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A Cross-cultural Evaluation of Ethnic Identity Exploration and Commitment

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The current study evaluates the unique contribution of the two subscales of the Multigroup Ethnic Identity Measure–Revised (MEIM-R), Exploration and Commitment, to mental and behavioral health outcomes among non-Hispanic White, ethnic minority, and mixed-race college students. Monoracial ethnic minority and mixed-race students reported higher Exploration scores in comparison to monoracial non-Hispanic White students. Monoracial ethnic minority students reported higher Commitment scores in comparison to monoracial non-Hispanic White students monoracial non-Hispanic White and mixed-race students. Among the total sample, higher Exploration scores were associated with greater anxiety symptoms suggesting that ethnic identity exploration may result in heightened levels of distress.

The development of a secure identity has been identified as a key milestone for young adults and has been associated with mental and behavioral health outcomes (Phinney, 1990). One aspect of identity that has received increasing attention in research on development is ethnic identity. To date, research findings on the relation between ethnic identity and mental and behavioral health have been inconsistent (Rivas-Drake et al., 2014; Torres & Ong, 2010; Umaña-Taylor, 2011). Different aspects of ethnic identity (e.g., exploration, resolution, pride) have been associated with positive psychosocial (e.g., positive self-esteem) and academic functioning (e.g., greater interest in learning, higher academic motivation); however, findings are less consistent for health behaviors and few studies are available for some ethnic groups, in particular for mixed-race young adults (Rivas-Drake et al., 2014). It remains unclear which particular components of ethnic identity act as a protective buffer, and which do not, and for whom. Thus, the present study aims to further examine the process of ethnic identity development and its relation to mental and behavioral health outcomes in a sample of monoracial ethnic minority, monoracial non-Hispanic White, and mixed-race college students. There have been a variety of research approaches and theoretical frameworks used to define and study ethnic identity, resulting in debate over how to advance science on the topic (Cokley, 2007; Helms, 2007; Ong, Fuller-Rowell, & Phinney, 2010). The approach we adopt here is Phinney's (e.g., 1992, 2007) view of ethnic identity as a component of social identity, which incorporates multiple dimensions of beliefs and behaviors surrounding one's ethnic/racial identity. Phinney's approach to ethnic identity measurement is unique in that it is not ethnic-group specific; but rather, considers central components of ethnic identity formation that are common across ethnic groups (Schwartz et al., 2014).

Phinney's Multigroup Ethnic Identity Measure (MEIM; Phinney, 1992) and the revised version (MEIM-R; Phinney & Ong, 2007) follow the developmental process proposed by Erikson (1968) and Marcia (1980). Erikson (1968) proposed that ethnic identity formation typically takes place during adolescence and occurs through a process of both exploration and commitment to one's ethnic identity. Phinney and Ong (2007) define exploration as pursuing information, knowledge, and experiences about one's ethnicity. Exploration is most prominent in adolescence, but may continue afterwards. Exploration may represent a time of unrest when a person is actively questioning their ethnic identity and seeking greater information about their ethnic group. Commitment, on the other hand, refers to a fervent connection or personal attachment and investment in a group and may represent greater internalization and acceptance of one's ethnic identity.

Phinney and Ong (2007) state that exploration and commitment are two distinct processes and can be assessed independently (using subscale scores) or combined (using a total score) when evaluating overall strength of ethnic identity. To calculate subscale scores, the average of the Exploration and Commitment items are calculated, respectively. A total score is calculated by averaging all measure items. Much research with the MEIM utilized the total score (Cokley, 2007), a tradition continued with the MEIM-R (e.g., LaFauci Schutt & Marotta, 2011; Ojeda et al., 2012; Pugh & Bry, 2007; Tartakovsky, 2009; Valdivia & Flores, 2012; Weaver, 2010; Xu, Farver, & Pauker, 2014; Yoon, Jung, Lee, & Felix-Mora, 2012) despite theoretical discussion distinguishing between exploration and commitment as two distinct factors (Erikson, 1978; Marcia, 1980). Additionally, factor analysis of the MEIM-R has revealed that a two-factor structure best fits the data in several studies (e.g., Dandy, Durkin, & McEvoy, 2008; Pegg & Plybon, 2005; Roberts et al., 1999). Research findings on the relation between ethnic identity and health outcomes have been inconsistent, likely in part due to the use of a composite ethnic identity score that collapses across distinct aspects of the construct (Rivas-Drake et al., 2014; Torres & Ong, 2010; Umaña-Taylor, 2011). Considering the independent effects of ethnic identity exploration and commitment on mental and behavioral health outcomes may be an effective way to investigate inconsistent findings. Furthermore, examining the impact of ethnic identity exploration and commitment separately, as opposed to using a total composite ethnic identity score, allows for the assessment of a potential interaction between ethnic identity exploration and commitment in predicting mental and behavioral health outcomes.

Recent studies with the MEIM-R have identified differences across subscales in predicting mental health outcomes in ethnically homogenous samples (Torres & Ong, 2010; Torres,Yznaga, & Moore, 2011). For example, Torres and colleagues have demonstrated in samples of Latino adults that Exploration is associated with greater psychological distress in response to discrimination whereas Commitment served as a buffer (Torres & Ong, 2010; Torres,Yznaga, & Moore, 2011). Higher levels of exploration may be associated with more psychological distress because exploration may occur in response to unresolved and potentially stressful questions related to ethnic identity. In addition, ethnic identity exploration that occurs in a prejudiced and discriminatory environment may negatively impact mental health and result in distress. Alternatively, commitment may reflect internalization or affirmation about one's ethnic identity and act as a protective factor. These

findings underscore that the two subscales may play distinct roles that should be addressed separately in research and interventions.

