WILLIAM & MARY
CHARTERED 1693

W&M ScholarWorks

Dissertations, Theses, and Masters Projects

Theses, Dissertations, & Master Projects

Spring 2017

Distress Tolerance and Emotional Disorder Symptoms among Racial/ethnic Minorities

Casey Elizabeth Snyder
College of William and Mary - Arts & Sciences, cesnyder@email.wm.edu

Follow this and additional works at: https://scholarworks.wm.edu/etd

🎨 Part of the Psychology Commons

Distress Tolerance and Emotional Disorder Symptoms among Racial/Ethnic Minorities

Casey Elizabeth Snyder

Wilmington, North Carolina

Bachelor of Arts, Wake Forest University, 2015

Thesis presented to the Graduate Faculty of The College of William & Mary in Candidacy for the Degree of Master of Arts

Department of Psychology

College of William & Mary

May 2017

APPROVAL PAGE
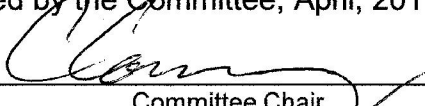
Thesis is submitted in partial fulfillment of
the requirements for the degree of

Master of Arts

_____
Casey Elizabeth Snyder
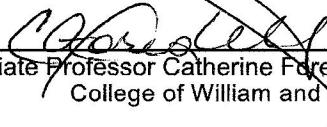
Approved by the Committee, April, 2017

_____
Committee Chair
Assistant Professor Christopher Conway, Psychology
College of William and Mary

_____
Assistant Professor Elizabeth Raposa, Psychology
College of William and Mary

_____
Associate Professor Catherine Forestell, Psychology
College of William and Mary

COMPLIANCE PAGE

Research approved by

The College of William and Mary Protection of Human Subjects Committee

Protocol number: PHSC-2015-09-03-10572-ccconway

Date(s) of approval: 09/14/2015

ABSTRACT

There is a wealth of research indicating that members of minority groups (e.g. according to race/ethnicity, religious beliefs, sexual orientation) are at risk of psychopathology, relative to their majority counterparts. It is important to determine the underpinnings of these negative experiences in order to understand their etiology, as well as to determine the most effective course of treatment. Distress tolerance (DT) has been a focus of recent clinical research as it has been associated with a number of psychological disorders, including anxiety, depression, and substance misuse. Although it has been found to act as a buffer against symptoms of psychopathology in white majority samples, DT has not been fully examined among racial/ethnic minority populations. The aim of the current study was to fill this void by determining whether DT protects individuals from racial/ethnic minority groups against depressive symptoms in the same way it does for individuals from the white majority. The sample consisted of 168 undergraduates at a medium-sized university from diverse ethnic backgrounds. Results from this study did not indicate a significant difference in depression between racial groups. Additionally, we did not find a significant interaction between DT and group membership to predict emotional disorder symptoms.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

LIST OF TABLES

Distress Tolerance and Emotional Disorder Symptoms among Racial/Ethnic

Minorities

The United States is becoming a more ethnically diversified country as

time goes on, with a growing percentage of the population being comprised of

racial-ethnic minorities (U.S. Census Bureau, 2012). From the year 2000 to 2010,

the Hispanic population has grown from 12.5 to 16.3 percent of the population,

with the Black population rising from 12.9 to 13.6 percent, and the Asian

population growing from 4.2 to 5.6 percent (U.S. Census Bureau, 2012). With the

expectation of these numbers rising even further in the coming years (Colby &

Ortman, 2015), it has become increasingly important that we understand the

unique experiences of these minority groups, especially as they relate to health

outcomes.

Although great strides have been made in understanding race-ethnic

disparities in physical illness, research on the experience of mental illness among

ethnic minorities is still relatively scarce and inconclusive (Breslau, Kendler, Su,

Gaxiola-Aguilar, & Kessler, 2005). There have been a number of large-scale

epidemiological surveys conducted in the U.S., and results have been mixed as

they relate to minority mental health (Vega & Rumbaut, 1991). Results of one

early community epidemiological study (i.e., the Health and Nutrition Examination

Survey) identified significant differences between Blacks and Non-Hispanic

Whites on both psychological distress and well-being, with Blacks experiencing

higher rates of psychological distress and lower levels of general well-being than

Whites (Sayetta & Johnson, 1980). Additionally, results from the Health and

Retirement Study indicated that ethnic minorities reported elevated rates of depression in comparison to Non-Hispanic Whites (Dunlop et al., 2003). Alternatively, a more recent survey (i.e. the National Epidemiologic Survey on Alcohol and Related Conditions [NESARC]) showed that racial-ethnic minorities reported a lower lifetime prevalence of depression than Non-Hispanic Whites, except for Native Americans, who reported a significantly higher lifetime prevalence of depression than Non-Hispanic Whites (Hasin, Goodwin, Stinson, & Grant, 2005). Another recent epidemiological survey (i.e., the National Comorbidity Survey Replication [NCSR]) also shows that racial-ethnic minorities report a lower lifetime prevalence of mental disorder than Non-Hispanic Whites (Breslau et al., 2006). However, the adolescent supplement of the NCSR showed higher rates of depression among Hispanic adolescents compared to Non-Hispanic Whites, and higher rates of anxiety for Black adolescents compared to Whites (Merikangas et al., 2010).

Although lifetime prevalence of mental disorder may be lower among racial-ethnic minorities, there is evidence that they actually tend to show greater persistence of these disorders (Breslau et al., 2005). The results of two large-scale epidemiological studies (i.e. NCS and Epidemiological Catchment Area) indicated differences in racial-ethnic disparities between prevalence and persistence of mental illness. Both surveys indicated that racial-ethnic minorities reported a lower lifetime prevalence of mental illness, but also reported greater persistence of disorder. Additionally, Williams and colleagues (2007) analyzed data from the National Survey of American Life and found that, although lifetime

prevalence rates of Major Depressive Disorder (MDD) were higher for Whites, it took a more chronic course in Blacks. That is, Blacks with MDD were more likely to report their experiences as "severe" and "debilitating" than Whites (Williams et al., 2007). Finally, Kearney, Draper, & Baron (2005) found that Asian Americans, when compared to Whites, reported greater mental illness at the termination of a counseling intervention, even when controlling for symptom levels at intake.

