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ASSOCIATIONS BETWEEN ETHNIC-RACIAL IDENTITY, FAMILY FACTORS AND ALCOHOL PROBLEMS AMONG DIVERSE EMERGING ADULTS

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science
at Virginia Commonwealth University.

by

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Abstract

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The current study examined how multiple dimensions of ethnic-racial identity (ERI) were associated with alcohol use and alcohol use disorder (AUD) symptoms and how these relations varied by individuals' ethnic-racial group among 1850 diverse emerging adults ($M = 18.46$, $SD = .38$). Further, measurement invariance of the Ethnic Identity Scale-Brief (EIS-B) was tested across Latinx, White, Black, Asian, and Multiracial students. Additionally, alternative models were examined that tested whether family factors (i.e., parent education and family history of alcohol problems) moderated the relations between ERI and alcohol problems to further examine nuances in these relations. Results indicated that the EIS-B functioned differently across White students and students of color; therefore, all research questions were tested separately for White students. Findings indicated that there were significant differences by race/ethnicity. ERI affirmation was negatively associated with AUD symptoms for Asian individuals and Black individuals. ERI exploration was positively associated with AUD symptoms among Black individuals. ERI resolution was negatively associated with alcohol use for Latinx individuals and positively associated with alcohol use for Multiracial individuals. For White individuals, ERI exploration was negatively associated with alcohol use and ERI affirmation was negatively

associated with AUD symptoms. Regarding the alternative models, parent education was a significant moderator, such that at high parent education, ERI resolution predicted more alcohol use among White students and less AUD symptoms among Minority students. Family history of alcohol problems was not a significant moderator of any relations between ERI dimensions and alcohol problems. Overall, continued research and finding ways to translate findings into interventions with college students that incorporate these nuanced mechanisms underlying alcohol problems is a fruitful and important endeavor.

Introduction

Excessive alcohol use and dependency[1] during college is a major public health concern. The 2015 National Survey on Drug Use and Health indicated that 58% of full-time college students in the U.S. consumed alcohol in the past month (SAMHSA, 2015), and harmful and underage drinking impairs the intellectual and social lives of students across campuses (NIAAA; National Institute on Alcohol Abuse and Alcoholism, 2014). Also, patterns that are formed from excessive drinking and dependence in college increase individuals' risk for serious health issues later in life, such as high blood pressure (Miller, Anton, Egan, Basile, Nguyen, 2005; Rehm et al., 2009; World Health Organization, 2014), alcohol-related liver disease (Hatton, Burton, Nash, Munn, Burgoyne, Sheron, 2009), and cancer (e.g., breast cancer, colon cancer; McKnight-Eily, Henley, Green, Odom & Hungerford, 2017).

Furthermore, there are health disparities in patterns of drinking and alcohol-related illnesses based on ethnicity and race. For example, national surveys indicated that White adults reported the highest rates of alcohol consumption (i.e., 59.8%), followed by Native Americans (i.e., 47.8%), Latinxs (46.3%), African Americans (43.8%), and Asians (38%; Chartier & Caetano, 2002). However, African American and Latinx adults were more likely to report higher alcohol dependence symptoms than White adults (Mulia, Ye, Greenfield & Zemore, 2009). Similarly, concerning alcohol-related illnesses, cirrhosis death rates and liver disease are higher among Latinx and African American individuals than White individuals (NIAAA, 2013).

Therefore, given the prevalence and disparities in excessive alcohol use and dependence, and the impact on negative outcomes, it is important to focus on factors that play a role in

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[1] Consistent with recommended terminology (e.g., Homman, Edwards, Cho, Dick, & Kendler, 2017), we use *excessive alcohol use* and *alcohol use disorder symptoms* to refer to each construct independently, and the term *alcohol problems* to refer to these constructs collectively.

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reducing alcohol problems among diverse emerging adults. Previous research has indicated that various factors *increase* the risk of alcohol problems among diverse individuals, such as environments where risky behaviors take place (Gibbons, Gerrard, Lune, Wills, Brody & Conger, 2004; Nash, McQueen,& Bray, 2005), the transition from living with parents to becoming more autonomous (Evans, Cotter, Rose, & Smokowski, 2016), the age at which emerging adults first start regular use (Austin, 2004; DeWit, Adlaf, Offord, & Ogborne, 2000), family history of alcoholism (Alvarez-Alonso et al., 2016; Kendler, Edwards, Myers, Cho, Adkins, & Dick, 2015), and genetic predisposition (Dalvie, Brooks, Cardenas, Fein, Ramesar, & Stein, 2017; Dick et al., 2013; Meyers, Nyman, Loukola, Rose, Kaprio, Dick, 2013). Other work has focused on factors that *decrease* the risk of alcohol problems among diverse individuals, such as social advantages (i.e., alcohol-related refusal skill and religious beliefs; Mason, Hawkins, Kosterman, Caralano, 2010), higher education level (Harford, Yi, Hilton, 2006), and higher socioeconomic status (Collins, 2016). Although this prior work has provided important information about some of the personal, family, and genetic factors that inform alcohol problems, less work has tested whether *cultural* factors may play a role. Culture is an important part of how one's values, beliefs and practices are established (García Coll et al., 1996; Garcia Coll, Akerman, Cicchetti, 2000), which may influence their views on and use of alcohol. Specifically, a cultural factor that may be associated with alcohol use and alcohol use disorder symptoms is ethnic-racial identity (ERI). Although some research has been conducted in this area (e.g., Nasim, Belgrave, & Owens, 2007; Skewes & Blume, 2015), this work mainly focuses on the developmental period of adolescence and has tended to examine only one dimension of ERI (e.g., affirmation), although conceptualizations and research support the notion that ERI is a multidimensional construct that continues to unfold throughout adulthood (e.g., Umaña-Taylor et

al., 2014). Therefore, the current study examined how multiple dimensions of ERI (e.g., exploration, resolution, and affirmation) were associated with alcohol use and alcohol use disorder symptoms and tested how these relations varied by individuals' ethnic-racial group. Additionally, as aforementioned, given that prior work suggests that family factors, such as family history of excessive alcohol use (e.g., Alvarez-Alonso et al., 2016; Kendler et al., 2015) and lower socioeconomic status (Collins, 2016) increase alcohol problems, we tested alternative models that included the interactions between family factors and ERI to further examine nuances in these relations. Below we discuss ERI during emerging adulthood, the theoretical framework and supporting research for links between ERI and alcohol problems among diverse individuals, and the difference in how ERI predicts alcohol problems based on individuals' ethnic-racial group. We also provide support for our inclusion of an alternative exploratory analysis examining family factors.

ERI during Emerging Adulthood

Defined as a multidimensional construct, ERI includes the beliefs and attitudes one has about their ethnic-racial group membership, as well as the processes that help these beliefs and attitudes develop over time (Umaña-Taylor et al., 2014). Although there are several conceptualizations of ERI and the dimensions involved, an approach that has been commonly tested and supported in the literature is a three-dimensional conceptualization of ERI that consists of exploration (i.e., searching and learning more about one's ethnic-racial group), resolution (i.e., gaining a sense of clarity about being a member of one's ethnic-racial group), and affirmation (i.e., the positive or negative feelings one has toward being a member of their ethnic-racial group, which is also commonly referred to as ERI pride). Scholars have highlighted that ERI can be understood in terms of including *process* dimensions (e.g., exploration and

resolution) that involve individuals' experiences that they engage in to form their ERI, and

content dimensions (e.g., affirmation) that capture individuals' attitudes and feelings towards

their ERI.

Throughout the literature, the majority of work examining how ERI impacts alcohol

problems has been on the content dimensions of ERI (Ma et al., 2017; Stock et al., 2013), rather

than on the process dimensions of ERI. This is a notable limitation given that engaging in the

processes involved in forming an identity is important, particularly during emerging adulthood, a

developmental period defined by the late teenage years through the mid-twenties (Arnett, 2000).

Commonly during this developmental period and especially in college environments, individuals

experience diversity in peers, classes, and social settings, which stimulates emerging adults to

increasingly think about their own social group memberships and ERI (Azmitia, Syed, &

Radmacher, 2008). Furthermore, during college, individuals experience increased independence

and opportunities to make decisions about engaging in risk-taking behaviors like excessive

alcohol use (Evans et al., 2016). Thus, a consideration of how multiple dimensions of ERI unfold

during emerging adulthood and how this predicts alcohol problems is important.

ERI as a Predictor of Alcohol Problems among Diverse Youth

A theory that is useful for understanding how ERI may predict alcohol problems is Social

Identity Theory (Tajfel & Turner, 1986), which posits that individuals' social group

memberships play an important role in how they form their self-concept. It is posited that

individuals strive to uphold a positive self-concept through maintaining a positive perception of

their social group (or conversely, avoiding a negative perception of their social group; Tajfel &

Turner, 1986). Given that ethnicity and/or race is an important social identity during emerging

adulthood (Syed & Azmitia, 2009), it is possible that emerging adults who have a more

developed and positive ERI (e.g., greater ERI exploration, resolution, and affirmation) may desire to maintain a positive self-concept by avoiding a negative perception of their social group, and, therefore, engage in less excessive alcohol use and alcohol use disorder symptoms.

Although limited work has examined whether ERI is associated with alcohol problems among diverse *emerging adults*, prior research provides support for this association among diverse *adolescents*. For example, Zapoloski, Fisher, Banks, Hensel and Barnes-Najor (2017) examined ERI affirmation and exploration and substance use (a composite measure of substance that included alcohol) among White, African American, Latinx, Native American, Asian and Multiracial individuals who were 10 to 18 years old. Findings indicated that for African American and Multiracial adolescents, having a higher ERI affirmation and exploration was associated with lower alcohol use. However, for White adolescents, higher ERI affirmation and exploration were associated with higher alcohol use, and no significant association was found between ERI and alcohol use for Asian and Native American adolescents. Further, when examining the relations between ERI affiliation and attachment (e.g., "most of my friends are from my ethnic group"), pride (e.g., "being from my ethnic group is important to who I am") and substance use, Marsiglia, Kulis, and Hecht (2001) found that African American, Mexican American, and Multiracial students with higher ERI pride reported less substance use, while White students with higher ERI pride reported more substance use. In another study with Asian American, African American, Multiracial, European American, Native American and Latinx adolescents, Choi, Harachi, Gillmore and Catalano (2006) examined ERI affirmation and belonging (e.g., sense of pride and attachment to group), ERI achievement (i.e., seeking behaviors to find out more about one's ethnicity) and ERI practices (i.e., participating in activities) and substance use. Findings indicated that among all adolescents in the study, stronger

ERI was associated with less substance use. Additionally, the results indicated that the relation between ERI and substance use was stronger for Multiracial adolescents compared to other adolescents. These notable studies are among the few that have included content dimensions of ERI (e.g., ERI affirmation and belonging) and process dimensions of ERI (e.g., ERI exploration, achievement, and practices) and statistically tested for racial group differences.