Yoon (2011) used the two subscales of the MEIM-R to investigate the relation between ethnic identity status and subjective well-being in an ethnically diverse sample of 289 undergraduate and graduate students. In this study, scores from the MEIM-R were used to create four widely used ethnic identity classifications: 1) diffusion (lack of ethnic identity exploration and commitment), 2) foreclosure (commitment without exploration), 3) moratorium (exploration without commitment), and 4) identity achievement (commitment after exploration). Ethnic minority students in more advanced ethnic identity classifications (i.e. moratorium, achieved) reported higher subjective well-being in comparison to ethnic minority students in less advanced classifications (i.e. diffused, foreclosed). However, for non-Hispanic White students, those in the foreclosed status reported similarly high levels of subjective well-being in comparison to students in the achieved status (Yoon, 2011). Other studies have examined the relation between individual components of ethnic identity and psychosocial outcomes in pooled ethnic minority samples using other measures of ethnic identity, and found that higher levels of exploration and resolution were typically associated with increased self-esteem in ethnic minority high school and college students (Umaña-Taylor & Shin, 2007; Umaña-Taylor, Yazedjian, & Bámaca-Gómez, 2004). However, few studies have used pooled samples of monoracial ethnic minorities, monoracial non-Hispanic Whites, and mixed-race individuals, precluding cross-group comparison (Rivas-Drake et al., 2014).

To date, studies examining the relation between ethnic identity and mental health have typically focused on the linear relation between these constructs (Brittian et al., 2013). Studies are needed that examine potential moderators of this relation to better understand which adolescents are at risk for poor mental health. For example, previous studies have identified ethnic centrality, or the extent to which an individual believes his or her race/ ethnicity is central to his or her sense of self, as a moderator of the relation between ethnic affirmation and mental health among adolescents (Brittain et al., 2013; Rowley, Sellers, Chabous, & Smith, 1998). Ethnic affirmation was positively associated with better mental health, but only among individuals whose ethnic identity was central to their sense of self (Rowley et al., 1998). Other potential moderators of the relation between ethnic identity and mental health include sociodemographic variables that may be related to ethnic centrality such as race/ethnicity and generational status. Ethnic identity is not an equally salient feature of identity for all individuals and may be less salient for those of non-ethnic minority status (Waterman, 1985). Similarly, individuals who are first generation may view their ethnic identity as a more salient aspect of their sense of self, as compared to a person of second-or higher generations. Studies are needed that explore the role sociodemographic characteristics play in the relation between ethnic identity and mental health among college students.

A recent review of ethnic/racial identity research in adolescents found that ethnic/racial identity is more often positively associated with psychosocial and mental health outcomes across minority groups; however, relations with health risk behaviors were less consistent (Rivas-Drake et al., 2014). Among African American adolescents, studies have

demonstrated a relation between ethnic/racial identity and risky health behaviors, where more positive ethnic/racial identity was typically associated with less reported risky health behaviors such as drug use and exposure, alcohol use, sexual behavior, and fighting. A few studies have also found a relation between ethnic/racial identity and risky health behaviors among Latino youth, whereby positive ethnic/racial identity has been associated with a decrease in substance use intentions, less alcohol and tobacco use, and decreased intention to smoke and engage in risky sexual behavior. In some instances, mental health variables (e.g. self-esteem, self-efficacy) were found to mediate the relation between identity development and health behaviors. Overall, relations between ethnic/racial identity and health risk behaviors among Latinos, Asian American/Pacific Islander, and Native American adolescents remain generally inconsistent and with few studies available for any particular ethnic group (Rivas-Drake et al., 2014).

In addition, a critical lack of research has been noted in the study of ethnic/racial identity for young adults of mixed-race backgrounds, despite the growing population of mixed-race individuals in the United States (Rivas-Drake et al., 2014). Study of ethnic/racial identity for mixed-race individuals and its relation with psychosocial outcomes has largely been theoretical, and presently available studies have been critiqued for their small clinical samples, snowball recruitment methods, and reliance on self-report labels as opposed to use of parents' race when making group classifications (Bracey, Bamaca, & Umana-Taylor, 2004). Studies that have examined the relation between ethnic/racial identity of mixed-race individuals and psychosocial outcomes like self-esteem present with mixed results, with some showing that mixed-race adolescents have lower or higher self-esteem in comparison to monoracial adolescents, while other studies find no differences in self-esteem (Bracey et al., 2004). Some studies have examined the relation between ethnic/racial identity and health behaviors for mixed-race adolescents, but few have compared these outcomes with those of monoracial adolescents (Udry, Li, & Hendrickson-Smot, 2003). Mixed-race adolescents are believed to engage in risky health behaviors, in part, because of a struggle with identity formation resulting in lower self-esteem and social isolation (Udry et al., 2003). A large study (N = 83,135) of mixed-race and single-race adolescents in grades 7 through 12 participating in the National Longitudinal Study of Adolescent Health found that mixed-race adolescents were more likely to engage in risky health behaviors (e.g., alcohol and tobacco use) in comparison to single-race adolescents (Udry et al., 2003). More studies are needed that examine and compare the separate components of ethnic identity exploration and commitment on mental and behavioral health outcomes in samples including both mixedrace and monoracial adolescents to clarify inconsistent findings.