As the number of racial-ethnic minorities in the U.S. continues to grow, so also does the prevalence of racial-ethnic minorities on college campuses (Kearney, Draper, & Baron, 2005). For students of all races/ethnicities, the college years are a time of transition to adulthood, and they possess a number of unique and significant stressors (Arnett, 2000). Thus, mental health has become an increasing concern among college students (ACHA, 2008; Kitzrow, 2003; Hunt & Eisenberg, 2010). In fact, mental disorders represent nearly half of the disease burden on U.S. young adults (WHO, 2008). Ethnic minorities, particularly at predominantly White institutions, are not only susceptible to all of the typical stressors of life as a college student (e.g., papers, exams), but they are also at risk for experiencing race-related stressors that make them especially vulnerable to negative psychological experiences (Smith, Chesin, & Jeglic, 2014). In fact, early researchers went as far as to say that socioeconomic status (SES) could fully explain the relationship between race/ethnicity and mental illness. It has since been discovered that SES affects psychological outcomes via an interaction with race, not as a sole indicator (Kessler & Neighbors, 1986). Other race-related stressors such as alienation, victimization, and discrimination can

also serve to perpetuate negative psychological outcomes among minority group members, especially on college campuses (Williams, Neighbors, & Jackson, 2003; Greer & Chwalisz, 2007; Wei et al., 2010).

Some researchers have specifically looked at the experiences of mental illness among racial-ethnic minority college students. Research performed by Alamilla, Kim, and Lam (2010) focused on anxiety as an outcome variable of minority status among Latino college students. Participants included 130 students of Latino background that attended a predominately White university on the West Coast of the United States. Participants completed surveys that assessed Latino values, acculturation, minority stress, perceived racism, and anxiety. Researchers found that perceived racism and minority stressors were significantly correlated with higher levels of anxiety (Alamilla, Kim, & Lam, 2009). Thus, the way that Latino minorities perceived their social situations among their White counterparts predicted the level of anxiety that they experienced. Additionally, Smith and colleagues (2014) conducted a study with data from diverse populations at two universities in New York. Participants responded to a number of self-report inventories assessing emotional well-being (e.g. depression, loneliness). Results of their study indicated that being a racial-ethnic minority predicted binge drinking, past suicide attempt, depression, and loneliness (Smith, Chesin, & Jeglic, 2014).

As research on racial-ethnic disparities in mental health persists, it is important to continue identifying primary risk factors that may contribute to the experience of psychopathology among minority group members. It has been

posited that the negative psychological experiences of these individuals may largely be due to the experience of stress as the result of being a member of a marginalized group (Williams, Neighbors, & Jackson, 2003). Generally, research has shown that the way that monitories respond to stressful situations has significant implications for mental and emotional health. For example, Zvolensky and colleagues (2016) examined the relationship between acculturative stress, experiential avoidance (EA), and a variety of emotional disorder symptoms among a diverse sample of college students. EA is described in the literature as "efforts to escape and avoid emotions, thoughts, memories, and other private experiences" (Hayes et al., 1996). Their sample consisted of over 1,000 college students identifying as racial/ethnic minorities. Results of their study indicated that acculturative stress was a significant predictor of suicidal, anxious arousal, and social anxiety symptoms when students were high in EA tendencies.

Distress tolerance (DT) is an analogous construct to EA, and represents the ability to perform goal-directed actions while distressed or uncomfortable (McHugh et al., 2011). Low DT abilities have been associated with a number of negative outcomes in unselected and patient samples such as eating disorders (Anestis, Selby, Fink, & Joiner, 2007), anxiety and depression (review by Leyro, Zvolensky, & Bernstein, 2010); substance abuse disorders (Buckner, Keough, & Schmidt, 2007), post-traumatic stress disorder (PTSD) (Vujanovic, Bonn-Miller, Potter, et al., 2011), and self-injury (Nock & Mendes, 2008). Therefore, it seems that DT could be an important construct to examine as a prognostic indicator of negative psychological outcomes among racial minorities.

One way that DT has traditionally been measured is through self-report inventories, which are generally utilized to gauge an individual's *perceived* ability to tolerate distress. Individuals are asked to indicate their levels of agreement with statements such as "I can't handle feeling distressed or upset" (Distress Tolerance Scale [DTS]; Simons & Gaher, 2005), and "I can't stand situations where I might feel upset" (Frustration Discomfort Scale [FDS]; Harrington, 2005). Previous research has supported the association between responses to these statements and a variety of clinical outcomes. For example, Vujanovic and colleagues (2011) found an inverse association between perceived DT according to the DTS and symptoms of PTSD among a community sample of 140 participants who had recently experienced a traumatic event.

DT can also be measured with computerized behavioral tasks such as the Mirror Tracing Persistence Task (MTPT; Strong et al., 2008) and the Paced Auditory Serial Addition Task (PASAT; Lejuez, Kahler, & Brown, 2003), which are intended to induce some form of distress (e.g. frustration, discomfort, anxiety), and then evaluate the participant's behavior when he or she is given the opportunity to terminate the distressing task. The MTPT and PASAT, like other behavioral measures of DT, involve frustrating tasks--such as tracing the outline of a shape when the motions of the computer mouse and cursor are reversed (i.e. MTPT) and speeded mental arithmetic problems (i.e. PASAT)--in which incorrect answers are punished with loud aversive tones. The participant is free to quit at any point during these frustrating tasks, and those who persist longer in pursuit of reward are thought to display higher DT.

