). A number of studies have demonstrated the relationship between negative inference style and depression based on the hopelessness model of depression in college populations, excluding internal attributions from their analyses (Alloy et al., 2000, 2006; Safford, Alloy, Abramson & Crossfield, 2007). All three authors only provided minimum to no details regarding the racial/ethnic makeup of the samples. For example, Alloy et al. (2002) did not describe the racial/ethnic makeup of their sample. The latter two studies provided information in two categories: White or "Other." Both studies were largely White; specifically, 78.8% of the sample in Alloy and colleagues' (2006) study and 61.3% of the sample in Safford et al.'s (2007) study. This is noteworthy as the provided statistics may not be generalizable to all college populations.

A variety of studies in the disordered eating literature explore the attributional style of individuals with disordered eating behavior; however, there is a dearth of evidence regarding the inferences about consequences of an event and inferences about the self – the other two inferences proposed by Abramson et al. (1989). Several studies have found depressive symptoms associated with attributional style and disordered eating, finding predominant support for a negative attributional style in eating disordered women with only one study (Dalgleish et al., 2001) out of three (Mansfield & Wade, 2000; Morrison et al., 2006) losing statistical significance when accounting for

depression. To be more precise, Dalgleish and colleagues (2001) explored all three attribution styles and found that 33 women with anorexia and bulimia made significantly more global and stable attributions, but not more internal attributions for negative events than women without eating disorders. However, when the authors accounted for depression, these results disappeared. Metalsky and colleagues (1997) also found that a total score of all three attributional styles moderated the severity of depressed symptoms in both individuals with symptoms of bulimia and individuals with clinical symptoms depression. However; both of the described samples were quite small (n < 40) and did not provide data regarding the racial/ethnical make up of their sample. Both raises questions related to the generalizability of their results to all populations.

Similarly, women with eating disorders are more likely to make internal attributions compared to women without eating disorders (n = 51), even when accounting for weight and depressed mood (Morrison et al., 2006). The authors, who did not provide data regarding the racial/ethnical make up of their sample, only studied internal attributional style and did not assess for global and stable attributions. Finally, Joiner et al. (1995) found unique support for the global and stable attributional component of the hopelessness theory in that bulimic symptoms in college women (n = 64) alone did not predict depressive symptoms; significance for depressive symptoms emerged when bulimic symptomatology was coupled with a negative attribution style. Consistent with the hopelessness theory (Abramson, Metalsky, & Alloy, 1989), the authors only examined global and stable attributions, but not internal attributions. Further, the authors provided descriptive statistics, with participants largely identifying as White (68%), 5%

identifying as Black, 8% identifying as Hispanic, and 19% identifying as Asian American/Pacific Islander.

Despite that the hopelessness theory emphasizes the significance of only global and stable attributions, several studies in the eating literature examine the combination of all three attributional styles. In Mansfield and Wade's (2000) sample of women with eating disorder symptomatology, depressed symptomatology, and controls, women with disordered eating behaviors displayed a more general tendency to attribute negative events to global, stable, and internal factors compared to the control group. Goebel and colleagues (1989) found that women with bulimia were more likely to endorse a negative attributional style (global, stable, and internal) than those with no indication of an eating disorder (Goebel, Spalthoff, Schulze, & Florin, 1989). Further, all but one of the cited studies fail to account or provide information for the race/ethnicity of participants. The one study that did provide this information included a sample of overwhelmingly White participants (Abramson, Metalsky, & Alloy, 1989). When considering the lack of diverse samples in the majority of studies related to disordered eating and depression, it seems imperative that future research explores this area, which we aimed to do in the current study.

Summarized, the literature supports that women with disordered eating behaviors tend to endorse a more negative attributional style than women without disordered eating behavior. Thus, the author of this study concludes that attributional style is an underlying risk factor connecting depressive symptoms and disordered eating behavior in women. While the literature highlights the relationship between disordered eating and a tendency to make global, stable, and internal attributions for negative events, no study to date

explored the relationship between all five inferences (i.e., global, stable, and internal attributional style coupled with inferences about consequences of an event and inferences about the self) and disordered eating behaviors. Thus, the goal of the current study is to help fill in this gap by examining the relations of all five inferences in college women.

It is noteworthy that not all of the studies to disordered eating behavior and inference style find significance for all three attributional styles (i.e. global, stable, and internal). For example, Dalgleish and colleagues (2001) only found significance for global and stable attributions but not for internal attributions in women with disordered eating behaviors. On the other hand, Morrison and colleagues (2006) found support for symptoms of disordered eating in women who made more internal attributions than women who did not display disordered eating behaviors, even when depressed mood was accounted for. The author draws attention to these differences, as the literature connecting the hopelessness model of depression to disordered eating is currently incomplete and presents mixed findings.

The Current Study

The current study examines the relationship between attributions, inference style, depressive symptomatology, and disordered eating behavior in a racially diverse sample of undergraduate college women. Specifically, I applied the hopelessness theory of depression - stating that the endorsement of global attributions, stable attributions, inferences about the consequences of an event, and inferences about the self, but not internal attributions is associated with depressive symptomatology - to disordered eating behaviors. The proposed association between depression and disordered eating behavior is already firmly established in the literature (Hudson et al., 2007; Johnson et al., 2002;

Kurth et al., 1995; Liechty & Lee, 2013; Morris et al., 2011; Stice et al., 2004; Wildes et al., 2005; Zonnevylle-Bender et al., 2004). Furthermore, the evidence that the relationship is bidirectional is also well supported (Stice et al., 2004; Morris et al., 2011; Puccio et al., 2016).

Second, the relationship between a negative inference style and depression has been supported in the literature, with little debate on whether a negative inference style influences depressive symptoms (Abramson et al., 1989; Alloy et al., 2000; 2006; Safford et al., 2007). The literature on disordered eating and attribution styles has been inconsistent, with some studies finding association with all attribution styles (Goebel et al., 1989; Mansfield & Wade, 2000; Metalsky et al., 1997; Rotenberg et al., 2012), others with global and stable attribution styles only (Dalgleish et al., 2001; Joiner et al., 1995), and one study only examining internal attribution style, finding this attribution style associated with disordered eating (Morrison et al., 2006). Thus, while the association between global and stable attribution styles with disordered eating behavior seems to be clear, the role internal attribution style plays is less clear. Based on the empirical literature to date (Goebel et al., 1989; Mansfield & Wade, 2000; Metalsky et al., 1997; Morrison et al., 2006) the author proposes that internal attribution style will be significantly associated with disordered eating behaviors but will not be associated with symptoms of depression. To clarify, both predictions are identical with the exception of internal attributions, which will only be associated with disordered eating behaviors (see Figure 2).

Finally, the complete hopelessness model of depression has yet to be examined in regard to disordered eating behavior to date. Specifically, two components of the

hopelessness model (i.e. inferences about the self and inferences about consequences of a negative event) are not present in the disordered eating literature. The current study aims to fill this gap by studying all five dimensions of the hopelessness model of depression (Abramson et al., 1989) in a sample of undergraduate women. The proposed hypotheses are as follows: (1) the correlation between disordered eating and depressive symptomatology will be positively associated, (2) characteristics of self pathway will have a positive effect on depressive symptomatology, (3) global attribution style will have a positive effect on depressive symptomatology, (4) stable attribution style will have a positive effect on depressive symptomatology, (5) inferences about consequences of an event pathway will have a positive effect on depressive symptomatology, (6) global attribution style will have a positive effect on disordered eating behaviors, (7) internal attribution style will have a positive effect on disordered eating behaviors, (8) stable attribution style will have a positive effect on disordered eating behaviors (9) inferences about the characteristics of self pathway will have a positive effect on disordered eating and (10) inferences about the consequences of an event will have a positive effect on disordered eating (See Table 1).