Regarding studies that tested content dimensions of ERI among diverse adolescents, Marsiglia, Kulis, Hecht, and Sills (2004) examined ERI affiliation and affirmation and substance use (including alcohol use) among Mexican, Mexican Multiethnic, other Latinx, White, African American, American Indian and other Multiethnic adolescents. Findings indicated that higher ERI affiliation and affirmation predicted lower substance use for White adolescents, but higher substance use for Mexican American, American Indian, and multiethnic Mexican adolescents. Moreover, Gil, Wagner and Tubman (2004) examined ERI pride and alcohol use among Latinx and African American adolescents 14 to 19 years old. Findings indicated that for African American and Latinx adolescents, higher ERI pride was linked with less alcohol use.

As noted, limited work has tested whether ERI is related to less alcohol problems among diverse *emerging adults*, but some research supports this relation. For example, among, Black, Asian and Latinx adults 18 years and older, content dimensions of ERI (i.e., strong self-concept, racial pride, belonging, and attitudes) were linked with lower odds of lifetime alcohol use disorder (Burnett-Zeigler, Bohert & Ilgen, 2013). Similarly, a different study tested the association between ERI exploration and resolution and alcohol problems among non-Native (i.e., White, African American, Latinx and Asian) and Native (i.e., Alaska Native/American Indian) college students in Alaska (Skewes & Blume, 2015). The findings indicated that Native college students reported significantly greater alcohol consequences (i.e., alcohol dependency,

academic problems and negative social effects) than non-Native students. Moreover, greater ERI resolution was significantly associated with less alcohol problems, and ERI exploration had a non-significant relation with alcohol problems across both groups. Thus, this work is important in demonstrating racial differences in rates of alcohol problems among Native vs. non-Native college students. However, given that scholars did not specifically test whether there were racial differences in how ERI predicted alcohol problems, it is unclear whether the association between ERI and alcohol problems would be the same, or whether there may be differences based on individuals' racial group among emerging adults.

Differences in how ERI Informs Alcohol Problems based on Ethnic-Racial Group

Previous work indicates that the rates of developing alcohol problems vary depending on individuals' ethnic-racial group. For example, African American and Latinx individuals are at higher risk for alcohol dependence, and White individuals report the highest rates of excessive alcohol consumption (NIAAA, 2013). It is possible that the factors that underlie alcohol problems, and how they operate to inform alcohol problems, may also vary by individuals' ethnicity and race. However, apart from a few notable exceptions with adolescents (i.e., Choi et al., 2006; Zapoloski et al., 2017), research on ERI and alcohol problems has not tested whether there are meaningful differences in these relations based on individuals' ethnicity and race. Although the majority of research has not tested ethnic-racial group differences specifically, findings from existing research that included individuals from diverse backgrounds, as well as previous work focused on specific ethnic-racial groups, demonstrates that there may be meaningful ethnic-racial group differences in how ERI impacts alcohol problems. Thus, given that the current study focused on Black, Latinx, White, Asian and Multiracial individuals, findings from previous work that tested the relation between ERI and alcohol problems are

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presented separately for each of the five ethnic-racial groups. Further, the dimensions of ERI that have dominated this work and the dimensions of ERI that have been less of a focus are highlighted within each section.

Black individuals. Considering research specific to Black individuals, a majority of work has focused on content dimensions of ERI, such as affirmation. For example, Caldwell, Sellers, Bernat, and Zimmerman (2004) found that Black adolescents' ERI affirmation predicted less frequency of alcohol use. Similarly, among Black adolescents, Stock and colleagues (2013) found that ERI affirmation was associated with significantly lower levels of willingness to use of substance use. In work examining racial identity that encompasses affective, cognitive and behavior beliefs about being African American, and frequency of alcohol use among African American adolescents age 11 to 12 years old, Burlew and colleagues (2000) found that increased racial identity resulted in less alcohol use. Similarly, in other work, ERI affirmation and belonging was associated with lower levels of alcohol use among Black and White twelve-year-olds (Stock et al., 2013) and with less heavy alcohol use among Black and multiracial emerging adults (Nasim, Belgrave, & Owens, 2007). Although more limited, other work has tested additional dimensions of ERI. Smith, Phillips and Brown (2008) found that ethnic belonging (i.e., strong sense of belonging to one's own ethnic group) was a significant predictor of less alcohol use, while ethnic identity search (i.e., exploring one's ethnic group history and traditions) was not a significant predictor of alcohol use among Black emerging adults.

Overall, previous work with Black individuals has indicated that generally ERI is associated with less alcohol problems. However, the majority of this work has focused primarily on adolescents (Caldwell et al.,2004; Stock, 2013), with a few notable exceptions (Smith, Philips & Brown, 2008). Further, this work has tended to focus on content dimensions of ERI, such as

affirmation and belonging, while less has focused on process dimensions of ERI (e.g., resolution, exploration). Additionally, existing work focuses more on alcohol use, limiting our understanding of whether ERI is also protective against more serious alcohol-related problems, such as AUD symptoms, among Black individuals.

Latinx individuals. When reviewing work specific to Latinx individuals, the majority of work has focused on adolescents and has examined the content dimension of ERI affirmation. This work has also tended to be mixed. For example, as reviewed above, Zapolski, Fisher, Banks, Hensel, and Najor (2017) found that among Latinx adolescents, higher ERI exploration and affirmation was directly associated with lower substance use. Similarly, Castro, Stein, and Bentler (2009) found that among middle-school Latinx boys and girls, girls with higher ERI pride reported less alcohol use, but this finding was not significant for boys. Other studies have not found significant relations among ERI and alcohol use. For example, findings from a study with Latinx adolescents indicated that the relation between ERI pride and alcohol use was not significant (Ma et al., 2017). Thus, overall, while some findings suggest that higher ERI results in lower alcohol use among Latinx adolescents, other findings have indicated that there is no significant relation. However, the majority of work has focused on Latinx adolescents, therefore, more work is needed that examines the link between multiple dimensions of ERI and alcohol problems among Latinx emerging adults.

Asian individuals. To our knowledge, only one study has tested ERI and alcohol problems among Asian individuals. Although this study included adolescents from numerous ethnic-racial backgrounds (as noted above), among Asian adolescents specifically, ERI exploration and affirmation was not significantly associated with alcohol use (Zapolski et al., 2017). Overall, work examining the links between ERI and alcohol problems has only focused

on adolescents, and it is unclear whether similar findings would emerge among Asian emerging adults.

White individuals. Previous research with White individuals has tended to focus on adolescents and has been inconclusive. In particular, as noted, Zapolski et al. (2017) and Marsiglia et al. (2001) found that among White adolescents, higher ERI was associated with more substance use (using overall measures that included alcohol use). Inconsistent with these findings, other work (as noted above) found that higher ERI affirmation was associated with less substance use among White adolescents (Marsiglia, Kulis, Hecht & Sills, 2004). An important note, however, is that these three prior studies that have included White individuals assessed a composite of substance use that included alcohol use, but also included other substances (e.g., cigarettes and marijuana). Thus, it is unclear how findings may vary when only alcohol problems are assessed. Further, this previous work focused on adolescents, and no studies to our knowledge have focused on White emerging adults. Thus, the current study will test whether content and process dimensions of ERI are related to alcohol problems among White emerging adults.

Multiracial individuals. Only one study to our knowledge on ERI and alcohol problems focused exclusively on Multiracial individuals, and previous work in this area is with adolescents. Specifically, scholars found that Multiracial adolescents' ERI exploration and affirmation were associated with less alcohol use (Fisher, Zapolski, Barnes-Najor, 2017). Similarly, work with diverse samples that was noted above found that Multiracial adolescents who had higher ERI were less likely to frequently use substances (e.g., alcohol; Choi et al., 2006; Zapoloski et al., 2017). Thus, previous work with Multiracial adolescents has indicated that

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higher ERI is linked with less alcohol use, however because this work has not included emerging adults it is unclear whether similar findings would emerge.

Alternative Exploratory Analyses

Although the current study's main goal was to test if there were meaningful differences in the relation between ERI and alcohol problems based on individuals' ethnicity and race, we additionally tested alternative models to more rigorously test whether the relations between ERI dimensions and alcohol problems varied as a function of family factors that have been found to influence alcohol problems among emerging adults (i.e., family history of alcohol problems, parent education; Elliott, Carey, & Bonafide, 2012; Harrell, Huang, & Kepler, 2013; Powers, Berger, Fuhrmann, Fendrich, 2017; Wechsler & Nelson, 2008).

Parent education. Specifically, we tested whether college students' parents' level of education, which served as a proxy for socioeconomic status (SES) and having a family history of alcohol moderated the associations between ERI and alcohol problems. Regarding parent education as a moderator, it is possible that among college students whose parents have higher education, parents may have instilled messages in them about continuing their family legacy of education by representing their family in a positive way as they navigate college, such as avoiding alcohol problems. Prior work has indicated that parents with more education define success for their children as attending a good university and achieving an advanced degree (Goldrick-Rab & Pfeffer 2009; Walpole, 2003). Thus, students with higher parental education may not only be striving to represent their ethnic-racial group well (consistent with notions posited by Social Identity Theory; Tajfel & Turner, 1986), but also representing their family well as one that has attained and values higher education. Therefore, not only is ERI expected to

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predict less alcohol problems, but it is expected that this relation will be *stronger* among students with higher parent education.