DT has been examined extensively among predominantly White samples, but there is significantly less research focusing on DT among minority group samples. In fact, the current literature on racial differences in DT is scarce and inconclusive, focusing primarily on the differences between European- and African-Americans. Dahne and colleagues (2014) conducted a study with 153 mothers (62.1% White, 37.9% African American), to identify racial differences in DT capabilities and smoking habits. Participants completed a battery of self-report measures of DT as well as the PASAT. They found that African-American women with low DT capabilities were more likely to become lifetime smokers than African-American women with high DT capabilities.

Dennhardt and Murphy (2011) wanted to identify whether there were ethnic differences in the ability of DT capabilities to predict alcohol abuse. Using 206 undergraduate students, they looked specifically at self-reported DT and found that low DT capabilities were associated with more alcohol abuse problems among African-Americans, but not for European American students. Similarly, Daughters et al. (2009) found that low DT led to delinquent behavior among African-Americans, but not for European-Americans. In contrast, another study by Daughters and colleagues (2013) demonstrated that Caucasians, but not African-Americans, exhibited more conduct problems when they had low DT capabilities.

As there is a dearth in the research on minority status and DT, it is important to look at the differences between majority and minority group members on related constructs. As mentioned earlier, DT is considered to be an

emotion regulation strategy, thus literature on the relationship between minority status and emotion regulation—as opposed to DT per se—can be informative.

Carter and Walker (2014) conducted a study on a nonclinical sample of 151 African American adults. They assessed self-reported emotion regulation, and how it related to anxiety and perceived health. They found that difficulties in regulating emotions went above and beyond age and gender to predict increased symptoms of anxiety and more negative perceived health. In a primarily Black (79.1%) community sample of 210 child-caregiver dyads, Folk and colleagues (2014) found that children who had poor emotion regulation skills at time 1, had greater self-reported and caregiver-reported symptoms of depression at time 2. Additionally, these researchers also found that dysregulated emotion was also a significant predictor of self-reported anxiety-related symptoms (Folk, Zeman, Poon, & Dallaire, 2014). Lu and Wang (2012) found that ethnic minority college students experienced greater negative emotion and were less likely to utilize effective emotion regulation strategies than their majority counterparts.

The aim of the current study was to determine whether DT capabilities act as a buffer against depressive symptoms among ethnic minority college students. We chose to focus on depression as it is one of the most chronic and prevalent mental illnesses in both the community (Kessler et al., 1994) and on college campuses (Hunt & Eisenberg, 2010). Based on the findings of Smith and colleagues (2014), we hypothesized that those who identify as ethnic minorities will report greater symptoms of depression than the White majority. Additionally, following the logic of previous research studies (e.g., Dahne et al., 2014) we

8

hypothesize that minority group members will generally have elevated symptoms of depression, relative to white students, but that those racial-ethnic disparities will disappear among those with higher levels of distress tolerance.

Method

Participants

Participants for this study were 168 undergraduates (109 female) from a medium-sized public university on the East Coast. The sample was ethnically diverse, with 90 reporting to be "Non-Hispanic White," 25 "Black," 27 "Asian/Asian American," 19 "Hispanic/Latino," 6 "More than one race," and 1 "Other." The mean age of the sample was 19.20 years (SD= 1.33). Participants were recruited via the research participation pool for introductory psychology, and were awarded partial course credit for their time.

Measures

Distress Intolerance Index (DII; McHugh and Otto, 2012). The DII is a 10-item self-report inventory constructed to measure one's perceived ability to tolerate negative or distressing emotional states (e.g. "I'll do anything to stop feeling distressed or upset"). The DII is made up of the ten most consistently strong items on a latent Distress Intolerance (DI) factor from three different self-report measures of DI (i.e. Distress Tolerance Scale, Simons and Gaher, 2005; Anxiety Sensitivity Index, Peterson and Reiss, 1992; Frustration-Discomfort Scale, Harrington, 2005). These items were tested across three different samples

9

(McHugh and Otto, 2012). Items are scored on a 5-point Likert-type scale ranging from 0 (very little) to 4 (very much) with higher scores representing a lower perceived ability to handle distress, and lower scores representing a greater perceived ability to handle distress (M= 10.01, SD= 8.73). The DII has demonstrated strong convergent validity with behavioral measures of DI compared to other self-report measures of DI (McHugh & Otto, 2011; McHugh et al., 2016; Seo and Kwon, 2016; Szuhany & Otto, 2015). It has also displayed strong internal consistency across various studies (Cakir, 2016, McHugh and Otto, 2011, Szuhany and Otto, 2015), as well as solid test-retest reliability (Cakir, 2016). The internal consistency of the DII for the current study was excellent ($α$= .89).

Inventory of Depression and Anxiety Symptoms (IDAS; Watson et al., 2002). The IDAS is comprised of 64 items designed to measure specific dimensions of major depression and various anxiety disorders. It can be broken into ten subscales representing specific symptoms: Suicidality, Lassitude, Insomnia, Appetite Loss, Appetite Gain, Ill Temper, Well-Being, Panic, Social Anxiety, and Traumatic Intrusions. It also has two general scales: General Depression (overlaps with other scales) and Dysphoria (no overlap). The IDAS was created using factor analysis across three different samples (college students, psychiatric patients, community adults), and has proven robust in several other samples of college and high school students, young adults, postpartum women, and psychiatric patients (Watson et al., 2002). It also has

displayed strong reliability as well as convergent and discriminant validity in relation to other measures of depression and anxiety symptomology (Watson et al., 2007, Watson et al., 2008, Watson et al., 2012). For the current study, we will be using the General Depression subscale in order to include a broad range of depressive symptoms, which generally reflect risk for emotional disorders such as anxiety and depression (Watson et al., 2008). The internal consistency of the IDAS General Depression subscale in the current sample was strong (α= .90).

Procedure

After arriving to the lab space, participants signed an informed consent form and completed a battery of questionnaires on a computer through a secure network. Participants were ensured that there were no right or wrong answers to the prompts, and that all of their responses would be kept anonymous. Participants were then given a brief interview assessing chronic stress, and completed both the PASAT and MTPT to assess behavioral DT capabilities. Data from the latter parts of the experiment are not reported here.

