Mindfulness and Acceptance during Transitions in Emerging Adults
(The MATE Study)

by

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Table of Contents

List of Tables

List of Appendices

Abstract

Emerging adulthood is a developmental stage which involves personal, social, familial, cultural, biological, and psychological aspects of life. Significant decisions about career, life-partners, finances, education are made during this time. Studies suggest going through these transitions can lead to significant psychological distress. Studies also show that perceived social support can buffer the impact of these transitions on mental health outcomes. The current study assesses the moderating effects of psychological inflexibility and cognitive reactivity, constructs from ACT and MBCT, on the relationships between psychological distress, problematic drinking behavior, and perceived social support in emerging adults. Data were collected from 106 first-year college students from a small Midwest university. Participants completed self-report measures of distress, social support, cognitive reactivity, and psychological inflexibility. Psychological inflexibility and cognitive reactivity were positively associated with psychological distress and problematic drinking behavior, whereas psychological inflexibility and cognitive reactivity were negatively associated with perceived social support. Analyses of the potential moderating effects of psychological inflexibility and cognitive reactivity were not significant. The results suggest that developing mindfulness-based psychotherapy techniques uniquely directed towards the emerging adult population can be advantageous.

Chapter I

Introduction

Emerging adulthood is a developmental stage where an individual goes through a lot of changes in various aspects of life. These transitions have been associated with negative life events and these negative life events has been associated with psychological distress. Transition to college has been specifically linked to depression, anxiety and substance use for the emerging adult population. Higher perceived social support has been shown to buffer the effects of these transitions in the emerging adults. This study aims to assess the moderating role of mindfulness constructs, like psychological flexibility and cognitive reactivity, in the relationship between psychological distress, problematic drinking behavior, and perceived social support. Before we analyses our specific hypotheses, a comprehensive review of literature on the topic is provided.

Emerging Adulthood

Erikson (1968) first spoke about a phase of development between adolescence and adulthood referred as *psychosocial moratorium.* He speculated that this is a stage where older teens try to find something unique that would define them as an individual in their society. However, Erikson suggested that this would only happen in societies which would allow this moratorium or in societies which would expect this delay in adulthood by prolonged adolescence. Erikson thought this would be the phase where peer's viewpoints hold more value than parent's view, individuals choose to be unemployed to have unique experiences, and where finding a romantic partner is not based on sexual needs, but based on connections made on a more intimate level.

The developmental period called emerging adulthood is similar to those early ideas of Erikson. It has been described as a time when individuals experience a number of changes at the biological, social, personal, and cultural level (Arnett, 2000). Arnett posited that this phase of development occurred from late adolescence to mid-20s (18-25 years). Individuals in this age range need special attention because they are being considered adolescents and are being given complete "credit" of being an adult. Changing societal norms regarding marriage and parenthood have extended the historically "traditional" period of adolescence. According to this model (Arnett, 2000), individuals are making transitions and exploring various areas in their lives at this time such as, the decision of where to live, (e.g., with parents; with friends, with romantic partner or alone). A few more areas which the emerging adults explore during this transition includes the decision of choosing a field of study during college or the "right" career path, the decision of choosing a life partner, having your own political views and world views etc.

Having mentioned all the exploration and excitement of this phase, Arnett also mentions that these changes also lead to negative mental health outcomes. Exploration in love, work and worldviews can lead to disappointments and rejections. Challenging your childhood belief systems can be stressful too. Rejections and disappointments can also lead to risky behavior like unprotected sex, indulging into substance use, risky driving behavior etc. (Arnett, 2000). Pharo, Sim, Graham, Gross and Hayne (2011) state that the risk of death is two to three times higher in adolescence than at a younger age. Pharo et al. (2011) found significant differences in alcohol, drug use, sex, and, antisocial behavior questionnaires between both emerging adults (18-22 years old) and younger participants (13-17 years old). Real-world risk-taking behavior was predicted by the above-mentioned test-scores and performance on neuropsychological tests.

To examine this model further Arnett (2001) did a comparative study between adolescents aged 13-19 years old and adults in their midlife aged 30-55 years old to understand the conceptualization of perception of adulthood. For both the age groups; factors which held the most importance for perceived adulthood were holding oneself accountable for their own actions, finalizing one's values and beliefs, having a respectful relationship with parents where both parties value each other, and financial independence. Factors which were different for the two age groups were biological development and abiding to societal norms. Participants in their mid-life did not give much value to biological transitions, while those in the young group did. What the mid-life participants gave importance was the abiding to the norms of the society (e.g. avoiding drunk driving). These findings suggest that individuals within this group also see themselves as having unique pressures and tasks that are distinct to this developmental stage.

Baggio, Studer, Iglesias, Daeppen, and Gmel (2016) were able to expand the above findings using the short-form of the Inventory of Dimensions of Emerging Adults (IDEA-8) and other measures of psychosocial well-being. This study collected data from 4,991 Swiss men aged between 18 to 25 years old. Results showed that emerging adults with a negative outlook towards life (*negativity*) and having difficulties with finding a defining purpose of life (*identity exploration)* have low levels of perceived psychosocial well-being. Emerging adults with a more positive outlook towards life and a subjective sense of direction (*experimentation),* rated more positively and were found to have higher levels of perceived psychosocial well-being. Interestingly, the classic societal expectations of adulthood like financial stability and marriage were not found to be associated with psychosocial well-being.

Wood, Crapnell, Lau, Bennett, Lotstein, Ferris and Kuo (2017) consider emerging adulthood as a critical period in course of life development. Wood et al. (2017) takes a

biopsychosocial approach by including brain development as an important variable since many higher-order executive functions are still developing during emerging adulthood. As the brain develops, the emerging adult is enabled to delay gratification, better understand the impact of the external and internal environment, develops better problem-solving skills, and the ability to form meaningful social and personal relationships. Wood et al. (2017) posits that individuals with adequate social, psychological, economic and personal resources, along with necessary adult support, are more likely to make well-educated choices and progress towards a healthy and successful adulthood. On the other hand, individuals lacking these assets may struggle in various domains of adult life.

The above-mentioned studies appear to highlight that emerging adulthood, is a period filled with exploration and challenging tasks. The outcomes to these choices can be both positive and negative and seems to be influenced by how the emerging adults approach them. Moreover, considering that the brain is still developing during this age, it is likely to play a role in how some these important decisions are made. Hence, it is important for us to focus on emerging adults as choices made in this period have the potential to spur major consequences. It is also important to focus on factors that affect these decisions, factors that lead the emerging adults to these decisions, and the effects of these factors on emerging adults.

Negative Life Events and Effects

Throughout the course of an individual's life, they will experience a number of significant life events, some are driven by developmental or biological factors and some are more socio/cultural in nature. As noted above the developmental stage of emerging adulthood is a time where there is potential for many significant life events. Some of these events can occur as a seamless transition while others can be quite difficult for people to adapt to and may lead to

psychological distress. Holmes and Rahe (1967) investigated the role of significant life events as stressor and subsequent prediction of psychological illness in individuals following one of these events and came up with a list of events that were most predictive of latter distress. The events that were most influential included death of spouse, divorce or marital separation, personal injury, sexual difficulties, change to a different line of work, begin/end of school or college, and change in living conditions. Homes and Rahe (1967) calculated the mean values for each of the events based on the magnitude of severity and events like death of spouse, divorce, marital separation, jail term and death of a close family member were the top five with the highest mean score 100, 73, 65, 63 and 63 respectively. Events like beginning or end of school, changes in school, changes in living conditions (away from parents, with romantic partners, alone) and changes in residence; all events that are more likely to occur in emerging adulthood, were rated among the top 30 predictors of psychological distress.

Building on this work, Brown and Harris (1978) found that significant life events, as measured by the Life Events and Difficulties Schedule (LEDS; a semi-structured interview) were related to psychological distress, including symptoms of depression. In particular, this work showed that adverse life events have more impact on distress than other types of events. Adverse life events are conceptualized as either a 'loss event' where an individual loses a significant person (e.g., close family member, role model), a significant role or loses a significant asset or a 'humiliation event' where an individual might experience humiliation or inappropriate guilt leading to a negative thought pattern and thoughts of helplessness, hopelessness and worthlessness are especially critical. Swearingen and Cohen (1985) found strong positive relationship between negative life events and psychological distress but could not prove the positive effects of positive life events in an individual. Despite others finding a strong

association between negative life events and distress, Swearingen and Cohen (1985) found that negative life events are not always predictive of psychological distress and in-fact are partly based on the history and nature of distress; suggesting the potential for moderating factors on the distress-life event association.

The work on the importance of life events on distress has continued for nearly 40 years and numerous studies have found that life events are associated with not only symptoms of depression, but also other types of psychological distress (Cheney, Vesely, Aspy, Oman and Tolma, 2018). There have been numerous studies connecting the experience of a negative life event to negative mental health outcomes in young adults like anxiety and depression (Call and Nonnemaker, 1999; Ge, Lorenz, Conger, Elder, and Simons, 1994; Ge, Natsuaki, and Conger, 2006; Mackin, Perlman, Davila, Kotov, and Klein, 2017; Natsuaki et al., 2007; Stikkelbroek, Bodden, Kleinjan, Reijnders, and van Barr, 2016).

Wichers, Maes, Jacobs, Derom, Thiery and Kendler (2012) conducted a longitudinal twin study to prove a causal inter-relationship between depression and significant life events in women. Wichers et al. (2012) study results suggests that there is a causal relationship between negative life events and depression; i.e. lowering the probability of experiencing a negative life event lowers the chances of depressive symptoms and visa-versa. Marum, Clench-Aas, Nes and Raanaas (2013) conducted a life-satisfaction study on large Norwegian sample of 4,823 individual with age 16 and older and concluded that significant life transitions specially with negative outcomes can lead to higher levels of psychological distress and reduced life satisfaction. Amital, Fostick, Silberman, Beckman and Spivak (2008) suggest that treatment resistant depression (TRD) is associated with the number of significant life events in the patients

with Major Depressive Disorder. Losing employment and financial difficulties were able to predict TRD; events mostly all emerging adults go through (Amital et al., 2008).

Negative life-events not only have been proven to predict depression but other negative mental health outcomes including: suicidal ideation and self-harming behaviors (Daniel, Goldston, Erkanli, Heilbron, and Franklin, 2016; Mackin, Perlman, Davila, Kotov and Klein 2017), smoking (Byrne, Byrne, and Reinhart, 1995; Cheney et al., 2014; Simantov, Schoen, and Klein, 2000; Siqueira, Diab, Bodian, and Rolnitzky, 2000), alcohol and other illicit substance use (Lloyd and Turner, 2008; Carliner, Keyes, McLaughlin, Meyers, Dunn and Martins (2016); King and Chassin, 2008; Wills, Sandy, Yeager, Cleary, and Shinar, 2001), changes in body-mass index (Elsenburg, Smidt, and Liefbroer, 2016) and the obvious, increased risk of PTSD (Ghazali, Elklit, Sultan, Balang, and Chen, 2016).

Effects of Negative Life Events on Emerging Adults

Not only have negative life events been associated with poorer mental health outcomes in adult sample, but this research has been extended to adolescent and emerging adults samples as well. For instance, Ge et al. (1994) conducted a 4-year longitudinal study to track depressive symptoms due to negative life events in adolescents. Over a course of four years, Ge et al. (1994) found that severity of life events was associated with severity of depression. Similarly, Reyes-Rodríguez, Rivera-Medina, Cámara-Fuentes, Suárez-Torres and Bernal (2012; 2013) conducted a study on a college population in Puerto Rico and found that the transition from adolescence to young adults during this college going period was related to depressive experiences, which can further be associated with faulty coping skills like engaging in substance use in this age group.

Research has shown that negative life events in this group are independently associated with mental health outcomes (especially substance use), outside of ineffective coping. For

8

example, Lloyd and Turner (2007;2008), in an effort to find the effect of cumulative life adversities on emerging adults, found that stress to single or multiple negative life events was associated with higher risks for alcohol dependence. Similarly, Cheney et al. (2018) in their attempt to find possible correlation between negative live events and adolescent alcohol use, found that odds for using alcohol in the emerging adult years double with the experience of just one negative life event in the past one year. Events like death of a close family member or relative, parental divorce, moving to a new city, country or school, all have the capacity to affect the mental health of young adults, as coping measures taken to deal with these social changes often remain way past the concerned event (Cheney et al., 2018).

Transition to College

Given the link between stressful events and health, both physical and psychological, researchers have tried to focus on specific populations to better understand health risk. One group of particular interest is first-time undergraduate students who are going through a transition from high school to college (Johnston, O'Malley, Bachman, and Schulenberg (2007). The National Center for Educational Statistics, Institute of Education Sciences within the U.S. Department of Education reported that the number of "first-time" students has been consistently increasing (National Center for Education Statistics, 2015). A report from the Integrated Postsecondary Education Data System (IPEDS) for the academic year 2015-2016 states that the number of first time students has gone up from 2.9 million in Fall, 2009 to three million in the Fall, 2014.These individuals are within the very vulnerable group of emerging adulthood as described earlier (Arnett, 2000).