When considering the link between ERI and alcohol problems at low parent education, it could be that students are the first in their family to attend college (i.e., first generation college students; FGCS). Students may be trying to navigate their identity as a FGCS and are more focused on this new identity during their journey to achieve higher educational attainment and upward mobility. Therefore, their identity as a FGCS may coexist alongside their identity formation in terms of ethnicity/race, but it may weaken the association between how ERI itself impacts alcohol problems. Specifically, students who are FGCS tend to have less university cultural capital (e.g., knowledge of college culture, educational credentials; Bernhardt, 2013; Dumais, 2010), and have to spend more time building it than their counterparts who are not FGCS. Additionally, FGCS are often navigating the transition to college without much social and financial safety nets while trying to fit in and understand who they are (Stephens, Hamedani, & Destin, 2014; Wilbur & Roscigno, 2016). Given these demands and the stress associated with transitioning to college (Beiter et al., 2015; Bland, Melton, Welle, & Bigam, 2012), students whose parents have lower education may be focused more immediately on this identity, rather than their ERI. Thus, it is possible that ERI will predict less alcohol problems, but this relation will be *weaker* at lower parent education.

Family history of alcohol problems. In addition to parents' education, family history of alcohol problems may also function as a moderator of ERI and alcohol problems. Although no prior work to our knowledge has tested family history of alcohol problems as a moderator, of ERI and alcohol problems, prior work provides support that family history of alcohol negatively impacts engaging in normative, positive processes (similar to the normative, positive process of

ERI formation). For example, findings from a study of college students found that those with family history of alcohol problems reported that they engaged less frequently in enjoyable, evening substance-free activities (Joyner, Acuff, Meshesha, Patrick, & Murphy, 2018). Further, prior work has found higher rates of alcohol use (LaBrie, Kenney, Lac & Migliuri, 2009) and alcohol-related problems (Leeman, Fenton & Volpicelli, 2006) among college students who have a family history of alcohol problems compared to college students who do not.

Thus, it may be that ERI only informs less alcohol problems when there is a family history of alcohol problems. In other words, the link between ERI and alcohol problems may be *weaker* among students who have a higher family history of alcohol problems (i.e., more family members with alcohol problems) because even though engaging in ERI formation is a positive process during emerging adulthood (Brittian-Lloyd, & Williams, 2016; Umaña-Taylor et al., 2014), the increased risk may impede these processes. On the other hand, when there are fewer family members with alcohol problems, students' engagement in ERI processes may have the intended protective effects. Specifically, ERI may predict less alcohol problems, but this relation may be *stronger* among students who have less family history of alcohol problems.

The Current Study

Prior work has established the Ethnic Identity Scale (EIS; Umaña-Taylor, Yazedjian, & Bámaca-Gómez, 2004) to be a valid and reliable measure of ERI among diverse emerging adults (Brittian, Kim, Armenta, Lee, Umaña-Taylor, Schwartz et al., 2015; Umaña-Taylor, Zeiders & Updegraff, 2013; Weisskirch, Kim, Zamboanga, Scwartz, Bersamin & Umaña-Taylor, 2011). However, less work has examined the equivalence of the measurement structure of the brief form of the Ethnic-Identity Scale across ethnic-racial groups. Therefore, we began the current study by

ensuring that the factor structure of the Ethnic Identity Scale Brief (EIS-B; Douglass & Umaña-Taylor, 2015) worked consistently across the current sample.

To continue, the majority of previous work examining ERI and alcohol problems has focused predominantly on Black adolescents (e.g., Belgrave, Brome, & Hampton, 2000; Burlew, 2000; Caldwell et al., 2004), and less on other racial groups and developmental periods. Previous studies have tended to focus on one ethnic-racial group (e.g., Brown, 2006; Burlew, 2000; Ma, 2017; Smith et al., 2008), and the studies that included multiple individuals from diverse ethnic-racial groups (e.g., Gil et al., 2004; Marsiglia et al., 2004) did not examine whether there were significant differences in relations based on ethnicity/race, apart from two studies with adolescents (i.e., Choi et al., 2006; Zapoloski et al., 2017) making it unclear how findings might be similar or different across groups. Additionally, because the majority of previous work has focused more on content dimensions of ERI (e.g., Caldwell et al., 2004; Marsiglia, 2004), we know less about how process dimensions of ERI (e.g., exploration and resolution) inform alcohol problems among diverse emerging adults.

Thus, to fill these gaps in previous literature, the aim of the current study was to examine the effect of three dimensions of ERI (i.e., exploration, resolution, and affirmation) on alcohol problems (i.e., alcohol use and alcohol dependency) among Asian, Black, Latinx, White, and Multiracial college students. Based on Social Identity Theory (Tajfel & Turner, 1986), ERI was expected to be associated with less alcohol problems, and generally previous work has supported this notion (Burnett-Zeigler et al., 2013; Stock et al., 2013), although some findings have been more inconclusive based on the dimensions of ERI and ethnic-racial group of participants. Therefore, based on Social Identity Theory (Tajfel & Turner, 1986), we hypothesized that ERI exploration, ERI resolution, and ERI affirmation would be associated with less alcohol use and

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AUD symptoms outcomes across all emerging adults. Also, because previous research has indicated that alcohol use and AUD symptoms can vary as a function of age and sex (Grant, Stinson, & Hartford, 2001; Caetano, Mikler & Rodriguez, 2008), we included sex and age as controls.

Additionally, to more rigorously test the impact of ERI dimensions on alcohol problems, we also examined alternative models that assessed whether parent education and family history of alcohol problems moderated the relations between ERI dimensions and alcohol problems. Based on Social Identity Theory (Tajfel & Turner, 1986) and previous work (e.g., Elliott, Carey, & Bonafide, 2012; Harrell et al., 2013; LaBrie, Migliuri, Kenney, & Lac, 2010; Luthar & Lantendresse, 2005; Wechsler & Kuo, 2003) we expected that ERI would predict less alcohol problems, but these relations would be *stronger* among students with higher parent education and/or lower family history of alcohol problems (i.e., less family members with alcohol problems). Additionally, we expected ERI would predict less alcohol problems, but these relations would be weaker among students with lower parent education and/or higher family history of alcohol problems (i.e., more family members with alcohol problems).

Methods

Participants and Procedure

The current study used secondary data from Spit for Science, an on-going longitudinal study that enrolled 5 cohorts (2011-2014; 2017) at a large U.S. university. All incoming freshman students at the university aged 18 years or older were invited to participate in a self-report survey during their first semester of college, as well as a follow-up survey each subsequent spring semester. Any students that accessed the survey through an email link were led through an informed consent process that explained the study and that their participation was

voluntary. Students who chose to participate completed the survey online, which took approximately 15-30 minutes to complete. After completing the survey, students received $10 compensation. Study data were collected and managed using REDCap electronic data capture tools. The current study focused on students who completed a follow-up survey in Spring 2017 because this was the only wave that included questions about ERI. Further, although there are currently 5 cohorts in the larger longitudinal study, we only used data from cohorts 1-4 because the 5th cohort was not added until the semester after ERI measures were added to data collection, and therefore students in Cohort 5 did not complete ERI questions.

The current study included students who were in their third, fourth, fifth or sixth year in college, and identified as White ($n = 814$), Black/African American ($n = 420$), Hispanic/Latinx ($n = 112$), Asian ($n = 385$) and more than one race ($n = 119$). Given the focus of the current study on examining ethnic-racial group differences in how ERI impacts alcohol problems, we were unable to include individuals with other ethnic-racial backgrounds (e.g., American Indian, Native Hawaiian) because there was too small of a number of individuals (i.e., $n = 29$ American Indian individuals) to test moderation by additional ethnic-racial groups.

Therefore, the current analytic sample included 1850 emerging adults ages 18 to 22 years old ($M = 18.46$, $SD = .38$), with the majority identifying as female (i.e., 69%). The majority of the sample consisted of individuals who lived in a residence hall on campus (70%) and were not currently working (60%).

Measures

Ethnic-racial identity. To assess ethnic-racial identity, the 9-item brief form of the Ethnic Identity Scale (EIS-B; Douglass & Umaña-Taylor, 2015) was used. The EIS-B measures three dimensions of ERI: *Exploration* (3-items; e.g., "I have attended events that have helped me

learn about my ethnicity."), *Resolution* (3-items; e.g., "I know what my ethnicity means to me."), and *Affirmation* (3-items; e.g., "I dislike my ethnicity."). Responses were rated on a 4-point Likert Scale, in which 1 = *Does not describe me at all*, and 4 = *Describes me very well*. All six items in the EIS-B Exploration and Resolution subscales are positively worded, and three items from the Affirmation subscale are negatively worded. Negatively worded items were reverse scored so higher scores represent higher levels of affirmation. The items in each scale were averaged to produce three ERI subscale scores. The structure of the EIS-B was created using exploratory and confirmatory factor analysis with samples of Latinx adolescents and ethnically diverse college students. Findings provided support for strong measurement invariance across ethnic groups and provided preliminary evidence for validity and reliability of the EIS-B (i.e., α = .83 to .91) as a brief measure of ERI among diverse individuals (Douglass & Umaña-Taylor, 2015; Umaña-Taylor, Kornienko, Douglass, Updegraff, 2018). Alphas in the current study were .88 for exploration, .88 for resolution, and .83 for affirmation.

Alcohol use. Alcohol use was measured using one-item: "How often do you have a drink containing alcohol?". Options ranged from 1 = *never* to (5) = *four or more times a week*.

Alcohol use disorder symptoms. Alcohol use disorder symptoms were measured using the Diagnostic and Statistical Manual of Mental Health Disorders 5th ed. (DSM-V; American Psychiatric Association, 2013). The 16-item measure assesses uncontrollable use of alcohol and addiction to alcohol (e.g., "Have you continued to drink even though it was causing you medical, emotional or psychological problems?). Support for validity and reliability (α = .94) has been provided with work focused on diverse emerging adults (Lind, Baylour, Overstreet, Hawn, Rybarczyk, Kendler, et al., 2017).

Family factors. The following variables were assessed to examine family factors: family history of alcohol problems and parent education. For family history of alcohol problems, responses from four items in the survey were used (i.e., history for mother, father, aunts/uncles/grandparents, and siblings). For example, students were asked: "Do you think your biological mother has ever had problems with alcohol? (By problems with alcohol we mean that her alcohol use caused problems at home, at work, with her health, or with the police, or that she received alcohol treatment). Using the responses to this question for the four categories of relatives, a family history of alcohol problems total score was created, which was a sum of the standardized scores of the four items. Additionally, parent education was used as a proxy for socioeconomic status and coded as the mean of educational attainment of two parental figures.