<center>**Results**</center>

Descriptive Statistics

We analyzed our data two ways: once with a dichotomous variable for race (White vs. Non-White), and once separating the Non-White groups using dummy variables. A correlation matrix of all the variables used in our analyses can be found in Table 1. The mean score on the IDAS General Depression subscale within our sample was 42.62 (SD=12.69), and the mean score on the

DII was 51.41 (SD=11.42). More than eighty percent of the participants came

from families making $50,000 per year or higher.

Table 1

Correlations between Key Variables

	DT	Dep.	Income	Gender	White vs. Black	White vs. Asian	White vs. Hisp/ Latino
DT	1.00						
Depression	**-0.46****	1.00					
Income	-0.11	**0.21****	1.00				
Gender	-0.05	0.06	-0.08	1.00			
White vs. Black	-0.12	0.07	0.16	-0.04	1.00		
White vs. Asian	-0.04	-0.04	0.09	-0.09	**-0.19***	1.00	
White vs. Hisp/Latino	-0.14	-0.14	0.08	-0.07	**-0.16***	**-0.16***	1.00

**$p < .01$; *$p < .05$; Gender was coded using 0 for "male" and 1 for "female"

Dichotomous Coding for Race

In preparation for analyzing our data, we created a dichotomous variable

for group membership with "1" representing those who identified with the White

majority, and "2" representing those who identified themselves as members of

the Non-White minority. In order to analyze our data, we used a hierarchical

linear regression analysis. This allowed us to test whether DT capabilities

moderate the relationship between racial group membership and depression. We

included income level and gender as covariates in the analysis.

The initial step of the regression tested our first hypothesis that those who identify as members of the Non-White minority would experience more emotional disorder symptoms than those who identify with the White majority group. That is, we expected to find a significant main effect of racial group membership in predicting depression. Results for step 1 of the analysis can be found in Table 2. As Table 2 shows, depression symptom levels did not differ across racial groups. In contrast, DT had a moderate, inverse association (β = -.44) with depressive symptoms. Additionally, family income had a small yet positive (β = .18) association with depression.

Table 2

Multiple Regression Predicting Depressive Symptoms with Dichotomous Race Variable: Step 1

Variable	*b*	SE	Beta
Race	-1.97	1.80	-0.08
DT	-0.49	0.08	-0.44**
Income	1.81	0.70	0.18*
Gender	2.20	1.84	0.08

**$p < .01$; *$p < .05$; Gender was coded using 0 for "male" and 1 for "female"

The second step of the regression analysis tested our main hypothesis that the risk for experiencing depressive symptoms that accompanies minority status is minimized among those with greater DT capabilities. That is, we predicted that the interaction between DT capabilities and race would predict depression. Results for step 2 of the analysis can be found in Table 3. The

interaction between racial group membership and DT did not approach statistical significance.

Table 3

Multiple Regression Predicting Depressive Symptoms with Dichotomous Race Variable: Step 2

Variable	b	SE	Beta
Race	2.86	8.28	0.11
DT	-0.36	0.24	-0.32
Income	1.73	0.71	0.18*
Gender	2.17	1.84	0.08
DT*Race	-0.09	0.16	-0.23

**p < .01; *p < .05; Gender was coded using 0 for "male" and 1 for "female"

Separate Minority Group Comparison

We then repeated these analyses, allowing each major minority group (i.e. Black, Asian, & Hispanic/Latino) to differ from one another. In order to do this, we created three dummy variables to allow us to compare each of the three minority groups to the Non-Hispanic White majority group separately. Again, we used a hierarchical linear regression including gender and income as covariates.

Once again, depressive symptoms did not differ across any of the racial groups in step 1 of the regression. Results for step 1 of the regression analysis can be found in Table 4. DT had a moderate, inverse association (β = -.45) with depression, and family income had a small, positive association (β = .18) with symptom levels. Results for step 2 of the regression analysis can be found in

Table 5. Once again, we did not find any significant interactions between race and DT to predict depression levels.

Table 4

Multiple Regression Predicting Depressive Symptoms with Separate Minority Groups: Step 1

Variable	*b*	SE	Beta
White vs. Black	-1.26	2.55	-0.04
White vs. Asian	-4.20	2.45	-0.13
White vs. Hispanic/Latino	-0.82	2.89	-0.02
DT	-0.49	-0.08	-0.45**
Income	1.69	0.70	0.18*
Gender	2.42	1.83	0.09

**p < .01; *p < .05; Gender was coded using 0 for "male" and 1 for "female"

Table 5

Multiple Regression Predicting Depressive Symptoms with Separate Minority Groups: Step 2

Variable	*b*	SE	Beta
White vs. Black	4.73	11.00	0.14
White vs. Asian	-6.13	11.57	-0.19
White vs. Hispanic/Latino	14.11	14.48	0.36
DT	-0.45	0.10	-0.41**
Gender	2.46	1.85	0.10
Income	1.58	0.72	0.16
DT*WB	-0.12	0.22	-0.18
DT*WA	0.04	0.22	0.06
DT*WH/L	-0.27	0.26	-0.39

**p < .01; *p < .05; Gender was coded using 0 for "male" and 1 for "female;" Dummy variables were created by having one minority group (e.g. Black) equal 1 while the other groups equal 0

Discussion

The purpose of this study was to examine racial differences in the experience of depressive symptoms, and to determine whether DT capabilities might buffer racial minorities from negative outcomes. We hypothesized that

members of racial minority groups would experience more symptoms of depression than Non-Hispanic Whites. We also hypothesized that DT would act as a moderator of that relationship, suggesting that racial disparities in depressive symptom levels would be mitigated among minorities with high DT capabilities. Results indicated a main effect of DT on depressive symptoms, but we did not find a main effect for ethnic group or a significant interaction between DT and race in predicting symptoms of depression. That is, minority and majority group members did not differ significantly with respect to depressive symptoms, regardless of their levels of DT.