Previous studies suggest that there are variables that seem to moderate the association between life events and distress (Swearingen and Cohen; 1985). Researchers have examined

factors that seems to buffer the effects of significant negative events in this group. For example, Foiri and Consedine (2013) conducted a longitudinal study on a college sample of 113 first-year students and found that higher negative exchanges within the student's personal, social and academic environment, led to poorer emotional well-being and visa-versa. Similarly, Low et al. (2012) found that common stressors like romantic breakup stress, family disruption, health and school related stress, which are all more prevalent in emerging adults, had significant association with various mental health outcomes like depressive symptoms and cigarette/marijuana use.

Adding to the importance of understanding life events in this population is epidemiological data that shows illness like borderline personality disorder, bipolar disorder, and schizophrenia, tend to first manifest themselves during late adolescence or early adulthood (Kessler, Amminger, Aguilar-Gaxiola, Alonso, Lee, and Üstün, (2007). Moreover, Kitzrow (2003) noted that counseling centers and services across various campuses and universities have noticed a significant increase in the number of students seeking help. It is also interesting to see that the nature of students enquires/complaints have also changed from more non-serious developmental and informational needs to more severe mental health issues. Specifically, students presented with more issues related to self-injury, eating disorders, alcohol and other illicit drug use, and sexual assault and/or abuse (Kitzrow, 2003).

It may be that the transition into collegiate level education represents a significant life event for some of these emerging adults, thus more work on this area is crucial.

Psychological Distress

The median age of onset for psychological disorders like phobias, generalized anxiety disorder and major depression is between the ages of 23 and 30 years (Kessler, Petukhova, Sampson, Zaslavsky and Wittchen, 2012), which falls within the emerging adulthood bracket. Moreover, the emerging adulthood population who has been shown threefold higher prevalence rate compared to individuals aged 60 years or older (Kessler et al. 2012). In order to better understand distress in the emerging adult population, it is crucial that a solid foundation of those disorders is presented. A full review of the symptomatology, etiology, and treatment considerations is beyond the scope of this project; however, a concise review of common disorders is provided.

Depression

Major Depressive Disorder is among the most common psychological illnesses with twelve-month prevalence rates of 8.6% with a lifetime morbid risk of approximately 30% (Kessler et al. 2012). Depression can be defined as an emotional state of low mood and aversion to activities that can affect all aspects of an individuals' life, i.e. his / her thoughts, behavior, feelings and also physical well-being. Feelings of guilt, hopelessness, helplessness, worthlessness and pessimism are also common. Other significant symptoms of depression include thoughts of death and suicide or suicide attempts. People might also face difficulties concentrating, remembering, making decisions, and would also experience changes in sleeping patterns as they would find themselves oversleeping or having difficulties in early-morning awakening. Sudden changes in appetite and weight are also common (NIMH, 2015). It must also be noted that a lot of people experience sub-clinical level of depressive symptoms, without

meeting the diagnostic criteria for Major Depressive Episode. Experiencing these sub-clinical levels of depressive symptoms have also been linked to poor functioning.

Anxiety

The lifetime prevalence for anxiety disorders in ages 13 and up in the United States is 12.1% for specific phobia; 7.4% for social phobia; 3.7% for PTSD; 2.4% for panic disorder and 2% for generalized anxiety disorder (Kessler et al., 2012). Burstein, Beesdo-Baum, He and Merikangas (2014) found that 3% of the American youth population are suffering from Generalized Anxiety Disorder, with nearly 6% of the population have experienced threshold or subthreshold levels of GAD once in their lifetime. Essau, Lewinsohn, Olaya and Seeley (2014) examined the effects of early onset anxiety disorders and its outcomes at age 30. Adolescent anxiety was able to predict poor adjustment at work, overall low levels of life satisfaction, chronic stress and substance and/or alcohol use and dependence during adulthood (Essau et al., 2014). The common symptoms of anxiety consist of excessive, uncontrollable worry about a variety of events, activities or topics along with restlessness, fatigue, impaired concentration, irritability and sleeping difficulties (American Psychiatric Association, 2013).

Substance Use

Surveys conducted by the National Institute of Drug Abuse suggests that the number of American emerging adults aged 12 or older using an illicit drug has considerably increased from 8.3% of the population in 2002 to 9.4% population in 2013 (National Institute on Drug Abuse, 2015). The National survey points at a recent rise in the use of marijuana as the drug as the drug of choice for respondents. Since 2007, adolescents aged 12 or older using marijuana has increased from 5.8% to 7.5% in 2013. Studies have shown that getting involved in alcohol and drug use during early adolescence can lead to interference in some important developmental

milestones and can eventually lead to various poor psychological, social, educational and physical health related problems (Murphy and Dennhardt, 2016).

Brady and Kendall (1992) studied the comorbidity of depression and anxiety in adolescents and found that almost 62% of the participants with complains of depression or anxiety had a comorbid anxiety or depressive disorder. Fusar-Poli, Nelson, Valmaggia, Yung, McGuire (2014) found similar results when assessing comorbid depression and anxiety and its ability to predict psychosis. Fusar-Poli et al. (2014) found that the baseline prevalence for their study sample was 41% and 15% for comorbid depression and anxiety disorders respectively. Comorbid depression and anxiety was also associated with global impairment in the functioning of the individual (Fusar-Poli et al., 2014). Lai, Cleary, Sitharthan and Hunt (2015) conducted a systematic review and meta-analysis of studies conducted between 1990 and 2014 on the comorbidity between substance use, depression and anxiety. Results showed strong association between drug use, depression and anxiety as people with a substance use disorder were at twice as greater risk for developing a depressive or anxiety disorder.

Perceived Social Support

Given the important tasks involving social relationships for emerging adults and the potential buffering role for negative life events/transitions and psychological distress, the psychological construct of perceived social support holds a great deal of importance. There is a vast literature on social support (Hakulinen et al., 2016), with a number of studies suggesting that social support can buffer the effects of stress on both physiological and psychological health. For instance, Cohen (2004) examined the effects of social relationships and its effects on general health of an individual. Cohen found that social support, social integration, and negative interactions show noteworthy effects on health (including better mortality rates). Cohen further

suggests that overall health can be improved by improving social integration and social support. Studies also show direct links between psychological health and social support.

Social support appears to also buffer the potentially negative impact of life events. Zhang, Gao, Gao, Kong, Hu, Wang and Mei (2017) conducted a comparative study between healthy older adults and older adults with choric disease to assess the relationships between depression, social support, negative life events and coping styles. Zhang et al. (2017) found that objective support buffers the impact of negative life events on depression in the chronic disease group. For the healthy older group, making use of the existing support systems and positive coping strategies weakens the effects of negative life events. Talwar (2016) also had similar findings and concluded that perceived social support moderates the relationship between stress and depression. Takizawa, Kondo, Sakihara, Ariizumi, Watanabe and Oyama (2006) studied the stress buffering effects of social support on depression in middle age and found social support alleviates depressive symptoms under negative life circumstances in middle aged men.

There is a robust literature on social support in emerging adults as well. Family support has been shown to reduce the risk of depression in young adults (Moreira and Telzer, 2015), especially in young women (Ge et al., 1994). A recent study by Chang et al. (2017) suggested that family support plays a significant role in the relationship between loneliness and suicide risk among college students. In this study, level of family support was able to predict both depressive symptomology and suicidal ideations above and beyond reports of loneliness. Similarly, Levens, Elrahal and Sagui (2016) studied the relationship between family support, perceived stress reactivity and depression in first year college students and found that the relationship between perceived stress reactivity and depressive symptoms is moderated by family support. On the contrary, Levens et al. (2016) found that when perceived stress reactivity is low, family support

can help alleviate any possible depressive symptoms whereas when the perceived stress reactivity is high, even good family support does not provide any buffer for the depressive experience of the first-year college students.

Mackin et al. (2017) found that parental support was better than peer support in buffering the effects of life stressors on developing suicidal ideation in adolescent girls. However, Zhang (2017) conducted an interesting study trying to find if facing stressful life situations eliciting self-disclosure on social media buffered stress experience due the social support received on the internet, which would presumably be more peer focused. Self-disclosure was found to moderate the dynamics between mental health outcomes and negative life events; it also increased levels of perceived social support was found to alleviate the depressive symptoms and increase life satisfaction. Lee, Dickson, Conley and Holmbeck (2014) conducted a longitudinal cross-lagged path analysis on factors like self-esteem, perceived social support, depressive symptoms and coping across the transition to college. Perceived social support was found to moderate the relationship between self-esteem and depression. Meng, Huang, Hou and Fan (2015) were able to replicate these results by finding positive association between perceived social-efficacy and academic success during the college transition; mediated by perceived social support. Students with higher perceived social support experienced higher perceived self-efficacy. These students were less depressed and obtained better grades during the high school to college transition. Overall, these studies suggest that perceived social support may buffer the impact of negative psychosocial factors affecting the lives of emerging adults.

Cognitive Reactivity and Psychological Flexibility

In the previous sections, we explored the concept of emerging adulthood and how emerging adults transitioning to college are at a higher risk for psychological distress and

substance use. However, not all who go through this transition are at risk or experience psychological distress. Some emerging adults would be at a higher risk than others while some may have a smooth transition. There are many possible explanations for this variation, based on clinical studies mindfulness constructs called psychological flexibility and cognitive reactivity may have some association with psychological distress and problematic drinking. Below is a brief description of these constructs.

Mindfulness-Based Cognitive Therapy (MBCT) and Acceptance and Commitment Therapy (ACT), both third generation treatment approaches, integrate these constructs into the treatment of depression and other types of psychological distress. The degree of change in negative thinking in response to sad mood or fluctuating negative attitude about oneself, in response to daily events, or sad mood can be conceptualized as cognitive reactivity (Segal et al., 2006; Van der Does, 2002; Beck, 2008). Cognitive reactivity is, how easily negative attitudes towards oneself, for example 'I failed a test, i.e. I am a failure in life'; are initiated by responses to daily events or sad mood, can be defined as cognitive reactivity. Important for the current study, the presence of cognitive reactivity before a stressful life event predicts onset of depression (Scher et al., 2005). Vulnerability to depression has also been linked to cognitive reactivity and perceived parental support. People who have been previously diagnosed with depression uniquely divert their attention towards negative stimuli when they are in a negative mood (Ingram et al. 2000). Kuyken, Warren, Taylor, Whalley, Crane, Bondolfi, . . . Dalgleish (2016) conducted a meta-analysis of the studies from November 2010 to November 2014 on Mindfulness-Based Cognitive Therapy and concluded that Mindfulness-Based Cognitive Therapy appears to be as effective as pharmacotherapy and other traditional psychotherapies in treating patients with depression and preventing relapse in recurrent depression.

A related construct, psychological inflexibility, has been described by Hayes (Hayes, 2004) as an individual's ability to be fully present in the current moment, with his/her thought and feelings, in the absence of unnecessary defense, continuing to change behavior in the pursuit of his goals and values. Psychological flexibility has various functions / roles / abilities which allows an individual to understand and adapt to numerous environmental demands; change / alter mindsets and behavioral patterns when the coping strategies fail to adapt resulting in social and/or personal dysfunction; to be alert, open and dedicated to behavioral patterns that are compatible with strongly held personal values (Kashdan and Rottenberg; 2010). On the other hand, absence of these skills might lead to rigidity, lack of situational sensitivity or inflexibility, ultimately leading to more psychological distress.

A-Tjak, Davis, Morina, Powers, Smits and Emmelkamp (2015) conducted a meta-analysis of 39 randomized controlled trials on Acceptance and Commitment Therapy and concluded that Acceptance and Commitment Therapy is an effective therapeutic technique for anxiety, depression, substance use, and psychosomatic issues, is as effective as other traditional psychotherapies. Considering the effectiveness of these modalities, we believe that programs based on these third-generation cognitive behavior therapy techniques, would be beneficial to the emerging adult population. In order to do that, researchers must assess the relationship between the mindfulness constructs of psychological flexibility and cognitive reactivity with psychological distress and problematic drinking behavior.

Current Study

Given the literature reviewed, the present study explores the influence that psychological flexibility and cognitive reactivity has on the relationship between perceived social support and psychological distress in emerging adults. Specifically, this study seeks to analyze the potential

moderating influence of psychological flexibility and cognitive reactivity on the existing relationship between perceived social support and psychological distress of first-year college students with no prior post-secondary experience ever.

Data from National Center for Educational Statistics (NCES, 2014) notes that 70% of high school graduates now enroll for a college education. Out of those, 58% are females as opposed to 42% males; Asian Americans and Caucasians having higher rates for entry to a 4-year residential college program than African American and LatinX population (NCES, 2014). Arnett (2016) points out that most studies involving the emerging adult populations have a majority of Caucasian females and collecting data from this sample might not be an accurate representation of the emerging adult population. This study is unique in that context as the data is collected from a non-residential campus which is not predominantly Caucasian or female.