CHAPTER II

METHOD

Participants

The current study recruited participants from several branches of a two-year

technical college in the South. A total of 326 individuals participated in completing the

surveys. Data from 190 self-identified women were retained for the current study. Forty-

four percent of the female sample identified as White, 33.7% of the sample identified as

Black, 3.2% of the sample identified as Asian/Pacific Islander, 12.6% of the sample

identified as Hispanic/Latina, 2.6% of the population identified as bi-racial, and 2.6% of

the sample identified as "Other" (an ethnicity not listed). The mean age of the sample was

24 years, with participants' ages ranging from 17 to 62. While the percentage of White

students in our sample was disproportionally higher than other races/ethnicities, the

current sample is still noticeably diverse compared to the average enrollment statistics in

technical colleges in the region (KCTCS Fact Books, 2016). Additionally, our sample

percentages are close to those presented in the enrollment statistics for colleges across the

United States (Ma & Baum, 2016). Path analysis requires large sample sizes for reliable

results. Simulation studies have demonstrated that with no missing data and normally

distributed indicator variables, the minimum sample size for a CFA model is around n=

150 (Muthén & Muthén, 2002). Further, a rule of thumb in the SEM literature is that a

sample size of 100 is considered "small," a sample of 100-200 is "medium," and a

sample of over 300 is considered "large" (Kline, 2011). Therefore, our sample of 190

participants is sufficient for the proposed analysis (Kline, 2011; Muthén & Muthén, 2002). Further, path analysis is far from being a-theoretical technique; thus, prior research and understanding of the phenomena under investigation is critical. The presented hypotheses are informed by the current disordered eating and depression literature and thus, theoretically driven.

Measures

  Demographics. Participants were asked to provide information regarding their age, sex, race/ethnicity, current body weight and height, ideal body weight, residence type, and year in college.

  Eating Attitudes Test (EAT-26). The EAT-26 is a self-report measure consisting of 26 items that assess a range of eating behaviors related to dieting, food preoccupation, and disordered eating symptoms (Garner, Olmsted, Bohr, & Garfinkel, 1982). Participants indicate the frequency of behavior on a scale ranging from 1 to 6, with 1 meaning "never" and 6 meaning "always." Examples of items include "*I feel extremely guilty after eating," "I am terrified of being overweight," "I display self-control around food."* Each "always (6)" response receives a score of 3, each "usually (5)" response yields a score of 2; each "often (4)" response is scored as 1, and each item rated as "sometimes, (3)" "rarely, (2)" or "never (1)" receives a score of 0, excluding the final item which is reverse-scored. Total scores may range from 0 to 78. Scores above the clinical cutoff of 20 indicate serious eating concerns and a potential eating disorder. Although initially developed with anorexic patients, the EAT-26 has been supported with nonclinical populations as a screening instrument (Mintz & O'Halloran, 2000). In a

college population, the EAT-26 revealed excellent internal consistency with an alpha of .98 (Sira & White, 2010).

Cognitive Style Questionnaire-Short Form (CSQ-SF). The CSQ-SF is a self-report instrument that assesses causal attributions for eight negative hypothetical events on three dimensions: globality, stability, and internality (Meins et al., 2012). The CSQ is a modified and expanded version of the Attributional Style Questionnaire (Peterson et al., 1982) and not only assesses for attribution style, but accounts for all three components of cognitive vulnerability presented in the hopelessness theory (i.e. attribution style, consequences of the event, and negative self-worth implications). The hypothetical events utilized in the CSQ-SF were developed to be used with college populations and covers both interpersonal and achievement domains (Haeffel et al., 2008). Items correspond specifically to one of the five CSQ scales. For example, an item measuring internal attribution style states, *"It is my fault if I am getting along badly with my parents."* An item measuring global attribution styles states, *"The reason I get on badly with my parents causes problems in all areas of my life."* An item measuring global attribution style states, *"The reason for getting along badly will stop me from getting aong well with my parents in the future."* An item measuring consequences of the event states, *"Getting along badly with my parents means other negative things will happen to me."* An item measuring characteristics about the self states, *"Getting along badly with my parents means there's something wrong with me as a person."* Participants score each situation on a 5-point Likert scale (i.e. *Strongly Agree to Strongly Disagree)* and rate the cause they have specified (on dimensions of globality, stability, and internality). Participants also are asked to consider the hypothetical event and rate the future consequences and

implications of the self based on the described event. Four items on each of the 9 scenarios of the CSQ-SF will be reverse-scored (Meins et al., 2012). Five CSQ-SF subscales will be calculated by summing the items within each subscale. The CSQ-SF has good internal consistency, with a reported Cronbach's alpha of .85 across the five dimensions in a study of adults (Meins et al., 2012).

Center for Epidemiologic Studies for Depression Scale (CES-D). The CES-D is a 20-item self-report measure of symptoms associated with depression (Radloff, 1977). This measure was designed for use in epidemiological studies of depression and is short as well as easy to read. Individuals respond on a 4-point Likert scale, indicating how often they identified with the symptoms described (i.e. *Rarely or none of the time (0); some or a little of the time (1); occasionally or all of the time (2); most or all of the time (4)*. Items include somatic symptoms (i.e. *"I did not feel like eating; my appetite was poor)*, interpersonal items (i.e. *"I felt that people dislike me)*, depressed affect (i.e. *"I though my life had been a failure"),* and positive affect (i.e. *"I was happy")*. The CES-D total score is calculated by reverse scoring all positively worded items (i.e. Item 8: *"During the past week, I hopeful about the future"), and then summing all item scores.* Scores may range from 0 to 60, with higher scores indicating the presence of more depressive symptomatology. The CES-D demonstrated good internal consistency (.88) in a racially diverse college sample (Herman et al., 2011).

Procedure

Prior to data collection, professors at the technical college were contacted via email and 6 of 21 contacted professors granted permission for data to be collected during one full class period. Data was collected from 16 out of 48 Introductory Psychology

classrooms across three campuses and each class had between 25 and 35 enrolled students. The Introductory Psychology course was a general education requirement and thus, served as a representative sample of the community and technical college population. Several graduate students who were well versed in data collection procedures and had obtained Institutional Review Board training entered the community college classrooms, provided a brief synopsis of the study, and obtained informed consent. Participants completed identical questionnaires; however, the questionnaire order was randomized to account for fatigue and order effects. The total time required to complete the questionnaires was approximately 60 minutes. Participants were informed that participation was voluntary and they could withdraw from the study at any time. Participants were not offered compensation for their participation, though extra course credit could be granted per professor discretion. The administrators utilized a standardized script in order to maintain reliability across classroom administrations, which reduced threats to statistical conclusion validity (Heppner, Wampold, & Kivlighan, 2008). After providing consent, participants completed the entire questionnaire via paper and pencil within one classroom hour. During this time, professors left the room, and students were reminded that no names or identifying material would be on survey materials in order to maintain anonymity. Students who preferred to discontinue the study were dismissed from the classroom without any attendance penalty. The researchers ensured proper precaution to maintain institutional review board approval from the researchers' institution as well as the community and technical college system.

Statistical Analyses

Preliminary Analyses. Before running the primary analyses, I re-analyzed demographic data after data cleaning. The data was examined in terms of means, standard deviations, and percentages to describe the final sample. The data was examined to ensure that the assumptions were met, as described above.

Missing data. First, I ran descriptive statistics in SPSS to determine the frequency of missing data for the overall EAT-26 and CES-D, and all subscales of the CSQ-SF. Carelessness was determined by failure to complete at least 50% of survey items or by responding with the same answer throughout the entire questionnaire. I removed 1 case that was related to careless responding. Next, I used Available Item Analysis (AIA) to address missing data (Parent, 2013). AIA is a procedure to handle missing data by using available items and calculating a mean for each individual scale. There are a variety of benefits to utilizing AIA, including the simplicity of this data cleaning method. In fact, Parent (2013) notes that "imputation may not be necessary for most analyses when dealing with item-level missing data on multi-item scales" (p. 572). AIA may be subject to bias, but only when missing data is extreme, such as 50% or higher (Schlomer, Bauman, & Card, 2010). In accordance with Parent's (2013) recommendation, I selected 75% as a level of tolerance for any missing data, meaning that participants needed to complete at least 75% of all items in each measure. If participants did not meet the tolerance level for any of the measures, they were excluded from the analyses. After completing the AIA, 8 cases were removed from the dataset after failing to meet the 75% tolerance requirement.