Results of this study were consistent with previous research indicating that DT is associated with psychopathology. DT has consistently been linked with both the development and maintenance of mental disorders, including anxiety, mood, personality, and substance use disorders (Leyro, Zvolensky, & Bernstein, 2010). One widely accepted perspective on the link between DT and psychopathology suggests that those with low DT capabilities are more likely to respond in maladaptive ways to stress-inducing situations and endorse negative reinforcement strategies, thus making them more prone to negative psychological outcomes. On the contrary, those with higher DT capabilities may be more equipped to approach negative stimuli with positive reinforcement strategies, and thus experience less negative psychological outcomes (Leyro et al., 2010). Michel and colleagues (2016) performed a study with a sample of clinical outpatients presenting with either panic disorder, social anxiety disorder, generalized anxiety disorder, or obsessive compulsive disorder. Participants

completed a number of surveys and questionnaires, and were given a clinical interview to determine diagnoses. Their results indicated a significant negative relationship between DT scores and symptoms of worry, social anxiety, and OCD. That is, those with lower DT capabilities experienced more symptoms of anxiety disorders. Holliday and colleagues (2016) extended research on DT and psychopathology to a young adult veteran population, and they found that DT was a significant predictor of depression, PTSD, and alcohol misuse. Additionally, DT was responsible for the comorbidity of depression and PTSD with alcohol misuse among their sample.

Results were not consistent with previous research indicating that minority group members are at increased risk for negative psychological outcomes. We did not identify a main effect of minority group membership (i.e. race) on the experience of depressive symptoms despite the demonstration of that relationship by previous research groups. For instance, results from the NCS and the National Survey of American Life showed that minority groups reported greater persistence of mental illness than the Non-Hispanic White majority group (Breslau et al., 2005; Williams et al., 2007). However, our results were not entirely surprising given that other researchers have found a lack of racial-ethnic disparities when evaluating mental health outcomes (Breslau et al., 2006; Vega & Rumbaut, 1991).

Although we did not find a significant interaction between race and DT in predicting depressive symptoms, results did show a significant main effect of DT on depression, whereby all groups reported fewer depressive symptoms as a

function of higher DT. This trend is supported by previous research on DT as a moderator variable between emotional disorder risk factors and subsequent emotional disorder symptoms. Banducci and colleagues (2016) conducted a study on a sample of community youth who had experienced childhood emotional abuse. Youth that indicated greater experiences of abuse at baseline also indicated higher levels of baseline anxiety. Additionally, DT moderated the relationship between these two baseline measures so that youth with greater abuse experiences and lower DT capabilities experienced the highest levels of anxiety symptoms. This relationship remained consistent across five annual assessments. Ali and colleagues (2013) were interested in the relationship between DT, trait aggression, and problematic alcohol use. Specifically, they wanted to identify whether DT acted as a moderator on the relationship between trait aggression and problematic alcohol use. They used a large sample of undergraduate students who completed self-reported indices of trait aggression, alcohol use, and DT. Results indicated that DT was indeed a moderator variable as there was a significant relationship between trait aggression and problematic alcohol use among those with low DT capabilities, but not among those with high DT capabilities. Finally, Macatee and colleagues (2016) examined the relationship between daily stress, affective symptoms, and DT using a non-clinical sample of young adults. Participants completed baseline measures of DT and trait negative affect, and then completed six diary entries throughout a two-week period through which they reported on daily stressors, negative affect, and emotional disorder symptoms. Results of the study indicated that DT was a

moderator variable in that there was a significant relationship between daily stress and both worry and depression when participants had low but not high DT capabilities.

There are a couple main reasons why results may not have been consistent with previous research on minorities and psychopathology. First, instead of focusing on self-reported racial-ethnic group membership, it may be beneficial to include a subjective measure of minority status. That is, to have participants identify the extent to which they feel like a minority member of their community. For example, an objective measure of minority status does not necessarily take into account subjective experiences of factors that may vary among minority group members such as perceived discrimination, which has consistently been associated with experiences of psychopathology (Cokley et al., 2017). Schmitt and colleagues (2014) conducted a meta-analysis on the consequences of perceived discrimination and psychological well-being, and found an overall negative effect size ($r = -.23$) of perceived discrimination on mental health. Additionally, they found these effects to be greater for disadvantaged people ($r = -.24$) than for advantaged people ($r = -.10$). Thus, it appears that subjective measures such as perceived discrimination may be important to consider when assessing psychological health among racial minorities.

Another important factor that may be at play in the relationship between minority status and psychopathology is racial/ethnic centrality. That is, the extent to which an individual identifies with his or her racial/ethnic group and makes it a

central part of his or her identity, may have implications for mental health (Ellison, 1991). Previous research suggests that those who identify more strongly with their minority group report less negative psychological outcomes than those with a weaker identity (Burnett-Zeigler, Bohnert, & Ilgen, 2013). Sellers and colleagues (2003) conducted a study with a large sample of African American adults to examine whether racial identity attitudes played a role in determining psychological outcomes. Results of their study indicated that the correlation between racial discrimination and perceived stress was weaker for those who identified more strongly with their racial groups. That is, those who made being African American a more central part of their identities also experienced less perceived stress than those with a less central identity. In a similar study with Black males, Bynum et al (2008) found that among those who experience racism, those Black males who reported feeling more positively about being Black reported experiencing less anxiety-related symptoms than those who felt less positive about being Black.

The results of this study have several implications worth noting. First, it is important for clinicians and communities to understand that DT is a risk factor for psychopathology regardless of race. Therefore, helping individuals identify and practice effective coping strategies during stressful situations could prove to be broadly beneficial in preventing and remediating mental disorder. In their review article, Leyro and colleagues (2010) specifically mention that acceptance and commitment therapy, functional analytic psychotherapy, integrative behavioral couples therapy, and mindfulness based cognitive therapy either indirectly or

directly target distress tolerance capabilities and have had successful outcomes. Additionally, it is important for clinicians and researchers alike to realize that DT may operate alongside other risk factors (e.g. perceived discrimination, ethnic centrality) in predicting emotional disorders, especially for minority group members. Future research may investigate specific minority experiences that may interact with DT to predict mental health outcomes. Instead of comparing minority group members to majority group members, a future study could investigate within group differences in DT as they relate to psychological disorders.