More specifically, we hypothesize as follows:

Hypothesis 1: *Psychological inflexibility, (as measured by AAQ-II) will have a positive association with symptoms of psychological distress and substance use (as measured by GHQ and CAGE – Modified).*

Hypothesis 2: *Cognitive Reactivity (as measured by LEIDS) will have a positive association with symptoms of psychological distress and substance use (as measured by GHQ and CAGE-Modified).*

Hypothesis 3: *Perceived social support (as measured by MSPSS) will have a negative association with symptoms of psychological distress and substance use (as measured by GHQ and CAGE – Modified).*

Hypothesis 4: *There will be a negative association between perceived social support and symptoms of psychological distress and substance use, and this association will be moderated by psychological inflexibility.*

Hypothesis 5: *There will be a negative association between perceived social support and symptoms of psychological distress and substance use, and this association will be moderated by cognitive reactivity.*

Chapter II

Methods

Participants

A power analysis was conducted using effect sizes in the current literature using the

GPower analytical software (Faul, Erdfelder, Lang, and Buchner, 2007). This analysis suggested

that a sample size of 111 would be sufficient to detect statistically significant effects, but in

anticipation of potential subject early withdraw a goal sample size of 120 was chosen for

recruitment. Participants were recruited via SONA, the online undergraduate participation

system within the University of Michigan – Dearborn. At the outset of the academic semester,

students in the subject pool completed a brief pre-screening questionnaire asking if they were at

UM-Dearborn for the first time. Only students in the subject pool who answered "yes" were

targeted for recruitment in the study. This process ensured that only first-time university/college

students participated in the study.

Inclusion criteria to participate in the study included potential participants being currently

enrolled in a course that participates with the subject pool (e.g., Psych 101) at the University of

Michigan – Dearborn. In addition, given the study's focus on emerging adults, potential

participants had to be under the age of 25 years with no prior post-secondary educational

experience at any other university at the undergraduate level. Participants were also required to

be fluent in reading/writing in English.

The study was reviewed and approved by the Institutional Review Board at the

University of Michigan-Dearborn. In order to ensure confidentiality for participants, there were

no demographic questions asked of participants. Subjects were identified with a unique subject

number only. In compensation for their time and effort of participating a total of 1 SONA credit

was awarded, only after the completion of all the measures.

Measures

Psychological Flexibility: The Acceptance and Action Questionnaire (AAQ-II

[Appendix A]; Bond et al., 2011) is the revised version of AAQ-I, aimed to measure experiential

avoidance and psychological inflexibility. The AAQ-II is a 10-item, self-administered

questionnaire with responses based a 7-point Likert type scale (1=never true, 2=very seldom

true, 3=seldom true, 4=sometimes true, 5=frequently true, 6=almost always true, 7=always true)

where higher scores on the scale indicate higher psychological inflexibility (ex. "It's okay if I

remember something unpleasant.", "My painful memories prevent me from having a fulfilling

life." The AAQ-II has been shown to have sound psychometric properties (Bond et al., 2011).

There were two participants who did not fill in one item each on this measure. In the current

study, the alpha for the AAQ-II was .86.

Substance Use: The Cut Down, Annoyed, Guilty, Eye Opener Questionnaire – Modified

(CAGE [Appendix B]; Taylor, El-Sabawai, and Cangin, 2016) is a 7-item self-administered

questionnaire based on a 2-point scoring system of 0=NO and 1=YES. A score greater than two

is considered clinically significant for risk of an alcohol use disorder and a cut off score of one is

used for a moderate risk of alcohol use disorder. The CAGE - Modified questionnaire was

developed from the original 4-item CAGE questionnaire (Ewing and Ewing, 1984) as a more

accurate tool for alcohol screening in college students. Studies have shown that the modified

CAGE can identify 20.24% - 27.62% more students whose drinking behaviors can be classified

as alcohol abuse or alcohol dependency, as compared to the original CAGE with four items

(Taylor et al., 2016). In the current study, 73.6% (n = 78) reported zero risk factors for problematic drinking. Therefore, scores on the CAGE were dichotomized for analysis in the current study. Participants who endorsed one more risk factors for problematic drinking were grouped together and compared against those with zero risk factors. Twenty-six percent (n=28) participants scored in at risk category in the current sample.

Psychological Distress: The General Health Questionnaire-28 (GHQ; [Appendix C] Goldberg and Hillier, 1979) is a shortened version of the original General Health Questionnaire (Goldberg, 1972) designed to detect those individuals with risks to develop a diagnosable psychiatric disorder. It is a 28-item self-administered questionnaire answered on a 4-point Likert scale, with scores ranging from 0-3 (0=not at all, 1=no more than usual, 2=rather more than usual and 3=much more than usual) with total scores ranging from 0-84. The GHQ-28 has been divided into four sub-scales, somatic symptoms (ex. "Been feeling perfectly well and in good health?", "Been feeling rundown and out of sorts?"), anxiety symptoms (ex. "Lost much sleep over worry?", "Been feeling nervous and strung-up all the time?"), social dysfunction (ex. "Been managing to keep yourself busy and occupied?", "Felt capable of making decisions about things?") and severe depression (ex. "Felt that life is entirely hopeless", "Felt that life isn't worth living"). Test-retest reliability for the GHQ-28 has been reported as high as 0.90 (Robinson and Price, 1982). The alpha for the GHQ in the current study was 0.85.

Interpersonal Ambivalence: The Inventory of Interpersonal Ambivalence -18 (IAA-18; [Appendix D] Siefert; 2015) is an 18-item self-administered questionnaire, based on a 4- point scale (1=False, Not True; 2=Slightly True; 3=Mainly True; 4=Very True) which aims to assess the level of lingering difficulties in the subject's interpersonal relationships. As noted in the procedure section, this measure was given to reduce the potential impact of the negative mood

induction of the Leiden Index of Depression Sensitivity. There were no specific study hypotheses related to measure in the current study. Nonetheless, the alpha for the current sample was 0.90.

Cognitive Reactivity: The Leiden Index of Depression Sensitivity (LEIDS-R [Appendix E]; Van der Does and Williams, 2003) is a measure of cognitive reactivity. The LEIDS-R is a 34-item self-report questionnaire which participants answer on a 5-point Likert scale (0=not at all, 1=a bit, 2=moderately, 3=strongly and 4=very strongly). Under the global construct of cognitive reactivity, Van der Does (2002) identified six sub-facets: hopelessness (e.g. "When I feel down, I more often feel hopeless about everything."); Acceptance/Coping (e.g. "When in sad mood, I am more creative than usual"); Aggression (e.g. "In a sad mood, I do more things that I will later regret"); Control/Perfectionism (e.g. "When I feel sad, I spend more time thinking about what my moods reveal about me as a person)"; Risk Aversion (e.g. "I can only think positive when I am in a good mood"); and Rumination (e.g. "When I feel down, I more often feel overwhelmed by things"). Past research has shown the LEIDS-R to be psychometrically sound (Barnhofer and Chittka, 2010). The LEIDS-R aims to measure the thought process of an individual when s/he is in a sad mood. Consistent with how the measures has been used in the past (Barnhofer and Chittka, 2010), participants in the current study were given instructions to think about a situation in their life when they felt moderately sad. As per the instructions on the measure (Van der Does and Williams, 2002):

> *"Try to imagine the following situation when filling out this questionnaire – It is certainly not good day, but you don't feel truly down or depressed. Perhaps your mood is an early sign of something worse to come, but things might also improve in a next day or two. On a scale ranging from 0-10 (0=not at all sad; 10= extremely sad; 6 and above= a truly*

depressed mood), you would choose a 3 or 4 to describe your mood. Please try to

imagine yourself in the above situation, for instance by thinking back to the last time you

felt somewhat sad (score 3 or 4)."

Participants were given two minutes to think about this situation. At the end of the two

minutes, participants were given the measure to complete. The alpha for the LEIDS for the

current sample was 0.83.

Perceived Social Support: The Multidimensional Scale of Perceived Social Support

(MSPSS [Appendix F]; Zimet, Dahlem, Zimet, Farley, 1988) is a 12-item self-administered

questionnaire answered on a 7-point Likert type scale (1=very strongly disagree, 2=strongly

disagree, 3=mildly disagree, 4=neutral, 5=mildly agree, 6=strongly agree, 7=very strongly

agree). The MSPSS was developed to measure the test-takers subjective opinion on his/her level

of perceived social support. The questionnaire measures perceived social support from three

sources: family (ex. "My family really tried to help me"), friends (ex. "My friends really try to

help me") and one's significant other (ex. "There is a special person who is around when I am in

need"), each consisting of four items each. The measure has been shown in previous research to

have high internal consistency and strong test-retest reliability (Zimet, Powell, Farley, Werkman

and Berkoff, 1990). The alpha for the MSPSS for the current sample was 0.91.

Procedure

Data for the current study were collected in a group format. Participants signed up on

SONA in groups of 20 participants for each scheduled appointment time. Upon arrival to the

laboratory, the researcher waited for each participant to arrive. A time allotment of 10 minutes

was given for those participants running late for the appointment. After 10 minutes, the study

protocol was started, and absent participants were given a "no-show" in SONA. To give credit to

participants, students had to sign in on a sign-in sheet upon arrival to the laboratory. While participants were completing their packets, the researcher used a laptop computer to assign credit through the SONA system. The sign-in sheet was immediately shredded after the data collection was completed to ensure participant confidentiality. The principle investigator (PI) of the study and one graduate research assistant were present during each data collection session due to the nature of the risk assessment detailed below.

Once all the participants arrived, the purpose of the study was explained, and each participant was given a written consent form. They were asked to read over the consent (including the risk and benefits) and a verbal request for any questions about the study or their rights as a research participant was presented to the participants. After all questions were answered, participants were asked to put a ✓ in a box at the conclusion of the consent form indicating if they gave (or did not gave) consent. Since the consent form was the only link between the identity of the participant and the present study, an application for waiver of documentation of informed consent was obtained and no names were collected on the consent form. Once consent was obtained, the researcher gave each participant a questionnaire packet to complete. The checkout procedure was explained to the group before the questionnaire packets were distributed.

The packet consisted of all the measures in the following sequence; LEIDS-R, IIA-18, AAQ-II, MSPSS, GHQ-28, CAGE-Modified. The order of measures was chosen to be consistent with the goals of the study. As noted above, to help guard against the potential effects of induced negative mood during the administration of LEIDS-R, it was followed by IIA-18. The participants were asked to come up to the PI and submit their packets one-by-one. Upon completion of their measures, each participant's answers were checked for risk of self-harm and

participants then were given the debriefing form (Appendix G) while being escorted out of the room. The participants were instructed to remain seated if they see someone standing with the PI submitting their packet.

It should also be noted that there are two items in the General Health Questionnaire-28 (GHQ-28), "Found yourself wishing you were dead and away from it all?" and "Found that the idea of taking your own life kept coming into your mind?" which are aimed at assessing suicidal ideation. When a participant gave the researcher his/her completed test packet, responses to these two items were checked before the participant were allowed to leave. The possible responses are 1(not at all), 2(no more than usual), 3 (rather more than usual) and 4 (much more than usual). As such, anyone who scored either 3 or 4 on the items for suicidality was given the additional suicidal screening and assessment of imminent risk.

Participants who answered either "3" or "4", to even one of these items, were escorted to a separate room by the PI (a clinical faculty member's laboratory), while the graduate research assistant remained in the research room, where a detailed suicide risk assessment was administered by the PI. Considering the potential breach of privacy or identification of the participant, each of the participant was escorted out of the subject-pool room by the PI. A debriefing form was provided to every participant while they are being escorted out of the room. Only those participants who answered either "3" or "4" to the mentioned questions were escorted to the separate research laboratory. This protocol made sure that the participant does not feel 'singled-out' as every participant went through the same process of checking out. Again, the PI and another research assistant were present at all times during the data collection; but risk assessment interview was only conducted by the PI. Dr. Michelle Leonard (a fully licensed psychologist) was also available for consultation and emergency situations. If the result of the

risk assessment suggested that the participant required professional help, s/he was escorted to the Office of Counseling and Disability Services by the PI, which is situated on campus. For this reason, participants were only allowed to complete the study during hours of operation of the Counseling and Disabilities Services Office. Out of the 106 participants, only one participant was escorted to the Counseling and Disability Services office.

The data were collected on the same floor of the College of Arts, Sciences, and Letters building where it was stored. Data did not leave the study room until ready to be taken to Dr. Leonard's laboratory where it was securely stored. To take the data down the hallway to the lab, all de-identified packets were placed in an unmarked envelope and carried by the PI from the Subject-Pool Room to Dr. Leonard's laboratory. The collected data was stored in locked cabinets in the lab of Dr. Michelle Leonard. Data were analyzed using the IBM Statistical Package for the Social Sciences (SPSS) – 24. The electronic copy of the collected data and the results of the statistical analysis of the study was stored in encrypted drives on the PI's password protected personal laptop machine.