Analytic approach for testing significance. Furthermore, in the current work we utilized a significance level of $p < .05$ and confidence intervals to indicate if our findings were meaningful. When a finding indicates a statistically significant p value that is less than .05, it means that the observed outcome was unlikely to have occurred by chance (Cohen, 2016; Kain, MacLaren, 2007). However, scholars have expressed cautions of solely using the cutoff of $p < .05$ to indicate significance (Cabin & Mitchell, 2000). First, using one index of significance can be problematic, and the significance level of $p < .05$ does not tell us how large the effect of the finding is and if there is real-world importance (Ferguson, 2009).

First, to alleviate the concern about solely using the p < .05 criterion for significance, we also used the 95% CI as an additional tool to examine significance. The confidence interval provides a range in which the true value lies with a certain degree of probability (du Prel, Hommel, Rohrig, & Blettner, 2009). In other words, in addition to examining significance with p < .05, we also include the 95% confidence interval in which an interval that does not contain

zero suggests that the pathway is significant. Regarding the second concern about $p < .05$ not indicating how large of an effect exists, we also examined and included standardized coefficients in all of our results below, which indicate effect size. Specifically, coefficients of .20, .50, and .80 correspond to small, medium, and large effect sizes (Cohen, 1988).

Results

First, means, correlations and standard deviations were computed for all study variables (see Table 1). Skewness and kurtosis were examined, which indicated that measures were normally distributed (i.e., skewness less than two and kurtosis less than seven; Tabachnick & Fidell, 2006), except for ERI affirmation, which had skewness of -2.99 ($SE = .06$) and kurtosis of 9.2 ($SE =.12$). Given that one of our goals were to further investigate the measurement structure of the ERI items, we did not transform the ERI affirmation subscale. All analyses were tested in MPlus 8.0 (Muthen & Muthen, 1998- 2017) with the maximum likelihood (i.e., ML) estimation, which accounts for missing data (Enders, 2013).

Measurement Invariance of the EIS-B across Racial Groups

Next, we conducted confirmatory factor analyses to assess measurement invariance of the EIS-B (Douglass & Umaña-Taylor, 2015) between Black, White, Asian, Multiracial, and Latinx individuals, which allows us to ensure that the measure assesses the same construct across individuals. We used a series of nested multigroup confirmatory factor analyses that tested for configural, weak, and strong invariance, and included race as the grouping variable (i.e., Black, White, Latinx, Asian and Multiracial individuals). Configural invariance exists if the 9 items within the measure form a similar 3-factor structure across the 5 groups, which is indicated by all items having statistically significant loadings above .40 and good fit for the overall model (Chen, 2007). Then, to test weak invariance, factor loadings were constrained across the 5 racial groups,

and to test strong invariance, intercept means were constrained across the 5 racial groups. As recommended by scholars, strict invariance was not tested, which requires that the residual variances of corresponding indicators are equal across groups (Little, Preacher, Selig, & Card, 2007). Scholars note that this level of invariance is rarely enforced because it reflects a level of restriction that is usually unrealistic to expect (Brown, 2006).

At each level of invariance, we examined the change in CFI (i.e., ΔCFI) and RMSEA confidence intervals (Cheung & Rensvold, 2002). If the change in CFI was *less than or equal* to .01 and the RMSEA values fell within one another's confidence intervals, it indicated that there was invariance across groups. If the change in CFI test was *greater than* .01 and/or the RMSEA values *did not* fall within one another's confidence intervals, it indicated that there was not invariance across groups (Cheung & Rensvold, 2002).

Given that support for a three-factor structure (i.e., ERI exploration, resolution, and affirmation) of the EIS-B with three items on each factor has been provided (Douglass & Umaña-Taylor, 2015), we set up confirmatory factor analyses using this 3-factor structure. In all models, four primary fit indices were used to examine model fit: the chi-square (χ^2), the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). Model fit was considered to be good (acceptable) if the chi-square was not significant, CFI was greater than or equal to .95 (.90), the RMSEA was less than or equal to .06 (.08), and the SRMR was less than or equal to .05 (.08; Hu & Bentler, 1999).

First, in examining configural invariance for the 3-factor structure across racial groups, all items had statistically significant loadings above .40. The model demonstrated good fit: $\chi^2(df = 120) = 274.87$, $p = .00$; CFI = .98; RMSEA = .06, 90% CI [.05, .07]; SRMR = .04. Next, we

moved to weak invariance testing, in which factor loadings were constrained across each group, and the weak invariance model (acceptable model fit: $\chi^2(df = 156) = 700.75$, p = .00; CFI = .93; RMSEA = .10, 90% CI [.93, .11]; SRMR = .84), was compared to the configural model. This resulted in a ΔCFI between the weak and configural models that was greater than .01 (ΔCFI = .05), and neither the RMSEA from the weak model (RMSEA = .10, 90% CI [.09, .11]) or from the configural model (RMSEA = .06, 90% CI [.05, .07]) fell within one another's confidence interval. Thus, both the ΔCFI test and RMSEA confidence intervals suggested that there was not weak invariance, and the factor loadings could not be constrained across the 5 racial groups. To understand this result, we examined the factor loadings from the configural model, and removed the items that did not load well (below .40). In this step, Item 8, "I dislike my ethnicity" had a factor loading of .30 for Black individuals, .07 for Latinx individuals, and .35 for Multiracial individuals. Given that Item 8 was below .40 for 3 racial groups, the item was deleted across all groups.

Then, we reran and examined the configural invariance model again with Item 8 removed. Model fit for this configural model was considered to have good model fit: $\chi^2(df = 85) = 214.54$, $p = .00$; CFI = .98; RMSEA = .07, 90% CI [.56, .08]; SRMR = .03. The new model suggested that Item 4, "I feel negatively about my ethnicity", had a factor loading of .29 for Multiracial individuals and .34 for Asian individuals. Thus, we removed Item 4, but because this left only Item 5 (i.e., "I wish I were a different ethnicity") remaining in the ERI affirmation factor, and it is not possible to have a 1-item factor, we removed the entire 3-item ERI affirmation factor (i.e., Item 8, Item 4, and Item 5) from analyses.

Using the 2-factor structure (i.e., ERI exploration and ERI resolution) with 3 items in each factor, we re-examined configural invariance. This indicated that the 2-factor, 6-item model

had good fit: $\chi^2(df = 40) = 121.44$, $p = 00$; CFI = .99; RMSEA = .08, 90% CI [.06, .09]; SRMR = .03, and all items had statistically significant loadings above .40 across all 5 racial groups. Therefore, configural invariance was established. We then moved into testing weak invariance which had acceptable model fit: $\chi^2(df = 64) = 211.10$, $p = .00$; CFI = .97; RMSEA = .08, 90% CI [.07, .09]; SRMR = .14. The ΔCFI between the weak and configural models fit the criteria of being less than or equal to .01 (ΔCFI = .01). Furthermore, when examining the RMSEA values, the RMSEA from the weak model (RMSEA = .082, 90% CI [.07, .09]) and from the configural factorial model (RMSEA = .077, 90% CI [.06, .09]) fell within one another's confidence intervals, which indicates that weak invariance was established. Then, we tested strong invariance, in which indicator means were constrained to be equal across all 5 racial groups, and the weak invariance model was compared to the strong invariance model (poor model fit: $\chi^2(df = 88) = 743.77$, $p = .00$; CFI = .88; RMSEA = .15, 90% CI [.14, .16]; SRMR = .34). Results indicated that the ΔCFI between the strong and weak models was greater than .01 (ΔCFI = .09), and the RMSEA values from the strong model (RMSEA = .15, 90% CI [.14, .16]) and the weak model (RMSEA = .082, 90% CI [.07, .09]) did not fall into one another's confidence intervals, indicating that strong invariance was not established.

Given that strong invariance was not established, the weak model was examined to compare how the means were different/similar across the 5 racial groups. We noticed that the mean for White individuals was lower than the means of the other 4 ethnic-racial minority groups (i.e., Black, Asian, Multiracial, and Latinx individuals). The 6 items of our 2-factor model represent the process dimensions of the EIS-B (i.e., exploration and resolution), which seems to be different for White individuals when compared to ethnic-racial minority individuals. Thus, we constrained the means to be equal for the 4 racial minority groups only and left the

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mean for the White group freely estimated to test for weak and strong invariance. When the strong invariance model was constrained only among ethnic-racial minority individuals, it had acceptable model fit: $\chi^2(df = 82) = 282.97$, p = 00; CFI = .96; RMSEA = .08, 90% CI [.07, .10]; SRMR = .16. Results indicated that the ΔCFI between the strong and weak models was less than or equal to .01 (ΔCFI = .01), the RMSEA fell within each other's confidence intervals: weak invariance RMSEA = .08, 90% CI [.07, .09] and strong invariance RMSEA = .08, 90% CI [.07, .10], indicating that strong invariance was established across the 4 racial minority groups. Thus, given that measurement equivalence was established across Black, Asian, Multiracial, and Latinx individuals, in all subsequent analyses we ran models with all 4 minority groups included together, and analyses for White students were tested in a separate model.

Associations between ERI and Alcohol Problems and Racial Group Differences

Latinx, Asian, Black, and Multiracial individuals. To test our primary research question of how ERI informed alcohol problems similarly or differently based on an individual's race, we specified a multigroup model that included race (i.e., Asian, Black, Latinx, and Multiracial) as the grouping variable, along with age and sex as controls. Given the aforementioned CFA findings that suggested the EIS-B was different for White individuals, they were excluded from the multigroup model, and instead their results are reported separately below.

To test for significant racial group differences in how ERI predicted alcohol problems, we used a nested model approach in which we examined the difference between models using the change in CFI and RMSEA confidence intervals. In this method, a first model allowed all path estimates to be freely estimated across each racial group (i.e., an unconstrained model), and the second model constrained the path estimates to be equal across each racial group (i.e., fully

constrained model). When the ΔCFI between the unconstrained and fully constrained model were less than or equal to .01 and the RMSEA values fell within one another's confidence intervals, it suggested that there were significant differences in how the independent variables predicted the outcomes based on racial group. If this occurred, then using the unconstrained model, we sequentially constrained paths one at a time to examine which paths differed significantly by race.