The present study aimed to address some of the limitations in the current literature on ethnic identity and health in different subgroups and had three major goals. First, we examined differences in MEIM-R Exploration and Commitment subscale scores across monoracial ethnic minority, monoracial non-Hispanic White, and mixed-race college students. Ethnic minority students were combined for the present analyses due to theory and preliminary analyses with the current dataset. Table 1 provides sample (N= 310) demographic characteristics in greater detail. In this sample, there were significant differences among monoracial non-Hispanic White, monoracial ethnic minority, and mixed-race students, but no differences among monoracial ethnic minority groups on the Exploration or Commitment

subscales; thus supporting this approach. It is important to note that in comparing non-Hispanic White and minority groups, we do not intend for the former group to be considered the norm, or a control group. For the second aim, controlling for background characteristics (i.e., age, gender, generational status), we examined the effects of the MEIM-R Exploration and Commitment subscales and the interactions between 1) the MEIM-R subscales, 2) generational status and race/ethnicity, and 3) the MEIM-R subscales and race/ethnicity in predicting mental health symptoms (i.e., anxiety and depression) in the total sample. These three interaction terms were included in the model to determine if there are potential moderating effects of the MEIM-R subscales, generational status, or race/ethnicity on the relation between ethnic identity and mental health. For the third aim, controlling for background characteristics (i.e., age, gender, generational status) and body mass index (BMI), we examined the effects of the MEIM-R Exploration and Commitment subscales and mental health symptoms on health behaviors (i.e., alcohol use, physical activity, and diet) in the total sample. This study contributes to the literature by examining the independent effects of the MEIM-R Exploration and Commitment subscales in a group of diverse college students, a period in which the development of ethnic identity is salient, and may impact mental and behavioral health (Phinney, 1990; Umana-Taylor et al., 2014).

Methods

The current research was part of a larger study on health beliefs at a federally designated minority-serving university in the southwest region of the United States. The sponsoring university's Institutional Review Board approved study procedures and materials. Students (N= 383) enrolled in an Introductory Psychology course completed an on-line questionnaire to obtain research credit. Eight participants were identified as outliers on age (> 25 years old) and therefore were not included in the analyses. Only students providing information on the ethnic/racial identity for themselves and both parents, and who identified as either monoracial non-Hispanic White, monoracial ethnic minority, or mixed-race (parents from different ethnic/racial backgrounds) were included in the present study. This resulted in classifying 145 students (46.8%) as monoracial non-Hispanic White, 103 students (33.2%) as monoracial ethnic minority, and 62 (20.0%) students as mixed-race.

Measures

The questionnaire included demographic items as well as measures of key constructs.

Ethnic/Racial Identity.

Ethnic/racial identity was assessed by students reporting their own and their parents' race/ ethnicity by selecting from one of seven response options (e.g., Asian, Black/African American). Participants were classified as monoracial non-Hispanic White, monoracial ethnic minority, or mixed-race (parents from different ethnic/racial backgrounds).

Multigroup Ethnic Identity Measure-Revised (MEIM-R; Phinney & Ong, 2007).

The MEIM-R contains six items that evaluate strength of ethnic identity on a five-point scale. Phinney (1992) developed the MEIM and revised version using components of ethnic

identity that were not ethnic-group specific to allow for cross-group comparison. The measure can yield a total score and two subscales, Exploration and Commitment. Higher scores indicate greater ethnic identity exploration and commitment. The correlation between subscales in the current sample (r= .56) was lower than the correlation in the original validation study (r= .74; Phinney & Ong, 2007), although both correlation coefficients may be considered strong. This may be a result of demographic differences across study samples. The present study had a greater percentage of non-Hispanic White students as compared to the validation study. In addition, ethnic identity classifications (i.e., Diffusion, Foreclosure, Moratorium, Identity Achievement) can also be computed with the MEIM-R and provides descriptive information about the prevalence of each category in the current sample. See Table 1 for a description of how to determine MEIM-R ethnic identity classifications. To test the specific aims of the study, the MEIM-R Exploration and Commitment subscales were used.

Mental Health Symptoms.

The Hopkins Symptom Checklist-25 (HSCL-25; Mollica, Wyshak, de Marneffe, Khuon, & Lavelle, 1987) includes 25 items, assessed on a four-point Likert scale (0 = Not at all; 4 = Extremely) and results in a total distress score as well as Anxiety and Depression subscales (all α .850). Higher scores indicate greater levels of psychological distress.

Health Behaviors.

Participants completed items about recent alcohol use, physical activity, and diet taken from the 2009 California Health Interview Survey as part of the questionnaire. For male students, alcohol use was assessed by the question, "In the past 12 months, about how many times did you have 5 or more alcoholic drinks in a single day?" For female students, alcohol use was assessed by the question, "In the past 12 months, about how many times did you have 4 or more alcoholic drinks in a single day?" Physical activity was assessed by the questions, "Now think about *vigorous* activities you may do in your free time that take hard physical effort, such as aerobics, running, soccer, fast bicycling, or fast swimming. During the last 7 days, did you do any vigorous physical activities in your free time? On how many days did you do this?" and "How much time did you {usually} spend on {one of those days/on that day} doing vigorous physical activities in your free time?" The number of days spent doing vigorous activity in the past week was multiplied by the number of minutes in vigorous activity per day to obtain the average number of minutes per week in vigorous activity. Diet was assessed by the question, "During the past week, how many times did you eat fast food? Include fast food meals eaten at work, at home, or at fast-food restaurants, carryout or drive through."