Outliers. The author examined the data for outliers, as extreme scores can bias the data (Osborne, 2013). As a rule of thumb, I looked for outliers ± 3 standard deviations

from the mean of their prospective variable (Osborne, 2013). I calculated Mahalanobis Distances (MD) to determine full cases that had too much potential to impact the proposed statistical analyses. Outliers were determined by examining the critical values and degrees of freedom in a chi-square value table. MD values greater than the critical chi-square value at the $p > .001$ indicated the presence of one or more outliers. Based on Mahalonbs Distances ± 3 standard deviations from the mean, one additional data point was removed. The final data set consisted of 181 participants after removing missing data and outliers.

Assumption of Normality. After data cleaning, the assumption of normality was tested for the remaining dependent variables, disordered eating behaviors and depressive symptoms (n = 181). I examined the histograms, skew value, and the Kolmogorov-Smirnov and Whapiro-Wilk tests of normality (Osborne, 2013). Perfect skew and kurtosis values are 0, and while there are various rules of thumb regarding acceptable values, Osborne (2013) argues that skew or kurtosis moving toward -1 or 1 are concerning and indicate that the data is not remotely symmetrical or normal in regard to the height and width of the distribution. Osborne (2013) also notes that values from -.8 to .8 are acceptable, with values closer to 0 as optimal. Kolmogorov-Smirnov and Shapiro-Wilk tests of normality examine whether a variable conforms to a normal distribution or if it differs significantly (Osborne, 2013). Non-significant K-S and S-W values are ideal, as this indicates that the variable is normally distributed. Skew and kurtosis for all five predictor variables and depressive symptomatology were acceptable to good (Global attribution style skew = -.26, kurtosis = -.09; Stable attribution style skew = -.21, kurtosis = -.26; Internal attribution style skew = -.07, kurtosis = .11;

Inferences about the characteristics of self skew = -.16. kurtosis = -.30; Inferences about the consequences of events skew = .29, kurtosis = -.40; depressive symptomatology skew = .73; kurtosis = -.04). Skew and kurtosis were higher than the recommended cutoff for disordered eating symptoms (skew = 1.61; kurtosis = 2.39). I also examined the PP plots, which examine the actual probabilities of the data from an expected normal distribution. Plotted percentages that remain close to the diagonal line indicate normality (Osborne, 2013). Unsurprisingly, data points for the EAT-26 strayed from the diagonal line, further supporting that the results were not normally distributed for these values. Osborne (2013) suggests that the Box-Cox transformation is the best method for transforming data, as it can easily transform data with either a positive or negative skew and utilizes nearly an infinite amount of potential transformations for optimal normalization. Due to the normal-normal results, the data EAT-26 scale scores were Box Cox transformed to normalize the data. The data was then examined for multicollinearity by running a linear regression and checking the Variance Inflation Value (VIF). VIF values were below 3 for all variables (internal attributions = 1.20; global attributions = 2.94; stable attributions = 1.58; inferences about the characteristics of self = 2.66; inferences about the consequences of events = 1.89) indicating that the variables were not too correlated with one another enough to negatively impact the data.

Primary Analyses. I utilized Amos software to conduct a path analysis to determine if the described model accurately described the relationship between all inference styles of the hopelessness depression model (Abramson, Metalsky, & Alloy, 1989), disordered eating behaviors, and depressive symptoms. Model fit was determined by examining p values, with an acceptable model having a probability lower than .05

(Kline, 2011). Additionally, the χ² test, the minimum discrepancy divided by degrees of freedom (CMIN/DF), the goodness-of-fit (GFI), the comparative fit (CFI), the Tucker-Lewis Index (TLI), and the root mean square error of approximation (RMSEA) were determined. A non-significant χ² value indicated that the model is compatible with the data and CMIN/DF values ≤2 indicated good model fit (Schermelleh & Moosbrugger, & Müller, 2003). Good fit for GFI, CFI, and TLI was based on values equal or greater to .95, and values above .90 indicated adequate fit (Hu & Bentler, 1999; Kline, 2011). Finally, the RMSEA, which represents "badness of fit" was examined, with a value of zero indicating the best possible fit. Kline (2011) suggests that values equal or less than .05 may indicate good fit. Reasonable fit was indicated by values of .08 and the high end of the 90% confidence interval below 1 (Hu & Bentler, 1999). Analyses included three steps: First I ran the model, next I considered theoretical reasoning and looked through the modification indices table to determine whether the model could be optimized, and finally compared the model.

CHAPTER III
RESULTS

The fit of the model (Figure 1), χ^2 (1; N = 181) = 1.173, p = .279, GFI = .988,

CFI= 1.0, TLI= .991, RMSEA = .031, is good. After running the model (Figure 2), I used

the above criteria to determine appropriateness of the model fit. Model fit may be

improved by correlating errors and/or items that are highly correlated. After making a

modification, the model fit should improve. A χ^2 test is used to compare fit of the original

model and optimized model (Kline 1998). The χ^2 test is computed by taking the

difference of the χ^2 values as well as the difference of the degrees of freedom. A

statistically significant χ^2 test indicates that the adjusted model is preferable to the

original model, and the adjusted model will be retained. In such cases, modifications may

be made until the model fit is optimal and it theoretically makes no sense to further

correlate any errors and/or items. No modifications were made as the suggested

modification indices table did not indicate any adjustments for improved model fit.

My first hypothesis was that inferences about the characteristics of self pathway

would have a positive effect on depressive symptomatology. The path analysis supported

this hypothesis: the characteristics of the self pathway had a positive effect on depressive

symptomatology ($p < .005$). I also hypothesized that the correlation between disordered

eating and depressive symptomatology would be positively associated. Results of the

path analysis supported this hypothesis, as the correlation between disordered eating and

depressive symptomatology was significant (p = .004). Further, I hypothesized that

global attribution style would have a positive effect on depressive symptomatology;

however, results of the path analysis did not support this prediction (p = .24). I

hypothesized that stable attribution style would have a positive effect on depressive

symptomatology; however, the path model did not support this prediction (p = .63). My

next hypothesis, that inferences about consequences of an event pathway would have a

positive effect on depressive symptomatology, was also not supported by the path

analysis (p = .13). My hypothesis that global attribution style would have a positive effect

on disordered eating behaviors was not supported by the path analysis (p = .36). My

hypothesis that internal attribution style would have a positive effect on disordered eating

behaviors was not supported by the path analysis (p = 63). My hypothesis that stable

attribution style would have a positive effect on disordered eating behaviors was not

supported by the path analysis (p = .88). My hypothesis that inferences about the

characteristics of self pathway was have a positive effect on disordered eating behaviors

was not supported (p = .15). Finally, my hypothesis that inferences about the

consequences of an event would have a positive effect on disordered eating behaviors

was not supported by the path analysis (p = .97) (See Table 1).

CHAPTER IV
DISCUSSION

Depressive symptomatology and disordered eating behaviors are commonly associated with one another (Hudson et al., 2007; Johnson et al., 2002; Gitimu et al., 2016; Kurth et al., 1995; Liechty & Lee, 2013; Morris et al., 2011; Stice et al., 2004; Wildes et al., 2005; Zonnevylle-Bender et al., 2004). The current study applied the hopelessness theory of depression (Abramson, Metalsky, & Alloy, 1989) to disordered eating behaviors. The authors of the hopelessness theory of depression predicted that the endorsement of global attributions, stable attributions, inferences about the consequences of an event, and inferences about the self, but not internal attributions would be associated with depressive symptomatology (Abramson, Metalsky, & Alloy, 1989). Further, based on previous literature (Hudson et al., 2007; Johnson et al., 2002; Kurth et al., 1995; Liechty & Lee, 2013; Morris et al., 2011; Stice et al., 2004; Wildes et al., 2005; Zonnevylle-Bender et al., 2004) I predicted that all five inferential styles would be associated with disordered eating behaviors. Finally, I hypothesized that depressive symptomatology and disordered eating behaviors would be bidirectionally associated with one another (Stice et al., 2004; Morris et al., 2011; Puccio et al., 2016).