First, we ran the multigroup nested models that included Asian, Black, Latinx, and Multiracial individuals grouped by ethnicity/race. When the unconstrained model was compared to the fully constrained model, results indicated that the ΔCFI was less than or equal to .01 (ΔCFI = 0) and the RMSEA values fell within one another's confidence intervals: in the unconstrained model the RMSEA = 0.00, 90% CI [.00 – .04], and in the fully constrained model the RMSEA = 0.00, 90% CI[.00 – .04]. This suggested that there were significant differences in the paths in the model based on ethnicity/race. Thus, we moved forward with the unconstrained model, and sequentially constrained paths one at a time to examine which paths differed significantly by ethnicity/race. Findings indicated that each path in the model was significantly different across racial groups because in all tests, the ΔCFI was less than or equal to .01, and the RMSEA values fell into one another's confidence intervals. Therefore, our final model was the unconstrained model in which all paths were freely estimated across groups.

The final unconstrained model had good fit: χ^2 (df = 16) = 10.46, p = .84; CFI = 1.00; RMSEA = .00; 90% CI [.00, .034]; SRMR = .02. As noted, standardized estimates are reported below, and unstandardized estimates are reported in Table 2. Regarding significant paths, ERI affirmation was negatively associated with AUD symptoms for Asian individuals (β = -.20, p = .003); 95% CI [-.31, -.05] and Black individuals (β = -.16, p = .02); 95% CI [-.30, -.05]. Further,

ERI exploration was positively associated with AUD symptoms among Black individuals (β = .17, p = .02); 95% CI [.03, .22]. ERI resolution was marginal and negatively associated with alcohol use for Latinx individuals (β = -.26, p = .02); 95% CI [-.09, .06] and marginal and positively associated with alcohol use for Multiracial individuals (β = .25, p = .03); 95% CI [-.11, .07]. No other hypothesized paths were significant.

White individuals. Next, we specified a model that tested the associations between ERI and alcohol problems among White individuals. The model had acceptable fit: χ^2 (df = 4) = 27.54, p = .00; CFI = .92; RMSEA = .09; 90% CI [.06, .12]; SRMR = .04. Regarding significant paths, ERI exploration was negatively associated with alcohol use (β = -.10, p = .04); 95% CI [-.18, -.01] and ERI affirmation was negatively associated with AUD symptoms (β = -.37, p = .03); 95% CI [-.17, -.01].

ERI Dimensions & Alcohol Problems Moderated by Family Factors

To examine if the relations between ERI dimensions (i.e., ERI exploration, ERI resolution and ERI affirmation) and alcohol problems (i.e., alcohol use, alcohol use disorder symptoms) were moderated by family factors (i.e., parent education, family history of alcohol problems) we ran two models, each with a different family risk factor (one with parent education as a moderator and one with family history of alcohol problems as a moderator). Given that models were tested separately for ethnic-racial minority individuals (collectively) and White individuals, this resulted in a total of 4 models. Further, for each model, age and race were included as controls. Any significant moderators were probed at one standard deviation below the mean and one standard deviation above the mean (Preacher et al., 2006). In addition, given that both models included interactions, all predictor variables were mean-centered, and the

centered variables were used to compute the product of two variables (e.g., parent education by ERI exploration) to create each interaction term to test for moderation.

First, we ran the two models for minority individuals (i.e., model 1 with parent education as the moderator, and model 2 with family history of alcohol problems as the moderator). In the first model with parent education (Figure 1), findings indicated that parent education was a significant moderator of the relation between ERI resolution and AUD symptoms (β = -.11, p = .04); 95% CI [-.21, -.01]. Specifically, ERI resolution was significantly related to less AUD symptoms among minority students whose parents had high levels of education (β = -.18, p = .01); 95% CI [-.31, -.06], but this relation was not significant among students whose parents had low levels of education (β = .01, p = .93) 95% CI [-14, .15]. Regarding the second model with family history of alcohol problems as the moderator (Figure 2), no significant interactions emerged among minority individuals.

Turning to findings for White individuals, we first tested the model with parent education as the moderator (Figure 3), and findings indicated that parent education was a significant moderator of the relation between ERI resolution and alcohol use (β = .07, p = .05); 95% CI [.00, .17]. Specifically, higher ERI resolution was significantly related to greater alcohol use among White students whose parents had high levels of education (β = .13, p = .02); 95% CI [.02, .25], but this relation was not significant among students whose parents had low levels of education (β = -.04, p = .48); 95% CI [-.16, .08]. Regarding the second model (Figure 4) with family history of alcohol problems included as a moderator, no significant findings emerged among White individuals.

Discussion

The goal of the current study was to examine how multiple dimensions of ERI were associated with alcohol use and AUD symptoms among White, Black, Asian, Latinx and Multiracial emerging adults, and to test how these relations varied by individual's ethnicity/race. Further, in an exploratory manner, we tested the interaction between ERI and parent education, and ERI and family history of alcohol problems predicting alcohol problems. Below, we discuss how well the factor structure of the EIS-B (Douglass & Umaña-Taylor, 2015) functioned among a diverse group of emerging adults, as well as the associations between ERI and alcohol problems among minority individuals and White individuals. Additionally, we discuss the links between alcohol problems moderated by family factors (i.e., parent education and family history of alcohol problems) among minority and White individuals. We then conclude with a consideration of the current work's limitations and recommendations for future studies.

First, prior to testing the links between ERI and alcohol problems among diverse emerging adults, it was necessary to test the measurement equivalence of the EIS-B (Douglass & Umaña-Taylor, 2015) in order to ensure that it was assessing the same underlying construct among all individuals. While prior work has established the 17-item Ethnic Identity Scale (EIS; Umaña-Taylor, Yazedjian, Bámaca-Gómez, 2004) to be a valid and reliable measure of ERI among diverse emerging adults (e.g., Brittian, Umaña-Taylor & Derlan, 2013; Syed et al., 2013; Yoon, 2011), less work has examined equivalence of the measurement structure of the brief form. Our findings suggested that in the current sample of emerging adults in college, the exploration and resolution processes of identity formation functioned differently among White individuals in comparison to ethnic-racial minority individuals. Work by Hardiman and Keehn (2012) suggests that when White individuals have particular diversity-related experiences, such as attending a diverse university, it can propel them to confront their prior conceptions of the

world, and it is sometimes not until later on that White individuals develop a clearer understanding and positive connection to their White identity (Hardiman & Keehn, 2012; Hardiman, 2001). In other words, the processes of ERI exploration and resolution may be a bit slower to develop among White students. On the other hand, ethnic-racial minority students are faced with more immediate experiences related to race that may make their ERI exploration and resolution processes occur differently. For example, it is important to consider what the processes of exploration and resolution may look like for ethnic-racial minority individuals in the current study's setting at a diverse (i.e., 45% minority student population), but still predominantly White institution. In addition to the previous work that has discussed the challenges minorities are presented with when adjusting within these spaces (Baumeister, 2000; Gummadam, Pittma, & Ioffe, 2015; Smith, Chesin, & Jeglic, 2014), other studies have found that the exploration process is a period of uncertainty and can cause feelings of distress and restlessness (Yznaga, & Moore, 2011). Mills and Murray (2017) suggest that distress could come from race-related experiences (e.g., discrimination) that minority individuals face in the spaces they navigate while in college, which may lead to ERI exploration that then may cause more distress, especially when these processes are not also paired specifically with positive messages about their ethnic-racial group. Particularly among the individuals in the current study, students completed the ERI measures right after the presidential election of 2016, which may have intensified a lot of thoughts and emotion for students related to their ERI. Work from Williams and Medlock (2018) highlighted that during the 2016 election there was heightened intergroup discrimination and feelings of oppression among individuals belonging to oppressed groups (e.g., ethnic/racial minorities and women). It is likely that these experiences impacted their ERI formation during this time. Overall, it will be important for future work to continue testing the

measurement equivalence of the subscales in the EIS-B to understand if the findings in the current study were due to the sociopolitical context at the time of data collection, or whether there are important differences in ERI among minority and majority individuals that may not be fully captured in existing ERI measures.

Furthermore, two items of the three items for ERI affirmation were dropped ("I dislike my ethnicity", "I feel negatively about my ethnicity" because the items had low factor loadings for minority individuals. As a result, the affirmation subscale was dropped and only one-item for affirmation was used in analyses. The low factor loading may be due to the reverse coding of the subscale brief form. While prior work has provided support for the full ERI 9-item affirmation subscale (e.g., Syed et al., 2013; Yoon, 2011) that shows face validity and captures the affective component of an individual's ERI, future studies should consider whether the use of negatively worded items that have been reverse scored accurately captures positive feelings towards one's ethnicity/race when only using a small number of items. It will be beneficial to understand whether disagreeing to the items about feeling negatively about one's ethnicity/race is the same as affirming one's ethnicity/race. Given that the EIS-B only includes 3 items of the 9 total items from the affirmation subscale in the EIS, it could be that the affirmation subscale and scoring work better with more, as opposed to less, items (i.e., EIS; Umaña-Taylor, Yazedjian, Bámaca-Gómez, 2004). Based on 2 items not working well across individuals in the study, we utilized the 1 item from the affirmation subscale that did work well across individuals (i.e. "I wish I were of a different ethnicity") in all analyses. Findings with this 1-item ERI affirmation measure and the other dimensions of ERI, and their links to alcohol problems are discussed below, first among Minority emerging adults then White emerging adults.

Associations between ERI and Alcohol Problems

Findings for Latinx, Asian, Black, and Multiracial individuals. As noted, cultural factors like ERI may play a vital role in influencing one's alcohol use and AUD symptoms. While some work has assessed links between ERI and alcohol problems (e.g., Nasim, Belgrave, & Owens, 2007; Skewes & Blume, 2015), it has mainly focused on adolescents instead of emerging adults, tended to only assess one dimension of ERI, and has not tested whether there are meaningful differences in these relations based on individuals' ethnicity/race. Addressing these gaps, overall, our results indicated that there are meaningful differences in the links between ERI and alcohol problems across diverse emerging adults.