It is also important to note the limitations of the current study. First, the sample consisted of undergraduate students from a single university, with a relatively small number of individuals in each ethnic minority group (e.g., Black, Asian-American). Thus, the results of this study cannot necessarily generalize to clinical or community samples. One specific limitation in using a college sample could be that we may have unintentionally selected for resilience. That is, college students have already overcome a lot of obstacles in order to make it to the university level, and thus may have a uniquely high level of DT. Perhaps a community sample would provide more variability in levels of DT beyond what a college sample can provide.

Another limitation of the current study was the use of only one form of measurement (self-report) for DT. Prior studies have indicated that self-report, behavioral, and physiological measures of DT do not correlate as would be expected. Previous research supports strong within-modality convergent validity

when measuring DT (Ameral, Palm Reed, Cameron, & Armstrong, 2014), but a lack of convergence across modalities of measurement (Bernstein, Marshall, & Zvolensky, 2011; McHugh et al., 2011). That is, various self-report measures of DT appear to be highly correlated with one another, but they do not appear to be correlated with the behavioral or physiological measures of DT.   That being said, it appears that different modes of measurement of DT are not actually tapping into the same construct. Thus, we cannot be sure that the self-report measures of DT that we used in this study are giving us a comprehensive understanding of the relationship between DT, minority status, and psychological outcomes.

Given the limitations of the current study, suggestions for future research efforts would include using a subjective measure of racial identity, asking participants about the strength of their minority identification, and expanding the sample to include community members and/or clinical patients. Future research could also include a measure of stress. The extent to which participants are experiencing stresses in their lives may have implications for how often they exercise their DT capabilities. It would be interesting to explore the way stress interacts with DT in predicting psychological outcomes. Even further, it may be fruitful to identify specific stressors related to minority status (e.g. perceived discrimination) that may contribute to negative outcomes. By delving further into the specific experiences of minorities, and identifying additional risk factors, we can continue to develop more effective ways to improve their mental health experiences.

References

Alamilla, S. A., Kim, B. S., & Lam, N. A. (2009). Acculturation, enculturation, perceived racism, minority status stressors, and psychological symptomatology among Latino/as. *Hispanic Journal of Behavioral Sciences*.

Ali, B., Ryan, J. S., Beck, K. H., & Daughters, S. B. (2013). Trait aggression and problematic alcohol use among college students: The moderating effect of distress tolerance. *Alcoholism: clinical and experimental research*, *37*(12), 2138-2144.

Ameral, V., Palm Reed, K. M., Cameron, A., & Armstrong, J. L. (2014). What are measures of distress tolerance really capturing? A mixed methods analysis. *Psychology of Consciousness: Theory, Research, and Practice*,*1*(4), 357.

American College Health Association. American College Health Association–National College Health Assessment: Reference Group Data Report, Spring 2008. American College Health Association, Baltimore, MD; 2008

Anestis, M. D., Selby, E. A., Fink, E. L., & Joiner, T. E. (2007). The multifaceted role of distress tolerance in dysregulated eating behaviors. *International Journal of Eating Disorders*, *40*(8), 718-726.

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American psychologist*, *55*(5), 469.

Banducci, A. N., Lejuez, C. W., Dougherty, L. R., & Macpherson, L. (2016). A
prospective examination of the relations between emotional abuse and
anxiety: moderation by distress tolerance. *Prevention Science*, 1-11.

Bernstein, A., Marshall, E. C., & Zvolensky, M. J. (2011). Multi-method evaluation
of distress tolerance measures and construct (s): Concurrent relations to
mood and anxiety psychopathology and quality of life. *Journal of
Experimental Psychopathology*, *2*(3), 386-399.

Breslau, J., Kendler, K. S., Su, M., Gaxiola-Aguilar, S., & Kessler, R. C. (2005).
Lifetime risk and persistence of psychiatric disorders across ethnic groups
in the United States. *Psychological medicine*, *35*(03), 317-327.

Breslau, J., Aguilar-Gaxiola, S., Kendler, K. S., Su, M., Williams, D., & Kessler,
R. C. (2006). Specifying race-ethnic differences in risk for psychiatric
disorder in a USA national sample. *Psychological medicine*, *36*(01), 57-68.

Buckner, J. D., Keough, M. E., & Schmidt, N. B. (2007). Problematic alcohol and
cannabis use among young adults: The roles of depression and
discomfort and distress tolerance. *Addictive Behaviors*, *32*(9), 1957-1963.

Burnett-Zeigler, I., Bohnert, K. M., & Ilgen, M. A. (2013). Ethnic identity,
acculturation and the prevalence of lifetime psychiatric disorders among
Black, Hispanic, and Asian adults in the U.S. *Journal Of Psychiatric
Research*, *47*(1), 56-63. doi:10.1016/j.jpsychires.2012.08.029

Bynum, M. S., Best, C., Barnes, S. L., & Burton, E. T. (2008). Private regard,
identity protection and perceived racism among African American
males.*Journal of African American Studies*, *12*(2), 142-155.

Çakır, Z. (2016). Examining psychometric properties of Distress Intolerance

    Index and Cognitive-Behavioral Avoidance Scale. *Anatolian Journal of*

    Psychiatry, *17*, 24-32.

Carter, S. E., & Walker, R. L. (2014). Anxiety symptomatology and perceived

    health in African American adults: moderating role of emotion regulation.

    Cultural Diversity and Ethnic Minority Psychology, *20*(3), 307.

Cokley, K., Smith, L., Bernard, D., Hurst, A., Jackson, S., Stone, S., ... & Roberts,

    D. (2017). Impostor feelings as a moderator and mediator of the

    relationship between perceived discrimination and mental health among

    racial/ethnic minority college students. *Journal of Counseling*

    Psychology,*64*(2), 141.