The hypotheses were only partially supported: consequences about the self significantly predicted depressive symptoms and there was a significant bidirectional relationship between disordered eating and depressive symptomatology in this sample of

college females. Finding nonsignificant associations between disordered eating and all five vulnerabilities to depression was surprising given that these relationships have been supported in numerous research articles (Dalgleish et al., 2001; Joiner et al., 1995; Goebel et al., 1989; Mansfield & Wade, 2000; Metalsky et al., 1997; Morrison et al., 2006). Even more surprising was the lack of associations between the four predicted cognitive vulnerabilities and symptoms depressive symptomatology given the literature on the hopelessness theory that supports these connections (Alloy et al., 2000, 2006; Safford et al., 2007). It is important to explore the significant and non-significant associations presented in this study to better understand the relationship between these mental health concerns in the female college population and suggest future directions for the depression and disordered eating literature.

There are several factors that may have influenced the model having multiple non-significant pathways. First, the study would have benefited from a larger sample size, subsequently increasing the power of the statistical analysis (in this study, adjusted $r^2 = .23$). Larger sample sizes result in better approximations of the population and have less sampling error (Field, 2013). Should the sample been larger and subsequently the sampling error smaller, the analysis may have resulted in statistically significant results for the associations between the studied cognitive vulnerabilities and disordered eating behaviors as well as all four of the predicted cognitive vulnerabilities and symptoms of depression.

In addition, it is possible that separating out all five inferential styles and using them as predictors in the same model resulted in a lack of significance for all paths as each inferential style explains similar parts of the variance of depressive symptoms. This

hypothesis is supported by other studies having included only one of the attribution styles (Morrison et al., 2006), three attribution styles (global, stable, and internal; Dalgleish et al., 2001; Goebel et al., 1989; Mansfield & Wade, 2000), or used a comprehensive score combining all three attribution styles into one score (Metalsky et al., 1997) and having demonstrated significant associations between attributional styles and disordered eating behaviors. Similarly, the lack of significant associations between depressive symptoms and cognitive vulnerabilities might be caused by using four individual inference styles (internal excluded) rather than a composite score. As described above, each association may explain similar parts of the variance in depressive symptoms, resulting in only one significant pathway. For example, multiple authors (i.e., Alloy et al., 2000; 2006; Safford et al., 2007) utilized a composite score in their studies rather than separating each dimension out individually. The authors all found significant relationships between the four cognitive vulnerabilities and symptoms of depression when using a cognitive vulnerability composite score (Alloy et al., 2000; 2006; Safford et al., 2007). The difference in how the cognitive vulnerabilities were measured might explain why previous studies, but not the current study, found associations between cognitive vulnerabilities and disordered eating behaviors as well as four inferential styles and symptoms of depression. Future studies should utilize a composite score of cognitive vulnerabilities to depression, as demonstrated in the literature.

Another explanation for the lack of significant associations between inferential styles and eating behavior in our study is that the women in this sample did not endorse strong enough eating psychopathology to warrant significant results. For example, individuals struggling with clinical eating disorders experience a higher frequency and

28

severity of symptoms than individuals endorsing disordered eating behaviors (Mintz et al., 1988; Smink, et al., 2014). It is possible that, in a sample of individuals with clinical eating disorders, the proposed model may have yielded significant results. Women endorsing greater symptoms of maladaptive eating behaviors may experience more negative interpretations of events than individuals who endorse fewer eating concerns. However, one has to wonder if the same would not have to be expected for the correlation between disordered eating behavior and symptoms of depression if this explanation were true. Future studies may benefit from exploring the role of cognitive vulnerabilities to depression and disordered eating behaviors in a sample of women with clinical eating disorders.

Finally, cultural views of beauty may explain the lack of significance between the cognitive vulnerabilities and disordered eating behaviors. Researchers have noted that exposure to Western cultural influences heighten the likelihood of internalization of the thin ideal and increases the risk of disordered eating behaviors (Cattarin, et al., 2000; Cusumano & Thompson, 1997; Stice et al., 1994; Thompson & Stice, 2001). A variety of studies have demonstrated that Black and Latina women tend to be more satisfied with their body size, diet less, and report fewer symptoms of disordered eating compared to White women (Akan & Grilo, 1995; Breitkopf et al., 2007; Falconer & Neville, 2000; Schooler et al., 2004). These data suggest possible factors within certain ethnic groups that may serve as a protective factor against disordered eating behavior. It is possible that women who do not internalize the thin ideal also have a lower likelihood of endorsing a negative cognitive style due to a cultural difference associated with how one learns to reject, rather than internalize, blame for an event outside of their control. If a woman is

more likely to reject the thin ideal, perhaps she is also more likely to reject blame for a negative event and view it as an isolated incident that will not occur in other areas of her life. While the current literature does not include studies that examine the interplay between cognitive style and the thin ideal in college women, new evidence exists regarding adolescents' tendency to internalize the thin ideal and make internal causal attributions. Klaczynski and Felmban (2018) found that in a sample of Chinese and American adolescents, American adolescents were more likely to endorse a thin ideal and associate obesity to internal causes compared to their Chinese counterparts. It is noteworthy that Klaczynski and Felmban's study differs from the current study in that the current study did not explore obesity stereotypes and included an older sample. Further, while Klaczynski and Felmban did not account for all five inference styles, their research does shed some light on a relationship between internal attributions, cultural differences, and the role of the thin ideal. Further, if vulnerabilities to depression and symptoms of depression are, in fact, associated with disordered eating, and a large portion of the current sample (up to 55%) may not endorse a Westernized "thin ideal," it makes sense that I did not find significant relationships between cognitive vulnerabilities and disordered eating behaviors. However, if this were the case, I may have expected to see a similar trend for disordered eating and symptoms of depression as well. Thus, future research would benefit from exploring the moderating role of the thin ideal to address the role of culture and the lack of research exploring the relationship between the thin ideal and cognitive vulnerabilities in diverse female samples.

Strengths & Limitations

A relative strength of this study was the population from which the data was gathered. The sample was heterogeneous and represented a wide variety of racial and ethnic identities. This added to the literature as prior studies of cognitive vulnerabilities and disordered eating behaviors included primarily White samples. An additional strength of the current study was the use of a path model for our statistical analysis. Utilizing a path analysis allowed the author to examine the relationship between multiple dependent variables and independent variables from a one-time analysis, rather than re-running numerous analyses, which would have increased the rate of Type I error (Field, 2013).

However, there are also several limitations associated with the study that should be addressed. A particular limitation is the size of the sample after cleaning the data. Jeon (2015) suggested a sample size at least 20 times larger than the number of estimated variables to ensure reliable results, which would have suggested a sample size of 220 in our study. This study included 181 participants or 18% less than the suggested minimum after data cleaning. Should the sample size been in the medium to large (n = 200-300) range (Kline, 2011), there would have been more statistical power and the study might have yielded significant results. Future studies should include sample sizes in the large range (n = 300) in order to satisfy the suggested parameters (Kline, 2011).

Additionally, this study included multiple measures that required over a half hour for completion time, on average. This may have induced fatigue or boredom, potentially biasing the results by inducing a tendency to respond haphazardly. This reduces the reliability of the scale scores and makes it more difficult to identify existing associations. Future studies should incorporate fewer measures to avoid the possibility of participants

experiencing fatigue or boredom effects, thus reducing the likelihood of random responding.

Finally, the author of this study did not control for several confounding factors that may have influenced participants' responses. It is possible that confounding factors such as time of the year (seasonal depression) and stress associated with exams may have influenced the symptoms reported. Individuals may have been prone to reporting higher levels of disordered eating behaviors due to shifts in eating attitudes during the winter months (Magnusson & Partonen, 2005) and higher levels of somatic symptoms associated with depression during exam periods (Zunhammer et al., 2013), while reporting cognitive vulnerabilities as usual. In other words, the current study did not account for the factors that may influence students' report of maladaptive eating behavior and/or depressive symptoms. Future studies would benefit from assessing and controlling for such confounding factors.