First, inconsistent with expectations, greater ERI exploration significantly predicted greater AUD symptoms among Black individuals. ERI exploration can involve attending events, participating in activities, and reading books and other materials that include information about one's ethnicity/race. For the current sample of Black students, it could be that being at a diverse but predominately White institution (PWI) and experiencing more diversity in their peers, classes, and social settings could possibly stimulate Black students to want to know more about their own group, which facilitated their ERI exploration process (Azmita et al., 2008). Additionally, it may be that during this process Black individuals may be running into negative stereotypes and possibly discrimination. For example, work has shown that Black students report the highest amount of online discrimination (Tynes, Rose, & Markoe, 2013). Given this notion, it may be that as Black individuals are exploring in online spaces, they come across these challenges of interpreting the negative stereotypes and may use alcohol to cope which may lead to the development of AUD symptoms. Overall, more work is needed to examine what Black individuals are engaging in and information they are encountering as part of exploring what it

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means to them to be Black. Future work should include focus groups that investigate the messages that Black individuals may come across as they explore their ethnic-racial identity.

However, in contrast to ERI exploration, greater ERI affirmation was associated with *less* AUD symptoms among Black and Asian individuals. These findings are consistent with work that found that content dimensions of ERI (i.e., racial pride, belonging) were related to Black, Asian and Latinx individuals being less likely to have a lifetime alcohol use disorder (Burnett-Zeigler et al., 2013; Zapoloski et al., 2017). Brittian-Loyd and colleagues (2017) have suggested that having pride in your ethnicity/race can act as a protective factor of negative race-based experiences, which is important for positive health and development. Based on this, it could be that minority individuals who feel good about their ethnicity/race want to continue to uphold that positive perception of their ethnic-racial group, which results in participating less in behaviors like alcohol use over time that could lead to the development of AUD symptoms. It will be important for future work to directly test this notion by examining whether emerging adults are thinking about the perceptions others have about their ethnic-racial group and whether they are trying to maintain positive views from others about their group, which could be the mechanism that explains why ERI affirmation may be linked with less AUD symptoms.

Although relations between ERI resolution and alcohol problems were not significant among Black or Asian individuals, ERI resolution did play a role for Latinx and Multiracial individuals, in opposite directions. Specifically, having a clear sense of being Latinx was associated with less alcohol use. For Latinx students specifically, it could be that through their college experiences with diverse peers, they learn more about themselves and what it means to them to be Latinx, which could include protective cultural values. For example, an often-strong cultural value in the Latinx community is familism values, which involves representing the

family well and caring for one another (Knight, Carlo, Basilio, & Jacobson, 2015). It is possible that part of resolving what it means to be Latinx involves a recognition and stronger adherence to familism values, which may enable Latinx college students to adapt and cope with their everyday race-related experiences, maintain a positive perception of their ethnic-racial membership, and ultimately participate less in negative behaviors such as alcohol use. However, this notion is speculative and warrants future investigation. Specially, future work could test whether familism values mediates the relation between ERI resolution and less alcohol use. Given the increased risk for the use of alcohol among Latinx individuals (Johnston, O'Malley, Bachman, Schulenberg, 2009), it is essential to further work in this area to better understand how and why ERI resolution may be protective for Latinx emerging adults.

Contrary to positive effects for Latinx individuals, ERI resolution was linked to *greater* alcohol use among Multiracial individuals. Prior work has indicated that multiracial individuals think about their races/ethnicities in numerous ways (Rockquemore, 1999). For example, in considering a Black and White biracial individual, they may move fluidly between a monoracial identity for one of their biracial categories (e.g., Black), a monoracial identity for their other biracial category (e.g., White), and/ or biracial identities (e.g., Biracial, Mixed, etc.), and.or fluidly identify more with whichever identity may seem appropriate in any particular interactional setting and cultural community (Rockquemore & Brunsma, 2002). Multiracial individuals may also take an approach to not identify with any type of racial category at all, rejecting race as a category completely (Rockquemore & Brunsma, 2002). Therefore, it is possible that ERI resolution may vary depending on how individuals think about their races/ethnicities, and which identity or identities they were thinking about as they answered questions about their ethnicity/race (e.g., collectively vs. about one of their races/ethnicities).

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These thoughts towards one's group may have differential effects on alcohol use, which may have led to the current findings. Findings highlight that more mixed methods research is needed to examine how Multiracial individuals are defining and thinking about their race generally, and also specifically while they are completing measures of ERI to better understand these nuanced processes among Multiracial emerging adults.

Findings for White individuals. Among White individuals, greater ERI exploration and affirmation predicted less alcohol use and less AUD symptoms. These findings are consistent with previous work with White adolescents that indicated that higher ERI affiliation and affirmation predicted lower substance use (Marsiglia, 2004). However, given that other previous work with White adolescents indicated that more ERI exploration and affirmation were linked with more alcohol use (Zapolski et al., 2017), more research is needed that continues to understand how these relations vary across time from adolescence through emerging adulthood among White individuals. Additionally, next steps should include testing what mechanisms may moderate or mediate the relations between ERI and alcohol problems among White individuals, which could account for the inconclusive findings across developmental periods among White individuals.

ERI and Alcohol Problems moderated by Family Factors

Lastly, in an exploratory manner we examined if family factors moderated the links between ERI and alcohol problems. Specifically, we tested whether the relations between the ERI content and process dimensions and alcohol problems were moderated by parent education and family history of alcohol problems. Overall, we hypothesized that ERI would predict less alcohol problems, but these relations would be *stronger* among students with higher parent education and/or lower family history of alcohol problems, and weaker among students with

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lower parent education and/or higher family history of alcohol problems. Similar to the previous research questions, these links were tested in separate models for Minority college students and White college students.

Minority individuals. Consistent with expectations, findings indicated that among minority individuals, ERI resolution significantly predicted less AUD symptoms at high parent education. Additionally, it may be that at high parent education, individuals have been afforded more opportunities and experiences in previous environments (e.g., positive perceptions and greater expectations from peers; Walpole, 2003) that in turn supports more development in their ERI and specifically developing a clear sense in their ethnic-racial group membership compared to individuals who have low parent education (e.g., perceptions of inadequacy from peers; Mayer, 2012). Additionally, students' whose parents have higher education may have received messages to continue their family's legacy of education by representing their family in a positive way as they navigate college. Based on this notion and Social Identity Theory (Tajfel & Turner, 1986) individuals with high parent education may want to maintain that positive perception of themselves, their family and their ethnic-racial group, and so as they gain more resolve about what it means to be Black, Latinx, Asian, or Multiracial as they navigate through their college context, they participate less in alcohol-related activities that could lead to the development of AUD symptoms. However, given that no work has been conducted with parent education as a moderator of ERI and alcohol problems, more research is needed that tests more directly why this association exists. For example, as noted, it could be that students' increased opportunities and/or the legacy messages that their parents with higher education instilled in them account for how their ERI resolution impacts alcohol problems, but these notions need further investigation.

White individuals. On the other hand, contrary to expectations, among White individuals, ERI resolution significantly predicted *more* alcohol use at high parent education. Given that this finding emerged as expected among minority individuals, this finding may reflect the differences in how White individuals think about race and ethnicity and form their ERI in college, compared to ethnic-racial minority individuals. Prior work suggests that White individuals who have higher levels of ERI (i.e., centrality, how important and central one's race is to their identity) are more likely to feel responsible and even guilty for the historical wrongdoings of their ethnic-racial group (Knowles and Peng, 2005). Essentially, this finding suggests how White individuals may experience more racial engagement (i.e., consideration of what it means to be White with privilege and/or in the dominant group) in diverse contexts. It could be that resolving what it means to be White among individuals with highly educated family backgrounds is bringing awareness (perhaps for the first time in college) to the multiple forms of privilege that White individuals with highly educated families have. Considering the time of this study when the 2016 political campaign focused on race throughout the election (Sides, Tesler & Vavreck, 2018), recent research suggest that Whites have become increasingly anxious about their groups' status and position in society (Berry, Ebner, Cornelius, 2018; Mutz & Diana, 2018). Given this research and being within the context of a university that is 45% minority in a sociopolitical environment that has shown hostility toward minorities, White students in the current study may have felt increased guilt and negative feelings that they may have coped with by increased alcohol use. However, more work is warranted to test this notion.

Overall, findings across emerging adults in the current study illuminate the importance of considering individual's overlapping identities and experiences in order to understand the complexity of disadvantages and advantages that they may face (Perlman, 2018). Previous work

suggests that it will be important to use intersectionality perspectives for understanding health inequalities (Brown, 2018). In line with these suggestions, the current work examined how the relations between dimensions of ERI and alcohol problems were moderated by parent education and family history of alcohol problems. Findings revealed that the intersection of parental education and race have specific implications for alcohol problems for individuals who have privilege within both of these identities.

Limitations and Future Directions

The current study has important strengths and implications but there are also limitations to acknowledge. First, the study was cross-sectional; thus, causal relationships cannot be assumed. We were unable to assess how ERI relates to alcohol problems over time during this important development period of ERI development (i.e., emerging adulthood; Arnett, 2000). Second, our results suggest that there are meaningful differences among Latinx, Black, White, Multiracial, and Asian individuals in how ERI predicts alcohol problems. However, we were unable to test differences among other underrepresented ethnic-racial minority groups (e.g., Native Americans) given that there were too few number of individuals in the current study to test for significant differences. Given that Native American individuals, for example, have the second highest rate of alcohol consumption (Chartier & Caetano, 2002), and many of our findings found protective effects of ERI, it is essential that future research focus on dimensions of ERI as potential protective factors for alcohol problems among Native Americans, as well as other underrepresented ethnic-racial minority groups.

Next, parent education was included as a proxy for college students' SES, but it will be important for future studies to test whether different findings emerge if other assessments of SES (e.g., student current income and financial support, parent employment status) are included as

moderators. Relatedly, we only had data to test parent education and family history of alcohol problems, however studies have found that other risks, such as having multiple marginalized identities (e.g., identifying as a sexual minority individual; Grossman & Charmaraman, 2009; Hancock, Talley, Bohanek, Iserman, Ireland, 2018), play a role in an individual's alcohol use and AUD symptoms. Given this notion, it will be important for future work to continue testing how additional risk factors may moderate relations between ERI and alcohol problems.