Health behavior variables were dichotomized based on recommendation guidelines and risk statistics for alcohol use (Guide to Community Preventive Services, 2011), physical activity (United States Department of Health and Human Services, 2008), and fast-food consumption (Pereira et al., 2005; United States Department of Health and Human Services, 2004). A dichotomous variable assessing binge drinking was created based on men's self-report of consuming five or more alcoholic drinks in a single day in the past year and women's self-report of consuming four or more alcoholic drinks in a single day in the past

year (0 = no binge drinking; 1 = binge drinking). A dichotomous variable assessing the recommended amount of vigorous physical activity per week was created based on students reporting less then 75 minutes per week in vigorous physical activity or 75 minutes or more per week in vigorous physical activity (0 = less than 75 minutes per week; 1 = 75 minutes or more per week). A dichotomous variable assessing fast-food consumption was created based on students reporting less than three fast-food meals in the past week or three or more fast-food meals in the past week (0 = less than three fast-food meals; 1 = three or more fast-food meals).

Data Analysis

Data were analyzed using SPSS (version 22). For the first aim, multivariate analysis of variance (MANOVA) was used to compare mean MEIM-R Exploration and Commitment subscale scores and HSCL-25 Anxiety and Depression subscale scores across monoracial ethnic minority, monoracial non-Hispanic White, and mixed-race groups. However, there was evidence that the HSCL-25 Anxiety and Depression subscale scores did not follow a normal distribution. Thus, Kruskal-Wallis non-parametric tests were used. However, there were no differences in results between the Kruskal-Wallis and MANOVA tests so results from the MANOVAs were reported. Furthermore, MANOVA is considered robust to violations of normality (Schmider, Ziegler, Danay, Berek, & Buhner, 2010). For the second aim, hierarchical linear regression analyses predicting HSCL-25 Anxiety and Depression subscale scores were conducted in three blocks. The first block consisted of age, gender, and generational status. Age, gender, and generational status were included as covariates because they have been shown to be associated with anxiety and depression (Bayram & Bilgel, 2008; Harker, 2001). The second block consisted of the MEIM-R Exploration and Commitment subscale scores. The third block included interaction terms between the MEIM-R subscales, generational status and race/ethnicity, and the MEIM-R subscales and race/ethnicity. The HSCL-25 Anxiety and Depression subscale scores were log transformed to account for nonnormality in the linear regression analyses. For the third aim, hierarchical logistic regression analyses predicting health behavior scores were conducted in three blocks. The first block consisted of age, gender, generational status, and BMI. Age, gender, generational status, and BMI were included as covariates because they have been shown to be associated with health behaviors such as alcohol use, physical activity, and fast-food intake (Allen, Elliot, Morales, Diamant, Hambarsoomian, & Schuster, 2007; Bauman et al., 2012; Bowman & Vinyard, 2004; Nolen-Hoeksema, 2004). The second block consisted of the MEIM-R Exploration and Commitment subscale scores. The third block consisted of the HSCL-25 Anxiety and Depression subscale scores. Likelihood ratio tests were used to statistically compare models. Chi-square tests were used to compare health-risk behaviors across ethnic/racial groups.

Results

The study sample had a mean age of 18.82 years (SD = 1.14) and was predominantly female (72%). Most participants (84%) were second-generation immigrant or higher and approximately half (51.3%) of the sample identified as Caucasian. See Table 1 for a more detailed description of the study sample.

Multivariate analysis of variance revealed group differences in MEIM-R Exploration [F(2, 299) = 12.38, p < .01] and Commitment [F(2, 299) = 6.93, p < .01] ethnic identity scores (see Table 1). For Exploration, subsequent Tukey's post hoc tests revealed significant group differences between monoracial ethnic minority (M = 9.70, SD = 2.26) and monoracial non-Hispanic White students (M = 8.18, SD = 2.39; p < .01) and between monoracial non-Hispanic White and mixed-race students (M = 9.20, SD = 2.42; p = .02). For Commitment, subsequent Tukey's post hoc tests revealed significant group differences between monoracial ethnic minority (M = 11.31, SD = 2.42) and monoracial non-Hispanic White students (M = 10.00, SD = 2.84; p < .01) and between monoracial ethnic minority and mixed-race students (M = 10.10, SD = 2.94; p = .02). No differences were found between the groups across SES ([F(2, 242) = 2.36, p = .10]), age ([F(2, 298) = .08, p = .92]), or gender ([X^2 (2, 310) = 1.20, p = .55]). Monoracial ethnic minority students were more likely to be first-generation immigrants (14.6%, p = .01).

Mental Health Symptoms

Multivariate analysis of variance revealed no differences in HSCL-25 Anxiety [F(2, 284) = .97, p = .38] and Depression [F(2, 284) = .27, p = .76] subscale scores across the three racial and ethnic subgroups (see Table 1). The final regression model (including Blocks 1 and 2 only) predicting HSCL-25 Anxiety scores from MEIM-R Exploration and Commitment scores, controlling for age, gender, and generational status was significant [F(7, 260) = 3.71, p < .01, $R^2 = .09$]. Female gender and greater reported Exploration were associated with higher HSCL-25 Anxiety scores (see Table 2). The interaction terms included in Block 3 between MEIM-R Exploration and Commitment scores, generational status and race/ ethnicity, and race/ethnicity and MEIM-R Exploration and Commitment scores were not significant and adding them to the model did not significantly improve model fit (R^2 Change = .01); therefore, they were not included in the final model.

The regression model predicting HSCL-25 Depression scores from MEIM-R Exploration and Commitment scores, controlling for age, gender, and generational status was not significant [F(7, 248) = 1.53, p = .16, $R^2 = .04$]. The interaction terms in Block 3 between MEIM-R Exploration and Commitment scores, generational status and race/ethnicity, and race/ethnicity and MEIM-R Exploration and Commitment scores were not significant and adding them to the model did not significantly improve model fit (R^2 Change = .02.); therefore, they were not included in the final model.