Conclusion

The predicted path model yielded a positive association between consequences about the self and depressive symptoms as well as a positive correlation between disordered eating behaviors and depressive symptoms. This study provides additional evidence of the importance of understanding the relationship between disordered eating behaviors and depression in women. While numerous associations in the model were not significant (i.e. three of the four predicted cognitive vulnerabilities and symptoms of depression; all five cognitive vulnerabilities and disordered eating behavior), the findings still add to the disordered eating, cognitive vulnerability, and depression literature. The results of this study suggest that individually analyzing all five cognitive vulnerabilities

may not be an efficient strategy in research focusing on depression and disordered eating behaviors. As mentioned above, it is possible that the five inference styles may have had too much overlap to yield significant results, leading the author to believe that utilizing a composite score of all inference styles will be more beneficial in future studies.

Implications

Considering the high rates of disordered eating behavior in female college populations (Hoerr, Bokram, Lugo, Bivins, & Keast, 2002; Lipson & Sonneville, 2017; Prouty, Protinsky, & Canady, 2002; Reinking & Alexander, 2005), it may be beneficial for researchers to focus on protective factors to developing disordered eating behaviors. One particular area of interest might be the moderating effect of culture on cognitive vulnerabilities of depression and symptoms of depression. I suggest doing so by exploring the sociocultural model of eating disorder development (Stice, 2001) in women from diverse racial backgrounds and utilizing measures that explore the thin ideal. Considering the diversity of the current study's sample (55% identified as a racial or ethnic minority) and the lack of significant associations between disordered eating and all cognitive vulnerabilities, it may be possible that rejection of a Westernized "thin ideal" of beauty may serve as a protective factor against developing maladaptive eating behaviors coupled with a negative cognitive style. For this reason, future research should continue to break down the influence of culture and the factors that influence whether a person is at risk for developing an eating disorder. Understanding cultural factors that influence an individual's likelihood of developing an eating disorder might help clinicians to target specific populations with preventative measures and outreach in a much more efficient manner than currently possible.

Further, bearing in mind that the empirical literature continues to portray mixed findings regarding the directionality of disordered eating behaviors and depressive symptomatology (Stice et al., 2004; Morris et al., 2011; Puccio et al., 2016) and given the myriad of negative consequences associated with both mental health issues, a thorough understanding of the risk factors associated with depression and eating concerns is warranted. While this study provides additional support for the relationship between disordered eating behaviors and depressive symptoms, I am unable to add to the "chicken versus egg" argument as data was collected at only one time point. Future studies that track data longitudinally are warranted as they will be able to provide additional data regarding the directionality of disordered eating behaviors and symptoms of depression, as well as other factors that may influence the onset of either mental health concern.

Future studies should follow up with larger samples to better understand the relationship between vulnerabilities to depression, symptoms of depression, and disordered eating. If this study were to be replicated, a minimum sample size of 220 would be ideal (Jeon, 2015). Given the plethora of research supporting the relationships between our aforementioned variables, and the tendency for studies with smaller sample sizes to lack statistical power (Field, 2013), it is possible that a larger sample of college women would have yielded significant results.

In sum, eating concerns in college aged women continues to be a concern, with levels of disordered eating rising throughout recent years (White et al., 2011). The higher mortality rates of individuals with eating disorders (Arcelus, Mitchell, Wales & Nielsen, 2011; Fairburn et al., 1995; Fichter & Quadflieg, 2016) not only signifies the importance of continuing to implement preventative measures toward developing eating concerns but

34

highlights the necessity of developing efficacious interventions for addressing maladaptive eating behaviors in this population. This study provides supplementary evidence that researchers should continue to understand the relationship between disordered eating behaviors and symptoms of depression, as both concerns are positively associated in this sample of college women and demonstrated in the literature (Hudson et al., 2007; Johnson et al., 2002; Gitimu et al., 2016; Kurth et al., 1995; Liechty & Lee, 2013; Morris, Parra, & Stender, 2011; Stice, Presnell, & Spangler, 2004; Wildes et al., 2005; Zonnevylle-Bender et al., 2004). The study did not find significant associations between cognitive vulnerabilities and disordered eating behaviors or significant associations amongst three of the four predicted cognitive vulnerabilities and symptoms of depression. From the mixed findings of this study, is evident that there are important gaps to fill in this line of research.

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pone.0084911.

Table 1

Standardized and Unstandardized Effects

Variable	Unstandardized Effects	Standardized Effects	S.E.	p-value
Global → Dep Sx	0.16	0.12	.14	0.24
Stable → Dep Sx	0.06	0.04	0.12	0.63
Inf Self → Dep Sx	0.33	0.28	0.09	0.01
Inf Cons → Dep Sx	-0.28	-0.13	0.18	0.13
Global → DE	0.10	0.11	0.11	0.36
Internal → DE	-0.04	-0.04	0.09	0.63
Stable → DE	0.01	0.01	0.09	0.88
Inf Self → DE	0.13	0.17	0.09	0.15
Inf Cons → DE	0.00	0.00	0.14	0.97
Dep Sx ↔ DE	16.46	0.22	5.74	0.01