Colby, S. L., & Ortman, J. M. (2015). Projections of the size and composition of

    the US population: 2014 to 2060. *Current Population Reports*, (P25-1143).

Dahne, J., Stratton, K. J., Brown, R., Amstadter, A. B., Lejuez, C. W., &

    MacPherson, L. (2014). Race as a moderator of the relationship between

    distress tolerance and cigarette smoking. *Substance use & misuse*, *49*(6),

    708-714.

Daughters, S. B., Gorka, S. M., Magidson, J. F., MacPherson, L., & Seitz-Brown,

    C. J. (2013). The role of gender and race in the relation between

    adolescent distress tolerance and externalizing and internalizing

    psychopathology. *Journal of adolescence*, *36*(6), 1053-1065.

Daughters, S. B., Reynolds, E. K., MacPherson, L., Kahler, C. W., Danielson, C.

K., Zvolensky, M., & Lejuez, C. W. (2009). Distress tolerance and early

adolescent externalizing and internalizing symptoms: The moderating role

of gender and ethnicity. *Behaviour Research and Therapy*, *47*(3), 198-

205.

Dennhardt, A. A., & Murphy, J. G. (2011). Associations between depression,

distress tolerance, delay discounting, and alcohol-related problems in

European American and African American college students. *Psychology of

addictive behaviors*, *25*(4), 595.

Dunlop, D. D., Song, J., Lyons, J. S., Manheim, L. M., & Chang, R. W. (2003).

Racial/ethnic differences in rates of depression among preretirement

adults. *American Journal of Public Health*, *93*(11), 1945-1952.

Ellison, C. G. (1991). Identification and separatism: Religious involvement and

racial orientations among Black Americans. *The Sociological

Quarterly*,*32*(3), 477-494.

Folk, J. B., Zeman, J. L., Poon, J. A., & Dallaire, D. H. (2014). A longitudinal

examination of emotion regulation: Pathways to anxiety and depressive

symptoms in urban minority youth. *Child and Adolescent Mental

Health*,*19*(4), 243-250.

Gallagher, R. (2009). National survey of counseling directors. Retrieved from

http://www. iacsinc. org/2009%20National%20Survey.pdf

Greer, T. M., & Chwalisz, K. (2007). Minority-related stressors and coping

processes among African American college students. *Journal of College

Student Development*, *48*(4), 388-404.

Harrington, N. (2005). The frustration discomfort scale: Development and

psychometric properties. *Clinical Psychology & Psychotherapy*, *12*(5),

374-387.

Hasin, D. S., Goodwin, R. D., Stinson, F. S., & Grant, B. F. (2005). Epidemiology

of major depressive disorder: results from the National Epidemiologic

Survey on Alcoholism and Related Conditions. *Archives of general*

psychiatry, *62*(10), 1097-1106.

Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M., & Strosahl, K. (1996).

Experiential avoidance and behavioral disorders: A functional dimensional

approach to diagnosis and treatment. *Journal of consulting and clinical*

psychology, *64*(6), 1152.

Holliday, S. B., Pedersen, E. R., & Leventhal, A. M. (2016). Depression,

posttraumatic stress, and alcohol misuse in young adult veterans: The

transdiagnostic role of distress tolerance. *Drug and Alcohol Dependence*,

161, 348-355.

Hunt, J., & Eisenberg, D. (2010). Mental health problems and help-seeking

behavior among college students. *Journal of Adolescent Health*, *46*(1), 3-

10.

Kearney, L. K., Draper, M., & Barón, A. (2005). Counseling utilization by ethnic

minority college students. *Cultural Diversity and Ethnic Minority*

Psychology, *11*(3), 272.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E.

E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV

disorders in the National Comorbidity Survey Replication. *Archives of*

general psychiatry, *62*(6), 593-602.

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M.,

Eshleman, S., ... & Kendler, K. S. (1994). Lifetime and 12-month

prevalence of DSM-III-R psychiatric disorders in the United States: results

from the National Comorbidity Survey. *Archives of general psychiatry*,

51(1), 8-19.

Kessler, R. C., & Neighbors, H. W. (1986). A new perspective on the

relationships among race, social class, and psychological distress. *Journal*

of Health and Social Behavior, 107-115.

Kitzrow, M. A. (2003). The mental health needs of today's college students:

Challenges and recommendations. *NASPA journal*, *41*(1), 167-181.

Lejuez, C. W., Kahler, C. W., & Brown, R. A. (2003). A modified computer

version of the Paced Auditory Serial Addition Task (PASAT) as a

laboratory-based stressor. *The Behavior Therapist*..

Leyro, T. M., Zvolensky, M. J., & Bernstein, A. (2010). Distress tolerance and

psychopathological symptoms and disorders: a review of the empirical

literature among adults. *Psychological bulletin*, *136*(4), 576.

Lü, W., & Wang, Z. (2012). Emotional expressivity, emotion regulation, and mood

in college students: A cross-ethnic study. *Social Behavior and Personality:*

an international journal, *40*(2), 319-330.

Macatee, R. J., Albanese, B. J., Allan, N. P., Schmidt, N. B., & Cougle, J. R.

(2016). Distress intolerance as a moderator of the relationship between daily stressors and affective symptoms: Tests of incremental and prospective relationships. *Journal of Affective Disorders*, *206*, 125-132.

McHugh, R. K., Daughters, S. B., Lejuez, C. W., Murray, H. W., Hearon, B. A., Gorka, S. M., & Otto, M. W. (2011). Shared variance among self-report and behavioral measures of distress intolerance. *Cognitive Therapy and Research*, *35*(3), 266-275.

McHugh, R. K., & Otto, M. W. (2011). Domain-general and domain-specific strategies for the assessment of distress intolerance. *Psychology of Addictive Behaviors*, *25*(4), 745.

McHugh, R. K., & Otto, M. W. (2012). Refining the measurement of distress intolerance. *Behavior therapy*, *43*(3), 641-651.