Health Behaviors

Chi-square tests revealed group differences in binge drinking, $[X^2(2, N=285) = 16.30, p < .$ 01]. There were significant group differences in binge drinking between monoracial ethnic minority and monoracial non-Hispanic White students (46% v. 69%, p < .01) and between monoracial ethnic minority and mixed-race students (46% v. 65%, p = .03). There were no significant differences between monoracial non-Hispanic White and mixed-race students (69% v. 65%, p = .25). The overall logistic regression model predicting binge drinking from MEIM-R Exploration and Commitment subscale scores and HSCL-25 Anxiety and Depression subscale scores, controlling for age, gender, generational status, and BMI, was not significant, $X^2(8, N = 197) = 9.04, p = .34$ (see Table 3).

Chi-square tests revealed group differences in vigorous physical activity, $[X^2 (2, N = 298) = 8.28, p = .02]$. There were significant group differences in engaging in vigorous activity between monoracial ethnic minority and monoracial non-Hispanic White students (42% v. 59%, p < .01) and between monoracial ethnic minority and mixed-race students (42% v. 60%, p = .03). There were no significant differences between monoracial non-Hispanic White and mixed-race students (59% v. 60%, p = .98). The logistic regression model predicting vigorous physical activity from MEIM-R Exploration and Commitment subscale scores and HSCL-25 Anxiety and Depression subscale scores, controlling for age, gender, generational status, and BMI, was significant, X^2 (8, N = 210) = 24.69, p < .01. Higher HSCL-25 Depression subscale scores were associated with less than 75 minutes of vigorous physical activity per week, OR (Odds Ratio) = .38, p = .02. In addition, higher BMI was associated with more than 75 minutes of vigorous physical activity per week, OR (-2.01) = .200. In addition, higher BMI was associated with more than 75 minutes of vigorous physical activity per week, OR = 1.16, p < .01.

Chi-square tests revealed group differences in fast-food intake, $[X^2 (2, N = 303) = 6.69, p = .04]$. There were significant group differences between monoracial ethnic minority and non-Hispanic White students (50% v. 37%, p = .03) and between monoracial ethnic minority and mixed-race students (50% v. 34%, p = .03). There were no significant differences in fastfood intake between non-Hispanic White and mixed-race students (37% v. 34%, p = .68). The logistic regression model predicting fast-food intake from MEIM-R Exploration and Commitment subscale scores and HSCL-25 Anxiety and Depression subscale scores, controlling for age, gender, generational status, and BMI, was significant, X^2 (8, N = 215) = 23.56, p < .01. Higher HSCL-25 Depression subscale scores were associated with consumption of three or more fast-food meals in the past week, OR = 4.38, p < .01. In addition, students who were male (OR = 2.24, p = .02) were more likely to have consumed three or more fast-food meals in the past week as compared to students who were female.

Discussion

Ethnic identity development, in particular the process of exploring one's ethnic identity, is an important consideration for adolescents and young adults and their mental well-being. This study found differences in college students' reports of Exploration and Commitment subscale scores on the MEIM-R across the ethnic/racial groups investigated. Monoracial ethnic minority and mixed-race students reported significantly higher MEIM-R Exploration scores in comparison to monoracial non-Hispanic White students. In turn, Exploration scores significantly predicted elevated symptoms of anxiety. These findings have important implications for screening and intervention on college campuses.

Marcia (1980) proposed that the process of ethnic identity development may be explained outside of a culturally-specific context. Although all people progress through a process of ethnic identity exploration and commitment, the content and salience of these processes differ on an individual level. Waterman (1985) proposed that ethnicity is not an equally salient feature of identity for all individuals. Other identity-related issues such as occupational identity and sex-role identity may be more salient for non-Hispanic White college students in comparison to monoracial ethnic minority and mixed-race students

(Jones & McEwen, 2000; Phinney & Alipuria, 1990). These hypotheses are supported by the current study.

Greater ethnic identity exploration was associated with more reported anxiety symptoms. These findings are consistent with previous research where greater ethnic identity exploration was associated with more psychological distress (Schwartz, Zamboanga, Weisskirch, & Rodriguez, 2009; Torres & Ong, 2010; Torres, Yznaga, & Moore, 2011). Individuals in the exploration stage are actively seeking information about their ethnicity and what it means to be a member of their ethnic group. The exploration stage is a period of uncertainty and concern with corresponding increases in anxiety symptoms, such as feeling tense or restless. Furthermore, there may be a bi-directional relation between exploration and distress. For example, psychological distress resulting from discrimination may lead to ethnic identity exploration, which in turn, may cause more distress. The exploration stage may be particularly salient for the present sample consisting of students attending a minority-serving university where more than 25% of students are Hispanic. Research has shown that co-ethnic peers on a college campus encourage involvement in ethnic student organizations and ethnic studies classes, which, in turn, were related to increased ethnic identity exploration (Ortiz & Santos, 2010). Based on the present study findings, we expected monoracial ethnic minority and mixed-race students, who reported significantly higher MEIM-R Exploration scores, to also have higher HSCL-25 Anxiety scores. There were no differences, however, in HSCL-25 Anxiety scores among the subgroups. This suggests that there may be other protective factors playing a role among these students. For example, ethnic-racial socialization and an ethnic cultural orientation have been associated with several promotive and protective effects for ethnic minority students (Neblett, Rivas-Drake, & Umana-Taylor, 2012). In addition, there may be protective factors associated with attending a minority-serving institution such as increased programming and support for cultural diversity. Future studies should examine potential protective factors of attending a minority-serving university.