Chapter III

Results

Data Screening

Prior to any data analysis the data were cleaned and examined for normalcy. As noted above, there were some issues with missing data. These were mainly at the specific item level and not the scale level. Based on the small number of these missing data points, these missing values were corrected with mean substitution. Analysis for skew were conducted and data from the Multidimensional Scale for Perceived Social Support was skewed, however there were no significant issues with the distribution with the data. In addition, data were checked and screened for univariate and multivariate outliers. Each of the measures had at least one univariate outlier and multivariate outlier analysis showed that there were eight multivariate outliers. Data analyses were run with and without the outliers present and it did not appear to be any appreciable difference in results and effects were in the/ same direction. Therefore, in order to preserve sample size, the full dataset was utilized.

To test the first three hypotheses, bivariate correlations were run between psychological inflexibility, cognitive reactivity, perceived social support and psychological distress. Independent sample *t*-tests were run between psychological inflexibility, cognitive reactivity, perceived social support; and substance use because the data from substance use was dichotomized. To test hypothesis four and five, hierarchical linear and logistic regressions were conducted to test the potential moderating effects outlined in these hypotheses.

Hypothesis 1: *Psychological inflexibility, (as measured by AAQ-II) will have a positive association with symptoms of psychological distress and substance use (as measured by GHQ and CAGE – Modified).*

This hypothesis was partially supported. The correlations between psychological inflexibility and psychological distress are shown in Table 1. As it can be seen, there was significant positive correlation between psychological inflexibility and psychological distress($r =$ .67, $p < .01$). Additionally, t-tests failed to reveal a significant difference on levels of psychological flexibility and between those at risk for problematic drinking behavior ($M = 37.78$, $SD = 11.58$) and those who do not appear to be at risk for problematic drinking behavior ($M = 34.41$, $SD = 11.07$) as measured by CAGE ($t (104) = 1.36$, $p = .17$). However, it must be noted that the means were in the expected directions.

Hypothesis 2: *Cognitive Reactivity (as measured by LEIDS) will have a positive association with symptoms of psychological distress and substance use (as measured by GHQ and CAGE-Modified).*

This hypothesis was partially supported. The correlations between cognitive reactivity and psychological distress are shown in Table 1. As it can be seen, there was significant positive correlation between cognitive reactivity and psychological distress($r = .54$, $p < .01$). Additionally, t-tests failed to reveal a significant difference on levels of cognitive reactivity and between those at risk for problematic drinking behavior ($M = 67.93$, $SD = 15.56$) and those who do not appear to be at risk for problematic drinking behavior ($M = 63.09$, $SD = 14.39$) as measured by CAGE ($t (104) = 1.49$, $p = .13$). Again, however, it can be noted that the means were in the expected directions.

Hypothesis 3: *Perceived social support (as measured by MSPSS) will have a negative association with symptoms of psychological distress and substance use (as measured by GHQ and CAGE – Modified).*

This hypothesis was partially supported. The correlations between perceived social support and psychological distress are shown in Table 1. As it can be seen, there was significant negative correlation between perceived social support and psychological distress(r = -.24, p < .05). Additionally, *t*-tests failed to reveal a significant difference on levels of perceived social support and between those at risk for problematic drinking behavior (M = 5.35, SD = 1.09) and those who do not appear to be at risk for problematic drinking behavior (M = 5.42, SD = 1.08) for substance use; as measured by CAGE (t (104) = -.30, p = .66).

Hypothesis 4: *There will be a negative association between perceived social support and symptoms of psychological distress and substance use, and this association will be moderated by psychological inflexibility.*

Hierarchical linear regression analysis revealed that main effects for psychological inflexibility was significant, β = .59, t (3) = 8.69, p < .001; but not significant for perceived social support. The interaction term between these variables was also not significant (see Table 3). Results of the binary logistic regression indicated that there was no significant association between perceived social support, substance use and psychological inflexibility (χ_2 (2) = 1.90, p = .38).

Hypothesis 5: *There will be a negative association between perceived social support and symptoms of psychological distress and substance use, and this association will be moderated by cognitive reactivity.*

Hierarchical linear regression analysis revealed that main effects for cognitive reactivity was significant, $\beta = .35$, $t(3) = 5.95$, $p < .001$; but not significant for perceived social support. The interaction term between these variables was also not significant (see Table 3). Results of the binary logistic regression indicated that there was no significant association between perceived social support, substance use and cognitive reactivity ($\chi_2(2) = 2.33$, $p = .31$).

Chapter IV

Discussion

Emerging adulthood is a period of development that has been gaining attention in the literature. Initially, Erickson (1968) referred to it as *psychosocial moratorium* and this has been more recently expanded on by Arnett (2000), who proposed the theory of emerging adulthood. According to this theory during this time, there is a great potential for the experience of negative life events (e.g., moving away from family, end of a significant romantic relationship) during the time of emerging adulthood. There is significant literature to support that negative life events are associated with psychological distress and substance use in young adults (Cheney et al., 2018); however, social support has been known to buffer the effects of negative life events on distress. Intra-individual variables associated with mindfulness (psychological inflexibility and cognitive reactivity), may also be related to distress. Therefore, the current study aimed to assess if constructs like psychological inflexibility and cognitive reactivity moderates the relationship between psychological distress and problematic drinking behavior to perceived social support among the first-year students who are going through the transition of emerging adulthood.

Hypothesis 1: *Psychological inflexibility, (as measured by AAQ-II) will have a positive association with symptoms of psychological distress and substance use (as measured by GHQ and CAGE – Modified).*

It was expected that psychological inflexibility would have a positive association with psychological distress and problematic drinking behavior. This hypothesis was supported as it was found that psychological inflexibility has a strong positive association with psychological

distress. This means, individuals with higher levels of psychological inflexibility likely experience higher levels of psychological distress too. Given that these findings are cross sectional in nature it is unclear if inflexibility precedes distress of if distress blocks an individual's ability to have more psychological flexibility. However, Powers, Zum Vörde Sive Vörding, and Emmelkamp (2009) conducted a meta-analysis of efficacy studies for Acceptance and Commitment Therapy (ACT) and found that individuals who were able to improve on their psychological flexibility had better mental health outcomes than before, suggesting that temporally this association is directional in nature. Future studies can focus on breaking down the relational frame theory (Hayes, 2004) into its six main facets and examining which facet has the most impact on improving psychological flexibility of an individual. Future studies can also focus on developing and assessing the efficacy of brief mindfulness-based interventions specially designed for the emerging adult populations considering that this population is 'always on the go'.

In terms of drinking behavior, the hypothesis was not supported, however, as there was no statistically significant difference in levels of psychological inflexibility for those who were identified as at risk for problematic drinkers and those who were not. However, it must be noted that the means of these groups were in the expected directions (i.e. the mean scores for psychological inflexibility for the problematic drinking behavior group were higher than the mean scores for psychological inflexibility for the non-problematic drinking behavior group). It maybe that individuals with higher psychological inflexibility resort to negative coping mechanisms like problematic drinking behavior.

A possible explanation for the lack of significance for this portion of the hypothesis involves the size of the problematic drinking group. As mentioned earlier, there were only 28

participants in the problematic drinking behavior group, leading to an underpowered analysis of the constructs. Alternatively, the data collection took place at university campus situated in Dearborn, MI. According to U.S. Census Bureau, Census 2000, Dearborn's total population is constituted of 29.85% Arab Americans, making Dearborn one of the cities with the largest Arab American population in the United States. Consequently, a large population of the sample was non-drinking Muslim Americans, skewing the data with non-problematic drinking behavior participants (N=78). Unfortunately, data on the religious beliefs of the sample was not collected, but findings from Arfken, Arnetz, Fakhouri, Ventimiglia and Jamil (2011) supports this assumption. Arfken et al. (2011) reports that alcohol use rates in Arab Americans are 50.8% lower than their Caucasians counterparts. It may be beneficial for future studies to examine other types of substance using including smoking, which may be more common in samples such as the one for this study. Moreover, these findings may be different for other demographic groups.

Hypothesis 2: *Cognitive Reactivity (as measured by LEIDS) will have a positive association with symptoms of psychological distress and substance use (as measured by GHQ and CAGE-Modified).*

It was expected that cognitive reactivity would have a positive association with psychological distress and problematic drinking behavior. The elements of the hypothesis involving distress were supported as there was a strong positive correlation between cognitive reactivity and psychological distress. Although the findings do not suggest direction of the relationship, this could be interpreted similarly to psychological inflexibility, where if someone is experiencing psychological distress, helping them become less reactive will lead to alleviation in their distress levels. These results are consistent with the findings of Kuyken et al. (2010) who found that poor outcomes in depression symptoms can be predicted by higher levels of cognitive

reactivity. Cotton et al. (2016) was also able to replicate these findings with respect with adolescents with anxiety where after a 12-week MBCT program, both the patient and clinician ratings of patient anxiety reduced, meaning there is significant association between cognitive reactivity and psychological distress. Alternatively, having high psychological distress may influence one's ability to engage in emotion regulation strategies, leading to more reactivity to stressful life events/situations (Joormann and Gotlib, 2010). Future studies should examine the role of emotion regulation skills in the association between cognitive reactivity and psychological distress. Similarly, Berking, Margraf, Ebert, Wupperman, Hofmann and Junghanns (2011) found that decreased emotion regulation skill in the alcohol dependent population as opposed to the non-clinical population. Berking et al. (2011) suggested that goals directed towards improving tolerance of negative emotions due to daily stressful events can lead to better treatment outcomes for the alcohol dependent sample.

Similar to the findings for psychological inflexibility, there was no difference in cognitive reactivity between the non-problematic and risk for problematic drinking groups. However, again the means were in the expected directions for these groups albeit not significant. It is likely the some of the same factors of sample distribution and demographics also influenced the findings for this hypothesis.

Hypothesis 3: *Perceived social support (as measured by MSPSS) will have a negative association with symptoms of psychological distress and substance use (as measured by GHQ and CAGE – Modified).*

It was expected that perceived social support will have a negative association with psychological distress and problematic drinking behavior. Indeed, this hypothesis was supported by the results as there was strong negative correlation between perceived social support and

psychological distress. This means, individuals with higher levels of perceived social support will experience lower levels of psychological distress. Again, these findings are cross sectional in nature and do not indicate direction of the relationship; however, numerous studies have shown the support buffers against distress. For instance, Reid, Holt, Bowman, Espelage and Green (2016) found that perceived social support buffered the risk of developing anxiety and depressive symptoms among first-year college students during both the spring and fall semesters. Although there was a significant association to distress, social support did not appear to be an important distinction in the non-problematic and risk for problematic drinking groups.

As previous research has shown that social support does mediate the experience of alcohol use among college students. However, the results of this study indicate otherwise. The lack of significant relationship between perceived social support and problematic drinking behavior has been observed by various studies (Thompson, 2017; Harrell and Powell, 2014; Dulin, Hill and Ellingson, 2006). One factor that is common between all these studies and the current study is religious involvement among students. We believe that that these insignificant results are due to student's or their families' religious involvement. As mentioned the data were collected in a population where many of students are Muslim Americans which are known to strongly abide by the rules dictated in their printed religious doctrine. Studies have been able to positively link religious involvement with lower levels of drinking among college students (Harrell and Powell, 2014). Future studies can focus on assessing the mechanisms or believe systems behind religious involvement that prevent the emerging adults from engaging in problematic drinking behavior. Researchers can also focus on differentiating the emerging adult's religious beliefs with their parents' religious beliefs and how that affects their drinking behavior.

Hypothesis 4: *There will be a negative association between perceived social support and symptoms of psychological distress and substance use, and this association will be moderated by psychological inflexibility.*

Hypothesis 5: *There will be a negative association between perceived social support and symptoms of psychological distress and substance use, and this association will be moderated by cognitive reactivity.*

Due to similar findings for hypotheses four and five, both of them are discussed together. It was expected that perceived social support will have a negative association with psychological distress and problematic behavior and this association will be moderated by psychological inflexibility and cognitive reactivity. For both the moderators, the overall regression model predicted a significant amount of variance in psychological distress; however, this was mainly driven by the main effects of psychological inflexibility and cognitive reactivity. These findings support the results from previous hypotheses that psychological inflexibility and cognitive reactivity appear to be linked with the experience of psychological distress in the emerging adults. Since psychological inflexibility and cognitive reactivity did not moderate the relationship between perceived social support and psychological distress, future research can focus on determining the possible mechanisms behind social support and its effects on mental health.

One possible mechanism behind social support was proposed by Thoits (1986). Thoit suggested that social support can be reconceptualized as coping assistance, which means active involvement of significant figures in an individual's effort to manage the psychological distress. Thoits has conceptualized coping assistance as an combination of Lazarus and Folkman's (1984) problem-focused and emotion-focused ways of coping and House's (1981) types of social

support i.e. instrumental aid, socioemotional aid, and informational aid. Thoits theorizes that

social support might act like a coping mechinism where support from the individual's social

circle might help in changing the distress causing situation, or help in changing the emotional

reation to the situation, or help change the perception of the situation or help change all three.