Another limitation is that because the invariance tests for the EIS-B measure indicated that there were measurement differences among White vs. ethnic-racial Minority individuals, all models had to be tested separately, which doubled the number of tests that were ran in the present study. Specifically, to test our research question of whether there were significant racial group differences in how ERI predicted alcohol problems we ran 2 models, one for White individuals and one for Minority individuals. To test our exploratory moderation questions, we ran 4 models: two models for minority individuals (i.e., model 1 with parent education, and model 2 with family history of alcohol problems), two models for White individuals (i.e., model 3 with parent education, and model 4 with family history of alcohol problems). Scholars have cautioned that running multiple tests can increase type I error (i.e., a false positive or finding a significant effect when there actually is not one) and recommend that one way to correct for running multiple tests is to use a test for correction (e.g., Bonferroni correction) which adjusts probability (p) values reducing the chance of a type I error (Armstrong, 2014). On the other hand, other work suggests that this correction could potentially increase type II error rate (Nakagawa, 2004), which is also known as a false negative and occurs when a researcher fails to reject a null hypothesis which is actually false. In other words, type II error is when a researcher concludes there is not a significant effect, when actually there really is an effect. Given that our

primary research question was tested with only 2 models we were less concerned with multiple tests in answering these primary research questions. We acknowledge that the 4 models we ran to test the moderation questions could have resulted in a risk of Type I error, but given that these analyses were exploratory, and that we also did not want to increase our risk of type II error, we did not use the Bonferroni correction for these 4 models. An important future research direction will be to further test these models to ensure that findings are replicable and not found by chance.

Despite its limitations, the current study builds on our understanding of cultural factors that underlie alcohol problems among emerging adults and offers important insight for further investigation. First, the present study moves the field forward by focusing on cultural factors that inform alcohol problems, which builds on the personal, family, and genetic factors that have been the focus in much of the prior work with college students (Alvarez-Alonso et al., 2016; Austin, 2004; Dick et al., 2013). Findings demonstrate that when examining ERI and alcohol problems it is important to consider how and under what circumstances ERI unfolds differently based on individuals' ethnic-racial background. Scholars have recommended that ERI dimensions are important aspects that need to be considered in alcohol use research among diverse youth and emerging adults. Our findings support this recommendation, highlight how there are differences based on dimension, and also suggest that considering family factors is important during this developmental period. Overall, continued research and finding ways to translate findings into interventions with college students that incorporate these nuanced mechanisms underlying alcohol problems is a fruitful and important endeavor.

References

Alvarez-Alonso, Jurado-Barba, Martinez-Martin, Espin-Jaime, Bolaños-Porrero, Ordoñez-Franco, . . . Rubio. (2016). Association between maltreatment and polydrug use among adolescents. *Child Abuse & Neglect, 51*, 379-38. doi:10.1016/j.chiabu.2015.07.014

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (DSM-5®). American Psychiatric Pub.

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

Armstrong, R. A. (2014). When to use the Bonferroni correction. *Ophthalmic and Physiological Optics*, *34*(5), 502-508. doi: 0.1111/opo.12131

Austin, A. A. (2004). Alcohol, tobacco, other drug use, and violent behavior among native Hawaiians: Ethnic pride and resilience. *Substance Use & Misuse*. doi:10.1081/JA-120034013

Azmitia, M., Syed, M., & Radmacher, K. (2013). Finding your niche: Identity and emotional support in emerging adults' adjustment to the transition to college. *Journal of Research on Adolescence*, *23*(4), 744-761. doi:10.1111/jora.12037

Barnes, G. M., Welte, J. W., & Hoffman, J. H. (2002). Relationship of alcohol use to delinquency and illicit drug use in adolescents: Gender, age, and racial/ethnic differences. *Journal of Drug Issues*, *32*(1), 153-178. doi:10.1177/002204260203200107

Beiter, R., Nash, R., McCrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S. (2015). The prevalence and correlates of depression, anxiety, and stress in a sample of

college students. *Journal of affective disorders*, *173*, 90-96.

Belgrave, F. Z., Brome, D. R., & Hampton, C. (2000). The contribution of Africentric values and racial identity to the prediction of drug knowledge, attitudes, and use among African American youth. *Journal of Black Psychology*, *26*(4), 386-401. doi:10.1177/0095798400026004003

Bernhardt, J. M., Chaney, J. D., Chaney, B. H., & Hall, A. K. (2013). New media for health education: a revolution in progress. *Health Education & Behavior*, *40*(2), 129-132. doi:10.1177/1090198113483140

Berry, J. A., Ebner, D., & Cornelius, M. (2019). White identity politics: linked fate and political participation. *Politics, Groups, and Identities*, 1-19. doi:10.1080/21565503.2019.1615965

Bland, H. W., Melton, B. F., Welle, P., & Bigham, L. (2012). Stress tolerance: New challenges for millennial college students. *College Student Journal*, *46*(2), 362-376.

Brittian Loyd, A., & Williams, B. V. (2017). The potential for youth programs to promote African American youth's development of ethnic and racial identity. *Child development perspectives*, *11*(1), 29-38. doi:10.1111/cdep.12204

Brown, T.H. (2018). Racial stratification, immigration, and health inequality: A life course-intersectional approach. *Social Forces 96*(4), 1507-1539. doi:10.1093/sf/soy013

Brown, R., Dickerson, A., & D'Amico, D. (2016). Cultural identity among urban American Indian/Alaska Native youth: Implications for alcohol and drug Use. *Prevention Science*, *17*(7), 852-861. doi:10.1007/s11121-016-0680-1

Bucholz, K. K., Cadoret, R., Cloninger, C. R., Dinwiddie, S. H., Hesselbrock, V. M., Nurnberger Jr, J. I., ... & Schuckit, M. A. (1994). A new, semi-structured psychiatric interview for use in genetic linkage studies: a report on the reliability of the SSAGA. *Journal of*

Studies on Alcohol, *55*(2), 149-158. doi:10.15288/jsa.1994.55.149

Burlew, K., Neely, D., Johnson, C., Hucks, T. C., Purnell, B., Butler, J., ... & Burlew, R. (2000). Drug attitudes, racial identity, and alcohol use among African American adolescents. *Journal of Black Psychology*, *26*(4), 402-420. doi:10.1177/0095798400026004004

Burnett-Zeigler, Bohnert, & Ilgen. (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

Cabin, R. J., & Mitchell, R. J. (2000). To Bonferroni or not to Bonferroni: when and how are the questions. *Bulletin of the Ecological Society of America*, *81*(3), 246-248.

Caetano, R., Ramisetty-Mikler, S., & Rodriguez, L. A. (2008). The Hispanic Americans baseline alcohol survey (HABLAS): rates and predictors of alcohol abuse and dependence across Hispanic national groups. *Journal of Studies on Alcohol and Drugs*, *69*(3), 441-448. doi:10.15288/jsad.2008.69.441

Caldwell, C. H., Sellers, R. M., Bernat, D. H., & Zimmerman, M. A. (2004). Racial identity, parental support, and alcohol use in a sample of academically at-risk African American high school students. *American Journal of Community Psychology*, *34*(1-2), 71-82. doi:10.1023/B:AJCP.0000040147.69287.f7

Castro, F. G., Stein, J. A., & Bentler, P. M. (2009). Ethnic pride, traditional family values, and acculturation in early cigarette and alcohol use among Latino adolescents. *The Journal of Primary Prevention*, *30*(3-4), 265-292. doi:10.1007/s10935-009-0174-z

Chartier, K., & Caetano, R. (2002). Ethnicity and health disparities in alcohol research. *National Institute of Alcohol Abuse and Alcoholism*. Retrieved from: https://pubs.niaaa.nih.gov/publications/arh40/152-160.htm

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, *14*(3), 464-504. doi:10.1080/10705510701301834

Choi, Y., Harachi, T. W., Gillmore, M. R., & Catalano, R. F. (2006). Are multiracial adolescents at greater risk? Comparisons of rates, patterns, and correlates of substance use and violence between monoracial and multiracial adolescents. *American Journal of Orthopsychiatry*, *76*(1), 86-97. doi:10.1037/0002-9432.76.1.86

Cohen, J. (2016). The earth is round (p<. 05). In *What if there were no significance tests?* (pp. 69-82). Routledge.

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Collins, C. (2016). Born on Third Base. West River Junction: Chelsea Green Publishing.

Crenshaw, K. (1994). Mapping the margins: Intersectionality, identity politics, and violence against Women of Color. In: Martha Albertson Fineman, Rixanne Mykitiuk, Eds. The Public Nature of Private Violence. New York: Routledge. p. 93-118.

Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. University of Chicago Legal Forum.

Dalvie, S., Brooks, S., Cardenas, V., Fein, G., Ramesar, R., & Stein, D. (2017). Genetic variation within GRIN2B in adolescents with alcohol use disorder may be associated with larger left posterior cingulate cortex volume. *Acta Neuropsychiatrica, 29*(4), 252-258. doi:10.1017/neu.2016.41

DeWit, D. J., Adlaf, E. M., Offord, D. R., & Ogborne, A. C. (2000). Age at first alcohol use: A

42

risk factor for the development of alcohol disorders. *American Journal of Psychiatry*, *157*, 745-750. doi:10.1176/appi.ajp.157.5.745

Dick, Aliev, Latendresse, Porjesz, Schuckit, Rangaswamy, . . . Kramer. (2013). How phenotype and developmental stage affect the genes we find: GABRA2 and impulsivity. *Twin Research and Human Genetics: The Official Journal of the International Society for Twin Studies, 16*(3), 661-669. doi:10.1017/thg.2013.20

Douglass, S & Umaña-Taylor, A.J. (2015) A brief form of the ethnic identity scale: *Development and Empirical Validation, Identity, 15*:1, 48-65. doi:10.1080/15283488.2014.989442

Dumais, S. A., & Ward, A. (2010). Cultural capital and first-generation college success. *Poetics*, *38*(3), 245-265. doi:10.1016/j.poetic.2009.11.011

Elliott, J. C., Carey, K. B., & Bonafide, K. E. (2012). Does family history of alcohol problems influence college and university drinking or substance use? A meta-analytical review. *Society for the Study of Addictions*, *107*(10), 1774– 1785. doi:10.1111/j.1360-0443.2012.03903.x

Enders, C. K. (2013). Dealing with missing data in developmental research. *Child Development Perspectives, 7*(1), 27-31. doi:10.1111/cdep.12008

Erol, A., & Karpyak, V. M. (2015). Sex and gender-related differences in alcohol use and its consequences: Contemporary knowledge and future research considerations. *Drug and alcohol dependence*, *156*, 1-13. doi:10.1016/j.drugalcdep.2015.08.023