Of note, no significant relations were found between the MEIM-R Commitment subscale and the HSCL-25 Anxiety and Depression subscales. Previous research has suggested that ethnic identity commitment may act as a protective factor against psychological distress as it may demonstrate an acceptance of one's ethnic identity (Schwartz et al., 2009). However, this was not found in the present study, either as a main or interactive effect. This research supports arguments against collapsing across Exploration and Commitment subscales, which may obscure distinct contributions made by the two subscales. Commitment may have a stronger link with positive developmental outcomes, such as self-esteem or academic success, which were not included in the current study. The potential independent contribution of Commitment has implications for assessment and interventions for young adults.

Although ethnic identity exploration was associated with elevated symptoms of anxiety in the present study, we do not intend these findings to discourage this important ethnic identity process. On the other hand, these findings have clinical implications for intervention including increasing supports during periods of ethnic identity exploration, particularly for monoracial ethnic minority and mixed-race students who engage in more ethnic identity

exploration in comparison to monoracial non-Hispanic White students. School and community counselors should be aware of the potential adverse experiences (i.e., increases in anxiety and depression symptoms) associated with ethnic identity exploration and structures should be put in place to assist those who struggle in this process. Furthermore, the process of ethnic identity development is dynamic. College students may return to the exploration phase of the developmental process even after experiencing a strong commitment to their ethnic identity. Thus, continued support should be available in school and community settings.

Consistent with previous research (Borsari, Murphy, & Barnett, 2007; Eyler et al., 2002; Kant, Block, Schatzkin, Ziegler, & Nestle, 1991; Raffensperger et al., 2010), there were significant differences among health behaviors across the ethnic/racial groups. For alcohol, monoracial non-Hispanic White and mixed-race students were more likely to report binge drinking in the past year in comparison to monoracial ethnic minority students. For physical activity, monoracial non-Hispanic White and mixed-race students were more likely to report 75 minutes or more of vigorous physical activity per week as compared to monoracial ethnic minority students. For diet, monoracial ethnic minority students were more likely to consume three or more fast food meals in the past week as compared to non-Hispanic White and mixed-race students. The present study did not examine the impact of socioeconomic status on these health behaviors. Future studies should explore the impact of potentially important covariates like socioeconomic status on these health behaviors.

In an effort to determine whether ethnic identity exploration and commitment and mental health symptoms played a role in health-risk behaviors, we examined the relationships among the MEIM-R Exploration and Commitment subscales, HSCL-25 Anxiety and Depression subscales, and each health behavior (i.e., alcohol use, physical activity, diet). The regression models were significant when predicting physical activity and diet, but not alcohol use. Students reporting higher HSCL-25 Depression subscale scores were more likely to engage in less than 75 minutes per week in vigorous physical activity and consume three or more fast-food meals per week. In addition, male students were more likely to consume three or more fast-food meals per week as compared to female students. However, the MEIM-R Exploration and Commitment subscales were not significantly associated with any of the health behaviors assessed. Few studies have examined the relationships among ethnic identity exploration and commitment and health behaviors and to date, findings are mixed across and within ethnic/racial subgroups (Rivas-Drake et al., 2014). The present study did not find significant relationships, though a more targeted approach may be needed. For example, daily assessments that examine social norms and contextual influences on health behaviors across diverse populations may illuminate strategies for improving health behaviors among college students.

The current study examines an important period of time in which many young adults are experiencing changes in identity, values, and behaviors; therefore, this is an important population with whom to examine ethnic identity and its correlates. Although ethnic identity exploration and commitment are considered to be universal processes, future studies should examine ethnic minority subgroups independently. In addition, the present study did not collect information on immigration or citizenship status. Future studies should examine

these variables as they may have an impact on the ethnic identity process and well-being (Phinney, Horenczyk, Liebking, & Vedder, 2001). Recent immigrants may be a particular subgroup for whom ethnic identity development processes are particularly salient and who might have additional stressors related to the immigration process.

Internal consistency reliability, as measured by Cronbach's alpha, was low for the MEIM-R Exploration subscale, potentially suggesting measurement non-equivalence across ethnic groups. However, the low alpha values may be a result of the limited number of items on the MEIM-R Exploration subscale. In addition, measurement invariance for the MEIM has been demonstrated across a multi-ethnic sample of college students suggesting that the measure can be used to compare levels of ethnic identity exploration and commitment across diverse ethnic groups (Yap et al., 2014). Additional studies should examine measurement invariance of the MEIM-R across other diverse ethnic/racial groups. In addition, prospective study designs and statistical modeling approaches are needed to examine changes in ethnic identity over time and to explore causal processes.

The transition to adulthood is a pivotal time and lays the foundation for future mental and behavioral health. Identifying unique risk and protective factors for health in young adulthood represents an important area for prevention and intervention efforts. Future research would benefit from a comprehensive and prospective examination of the independent contribution of ethnic identity exploration and commitment on health for young adults from minority and mixed-race backgrounds. In addition, including examination of potential moderators such as socioeconomic status, immigration status, and the family and school context may help elucidate unique risk and protective factors for mental and behavioral health across diverse student populations.

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Table 1.