McHugh, R. K., Weiss, R. D., Cornelius, M., Martel, M. O., Jamison, R. N., & Edwards, R. R. (2016). Distress intolerance and prescription opioid misuse among patients with chronic pain. *The Journal of Pain*, *17*(7), 806-814.

Merikangas, K. R., He, J. P., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., ... & Swendsen, J. (2010). Lifetime prevalence of mental disorders in US adolescents: results from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, *49*(10), 980-989.

Michel, N. M., Rowa, K., Young, L., & McCabe, R. E. (2016). Emotional distress tolerance across anxiety disorders. *Journal of Anxiety Disorders*, *40*,

94-103.

Neville, H. A., Heppner, P. P., Ji, P., & Thye, R. (2004). The relations among general and race-related stressors and psychoeducational adjustment in Black students attending predominantly White institutions. *Journal of Black Studies*, *34*(4), 599-618.

Nock, M. K., & Mendes, W. B. (2008). Physiological arousal, distress tolerance, and social problem-solving deficits among adolescent self-injurers. *Journal of Consulting and Clinical Psychology*, *76*(1), 28.

Peterson, R. A., & Reiss, S. (1992). *Anxiety Sensitivity Index*. Lawrence Erlbaum Associates.

Sayetta, R. B., & Johnson, D. P. (1980). Basic data on depressive symptomatology. United States, 1974-75. *Vital and health statistics. Series 11, Data from the national health survey*, (216), i.

Schmitt, M. T., Branscombe, N. R., Postmes, T., & Garcia, A. (2014). The consequences of perceived discrimination for psychological well-being: A meta-analytic review. *Psychological Bulletin*, *140*(4), 921.

Sellers, R. M., Caldwell, C. H., Schmeelk-Cone, K. H., & Zimmerman, M. A. (2003). Racial identity, racial discrimination, perceived stress, and psychological distress among African American young adults. *Journal of Health and Social Behavior*, 302-317.

Seo, J. W., & Kwon, S. M. (2016). Testing an affective judgment model of distress tolerance in college heavy drinkers. *Addictive behaviors*, *58*, 100-103.

Simons, J. S., & Gaher, R. M. (2005). The Distress Tolerance Scale: Development and validation of a self-report measure. *Motivation and Emotion*, *29*(2), 83-102.

Smith, K. M., Chesin, M. S., & Jeglic, E. L. (2014). Minority college student mental health: Does majority status matter? Implications for college counseling services. *journal of Multicultural counseling and developMent*,*42*(2), 77-92.

Smith, W. A., Allen, W. R., & Danley, L. L. (2007). "Assume the Position... You Fit the Description" Psychosocial Experiences and Racial Battle Fatigue Among African American Male College Students. *American Behavioral Scientist*, *51*(4), 551-578.

Strong, D., Lejuez, C., Daughters, S., Marinello, M., Kahler, C., & Brown, R. (2003). *The computerized mirror tracing task*. [Unpublished manual]. Available from <http://www.addiction.umd.edu.go.libproxy.wakehealth.edu/downloads.htm>.

Szuhany, K. L., & Otto, M. W. (2015). Contextual influences on distress intolerance: priming effects on behavioral persistence. *Cognitive therapy and research*, *39*(4), 499-507.

U.S. Census Bureau. (2012, September 27). 2010 Census Briefs main page. Retrieved March 24, 2017, from https://www.census.gov/population/www/cen2010/glance/2010CensusBriefs.html

Vega, W. A., & Rumbaut, R. G. (1991). Ethnic minorities and mental health. *Annual Review of Sociology*, *17*(1), 351-383.

Vujanovic, A. A., Bonn-Miller, M. O., Potter, C. M., Marshall, E. C., & Zvolensky, M. J. (2011). An evaluation of the relation between distress tolerance and posttraumatic stress within a trauma-exposed sample. *Journal of Psychopathology and Behavioral Assessment*, *33*(1), 129-135.

Watson, D., O'hara, M. W., Simms, L. J., Kotov, R., Chmielewski, M., McDade-Montez, E. A., ... & Stuart, S. (2007). Development and validation of the Inventory of Depression and Anxiety Symptoms (IDAS). *Psychological assessment*, *19*(3), 253.

Watson, D., O'hara, M. W., Chmielewski, M., McDade-Montez, E. A., Koffel, E., Naragon, K., & Stuart, S. (2008). Further validation of the IDAS: evidence of convergent, discriminant, criterion, and incremental validity. *Psychological assessment*, *20*(3), 248.

Watson, D., O'Hara, M. W., Naragon-Gainey, K., Koffel, E., Chmielewski, M., Kotov, R., ... & Ruggero, C. J. (2012). Development and validation of new anxiety and bipolar symptom scales for an expanded version of the IDAS (the IDAS-II). *Assessment*, *19*(4), 399-420.

Wei, M., Liao, K. Y. H., Chao, R. C. L., Mallinckrodt, B., Tsai, P. C., & Botello-Zamarron, R. (2010). Minority stress, perceived bicultural competence, and depressive symptoms among ethnic minority college students. *Journal of Counseling Psychology*, *57*(4), 411.

Williams, D. R., Gonzalez, H. M., Neighbors, H., Nesse, R., Abelson, J. M.,

Sweetman, J., & Jackson, J. S. (2007). Prevalence and distribution of
major depressive disorder in African Americans, Caribbean blacks, and
non-Hispanic whites: results from the National Survey of American Life.
Archives of general psychiatry, *64*(3), 305-315.

Williams, D. R., Neighbors, H. W., & Jackson, J. S. (2003). Racial/ethnic
discrimination and health: findings from community studies. *American
journal of public health*, *93*(2), 200-208.

World Health Organization (WHO). (2008). Global Burden of Disease: 2004
Update**.** World Health Organization, Geneva.

Zvolensky, M. J., Jardin, C., Garey, L., Robles, Z., & Sharp, C. (2016).
Acculturative stress and experiential avoidance: relations to depression,
suicide, and anxiety symptoms among minority college students. *Cognitive
behaviour therapy*, *45*(6), 501-517.