Note. Inf Self = Inferences about the self; Cons self = Inferences about Consequences; Dep Sx = Depressive Symptomatology; DE = Disordered Eating Behaviors; Global = Global Inference Style; Internal = Internal Inference Style; Stable = Stable Inference Style; S.E. = Standard Error for Unstandardized Effects.
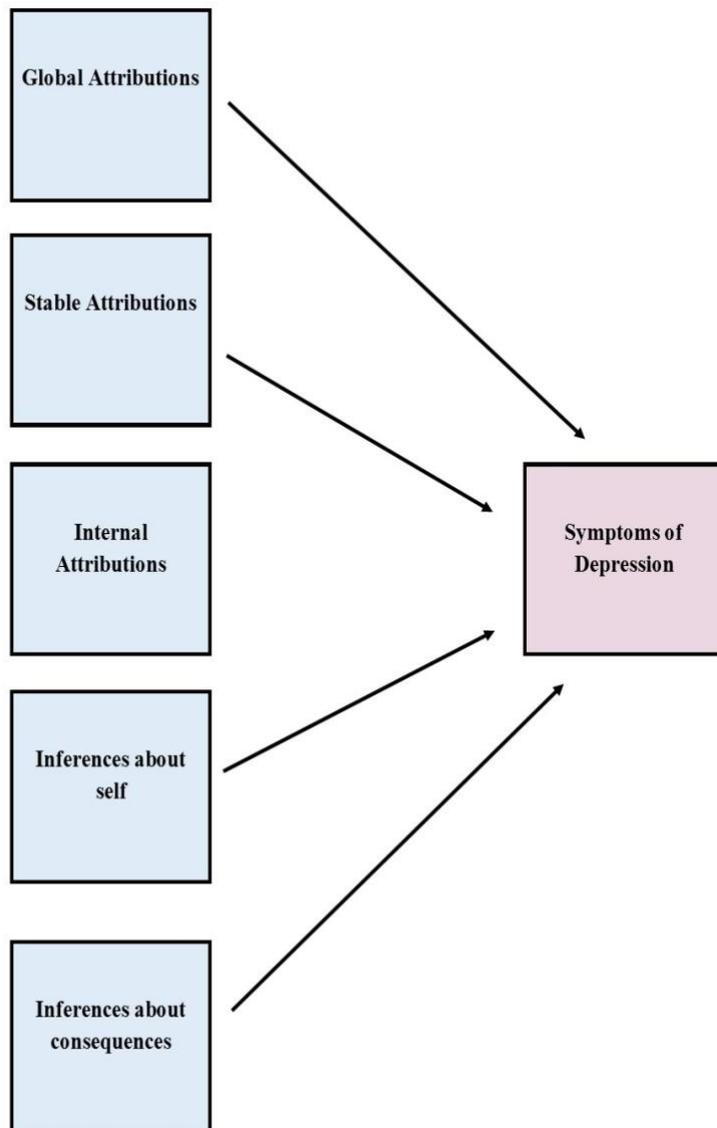
Figure 1. This figure displays the Hopelessness Model of Depression (from Abramson et al., 1989).
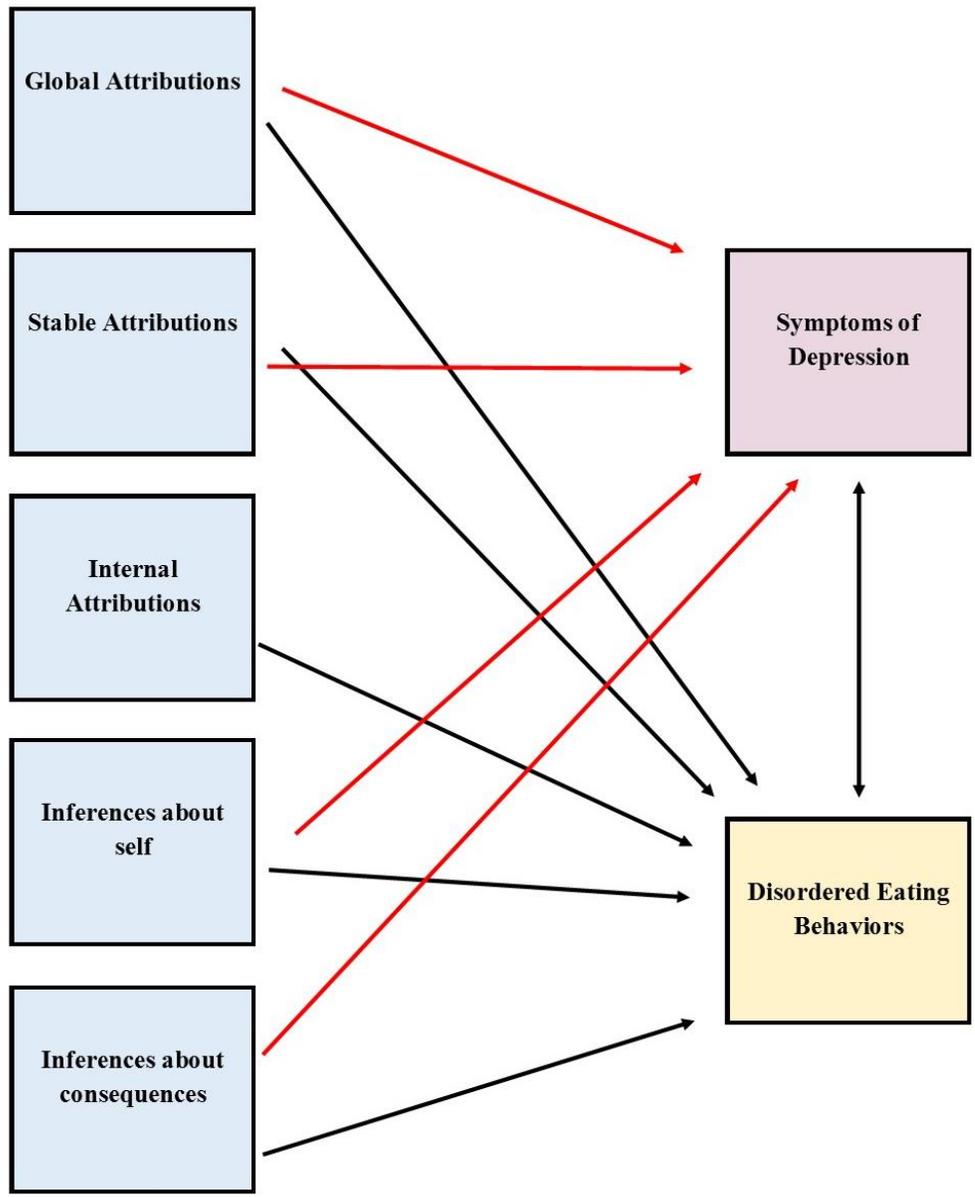
Figure 2. This figure displays the standardized results of the path model of four negative inference styles predicting symptoms of depression and five negative inference styles predicting disordered eating behavior. Standardized effects and standard errors are reported. *p < .05; **p < 0.01

CURRICULUM VITA

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EDUCATION

Aug. 2019
(Expected)
Doctor of Philosophy in Counseling Psychology - Current GPA: 3.98
University of Louisville, Louisville, KY (APA Accredited)
<u>Dissertation</u>: *Disordered Eating, Depression, and Cognitive Vulnerabilities in College Women*
<u>Defended</u>: December 18th, 2018

Dec. 2016
Master of Education in Counseling and Personnel Services with a Specialization in Counseling Psychology – GPA: 3.98
University of Louisville, Louisville, Kentucky

May 2013
Bachelor of Science in Psychology - GPA: 3.91 (Magna Cum Laude)
Western Illinois University, Macomb, Illinois

CLINICAL EXPERIENCE

Aug. 2018-
July 2019
Psychology Predoctoral Internship
University of Florida Counseling and Wellness Center, Gainesville, FL
<u>Responsibilities</u>: Provided approximately 12 hours of individual therapy per week. Most clients are seen on a short-term basis (1-6 sessions), with the ability to work with several clients for the duration of the year. Conducted 3-4 triages per week, facilitated appropriate community referrals, and provided crisis walk-in services. Served one week on-call after hours. Co-led a psycho-educational anxiety/mindfulness group, co-led a group for female students with eating disorders, and co-led an interpersonal process group. Conducted 2-3 psychological batteries per semester, wrote reports, and provided feedback (including WAIS-IV, WIAT-III, MMPI-II, TOVA, IVA-2, and LASSI). Attended monthly eating disorder committee consultation meetings and maintained a caseload of 3-4 individual clients with eating concerns. Tracked client progress using the BHM20. Provided outreach services via tabling events and presentations. Developed individualized treatment plans for clients with a range of diagnoses and concerns, ranging (but not limited to): eating disorders, sexual identity concerns, generalized anxiety, major depression, personality, and trauma-related disorders.

Concentration areas: Treatment of Eating Disorders and Psychological Assessment.
Population served: Undergraduate and graduate students at a large racially diverse university.

Aug. 2017-
May 2018

University Counseling Center Practicum
Bellarmine University Counseling Center, Louisville, KY
Responsibilities: Provided direct services via intakes and individual therapy. Co-led a weekly interpersonal therapy group. Utilized and integrated outcome measures into case conceptualization and treatment planning (e.g. CCAPS, ORS, and SRS). Utilized Therapist Assisted Online as an adjunct to individual therapy. Provided outreach services to women's field hockey team in the fall semester. Attended outreach and tabling events and recorded a "coping with test anxiety" workshop for students to access online.
Population Served: Students at a private university. The majority of students referred to counseling are within the standard college age range (18-22) and are within the white, middle-class demographic bracket.

July 2016-
June 2017

Psychology Training Practicum
Central State Psychiatric Hospital, Louisville, KY
Responsibilities: Conducted initial interviews, individual therapy, group therapy, relapse prevention planning, suicide risk assessments, personality assessments, assessments of cognitive functioning, and additional assessments as needed. Attended multidisciplinary treatment team meetings with medical doctors, psychiatrists, nurses, and social workers. Prepared documents for psychologists to use in court proceedings for resolution of patients' legal status; attended court to observe forensic psychology practices. Primarily utilized cognitive behavioral interventions, motivational interviewing, and a person-centered approach; utilized approaches from *Seeking Safety* and *CBT for Psychotic Symptoms* in groups.
Population Served: Adult inpatients diagnosed with serious mental illness.

Aug. 2015-
July 2016

University Counseling Center Practicum
Spalding University Counseling Center, Louisville, KY
Responsibilities: Provided direct services via intakes, individual therapy, and psychological assessments. Consulted with a nutritionist to provide informed care to a client recovering from an eating disorder. Provided two written referrals to a physician for psychological appropriateness for medical interventions related to gender transition. Administered, scored, interpreted, wrote, and provided feedback for two integrated assessment reports. Presented and provided information at outreach events for the university.
Population Served: Undergraduate and graduate students enrolled at a private university ranging in age from 18 to 44.