Sociodemographics, MEIM-R subscales, HSCL-25 subscales, and Health Behaviors for the Total Sample and across Ethnic Groups

	Total Sample ($N = 310$) M (SD) $/$ n (%)	Monoracial non-Hispanic Whites (n = 145) M(SD) / n (%)	Monoracial Ethnic minorities (n = 103) M(SD) // n (%)	Mixed-race ($n = 62$) M (SD))/ n (%)	<i>p</i> - value ^c
Age (years)	18.82 (1.14)	18.79 (1.04)	18.85 (1.22)	18.84 (1.22)	.92
Gender					.55
Female	223 (71.9%)	100 (69.0%)	77 (74.8%)	46 (74.2%)	
Male	87 (28.1%)	45 (31.0%)	26 (25.2%)	16 (25.8%)	
Self-reported Ethnic Identity					<.01
Caucasian	159 (51.3%)	145 (100%)		14 (22.6%)	
Hispanic or Latino	63 (20.3%)		49 (47.6%)	14 (22.6%)	
Asian	49 (15.8%)		42 (40.8%)	7 (11.3%)	
Black/African American	13 (4.2%)		9 (8.7%)	4 (6.5%)	
Native Hawaiian or Pacific Islander	6 (1.9%)		3 (2.9%)	3 (4.8%)	
American Indian or Alaska Native	3 (1.0%			3 (4.8%)	
Other	17 (5.5%)			17 (27.4%)	
Generational Status (1 st generation)	25 (8.1%)	7 (4.8%)	15 (14.6%)	3 (4.8%)	.01
Ethnic Identity Classifications					<.01
Diffusion	103 (33.2%)	54 (37.2%)	16 (15.5%)	22 (35.3%)	
Foreclosure	83 (26.8%)	44 (30.3%)	25 (24.3%)	14 (22.6%)	
Moratorium	12 (3.9%)	2 (1.4%)	4 (3.9%)	6 (9.7%)	
Identity Achievement	115 (37.1%)	40 (27.6%)	56 (54.4%)	19 (30.6%)	
Missing	8 (2.6%)	5 (3.4%)	2 (1.9%)	1(1.6%)	

<i>p</i> - value ^c	< .01		<.01		.38		.76		<. 01	.02	.04
Mixed-race (n = 62) M (SD) // n (%)	9.20 (2.42)	.56	10.10 (2.94)	88.	1.66 (.56)	.89	1.77 (.50)	.89	40 (64.5%)	37 (59.7%)	21 (33.9%)
Monoracial Ethnic minorities (n = 103) M(SD) $//$ n (%)	9.70 (2.26)	.52	11.31 (2.42)	.91	1.58 (.46)	.86	1.76 (.51)	06.	47 (45.6%)	43 (41.7%)	51 (49.5%)
Monoracial non-Hispanic Whites (n = 145) M(SD) / n (%)	8.18 (2.39)	.71	10.00 (2.84)	.82	1.58 (.46)	.86	1.72 (.50)	.91	100 (69.0%)	86 (59.3%)	54 (37.2%)
Total Sample ($N = 310$) M (SD) // n (%)	8.89(2.45); range: 3 – 15		10.46(2.79); range: 3 – 15		<i>1.59 (.48</i>); range: 0 – 4		<i>1.75</i> (<i>.50</i>); range: 0 – 4				
	MEIM-R: Exploration	Cronbach's Alpha ^b	MEIM-R: Commitment	Cronbach's Alpha	HSCL-25 Anxiety	Cronbach's Alpha	HSCL-25 Depression	Cronbach's Alpha	Alcohol (binge drinking in the past year)	Exercise (75 minutes or more per week in vigoruous activity)	Diet (3 or more fast food meals in the past week)

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Responses were recoded so that -2 indicated Strongly Disagree and 2 indicated Strongly Agree. Positive scores indicated engaging in exploration and reporting commitment to one's race/ethnicity. Based on this recoding, participants were classified into one of four categories: diffusion (negative Exploration/Commitment scores), foreclosure (negative Exploration and positive Commitment scores). moratorium (positive Exploration and negative Commitment scores), and identity achievement (positive Exploration/Commitment scores).

 $b_{\rm T}$ The low alpha values may be a result of the limited number of items on each subscale.

^c, MANOVA and Chi-square tests of differences were used to assess group differences in means and categorization, respectively.

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Table 2.

Output for Regression Analyses Predicting HSCL-25 Anxiety and Depression Subscale Scores

		B	lock 1			Bloc	ks 1& 2	
	В	SE	ß	t	В	SE	ß	t
HSCL-25 Anxiety:								
Age	01	<.01	10	-1.69	01	<.01	11	-1.88
Gender (Ref: female)	05	.02	19	-3.21 **	05	.02	17	-2.86**
Generational Status (Ref: 1st generation)	.04	.03	.09	1.42	.05	.03	.11	1.77
Minority (Ref: White)	-<.01	.02	-<.01	08	02	.02	07	91
Bicultural (Ref: White)	.01	.02	.04	.59	.02	.02	.06	.89
Block 1: $F(5, 262) = 3.15 p < .01, R^2 = .06$								
MEIM-R Exploration					.01	<.01	.20	2.67**
MEIM-R Commitment					<.01	<.01	-<.01	04
<i>Blocks 1 & 2: F</i> (7, 260) = $3.71 \ p < .01, R^2 =$.09, R ² C	Change=	.03					
HSCL-25 Depression:								
Age	-<.01	<.01	02	39	-<.01	.01	03	40
Gender (Ref: female)	04	.02	14	-2.16*	03	.02	12	-1.92
Generational Status (Ref: 1st generation)	-<.01	.03	02	27	-<.01	.03	-<.01	06
Minority (Ref: White)	.02	.02	.07	.99	.01	.02	04	.51
Bicultural (Ref: White)	-<.01	.02	03	41	-<.01	.02	02	32
Block 1: $F(5, 250) = 1.29, p = .27, R^2 = .03$								
MEIM-R Exploration					.01	<.01	.16	2.02 *
MEIM-R Commitment					-<.01	<.01	06	81
<i>Blocks 1 & 2: F</i> (7, 248) = 1.53, $p = .16$, \mathbb{R}^2 =	$= .04, R^2$ (Change=	.02					

Notes. β = standardized regression coefficients; B = unstandardized regression coefficients; Ref = reference category; MEIM-R = Multigroup Ethnic Identity Measure-Revised; HSCL-25 = Hopkins Symptom Checklist-25; HSCL-25 Anxiety and Depression scores were log-transformed to address non-normal distribution

indicates p < .05.

indicates p < .01.