Thoits (2011) further divides supporters into two categories – significant others and

experientially similar others, both of which have a very specific role in providing support.

Instrumental aid and emotionally sustaining behavior from significant others and informational

aid along with role modeling from similar others might be most effective countering the physical

and psychological effects of the distress (Thoits, 2011). As mentioned above, the sample for the

current study came from a relatively small commuter campus, there is a possibility that the

emerging adult population may or may not have received instrumental aid and positive role

modeling from their significant others and the community, alleviating or worsening the

symptoms of their psychological distress. Future research can further look into any possible

associations between psychological inflexibility and cognitive reactivity with the various social

support mechanisms, i.e. (social influence/social comparison, social control, role-based purpose

and meaning, self-esteem, sense of control, belonging and companionship and perceived social

avialability; Thoits, 2011).

It was also expected that the negative assocaition between percieved social support and

problematic drinking behavior will be moderated by psychological inflexibility and cognitive

reactivity. Binary logistic regression results showed that psychological inflexibility and cognitive

reactivity did not moderate the said relationship. The possible reason behind these insignificant

results with problematice drinking behavior might be scale used to assess this construct. The

itmes on the CAGE are designed in a way that helps clinicians identify patients with a possible

substance use disorder. Hence, they are worded in way which might act as an eye-opener in itself for these emerging adults, pushing them towards responding in way which makes them look more socially desireable. Carpenter and Howard (2009) assessed the psychometric properties of the drug use resistance self-efficacy (DURSE) scale. Apart from the results related to the self-efficacy of DURSE, Carpenter and Howard also found that DURSE scores were correlated with the scores on a self-desirability measure, meaning that the student population might have responded to the sensitive nature of the drug use question. For the current study this same effect may be at play and students might have been hesitant to disclose substance use, to make them look socially more desireable. Due to this social desireability bias participants might not have responded as truthfully as we would like them to be.

Strengths and Limitations of the Current Study

Limitations. There were several limitations of the current study. First, as previously noted, the sample consisted of undergraduate students at the University of Michigan- Dearborn which is not a residential campus. Many students choose the University of Michigan – Dearborn as this campus will allow for them to still reside with their families which still provides them with a solid perception of social support, probably making this sample non-ideal to test the association between perceived social support and mental health outcomes. Future research can be directed towards assessing factors that makes the emerging adult population in Dearborn have a strong sense of perceived social support.

Also, as noted above, Dearborn has a large Arab-American population, which may make generalizations from the findings limited and it may have limited the examinations of substance use. Secondly, the data from CAGE was dichotomized, giving us a polarized sample of very large number of non-risk participants (N=78) and a very small number of at-risk participants

(N=28). Due to this polarization we were unable to get statistical significance in all five hypotheses involving data from CAGE.

Moreover, many of the participants in the study may not have been of legal drinking age and either not had experience with alcohol consumption or were responding to pressures to underreport drinking behavior or to look socially desirable. Brenner and DeLamater (2016) talk about social desirability bias in their research and posits that participants respond to self-report measures in a way that makes look prosocial and desirable to the researchers. As discussed earlier, due to this social desireability bias participants might not have responded as truthfully as we would like them to be.

Another considerable limitation for the study was the lack of demographic data. Although this choice was made to protect the participants given the nature of the measures, it may be that some variables (e.g., gender) could have been fruitful in enhancing the knowledge in this area. Finally, this is a cross-sectional study which means that we cannot determine a cause and effect relationship among the variables. Our results show that psychological inflexibility and cognitive reactivity are associated with psychological distress, but this does not provide us information regarding the direction of the relationship. Future research can focus on finding the direction of this relationship i.e. researchers can focus on whether higher levels of psychological distress leads to higher levels of psychological inflexibility or higher levels of psychological inflexibility leads to higher levels of psychological distress. The same can be done with cognitive reactivity.

Strengths. Arnett (2016) pointed out that most of the studies conducted on the emerging adult population are based on the sample from a 4-year residential college program, meaning that those samples might not be a true representation of the emerging adult population. Even though

this has been mentioned in the limitations of the study, this sample is nonetheless unique as it is not from a residential college which is predominantly neither White. Secondly, there has been a significant increase in scientific interest towards mindfulness-based interventions (Goldberg, Tucker, Greene, Simpson, Kearney and Davidson, 2017) and this study is a timely addition to the literature, as it is one of its kinds where the researchers have broken down the umbrella term of mindfulness into its core constructs of psychological flexibility and cognitive reactivity. This can help guide further research into the mechanisms of how mindfulness helps to improve on several different mental health issues.

Implications. We also know that the emerging adult population is more vulnerable than other towards experiencing various forms of psychological distress (Kessler et al., 2012). Keeping that in mind, this study focuses specifically on the emerging adult population in efforts to understand the underlying cause of this high vulnerability. Findings from this study can in applied in both the academic and clinical settings as we encourage researchers and clinicians to develop more mindfulness-based therapy modules which are directed towards making this emerging adult population more psychologically flexible and less cognitively reactive. This could ensure better mental health outcomes for emerging adults along with increasing academic success for students (e.g. higher grades) and universities (e.g. higher graduation rates).

References

American Psychiatric Association, and American Psychiatric Association. DSM-5 Task Force. (2013). Diagnostic and statistical manual of mental disorders: DSM-5 (5th ed.). Arlington, VA: American Psychiatric Association.

Amital, D., Fostick, L., Silberman, A., Beckman, M., and Spivak, B. (2008). Serious life events among resistant and non-resistant MDD patients. *Journal of Affective Disorders*, 110(3), 260-264. doi:10.1016/j.jad.2008.01.006

Arfken, C. L., Arnetz, B. B., Fakhouri, M., Ventimiglia, M. J., and Jamil, H. (2011). Alcohol use among arab americans: What is the prevalence? *Journal of Immigrant and Minority Health*, 13(4), 713-718. doi:10.1007/s10903-011-9447-8

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55(5), 469-480. doi:10.1037/0003-066X.55.5.469

Arnett, J. J. (2001). Conceptions of the transition to adulthood: Perspectives from adolescence through midlife. *Journal of Adult Development*, 8(2), 133-143. doi:10.1023/A:1026450103225

Arnett, J. J. (2016). College students as emerging adults: The developmental implications of the college context. *Emerging Adulthood*, 4(3), 219-222. doi:10.1177/2167696815587422

A-Tjak, J. G. L., Davis, M. L., Morina, N., Powers, M. B., Smits, J. A. J., and Emmelkamp, P. M. G. (2015). A meta-analysis of the efficacy of acceptance and commitment therapy for clinically relevant mental and physical health problems. *Psychotherapy and Psychosomatics*, 84(1), 30-36. doi:10.1159/000365764

Baggio, S., Studer, J., Iglesias, K., Daeppen, J., and Gmel, G. (2017;2016;). Emerging adulthood: A time of changes in psychosocial well-being. *Evaluation and the Health Professions*, 40(4), 383-400. doi:10.1177/0163278716663602

Barnhofer, T., & Chittka, T. (2010). Cognitive reactivity mediates the relationship between neuroticism and depression. *Behaviour Research and Therapy*, 48(4), 275-281. doi:10.1016/j.brat.2009.12.005

Beck, A. T. (2008). The evolution of the cognitive model of depression and its neurobiological correlates. *American Journal of Psychiatry*, 165(8), 969-977.

Berking, M., Margraf, M., Ebert, D., Wupperman, P., Hofmann, S. G., and Junghanns, K. (2011). Deficits in emotion-regulation skills predict alcohol use during and after

cognitive-behavioral therapy for alcohol dependence. *Journal of Consulting and Clinical Psychology*, 79(3), 307-318. doi:10.1037/a0023421

Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., . . . Zettle, R. D. (2011). Preliminary psychometric properties of the acceptance and action Questionnaire–II: A revised measure of psychological inflexibility and experiential avoidance.*Behavior Therapy*, 42(4), 676-688. doi:10.1016/j.beth.2011.03.007

Brady, E. U., and Kendall, P. C. (1992). Comorbidity of anxiety and depression in children and adolescents. *Psychological Bulletin*, 111(2), 244-255. doi:10.1037/0033-2909.111.2.244

Brenner, P. S., and DeLamater, J. (2016). Lies, damned lies, and survey self-reports? identity as a cause of measurement bias. Social Psychology Quarterly, 79(4), 333-354. doi:10.1177/0190272516628298

Brown, G. W. 1., & Harris, T. O. (1978). Social origins of depression: A study of psychiatric disorder in women (1st American ed.). New York: Free Press.

Burstein, M., Beesdo-Baum, K., He, J., and Merikangas, K. R. (2014). Threshold and subthreshold generalized anxiety disorder among US adolescents: Prevalence, sociodemographic, and clinical characteristics. *Psychological Medicine*, 44(11), 2351-2362. doi:10.1017/S0033291713002997

Byrne, D. G., Byrne, A. E., and Reinhart, M. I. (1995). Personality, stress and the decision to commence cigarette smoking in adolescence. *Journal of Psychosomatic Research*, 39(1), 53-62.

Call, K. T., and Nonnemaker, J. (1999). Socioeconomic disparities in adolescent health: Contributing factors. *Journal of Health and Social Behavior*, 896, 352-355.

Carliner, H., Keyes, K. M., McLaughlin, K. A., Meyers, J. L., Dunn, E. C., and Martins, S. S. (2016). Childhood trauma and illicit drug use in adolescence: A population-based National Comorbidity Survey Replication - Adolescent Supplement Study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 55(8), 701-708.

Carpenter, C. M., and Howard, D. (2009). Development of a drug use resistance self-efficacy (DURSE) scale. *American Journal of Health Behavior*, 33(2), 147.

Chang, E. C., Chang, O. D., Martos, T., Sallay, V., Lee, J., Stam, K. R., . . . Yu, T. (2017). Family support as a moderator of the relationship between loneliness and suicide risk in college students: Having a supportive family matters. *The Family Journal*, 25(3), 257-263. doi:10.1177/1066480717711102

Cheney, M. K., Oman, R. F., Vesely, S. K., Aspy, C. B., and Tolma, E. L. (2014). Prospective associations between negative life events and adolescent tobacco use. *American Journal of Health Behavior*, 38(6), 942-950.

Cheney, M. K., Vesely, S. K., Aspy, C. B., Oman, R. F., and Tolma, E. L. (2018). Prospective associations between negative life events and adolescent alcohol use. *Journal of Alcohol and Drug Education*, 62(1), 8-26.

Cohen, S. (2004). Social relationships and health. *American Psychologist*, 59(8), 676-684. doi:10.1037/0003-066X.59.8.676

Cotton, S., Luberto, C. M., Sears, R. W., Strawn, J. R., Stahl, L., Wasson, R. S., . . . Delbello, M. P. (2016). Mindfulness-based cognitive therapy for youth with anxiety disorders at risk for bipolar disorder: A pilot trial. *Early Intervention in Psychiatry*, 10(5), 426-434. doi:10.1111/eip.12216

Daniel, S. S., Goldston, D. B., Erkanli, A., Heilbron, N., and Franklin, J. C. (2016). Prospective study of major loss life events and risk for suicidal thoughts and behaviors among adolescents and young adults. *Suicide and Life-Threatening Behavior*, doi: 10.1111/ sltb.12305.

Dulin, P. L., Hill, R. D., and Ellingson, K. (2006). Relationships among religious factors, social support and alcohol abuse in a western U.S. college student sample.(letter to the editor).*Journal of Alcohol and Drug Education*, 50(1), 5.

Elsenburg, L. K., Smidt, N., and Liefbroer, A. C. (2016). The longitudinal relation between accumulation of adverse life events and body mass index from early adolescence to young adulthood. *Psychosomatic Medicine*, 79(365-373).

Erikson, E. H. 1. (1968). Identity, youth, and crisis (1st ed.). New York: W. W. Norton.

Essau, C. A., Lewinsohn, P. M., Olaya, B., and Seeley, J. R. (2014). Anxiety disorders in adolescents and psychosocial outcomes at age 30. *Journal of Affective Disorders*, 163, 125-132. doi:10.1016/j.jad.2013.12.033

Ewing, J. A., & Ewing, J. A. (1984). Detecting alcoholism: The CAGE questionnaire. *Journal of the American Medical Association*, 252(14), 1905-1907. doi:10.1001/jama.252.14.1905;10.1001/jama.1984.03350140051025;

Faul, F., Erdfelder, E., Lang, A., & Buchner, A. (2007). GPower 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175-191. doi:10.3758/BF03193146

Fiori, K. L., and Consedine, N. S. (2013). Positive and negative social exchanges and mental health across the transition to college: Loneliness as a mediator. *Journal of Social and Personal Relationships*, 30(7), 920-941. doi:10.1177/0265407512473863

Fusar-Poli, P., Nelson, B., Valmaggia, L.,Yung, A.R., McGuire, P.K. (2014). Comorbid Depressive and Anxiety Disorders in 509 Individuals With an At-Risk Mental State:

Impact on Psychopathology and Transition to Psychosis. *Schizophrenia Bulletin*, Volume 40, Issue 1 (1), 120–131. doi.org/10.1093/schbul/sbs136

Ge, X., Lorenz, F. O., Conger, R. D., Elder, G. H., and Simons, R. L. (1994). Trajectories of stressful life events and depressive symptoms during adolescence. *Developmental Psychology*, 30(4), 467-483. doi:10.1037/0012-1649.30.4.467

Ge, X., Natsuaki, M. N., and Conger, R. D. (2006). Trajectories of depressive symptoms and stressful life events among male and female adolescents in divorced and nondivorced families. *Development and Psychopathology*, 78(1), 253-273.