May 2015-   **Assessment Practicum**
Aug. 2015   *Weisskopf Child Evaluation Center, Louisville, KY*
              Responsibilities: Co-led family interviews, completed and scored
              assessment batteries, collaborated with interdisciplinary team to determine
              diagnoses, and provided same-day feedback to families. Administered,
              scored, and interpreted psychological assessments. Administered
              assessments included (but not limited to): ADOS, Bayley-III, BASC-2,
              Beery VMI, CARS-2, SIB-R, Piers-Harris 2, RCMAS, SCQ, WAIS-IV,
              WISC-V, WPPSI-IV). Completed four integrated assessment reports.
              Population served: Children and adolescents with developmental,
              intellectual, and emotional concerns.

Aug. 2014-   **University Counseling Center Practicum**
July 2015   *University of Louisville Counseling Center, Louisville, KY*
              Responsibilities: Provided direct client services via intakes and individual
              therapy. Collaborated with psychiatric providers to monitor clients'
              treatment at weekly interdisciplinary meetings. Participated in weekly
              supervision meetings that included case presentations. Attended and
              presented at outreach events.
              Population served: A diverse group of undergraduate and graduate
              students enrolled at a large public university. Client ages ranged from 18
              to 63.

SUPERVISION EXPERIENCE

              Supervision of Advanced Practicum Student
Spring 2019   *University of Florida Counseling and Wellness Center, Gainesville, FL*
              Responsibilities: Supervised a doctoral-level practicum student 1.5 hours a
              week. Worked from a developmental supervision model. Received weekly
              supervision of supervision.

Jan. 2017-   **ECPY 755- Supervision Course**
April 2017   *University of Louisville, Louisville, KY*
              Responsibilities: Supervised a doctoral-level graduate student as part of a
              supervision training course. Met with the supervisee for six sessions.
              Focused on case conceptualization, feedback, and trainee self-awareness.
              Reviewed videotapes sessions and received feedback from peers and
              supervisor.

CONSULTATION/LIASON EXPERIENCE

August 2018- **Jamaica Consultation Project**
July 2019   *University of Florida Counseling and Wellness Center, Gainesville, FL*
  Responsibilities: Weekly meetings with members of the consultation team (comprised of interns, CWC Training Director, and a staff psychologist) focusing on a project with consultees located at various locations in Jamaica. Traveled to Jamaica for a one week to provide outreach in May.

Aug. 2017- **Liaison with Bellarmine Field Hockey Team**
Nov 2017   *Bellarmine University, Louisville, KY*
  Responsibilities: Met weekly with the women's field hockey team comprised of 27 female student athletes. Meetings included psychoeducational information on stress relief, team cohesion, positive self-talk, performance enhancement, and processing team goals and barriers.

Aug. 2015- **Consultation with Non-Profit Organization**
Dec. 2015   *Neighborhood House, Louisville, KY*
  Responsibilities: Served as the point-person on a team of students engaged in a consultation project with a local non-profit organization that provided services to families and children in a low-income neighborhood of Louisville. Evaluated the services offered to the Four Seasons Senior Program. Consulted with team administrators, collected and examined surveys, interacted with clients, and brainstormed ways to improve the mental health of attendees.

PROFESSIONAL AND RESEARCH EXPERIENCE

May 2017- **Graduate Research Assistant**
Dec 2017   *Department of Early Childhood and Elementary Education, Louisville, KY*
  Responsibilities: Assist in pre- and post-data collection, transcribe interviews, run analyses in SPSS, and assist with writing a post-grant evaluation.

Aug. 2016- **University Counseling Center Outreach Coordinator**
June 2017   *University of Louisville Counseling Center, Louisville, KY*
&   Responsibilities: Served two terms as UofL's UCC Outreach Coordinator
Aug. 2014- Participated in UofL and UCC sanctioned events (e.g. tabling events,
June 2016 Wellness Events, Tunnel of Oppression, Take Back the Night, etc). Managed and updated social media and the UCC website. Collaborated with Health Promotion to present workshops and SRC wellness activities. Responded to emails and outreach requests (presentations included Disordered Eating, Stress Busters, Test Anxiety, etc). During my second term, my duties increased and included additional presentations to resident assistants, undergraduate classrooms, and teaching assistants on requested

topics. Created handouts for various mental health topics, including: depression, generalized anxiety, suicide awareness, campus resources, and tips to handle stress. Acquired over 100 hours of direct outreach experience.

Aug. 2015-
May 2016
& June
2013 –
Aug. 2013

Graduate Research Assistant
Department of Counseling and Human Development, University of Louisville
Responsibilities: Designed a website for resiliency research. Collaborate on research and manuscripts. Ran advanced statistical analyses in AMOS (e.g. CFA, SEM). Prepared a poster presented at APA. Created numerous studies on Qualtrics. Collected information on CACREP-accredited doctoral program websites and co-wrote a manuscript (now published) on the information gathered.

Jan. 2016-
May 2018

Adolescent Depression Research Team
Department of Counseling and Human Development, University of Louisville
 Responsibilities: Gathered data in local schools, performed data entry, conducted statistical analyses, assisted in writing grants, attended lab meetings, and prepared and peer-reviewed manuscripts.

Jan. 2011-
June 2013

Interpersonal Relationships Lab
Western Illinois University, Department of Psychology
Responsibilities: Attended and facilitated discussion in lab meetings, presented research projects at conferences, entered and analyzed data using SPSS, assisted in research experiments, collected data and completed an honor's thesis.

MANUSCRIPTS UNDER REVIEW
Visalli, K.M., Pössel, P, Barnard, A.D., Adelson, J.L. (submitted). *The Influence of Parenting Behavior on Positive and Negative Affect in Elementary Age Children*. University of Louisville, Louisville, KY.

Winkeljohn-Black, S.M., Ajibade, B., **Visalli, K.M.**, Pittard, C.M., Pössel, P. (submitted). *The Effects of Alcohol use in a College Student Population.* University of Louisville, KY.

PEER REVIEWED PUBLICATIONS
Woo, H., Mulit, C. J., **Visalli, K.M**. (2016). Doctoral program websites: An initial orientation into Counselor Education and its professional identity. *Counseling & Values.* University of Louisville, Louisville, KY.

PROFESSIONAL PRESENTATIONS
McCubbin, L. D., **Visalli, K.M.,** Kuo, P. (2016, August). *Asian Americans' Experiences of Discrimination in Hawai'i and the Effects on Mental and Physical Health.* Poster presented at the American Psychological Association Conference in

Denver, Colorado.

Visalli, K. M., Pössel, P., Barnard, A.D., Adelson, J.L. (2015, August). *The Influence of Parenting Behavior on Positive and Negative Affect in Elementary Age Children.* Poster presented at the American Psychological Association Conference in Toronto, Canada.

Visalli, K. M., Pössel, P., Barnard, A.D., Adelson, J.L. (2015, March). *The Influence of Parenting Behavior on Positive and Negative Affect in Elementary Age Children.* Poster presented at the Great Lakes Regional Counseling Psychology Conference in Ball State, Muncie, IN.

Visalli, K. M. (2013, May). *The Hunger Games: Mate Preferences as a Function of Physiological Deficit.* Poster presented at the Midwestern Psychological Association conference in Chicago, IL.

Visalli, K. M., Hall, B. (2013, April). *Hunger, Environmental Security, and Mate Preferences.* Poster presented at Undergraduate Research Day, Western Illinois University, Macomb, IL.

Helmers, B., **Visalli, K. M.**, Smith, S., & Padera, C. (2012, April). *Body Image: Does Viewing Different Body Shapes Affect Eating Habits?* Poster presented at Undergraduate Research Day, Western Illinois University, Macomb, IL.