Table 3.

Output for Logistic Regression Models Predicting Health Behaviors

			1 June 1		Γ		la	ache 12				la	C 1 3400	~	
	B	SE	Wald's X ²	d	e ^B	в	SE	Wald' s X ²	d	e ^B	в	SE	Wald' s X ²	d	e ^B
Binge Drinking															
Age	.16	.15	1.09	.30	1.17	.15	.15	86.	.32	1.16	.15	.15	1.02	.31	1.17
Gender (Ref: female)	.08	.36	.05	.83	1.08	.02	.36	<.01	96.	1.02	.04	.37	.01	.91	1.05
Generational Status (Ref: 1 st generation)	1.21	.54	4.95	.03	3.35	1.13	.55	4.14	.04	3.08	1.15	.56	4.15	.04	3.14
BMI	<.01	.05	.01	.94	1.00	<.01	.05	.01	.91	1.01	-<.01	.05	<.01	76.	1.00
<i>Block 1: X</i> ² (4, $N = 197$) =	5.84, <i>p</i>	= .21, I	λ ² = .04												
MEIM-R Exploration						12	.08	2.08	.15	68.	12	.08	2.21	.14	68.
MEIM-R Commitment						.06	.07	.70	.38	1.06	.06	.07	.82	.36	1.06
Blocks 1 & 2: X^2 (6, $N = 1$)	9.7 = (79	99, <i>p</i> =	$.24, R^2 = .($)6; LR	= 2.16, <i>j</i>	<i>v</i> > .05									
HSCL-25 Anxiety											15	.48	60.	.76	.86
HSCL-25 Depression											.40	.45	.81	.37	1.49
Blocks 1, 2, & $3: X^2(8, N)$	= 197) =	: 9.04, /	$p = .34, R^2$	= .06; I	R = 1.0	4, <i>p</i> > .05									
Vigorous Physical Activity	y:														
Age	.05	.14	.12	.73	1.05	.05	.14	.11	.75	1.05	.03	.14	.05	.83	1.03
Gender (Ref: female)	.45	.35	1.65	.20	1.57	.41	.36	1.30	.25	1.50	.28	.37	.58	.45	1.33
Generational Status (Ref: 1 st generation)	53	.56	06.	.34	.59	72	.57	1.60	.21	.49	- <i>TT</i> -	.60	1.61	.20	.46
BMI	.10	.05	4.14	.04	1.11	.12	.05	5.06	.03	1.12	.15	.05	7.69	<.01	1.16
<i>Block 1: X</i> ² (4, $N = 210$) =	9.90, p	= .04, I	$R^{2} = .06$												
MEIM-R Exploration						12	.07	2.63	.11	68.	10	.08	1.78	.18	.90
MEIM-R Commitment						-< .01	.06	.01	.92	66.	02	.07	.11	.74	.98
Blocks 1 & 2: X^2 (6, $N=2$	10) = 13	.95, <i>p</i> -	$= .03, R^2 =$.09; LF	t = 3.96,	<i>p</i> <.05									
HSCL-25 Anxiety											<.01	.47	<.01	66.	1.01
HSCL-25 Depression											98	.43	5.18	.02	.38

			Block 1				Bl	ocks 1& 2				Blo	cks 1, 2, d	¢3	
	в	SE	Wald's X ²	d	e ^B	в	SE	Wald' s X ²	d	e ^B	В	SE	Wald' s X ²	d	eB
Blocks 1, 2, & $3: X^2(8, N=$	= 210) =	24.69,	<i>p</i> < .01, R ²	= .15;	LR = 10).74, <i>p</i> < .	1								
Fast-food Intake:															
Age	24	.14	2.84	60.	.79	24	.14	2.88	60.	97.	23	.14	2.66	.10	.80
Gender (Ref: female)	.65	.32	3.98	.05	1.91	.70	.33	4.50	.03	2.00	.81	.35	5.35	.02	2.24
Generational Status (Ref: 1 st generation)	.36	.57	.40	.53	1.43	.44	.58	.57	.45	1.55	.60	.60	1.01	.31	1.82
BMI	<.01	.04	:03	.87	1.01	<.01	.05	.02	.88	1.01	02	.05	.25	.62	86.
<i>Block 1: X</i> ² (4, <i>N</i> = 215) =	7.83, p	= .10, F	$\xi^{2} = .05$												
MEIM-R Exploration						.10	.07	1.71	.19	1.10	60.	.08	1.25	.26	1.09
MEIM-R Commitment						07	.06	1.16	.28	.93	05	.07	.62	.43	.95
Blocks 1 & 2: X^2 (6, $N=2$)	15) = 9.3	76, <i>p</i> =	$.14, R^2 = .0$	6; LR	= 1.93, <i>I</i>	o > .05									
HSCL-25 Anxiety											75	.47	2.57	.11	.47
HSCL-25 Depression											1.48	.44	11.24	<.01	4.38
Blocks 1, 2, & 3: X ² (8, N=	= 215) =	23.56,	<i>p</i> < .01, R ²	= .14;	LR = 13	80, <i>p</i> < .	01								
	- Tahai	11			USIT T	11 20 1			1	0.20				•	-

interval; BMI = body mass index; LR = likelihood ratio test NO :C2 Topkins Symptom Notes. MEIM-K = Multigroup Ethnic Identity Measure-Kevised; HSCLstatistic; \mathbb{R}^2 reported is the Nagelkerke \mathbb{R}^2 ; p .05 in bold font.