Ghazali, S. R., Elklit, A., Sultan, M. A., Balang, R. V., and Chen, Y. Y. (2016). Lifetine trauma exposure, gender, and DSM-5 PTSD symptoms among adolescents in Malaysia. *Traumatology*. Advance online publication. doi:10.1037/trm0000088

Goldberg, D. P., & Hillier, V. F. (1979). A scaled version of the General Health Questionnaire. *Psychological medicine*, 9(1), 139-145.

Goldberg, S. B., Tucker, R. P., Greene, P. A., Simpson, T. L., Kearney, D. J., and Davidson, R. J. (2017). Is mindfulness research methodology improving over time? A systematic review.*PLoS One*, 12(10), e0187298. doi:10.1371/journal.pone.0187298

Hakulinen, C., Pulkki-Råback, L., Jokela, M., E Ferrie, J., Aalto, A.-M., Virtanen, M., . . . Elovainio, M. (2016). Structural and functional aspects of social support as predictors of mental and physical health trajectories: Whitehall II cohort study. *Journal of Epidemiology and Community Health, 70*(7), 710-715. doi: 10.1136/jech-2015-206165

Harrell, Z.A. and Powell, K. (2014). The relationship between parent and student religious coping and college alcohol use. *Journal of Religion and Health*, 53(3), 895-903. doi:10.1007/s10943-013-9683-4

Hayes, S. C. (2004). Acceptance and commitment therapy, relational frame theory, and the third wave of behavioral and cognitive therapies. *Behavior Therapy*, 35(4), 639-665. doi:10.1016/S0005-7894(04)80013-3

Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of psychosomatic research*, 11(2), 213-218.

House, J. S. (1981). *Work stress and social support*. Reading, MA: Addison-Wesley.

Ingram, R. E., & Ritter, J. (2000). Vulnerability to depression: Cognitive reactivity and parental bonding in high-risk individuals. *Journal of Abnormal Psychology*, 109(4), 588-596.

Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2007). Monitoring the future national survey results on drug use, 1975-2006. Volume II: College students and adults ages 19-45.

Joormann, J., and Gotlib, I. H. (2010). Emotion regulation in depression: Relation to cognitive inhibition. *Cognition and Emotion*, 24(2), 281-298. doi:10.1080/02699930903407948

Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical psychology review*, 30(7), 865-878.

Kena, G., Aud, S., Johnson, F., Wang, X., Zhang, J., Rathbun, A., Wilkinson-Flicker, S., and Kristapovich, P. (2014). The Condition of Education 2014 (NCES 2014-083). *U.S. Department of Education, National Center for Education Statistics*. Washington, DC. Retrieved from http://nces.ed.gov/pubsearch.

Kessler, R. C., Angermeyer, M., Anthony, J. C., De Graaf, R. O. N., Demyttenaere, K., Gasquet, I., ... & Kawakami, N. (2007). Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey Initiative. *World psychiatry*, 6(3), 168.

Kessler, R. C., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., and Wittchen, H. (2012). Twelve-month and lifetime prevalence and lifetime morbid risk of anxiety and mood disorders in the united states. *International Journal of Methods in Psychiatric Research*, 21(3), 169-184. doi:10.1002/mpr.1359

King, K. M., and Chassin, L. (2008). Adolescent stressors, psychopathology and young adult substance dependence: A prospective study. *Journal of Studies on Alcohol and Drugs*, 69, 629-638.

Kitzrow, M. A. (2003). The mental health needs of today's college students: Challenges and recommendations. *NASPA journal*, 41(1), 167-181.

Kuyken, W., Warren, F. C., Taylor, R. S., Whalley, B., Crane, C., Bondolfi, G., . . . Dalgleish, T. (2016). Efficacy of mindfulness-based cognitive therapy in prevention of depressive relapse: An individual patient data meta-analysis from randomized trials. *JAMA Psychiatry*, 73(6), 565-574. doi:10.1001/jamapsychiatry.2016.0076

Kuyken, W., Watkins, E., Holden, E., White, K., Taylor, R. S., Byford, S., . . . Dalgleish, T. (2010). How does mindfulness-based cognitive therapy work? *Behaviour Research and Therapy*, 48(11), 1105-1112. doi:10.1016/j.brat.2010.08.003

Lai, H. M. X., Cleary, M., Sitharthan, T., and Hunt, G. E. (2015). Prevalence of comorbid substance use, anxiety and mood disorders in epidemiological surveys, 1990–2014: A systematic review and meta-analysis. *Drug and Alcohol Dependence*, 154, 1-13. doi:10.1016/j.drugalcdep.2015.05.031

Lazarus, R. S., and Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

Lee, C., Dickson, D., Conley, C., and Holmbeck, G. (2014). a closer look at self-esteem, perceived social support, and coping strategy: A prospective study of depressive

symptomatology across the transition to college. *Journal of Social and Clinical Psychology*, 33(6), 560-585. doi:10.1521/jscp.2014.33.6.560

Levens, S. M., Elrahal, F., and Sagui, S. J. (2016). The role of family support and perceived stress reactivity in predicting depression in college freshman. *Journal of Social and Clinical Psychology*, 35(4), 342.

Lloyd, D. A., and Turner, R. J. (2007;2008;). Cumulative lifetime adversities and alcohol dependence in adolescence and young adulthood. *Drug and Alcohol Dependence*, 93(3), 217-226. doi:10.1016/j.drugalcdep.2007.09.012

Lloyd, D. A., and Turner, R. J. (2008). Cumulative lifetime adversities and alcohol dependence in adolescence and young adulthood. *Drug and Alcohol Dependence*, 93(3), 217-226.

Low, N. C., Dugas, E., O'Loughlin, E., Rodriguez, D., Contreras, G., Chaiton, M., and O'Loughlin, J. (2012). Common stressful life events and difficulties are associated with mental health symptoms and substance use in young adolescents. *BMC Psychiatry*, 12(1), 116-116. doi:10.1186/1471-244X-12-116

Mackin, D. M., Perlman, G., Davila, J., Kotov, R., and Klein, D. N. (2016;2017;). Social support buffers the effect of interpersonal life stress on suicidal ideation and self-injury during adolescence. *Psychological Medicine*, 47(6), 1-13. doi:10.1017/S0033291716003275

Mackin, D. M., Perlman, G., Davila, J., Kotov, R., and Klein, D. N. (2017). Social support buffers the effect of interpersonal life stress on suicidal ideation and self-injury during adolescence. *Psychological Medicine*, 47, 1149-1161.

Marum, G., Clench-Aas, J., Nes, R. B., and Raanaas, R. K. (2014). The relationship between negative life events, psychological distress and life satisfaction: A population-based study.*Quality of Life Research*, 23(2), 601-611. doi:10.1007/s11136-013-0512-8

Meng, H., Huang, P., Hou, N., and Fan, J. (2015). Social self-efficacy predicts chinese college students' first-year transition: A four-wave longitudinal investigation. *Journal of Career Assessment*, 23(3), 410-426. doi:10.1177/1069072714547482

Moreira, J. F. G., & Telzer, E. H. (2015). Changes in family cohesion and links to depression during the college transition. *Journal of adolescence*, 43, 72-82.

Murphy, J. G., & Dennhardt, A. A. (2016). The behavioral economics of young adult substance abuse. *Preventive medicine*, 92, 24-30.

Natsuaki, M. N., Ge, X., Brody, G. H., Simons, R. L., Gibbons, F. X., and Cutrona, C. E. (2007). African American children's depressive symptoms: The prospective effects of neighborhood disorder, stressful life events and parenting. *American Journal of Community Psychology*, 59(1-2), 163-176.

NIDA. (2015, June 25). Nationwide Trends. Retrieved from
https://www.drugabuse.gov/publications/drugfacts/nationwide-trends on 2017, September
10.

Pharo, H., Sim, C., Graham, M., Gross, J., and Hayne, H. (2011). Risky business: Executive
function, personality, and reckless behavior during adolescence and emerging adulthood.
Behavioral Neuroscience, 125(6), 970-978. doi:10.1037/a0025768

Powers, M. B., Zum Vörde Sive Vörding, Maarten B, and Emmelkamp, P. M. G. (2009).
Acceptance and commitment therapy: A meta-analytic review. *Psychotherapy and
Psychosomatics*, 78(2), 73-80. doi:10.1159/000190790

Reid, G. M., Holt, M. K., Bowman, C. E., Espelage, D. L., and Green, J. G. (2016). Perceived
social support and mental health among first-year college students with histories of
bullying victimization. *Journal of Child and Family Studies*, 25(11), 3331-3341.
doi:10.1007/s10826-016-0477-7

Reyes-Rodríguez, M. L., Rivera-Medina, C. L., Cámara-Fuentes, L., Suárez-Torres, A., and
Bernal, G. (2012;2013;). Depression symptoms and stressful life events among college
students in puerto rico. *Journal of Affective Disorders*, 145(3), 324-330.
doi:10.1016/j.jad.2012.08.010

Scher, C. D., Ingram, R. E., & Segal, Z. V. (2005). Cognitive reactivity and vulnerability:
Empirical evaluation of construct activation and cognitive diatheses in unipolar
depression. *Clinical Psychology Review*, 25(4), 487-510.

Segal, Z. V., Kennedy, S., Gemar, M., Hood, K., Pedersen, R., & Buis, T. (2006). Cognitive
reactivity to sad mood provocation and the prediction of depressive relapse. *Archives of
General Psychiatry*, 63(7), 749-755.

Simantov, E., Schoen, C., and Klein, J. D. (2000). Health-compromising behavior: Why do
adolescents smoke or drink? *Archives of Pediatrics and Adolescent Medicine*, 154(10),
1025-1033.

Siqueira, L., Diab, M., Bodian, C., and Rolnitzky, L. (2000). Adolescents becoming smokers:
The roles of stress and coping methods. *Journal of Adolescent Health*, 27(6), 399-408.

Stikkelbroek, Y., Bodden, D. H. M., Kleinjan, M., Reijnders, M., and Baar, A. L. v. (2016).
Adolescent depression and negative life events, the mediating role of cognitive emotion
regulation. *Plos One*, 11(8), e0161062. doi:10.1371/journal.pone.0161062

Swearingen, E. M., and Cohen, L. H. (1985). Life events and psychological distress: A
prospective study of young adolescents. *Developmental Psychology*, 21(6), 1045-1054.

Takizawa, T., Kondo, T., Sakihara, S., Ariizumi, M., Watanabe, N., and Oyama, H. (2006).
Stress buffering effects of social support on depressive symptoms in middle age:

Reciprocity and community mental health. *Psychiatry and Clinical Neurosciences*, 60(6), 652-661. doi:10.1111/j.1440-1819.2006.01579.x

Talwar, P. (2016). The moderating effect of perceived social support on stress and depression among university students. *Online Journal of Health and Allied Sciences*, 15(3)

Taylor, P. J., El-Sabawi, T., & Cangin, C. (2016). Cut Down, Annoyed, Guilty, Eye Opener Questionnaire--Modified. *Psyctests*, doi:10.1037/t52510-000

Thoits, P. A. (1986). Social support as coping assistance. *Journal of Consulting and Clinical Psychology*, 54(4), 416-423. doi:10.1037/0022-006X.54.4.416

Thoits, P. A. (2011). Mechanisms linking social ties and support to physical and mental health. *Journal of Health and Social Behavior*, 52(2), 145-161. doi:10.1177/0022146510395592

Thompson, W. E. (2017). Social Support, Religious Involvement and Alcohol Use among Students at a Conservative Religious University. *Behavioral Sciences*, 7(2), 34. http://doi.org/10.3390/bs7020034

U.S. Census Bureau (2000). *The Arab Population: 2000.* Retrieved from https://www.census.gov/prod/2003pubs/c2kbr-23.pdf

U.S. Department of Health and Human Services, National Institutes of Health, National Institute of Mental Health. (2015). Depression (NIH Publication No. 15-3561). Bethesda, MD: U.S. Government Printing Office.

Van der Does, W. (2002). Cognitive reactivity to sad mood: Structure and validity of a new measure. *Behaviour Research and Therapy*, 40(1), 105-119.