Herrick, T., Chapman, D., Bockhoven, L., **Visalli, K. M.**, & Kelly, K. M. (2012, April). *Personality Correlates of Social Wounds.* Poster presented at Undergraduate Research Day, Western Illinois University, Macomb, IL.

Reeve, S.D., Kelly, K. M., **Visalli, K. M.**, & Apollon, D. G. (2012). *Environmental Threat Cues Intensify Sexual Dimorphic Mate Preferences.* Poster presented at the Midwestern Psychological Association conference in Chicago, IL.

TEACHING EXPERIENCE

Aug. 2017	**Teaching Assistant: PSY 648 (Intellectual Assessment)**
	Department of Counseling and Human Development, University of
&	*Louisville*
	Responsibilities: Scored mock assessments, viewed and graded videos of
Jan. 2017-	students administering the WISC-V, WAIS-IV, and WIAT-III, and
May 2017	provided feedback to students. During my second term as a TA for two
	graduate classes, additional duties included question and answer sessions
	for the WISC-V and WAIS-IV.
April & Nov	**Guest Lecturer: PSY 621 (Differential Diagnosis)**
Nov 2017	*Department of Counseling and Human Development, University of*
&	*Louisville*

April 2018	Topic: Eating disorders and disordered eating behaviors, assessing for maladaptive eating behaviors, and the importance of consultation/referrals.
Feb. 2016-	**Guest Lecturer: PSY 671 (Career Assessment)** *Department of Counseling and Human Development, University of Louisville* Topic: Stigma in the workplace.
Sep. 2015-	**Guest Lecturer: PSY 648 (Intellectual Assessment)** *Department of Counseling and Human Development, University of Louisville* Topic: Psychometrics and administration of the WISC-V.

PROFESSIONAL ACTIVITIES

January 2019	**Internship Interviewer** *University of Florida Counseling and Wellness Center, Gainesville, FL* Responsibilities: Reviewed internship applications, consulted with Internship committee members, and assisted with interviews via Zoom.
April 2017	**Roundtable Panel Discussion** *Great Lakes Conference, Ball State University, Muncie, IN* Responsibilities: Participated on a panel with two other graduate students. Discussed the ethical concerns and barriers of counseling psychologists working with vulnerable populations in restrictive settings.
Jan. 2017	**Doctoral Student Interviewer** *University of Louisville, Louisville, KY* Responsibilities: Assisted in the doctoral interview process. Interviews occurred in group format, with myself and a professor, Dr. Katy Hopkins.
March 2016	**Master's Student Interviewer** *University of Louisville, Louisville, KY* Responsibilities: Assisted a professor, Dr. Laurie McCubbin, in interviewing students for University of Louisville's Counseling Psychology Master's program.
Jan. 2014- Jan. 2016	**APAGS Campus Representative** *University of Louisville, Louisville, KY* Responsibilities: Encouraged awareness of legislative issues related to psychology among peers on campus. Encouraged peer participation in advocacy movements. Submitted monthly reports about advocacy participation rates.
March 2016	**Ad Hock Reviewer**

University of Louisville, Louisville, KY
Responsibilities: Assisted a professor, Dr. Patrick Pössel, in reviewing a manuscript for the *Journal of Youth and Adolescence*.

Aug. 2013-
Aug. 2015
Doctoral Student Organization
University of Louisville, Louisville, KY
Responsibilities: Membership in a doctoral student-run organization. Collaborated with other students in the department to assist in advocacy among the department administrators and faculty. Processed student concerns relating to the department, program, and faculty.

PROFESSIONAL DEVELOPMENT

May 2019
Challenging Islamophobia Training.
Straughn Professional Development Center, Gainesville, FL
Attended a Continuing Education program presented by Aliya Ismail, regarding competent care for clients who identify as Muslim, as well as understanding the challenges that Muslim students may face.

Sep. 2018
Working with Supervisees Who Do Not Meet Professional Competence Requirements
Straughn Professional Development Center, Gainesville, FL
Attended a Continuing Education program presented by Nadine Kaslow. Workshop focused on observing and addressing supervisees who are not meeting requirements for competent practice and working through remediation plans.

Nov. 2017
Eleventh Annual Depression Center Conference
The Clifton Center, Louisville, KY
Training will provide an overview of treatments for mood and depressive disorders and outline the use of Dialectical Behavioral Therapy with clients with disabilities to increase success at work.

Feb. 2017
Eating Disorder Panel
Bellarmine University, Louisville, KY
Six professionals who work with eating disorder populations provided a question and answer session after a viewing *Someday Melissa*, which features the story of a young woman who passed away from Bulimia Nervosa.

Nov. 2016
The Trevor Project Training
Stewart Auditorium, Louisville, KY
Training provided an overview of suicide among LGBTQ adolescents and young adults and various environmental stressors that contribute to increased risk of suicide. In-depth training on the Trevor Project as a resource.

Oct. 2016	**Tenth Annual Depression Center Conference**
	The Clifton Center, Louisville, KY
	Conference included keynote speakers addressing various topics: mood disorders, mindfulness-based practices, self-compassion, and suicide prevention.

Aug. 2016	**Trauma-Focused CBT**
	Medical University of South Carolina. The National Child Traumatic Stress Network Trauma-Focused Cognitive-Behavioral Therapy Web Online Training Course.

June 2015	**Cognitive Processing Therapy for PTSD**
	Eastern State Hospital, Lexington, KY
	Attended a 2-day training that described the efficacy of Cognitive Processing Therapy (a manualized treatment); learned the steps to provide CPT to clients diagnosed with PTSD.

March 2015	**Mental Health First Aid Training**
	Family and Children's Place, Louisville, KY
	Training focused on recognizing, approaching, and properly responding to signs of mental illness and substance abuse in the community.

June 2013	**Collaborative Institutional (CITI) Training**
	The University of Louisville, Louisville, KY
	Online training related to IRB requirements and ethical requirements in research.

OTHER CLINICAL & VOLUNTEER EXPERIENCE

Sept. 2017- July 2018	**Associates in Counseling and Psychotherapy**
	Group Practice, New Albany, IN
	Responsibilities: Working under my Master's degree, I provided direct psychotherapy services via intakes for assessments and individual psychotherapy to adolescents and adults ranging from ages 16 to 50. Majority of clients come from low-socioeconomic backgrounds with minimal access to health care.
	Population Served: Adolescents and adults from a rural area in IN.

June 2012- July 2012	**Job Shadowing/Volunteer Work**
	First Stop Care Clinic, Bradenton, FL
	Responsibilities: Shadowed intake counselors and psychologists as they assisted individuals unable to meet their basic needs or in crisis. This included referrals to Manatee Glens Hospital for mental health needs or renewal of medications.

June 2012-	**Substance Abuse Rehabilitation Shadowing**

July 2012   *Manatee Glens Hospital, Bradenton, FL*
Responsibilities: Shadowed and assisted Dr. Anisa Muhammed in the Drugs and Addiction Center of Manatee Glens Hospital. This included viewing process groups, depression groups, women's groups and debriefing with the supervisor.

PROFESSIONAL AFFILIATIONS

Graduate Student Affiliate, American Psychological Association (2014-Present)
Student Affiliate, Society for the Psychology of Women, *Division 35* (2017)
Student Affiliate, Educational Psychology, *Division 15* (2017)
Student Affiliate, Developmental Psychology, *Division 7* (2017)
Student Affiliate, Society of Group Psychology and Group Psychotherapy, *Division 49* (2016)
Member, American Psychological Association of Graduate Students (2014-Present)
Member, Golden Key Honors Society (Fall 2012-2013)
Member, Psi Chi National Honor Society, Western Illinois University (Fall 2011-2013)
Member, Phi Eta Sigma (Fall 2010-2013)

SCHOLARSHIPS AND AWARDS

2018 & 2019	**College of Education and Human Development Scholarship** *Honors and Scholarship Committee, University of Louisville, Louisville, KY*
2014	**Graduate Student Association Travel Award** *University of Louisville, Louisville, KY*
2009- 2013	**Academic Tuition (Athletic and Honors Scholarship)** *Western Illinois University, Macomb, IL*