Wichers, M., Maes, H. H., Jacobs, N., Derom, C., Thiery, E., and Kendler, K. S. (2012). Disentangling the causal inter-relationship between negative life events and depressive symptoms in women: A longitudinal twin study. *Psychological Medicine*, 42(9), 1-14. doi:10.1017/S003329171100300X

Wills, T. A., Sandy, J. M., Yeager, A. M., Cleary, S. D., and Shinar, O. (2001). Coping dimensions, life stress and adolescent substance use: A latent growth analysis. *Journal of Abnormal Psychology*, 110(2), 309-323.

Wood, D., Crapnell, T., Lau, L., Bennett, A., Lotstein, D., Ferris, M., and Kuo, A. (2017). Emerging adulthood as a critical stage in the life course. doi:10.1007/978-3-319-47143-3_7

Zhang, H., Gao, T., Gao, J., Kong, Y., Hu, Y., Wang, R., and Mei, S. (2017). A comparative study of negative life events and depressive symptoms among healthy older adults and

older adults with chronic disease. *International Journal of Social Psychiatry*, 63(8), 699-707. doi:10.1177/0020764017736543

Zhang, R. (2017). The stress-buffering effect of self-disclosure on facebook: An examination of stressful life events, social support, and mental health among college students. *Computers in Human Behavior*, 75, 527-537. doi:10.1016/j.chb.2017.05.043

Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of personality assessment*, 52(1), 30-41.

Zimet, G. D., Powell, S. S., Farley, G. K., Werkman, S., & Berkoff, K. A. (1990). Psychometric characteristics of the multidimensional scale of perceived social support. *Journal of personality assessment*, 55(3-4), 610-617.

Tables

Table 1.
Correlations between Psychological Distress, Perceived Social Support, Psychological Flexibility, and Cognitive Reactivity.

Measure	Mean	Standard Deviation	Correlations			
			1	2	3	4
GHQ - 28	28.95	9.99	1.00	-.24*	.55**	.68**
MSPSS	5.4	1.08	-	1.00	-.37**	-.33**
AAQ – II	64.37	14.79	-	-	1.00	.66**
LEIDS - R	35.3	11.25	-	-	-	1.00

*Note: GHQ – 28 = General Health Questionnaire – 28; MSPSS = Multidimensional Scale for Perceived Social Support; AAQ – II = Acceptance and Action Questionnaire – II; LEIDS – R = Leiden Index for Depression Sensitivity – Revised. ** = p<.01, * = p<.05.*

Table 2.
Independent Sample t-tests between Perceived Social Support, Psychological Flexibility, and Cognitive Reactivity and Problematic Drinking Behavior.

Measure	CAGE	N	M	SD	t	p
LEIDS-R	At-Risk	28	67.93	15.56	1.49	0.13
	Not At-Risk	78	63.09	14.39	1.43	0.15
	CAGE					
AAQ-II	At-Risk	28	37.78	11.58	1.36	0.17
	Not At-Risk	78	34.41	11.07	1.33	0.18
	CAGE					
MSPSS	At-Risk	28	5.35	1.09	-0.3	0.76
	Not At-Risk	78	5.42	1.08	-0.3	0.76

*Note: CAGE = Cut-Down, Annoyed, Guilty, Eye-Opener Questionnaire; MSPSS = Multidimensional Scale for Perceived Social Support; AAQ – II = Acceptance and Action Questionnaire – II; LEIDS – R = Leiden Index for Depression Sensitivity – Revised. ** = p<.01, * = p<.05.*

Table 3.
Hierarchical Linear Regression of Perceived Social Support, Psychological Inflexibility, and Cognitive Reactivity in predicting Psychological Distress.

Dependent Variable	Step	Predictor	R	R^2	ΔR^2	B	β	t
GHQ	1		.68	.46	.45	--	--	--
		AAQ-II	--	--	--	.60	.67	8.80**
		MSPSS	--	--	--	-.16	-.02	-.23
	2		.68	.47	.45	--	--	--
		AAQ-II	--	--	--	.60	.68	8.80**
		MSPSS	--	--	--	-.05	-.01	-.07
		AAQxMSPSS	--	--	--	-.869	-.10	-1.30
GHQ	1		.55	.30	.29	--	--	--
		MSPSS	--	--	--	-.40	-.44	-.50
		LEIDS-R	--	--	--	.35	.53	6.00**
	2		.55	.30	.28	--	--	--
		MSPSS	--	--	--	-.40	-.04	-.48
		LEIDS-R	--	--	--	.36	.53	6.00**
		LEIDSRxMSPSS	--	--	--	.17	.20	.23

*Note: GHQ – 28 = General Health Questionnaire – 28; MSPSS = Multidimensional Scale for Perceived Social Support; AAQ – II = Acceptance and Action Questionnaire – II; LEIDS – R = Leiden Index for Depression Sensitivity – Revised; AAQxMSPSS = interaction term between psychological inflexibility and perceived social support. LEIDSRxMSPSS = interaction term between cognitive reactivity and perceived social support. ** = p<.01, * = p<.05.*

Table 4.
Binary Logistic Regression of Perceived Social Support, Psychological Inflexibility, and Cognitive Reactivity in predicting problematic drinking behavior.

		B	Wald	Exp(B)	Sig.
CAGE	MSPSS	-0.03	0.023	0.96	0.88
	AAQ	-0.02	1.77	0.97	0.18
	Constant	2.22	1.89	9.26	0.16
CAGE	MSPSS	-0.06	0.07	0.93	0.78
	LEIDS-R	-0.02	2.14	0.97	0.14
	Constant	2.98	2.3	19.86	0.12

*Note: CAGE = Cut-Down, Annoyed, Guilty, Eye-Opener Questionnaire; MSPSS = Multidimensional Scale for Perceived Social Support; AAQ – II = Acceptance and Action Questionnaire – II; LEIDS – R = Leiden Index for Depression Sensitivity – Revised. ** = p<.01, * = p<.05.*

Appendix A: Action and Acceptance Questionnaire – II (AAQ-II)

Instructions: Please read all the questions carefully and circle the option that suits you the best.

Item No.	Item	Never True	Very Seldom True	Seldom True	Sometimes True	Frequently True	Almost Always True	Always True
1	It's okay if I remember something unpleasant.	1	2	3	4	5	6	7
2	My painful experiences and memories make it difficult for me to live a life that what I value.	1	2	3	4	5	6	7
3	I am afraid of my feelings.	1	2	3	4	5	6	7
4	I worry about not being able to control my worries and feelings.	1	2	3	4	5	6	7
5	My painful memories prevent me from having a	1	2	3	4	5	6	7

	fulfilling life.							
6	I am in control of my life.	1	2	3	4	5	6	7
7	Emotions cause problems in my life.	1	2	3	4	5	6	7
8	It seems like most people are handling their lives better than I am.	1	2	3	4	5	6	7
9	Worries get in the way of my success.	1	2	3	4	5	6	7
10	My thoughts are feelings do not get in the way of how I want to live my life.	1	2	3	4	5	6	7

Appendix B: Cut Down, Annoyed, Guilty, Eye Opener Questionnaire – Modified

Please read each item carefully and answer either "YES" or "NO" considering what suits you the best by putting a (✓) in the respective column.

ITEM	YES	NO
Have you ever felt you should cut down on your drinking?		
Have people annoyed you by criticizing your drinking?		
Have you ever felt bad or guilty about drinking?		
Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover?		
Have you ever as a result of your drinking engaged in destructive or dangerous behavior?		
Have you lost resources (family, job, good health, opportunities, insurance, legal status, etc.) as a result of your alcohol use?		
Has your use of alcohol affected your feelings towards yourself or other people? (For Example, you might not feel good enough about yourself to spend time with people whom you used to socialize.)		

Appendix C: General Health Questionnaire-28 (GHQ-28)

Please read this carefully:

We should like to know if you have had any medical complaints, and how your health has been in general, *over the past few weeks.* Please answer ALL the questions on the following pages simply by circling the answer which you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those that you had in the past.

It is important that you try to answer ALL the questions.

Thank you very much for your cooperation.

Item No.	Items: Have you recently….?	Not at all	No more than usual	Rather more than usual	Much more than usual
A1	Been feeling perfectly well and in good health?	0	1	2	3
A2	Been feeling in need of a good tonic?	0	1	2	3
A3	Been feeling run down and out of sorts?	0	1	2	3
A4	Felt that you are ill?	0	1	2	3
A5	Been getting any pains in your head?	0	1	2	3
A6	Been getting a feeling of tightness or pressure in your head?	0	1	2	3
A7	Been having hot or cold spells?	0	1	2	3
B1	Lost much sleep over worry?	0	1	2	3
B2	Had difficulty in staying asleep once you are off?	0	1	2	3
B3	Felt constantly under strain?	0	1	2	3
B4	Been getting edgy and bad-tempered?	0	1	2	3
B5	Been getting scared or panicky for no good reason?	0	1	2	3

| B6 | Found everything getting on top of you? | 0 | 1 | 2 | 3 |
| B7 | Been feeling nervous and strung-up all the time? | 0 | 1 | 2 | 3 |

Item No.	Items: Have you recently….?	Not at all	No more than usual	Rather more than usual	Much more than usual
C1	Been managing to keep yourself busy and occupied?	0	1	2	3
C2	Been taking longer over the things to do?	0	1	2	3
C3	Felt on the whole you were doing things well?	0	1	2	3
C4	Been satisfied with the way you have carried out your task?	0	1	2	3
C5	Feel that you are playing a useful part in things?	0	1	2	3
C6	Felt capable of making decisions about things?	0	1	2	3
C7	Been able to enjoy normal day-to-day activities?	0	1	2	3
D1	Been thinking of yourself as a worthless person?	0	1	2	3
D2	Felt that life is entirely hopeless?	0	1	2	3
D3	Felt that life isn't worth living?	0	1	2	3
D4	Thought of the possibility that you might make away with yourself?	0	1	2	3
D5	Found at times you couldn't do anything because your nerves were too bad?	0	1	2	3
D6	Found yourself wishing you were dead and away from it all?	0	1	2	3
D7	Found that the idea of taking your own life kept coming in your mind?	0	1	2	3

Appendix D: The Inventory of Interpersonal Ambivalence-18

Instructions: Please rate each statement below based on how true it is for you. Many statements include two points within a single sentence. If *either* point is completely false for you, you should rate the statement as "False, Not True". Thus, if any part of the statement is entirely false for you, you should rate the entire statement as "False, Not True".

		False, Not True	Slightly True	Mainly True	Very True
1	I have a desire to be close to others, but feel negative emotions when others get close to me.	F	ST	MT	VT
2	I want to talk about my feelings with others, but I find that I keep my feelings bottled up inside.	F	ST	MT	VT
3	I would like to form connections with others, but I find myself withdrawing before a connection is made.	F	ST	MT	VT
4	I want to depend on others, but I don't because I fear others will let me down if I rely on them.	F	ST	MT	VT
5	I want to share my struggles with others, but I am afraid sharing will just make things worse.	F	ST	MT	VT
6	I have very mixed feelings about close connections with others.	F	ST	MT	VT
7	On the one hand, I think the people I am close to care about me, but on the other hand, I often doubt it.	F	ST	MT	VT
8	I want to have close relationships and at the same time the idea of letting others into my life is very scary.	F	ST	MT	VT
9	The idea of an emotionally close relationship is both pleasing and frightening to me.	F	ST	MT	VT
10	I tend to keep others at a distance, despite often wishing I could be close to those I care about.	F	ST	MT	VT
11	Close relationships are hard for me, but I know I want close relationships in my life.	F	ST	MT	VT
12	Being emotionally close to others triggers a lot of good and bad feelings all at once.	F	ST	MT	VT
13	Imagining letting myself get close to someone makes me hopeful and anxious all at the same time.	F	ST	MT	VT
14	I believe I need others, but I avoid close relationships because I think people will ultimately hurt me.	F	ST	MT	VT

15	I want others to truly know me, but I fear others wouldn't like me if they knew who I truly was.	F	ST	MT	VT
16	I don't share much with the people I am close to, but I think sharing is a good idea.	F	ST	MT	VT
17	I have a lot of strong positive and strong negative feelings about being in close relationships.	F	ST	MT	VT
18	I want to have close relationships, but I find it very hard to trust other people.	F	ST	MT	VT

Appendix E: Leiden Index of Depression Sensitivity – Revised (LEIDS-R)

LEIDS-R

Instructions

Below are a number of statements that may apply to you to a lesser or greater extent.

Almost every statement concerns your thoughts about a certain matter *at times when you feel down or when you are in a low mood.* This does <u>not</u> mean a seriously depressed mood or true depression.
Your task is to indicate the extent to which the statements apply to you when you feel <u>somewhat</u> sad.

Try to imagine the following situation when filling out this questionnaire:

It is certainly not a good day, but you don't feel truly down or depressed.
Perhaps your mood is an early sign of something worse to come, but things might also improve in the next day or two.

On a scale ranging from 0 to 10 (0 = not at all sad; 10 = extremely sad; 6 and above = a truly depressed mood), you would choose a 3 or 4 to describe your mood.
The scale looks like this:
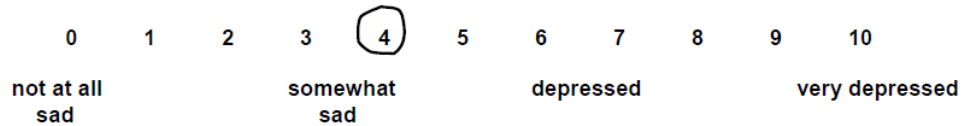
0	1	2	3	(4)	5	6	7	8	9	10

not at all sad   somewhat sad   depressed   very depressed

Please try to imagine yourself in the above situation, for instance by thinking back to the last time you felt somewhat sad (score 3 or 4).

{Now take some time to imagine such a situation.}

To what extent are you able to imagine such a situation?　　　o　well
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　o　somewhat
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　o　not at all

Now proceed to the next question (even if you find it difficult to imagine yourself in such a situation).

Item No.	Item	not at all	a bit	moderately	strongly	very strongly
1	I can only think positively when I am in a good mood.	0	1	2	3	4
2	When in a low mood, I take fewer risks.	0	1	2	3	4
3	When I feel sad, I spend more time thinking about what my moods reveal about me as a person.	0	1	2	3	4
4	When in sad mood, I am more creative than usual.	0	1	2	3	4
5	When I feel down, I more than often feel hopeless about everything.	0	1	2	3	4
6	When I feel down, I am more busy trying to keep images and thoughts at bay.	0	1	2	3	4
7	In a sad mood, I do more things that I will later regret.	0	1	2	3	4
8	When I feel sad, I go out and do more pleasurable activities.	0	1	2	3	4
9	When I feel sad, I feel as if I care less if I lived or died.	0	1	2	3	4
10	When I feel sad, I am more helpful.	0	1	2	3	4

		not at all	a bit	moderately	strongly	very strongly
11	When I feel sad, I am less inclined to express disagreement with someone else.	0	1	2	3	4
12	When I feel somewhat depressed, I think I can permit myself fewer mistakes.	0	1	2	3	4
13	When I feel down, I more often feel overwhelmed by things.	0	1	2	3	4
14	When in a low mood, I am more inclined to avoid difficulties or conflicts.	0	1	2	3	4
15	When I feel down, I have a better intuitive feeling for what people really mean.	0	1	2	3	4
16	When in a sad mood, I become more bothered by perfectionism.	0	1	2	3	4
17	When I feel sad, I more often think that I can make no one happy.	0	1	2	3	4

Item No.	Item	not at all	a bit	moderately	strongly	very strongly
18	When I feel bad, I feel more like breaking things.	0	1	2	3	4
19	I work harder when I feel down.	0	1	2	3	4
20	When I feel sad, I feel less able to cope with everyday tasks and interests.	0	1	2	3	4
21	In a sad mood, I am bothered more by aggressive thoughts.	0	1	2	3	4
22	When I feel own, I more easily become cynical (blunt) or sarcastic.	0	1	2	3	4
23	When I feel down, I feel more like escaping everything.	0	1	2	3	4
24	When in sad mood, I feel more like myself.	0	1	2	3	4
25	When I feel down, I more often neglect things.	0	1	2	3	4
26	When I feel sad, I do more risky things.	0	1	2	3	4
27	When I am sad, I have more problems concentrating.	0	1	2	3	4
28	When in a low mood, I am nicer than usual.	0	1	2	3	4

29	When I feel down, I lose my temper more easily.	0	1	2	3	4
30	When I feel sad, I feel more that people would be better off if I were dead.	0	1	2	3	4
31	When I feel down, I am more inclined to want to keep everything under control.	0	1	2	3	4
32	When I feel sad, I spend more time thinking about the possible causes of my moods.	0	1	2	3	4
33	When in a sad mood, I more often think about how my life could have been different.	0	1	2	3	4
34	When I feel sad, more thoughts of dying or harming myself go through my mind.	0	1	2	3	4

Please check whether all items are answered. Thank you.

Appendix F: Multidimensional Scale for Perceived Social Support

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.
Circle the "1" if you Very Strongly Disagree
Circle the "2" if you Strongly Disagree
Circle the "3" if you Mildly Disagree
Circle the "4" if you are Neutral
Circle the "5" if you Mildly Agree
Circle the "6" if you Strongly Agree
Circle the "7" if you Very Strongly Agree

Item No.	Item	Very Strongly Disagree	Strongly Disagree	Mildly Disagree	Neutral	Mildly Agree	Strongly Agree	Very Strongly Agree
1	There is a special person who is around when I am in need.	1	2	3	4	5	6	7
2	There is a special person with whom I can share joys and sorrows.	1	2	3	4	5	6	7
3	My family really tried to help me.	1	2	3	4	5	6	7
4	I get the emotional help and support I need from my family.	1	2	3	4	5	6	7
5	I have a special person who is real source of comfort to me.	1	2	3	4	5	6	7
6	My friends really try to help me.	1	2	3	4	5	6	7
7	I can count on my friends when things go wrong.	1	2	3	4	5	6	7
8	I can talk about my problems with my family.	1	2	3	4	5	6	7

Appendix G: Suicide Risk Assessment

The following Suicide Risk Assessment is to be followed if the participant responds positively to item 27 and 28 of the General Health Questionnaire – 28.

The following script will be used while escorting the participant out of the subject pool room. Once the PI and the concerned participant is completely out of the room, the PI will say, "Based on your responses to several items the study protocol requires that I ask a few more questions. We can do this in the room right down the hall. Please follow me."
Once the PI and the participant is in the room, the following script would be used:
"Your responses on items dealing with thoughts of suicide or harming yourself lead me to be concerned for your safety. Tell me about these responses….."
The following risk assessment will then be conducted.

IDENTIFYING RISK FACTORS
- Previous Attempts (Have you ever attempted to hurt / harm / kill yourself?)
  o When? (How long ago?)
  o Specificity (How did you attempt?)
  o Lethality (What happened next? Hospitalization?)
  o Availability (Access to gun / pills etc.?)
  o Proximity to help (Do you have someone to talk about your feelings? Are you seeing a therapist?)
- Alcohol / Drug Use
- History of Psychiatric illness
- Significant personal loss
- Feelings of worthlessness/hopelessness

CHARACTERISTICS OF SUICIDE IDEATION
- Frequency (How often does these thoughts come to you?)
- Intensity (How strongly do you feel them?)
- Duration (For how long does these thoughts stay with you?)

SUICIDAL INTENT
- Self-control (Do you feel that you can manage these thoughts without acting on them?)
- Intent (Would you act on these thoughts?)

EVALUATION OF SUICIDE PLANS
- Specificity (How do you plan to attempt?)
- Availability (Access to gun / pills etc.?)
- Proximity to help (Do you have someone to talk about your feelings? Are you seeing a therapist?)

EVALUATION OF LEVEL OF SELF-CONTROL
- Self-report of self-control (What thoughts come to your mind which prevents you from going ahead with your plan?)
- Motivation for treatment
- Future oriented thought
- Understanding of emergency psychological services

If the result of this risk assessment points in the direction that the participant needs help, s/he will be made to understand that it is in his/her best interest to seek professional help immediately. S/he will be then escorted to the Disability and Counseling Services office for professional help. If the participant does not agree to visit Counseling Services, Dr. Michelle Leonard, L.P, will be immediately contacted for assistance and supervision. As available, Dr. Leonard will come to the room where the participant is and provide additional screening as needed. As last resort, public safety will be called if the participant is not agreeable with the study protocol and is in imminent danger of self-harm.

Appendix H: Consent Form

**EXPERIMENTAL SUBJECT POOL PARTICIPATION
CONSENT FORM**

The psychology faculty considers participation in experimental research by subjects to be an educational experience for the students as well as a most important service to the research of the University. This research project has been approved by the University of Michigan-Dearborn Institutional Review Board (IRB Dearborn). Participation is voluntary, if you choose **not** to participate as a research subject you may participate in another research related activity at no expense to your academic record or standing.   The purpose of today's experiment is to better understand how distinct levels of psychological flexibility and cognitive reactivity have their effects on the relationship between perceived social support and mental health of emerging adults.

Psychology Subject Pool Subjects
As a part of your participation in an Introductory Psychology course at the University of Michigan – Dearborn, you agree to serve as a research subject for this experiment. You have read and understood the "Subject Pool Participation" description information that you viewed when you registered on the SONA System website as a research participant. You understand that completing the study will take approximately 60 minutes and for your participation, you will be given 1research credits in SONA. You may choose **not** to serve as a research subject and may instead participate in another research-related activity at no expense to your academic record or standing. You may withdraw at any time from today's study without penalty or loss of research participation credit.

Upper Level Psychology Course Research Subjects
As a part of your participation in an upper level psychology course at the University of Michigan – Dearborn, you agree to serve as a research subject for this experiment. You have read and understood the "Subject Pool Participation" description information that you viewed when you registered on the SONA System website as a research participant. You understand that completing the study will take approximately 60 minutes and for your participation, you will be given 1 research credits in SONA. You may choose **not** to serve as a research subject and may instead participate in another research-related activity at no expense to your academic record or standing. You may withdraw at any time from today's study without penalty or loss of research participation credit.

Description of Subject Involvement

The procedure in today's study involves completing several questionnaires. The first is a questionnaire that will ask you basic demographic information. The other questionnaires are aimed at assessing your typical approach to handling changes in your life and your reactions to stressful situations, and types of support that you have in your life. You will also be asked to complete questionnaires on your levels of psychological distress, overall health, and patterns of substance use. To protect your safety, your name and identity will not be collected. The researcher will work to ensure your safety and should there be concerns about imminent self-harm, the researcher will act in accordance to ethical guidelines. In addition, your responses will be kept on an encrypted hard drive, in a locked file cabinet, in a locked laboratory until the study's conclusion.

The risks include psychological distress (e.g., transient symptoms of depressed mood or sadness). The researchers have taken steps to minimize the risks of this study. Even so, you may still experience some risks related to the participation, even when the researchers are careful to avoid them. You should tell the researchers if you feel you have been harmed as a result of participation in this study. By indicating your consent on this form, you understand that you do not give up the right to seek payment if harmed as a result of being in this study. The study staff will try to reduce the likelihood of these risks and will provide you with resources for follow-up care if necessary.

After you have completed the study protocol, no further action is needed on your part. No identifying information will be obtained from you, and that the study staff will keep your responses anonymous and confidential.

The researchers plan to publish or present the results of this study, but will not include any information that would identify you. There are some reasons why people other than the researchers may need to see information you provided as part of the study. This includes organizations responsible for making sure the research is done safely and properly, including the University of Michigan, government offices.

Contact Information
If you have questions about the study you may contact Mr. Ankush Bhandarkar (asbhanda@umich.edu) or Dr. Michelle Leonard (mtleon@umich.edu) or Dr. Caleb Seifert (csiefert@umich.edu).
If you have questions regarding your rights as a research participant, or wish to obtain information, ask questions, or discuss concerns with someone other than the researcher(s), You may contact the Dearborn IRB Administrator at (734) 763-5084 Written inquiries should be sent to the Office of Research and Sponsored Programs, 2066 IAVS, University of Michigan-Dearborn, Evergreen Rd., Dearborn, MI 48128-2406. or email Dearborn-IRB@umich.edu.

Your participation will require no more than 60 minutes. The purpose and procedure as well as the benefits and risks of the study have been explained to you and the results will be made available to you upon your request. By checking yes below, you are agreeing to be in the study. You will be given a copy of this document for your records and one copy will be kept with the study records. Be sure that questions you have about the study have been answered and that you understand what you are being asked to do. You may contact the researcher if you think of a question later.

I agree to participate in this study. ☐ *YES*   ☐ *NO*

To be filled by experimenter:

Experiment: _____

Date: _____

Experimenter: _____

Appendix I: Debriefing Form

Debriefing Form
University of Michigan – Dearborn
POST PARTICIPATION INFORMATION

Thank you for your participation in the preceding study. We hope that by exploring various psychological constructs, like the ones assessed in this study, we can better understand the psychological processes of emerging adults and come up with better therapeutic interventions for the people in need. Without the input of individuals like yourself, advances in the field of mental health cannot be made.

Given the nature of this study it is necessary that you not talk about your participation with other students or potential participants. As you can surely appreciate, if other participants know the full details of the study prior to participation, this may influence their response to the items and therefore invalidate the data. To ensure the success of the study, it is therefore requested that participants in this study do not tell anyone about the methodology or purpose of the study.

The Principal Investigator, Ankush Bhandarkar (asbhanda@umich.edu) will be very willing to discuss any concerns that you have about the study. If you have any continued concerns you are welcome to contact Dr. Michelle Leonard (mtleon@umich.edu) or the University of Michigan – Dearborn.

If you feel you need to speak with a professional concerning any uncomfortable feelings from your participation in this research, you may contact any of the agencies listed below.

UM-D Counseling and Support Services (UM-D students only)	313-593-5430
Henry Ford Medical Center- Fairlane for Students, Faculty, and Staff (UM-D Students only)	313-982-8495

Please feel free to contact either of these agencies, and once again thank you for your participation.