Evans, C., Cotter, K., Rose, R., & Smokowski, P. (2016). Substance use in rural adolescents: The impact of social capital, anti-social capital, and social capital deprivation. *Journal of Addictive Diseases*, *35*(4), 244–257. doi:10.1080/10550887.2016.1171671

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*

Power 3.1: Tests for correlation and regression analyses. *Behavior research methods*,

41(4), 1149-1160. doi:10.3758/BRM.41.4.1149

Fisher, S., Zapolski, T. C., Sheehan, C., & Barnes-Najor, J. (2017). Pathway of protection:

Ethnic identity, self-esteem, and substance use among multiracial youth. *Addictive*

behaviors, *72*, 27-32. doi:10.1016/j.addbeh.2017.03.003

Ferguson, C. J. (2009). An effect size primer: a guide for clinicians and researchers. *Professional*

Psychology: Research and Practice, *40*(5), 532. doi: 10.1037/a0015808

Garcia Coll, C., Akerman, A., & Cicchetti, D. (2000). Cultural influences on

developmental processes and outcomes: Implications for the study of development and

psychopathology. *Development and Psychopathology*, *12*(3), 333-356.

doi:10.1017/S0954579400003059

Garcia Coll, C., Crnic, K., Lamberty, G., Wasik, B. H., Jenkins, R., Garcia, H. V., & McAdoo,

H. P. (1996). An integrative model for the study of developmental competencies in

minority children. *Child development*, *67*(5), 1891-1914.

doi:10.1111/j.14678624.1996.tb01834.x

Gibbons, F. X., Gerrard, M., Lune, L. S. V., Wills, T. A., Brody, G., & Conger, R. D. (2004).

Context and cognitions: Environmental risk, social influence, and adolescent substance

use. *Personality and Social Psychology Bulletin*, *30*(8), 1048-1061. doi:10.1007/s10964-

008-9330-7

Gil, A. G., Wagner, E. F., & Tubman, J. G. (2004). Culturally sensitive substance abuse

intervention for Hispanic and African American adolescents: Empirical examples from

the alcohol treatment targeting adolescents in need (ATTAIN) project. *Addiction*,

44

99(s2), 140-150. doi:10.1111/j.1360-0443.2004.00861.x

Goldrick-Rab, S., & Pfeffer, F. T. (2009). Beyond access: Explaining socioeconomic differences in college transfer. *Sociology of Education*, *82*(2), 101-125. doi:10.1177/003804070908200201

Grant, B. F., Stinson, F. S. & Harford, T. C. (2001) Age at onset of alcohol use and DSM-IV alcohol abuse and dependence: a 12- year follow-up. *Journal of Substance Abuse*, *13*, 493–504. doi:10.1016/S0899-3289(01)00096-7

Grossman, J. M., & Charmaraman, L. (2009). Race, context, and privilege: White adolescents' explanations of racial-ethnic centrality. *Journal of Youth and Adolescence*, *38*(2), 139-152. doi:10.1007/s10964-008-9330-7

Hardiman, R. (2001). Reflections on White identity development theory. *New perspectives on racial identity development: A theoretical and practical anthology*, 108-128.

Hardiman, R., & Keehn, M. (2012). White identity development revisited. *New perspectives on racial identity development: Integrating emerging frameworks*, 121-137.

Harford, T., Yi, H., Hilton, M. (2006). Alcohol abuse and dependence in college and noncollege samples: A ten-year prospective follow-up in a national survey. *Journal of Studies on Alcohol*, *67*(6), 803-809. doi:10.15288/jsa.2006.67.803

Harrell, Z.T., Huang, J.L., & Kepler, D.M. (2013). Brief report: Affluence and college alcohol problems: The relevance of parent- and child-reported indicators of socioeconomic status. *Journal of Adolescence*, *36*, 893-897. doi:10.1016/j.adolescence.2013.06.009

Hatton, J., Burton, A., Nash, H., Munn, E., Burgoyne, L., & Sheron, N. (2009). Drinking patterns, dependency and life-time drinking history in alcohol-related liver disease. *Addiction, 104*(4), 587-592. doi:10.1111/j.1360-0443.2008.02493.x

Hancock, D. W., Talley, A. E., Bohanek, J., Iserman, M. D., & Ireland, M. (2018). Sexual orientation self-concept ambiguity and alcohol use disorder symptomology: The roles of motivated psychological distancing and drinking to cope. *Journal of studies on alcohol and drugs*, *79*(1), 96-101. doi:10.15288/jsad.2018.79.96

Homman, L. E., Edwards, A. C., Cho, S. B., Dick, D. M., & Kendler, K. S. (2017). Gender and direction of effect of alcohol problems and internalizing symptoms in a longitudinal sample of college students. *Substance Use & Misuse*, *52*(4), 429-438. doi:10.1080/10826084.2016.1233983

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1–55. doi:10.1080/ 10705519909540118

Joyner, K. J., Acuff, S. F., Meshesha, L. Z., Patrick, C. J., & Murphy, J. G. (2018). Alcohol family history moderates the association between evening substance-free reinforcement and alcohol problems. *Experimental and Clinical Psychopharmacology*, *26*(6), 560. doi:10.1037/pha0000223

Kain, Z. N., & MacLaren, J. (2007). P less than. 05: what does it really mean?. *Pediatrics*, *119*(3), 608-610. doi:10.1542/peds.2006-3030

Kaplan, M., Brown, J. C., Huynh, Q. L., & Huynh, V. (2016). Exploring the relationship between socioeconomic status and ethnic identity. *Journal of Scholastic Inquiry: Education6*, (1), 34-47.

Kendler, K., Edwards, A., Myers, J., Cho, S., Adkins, A., & Dick, D. (2015). The predictive power of family history measures of alcohol and drug problems and internalizing disorders in a college population. *American Journal of Medical Genetics. Part B,*

Neuropsychiatric Genetics: The Official Publication of the International Society of Psychiatric Genetics, 168B(5), 337-46. doi:10.1002/ajmg.b.32320

King, M. (2017, May 4). Aggrieved whiteness: White identity politics and modern American racial formation. *Abolition Journal*, *1*. Retrieved from https://abolitionjournal.org/aggrieved-whiteness-white-identity-politics-and-modern-american-racial-formation/

Knight, G. P., Carlo, G., Basilio, C. D., & Jacobson, R. P. (2015). Familism values, perspective taking, and prosocial moral reasoning: Predicting prosocial tendencies among Mexican American adolescents. *Journal of Research on Adolescence*, *25*(4), 717-727. doi:10.1111/jora.12164

Knowles, E. D., & Peng, K. (2005). White selves: conceptualizing and measuring a dominant-group identity. *Journal of personality and social psychology*, *89*(2), 223. doi:10.1037/0022-3514.89.2.223

Kulis, S., Marsiglia, F. F., Kopak, A. M., Olmsted, M. E., & Crossman, A. (2012). Ethnic identity and substance use among Mexican-heritage preadolescents: Moderator effects of gender and time in the United States. *Journal of Early Adolescence*, *32*(2), 165–199. doi:10.1177/0272431610384484

LaBrie, J. W., Kenney, S. R., Lac, A., & Migliuri, S. F. (2009). Differential drinking patterns of family history positive and family history negative first semester college females. *Addictive behaviors*, *34*(2), 190-196. doi:10.1016/j.addbeh.2008.10.012

Lapalme, J., Haines-Saah, R., & Frohlich, K. L. (2019). More than a buzzword: how intersectionality can advance social inequalities in health research. *Critical Public Health*, 1-7. doi:10.1080/09581596.2019.1584271

Leeman, R. F., Fenton, M., & Volpicelli, J. R. (2006). Impaired control and undergraduate problem drinking. *Alcohol and Alcoholism*, *42*(1), 42-48. doi:10.1093/alcalc/agl095

Luthar, S. S., & Cicchetti, D. (2000). The construct of resilience: Implications for interventions and social policies. *Development and Psychopathology*, *12*(4), 857-885. doi:10.1017/S0954579400004156

Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development*, *71*(3), 543-562. doi:10.1111/1467-8624.00164

Luthar, S. S., & Latendresse, S. J. (2005). Children of the affluent: Challenges to well-being. *Current Directions in Psychological Science*, *14*, 49–53. doi:10.1111/j.0963-7214.2005.00333.x

Ma, M., Malcolm, L., Díaz-Albertini, K., Sánchez, J., Simpson, B., Cortes, L., & Kibler, J. (2017). Cultural assets and substance use among Hispanic adolescents. *Health Education & Behavior*, *44*(2), 326-331. doi:10.1177/1090198116659440

Marsiglia, F. F., Kulis, S., & Hecht, M. L. (2001). Ethnic labels and ethnic identity as predictors of drug use among middle school students in the Southwest. *Journal of Research on Adolescence*, *11*, 21–48. doi:10.1111/1532-7795.00002

Marsiglia, F. F., Kulis, S., Hecht, M. L., & Sills, S. (2004). Ethnicity and ethnic identity as predictors of drug norms and drug use among preadolescents in the US Southwest. *Substance Use & Misuse*, *39*(7), 1061-1094. doi:10.1081/JA-120038030

Mason, W. Alex, Hawkins, J. David, Kosterman, Rick, & Catalano, Richard F. (2010). Alcohol use disorders and depression: Protective factors in the development of unique versus

comorbid outcomes. *Journal of Child & Adolescent Substance Abuse*, *19*(4), 309-323. doi:10.1080/1067828X.2010.502491

Mcknight-Eily, Henley, Green, Odom, & Hungerford. (2017). Alcohol screening and brief intervention: A potential role in cancer prevention for young adults. *American Journal of Preventive Medicine*, *53*(3), S55-S62. doi:10.1016/j.amepre.2017.04.021

McHugh, M. L. (2013). The chi-square test of independence. *Biochemia medica: Biochemia medica*, *23*(2), 143-149. doi:10.11613/BM.2013.018

McHugh, R. K., Votaw, V. R., Sugarman, D. E., & Greenfield, S. F. (2018). Sex and gender differences in substance use disorders. *Clinical psychology review*, *66*, 12-23. doi:10.1016/j.cpr.2017.10.012

Meyers, J., Nyman, E., Loukola, A., Rose, R., Kaprio, J., & Dick, D. (2013). The association between DRD2/ANKK1 and genetically informed measures of alcohol use and problems. *Addiction Biology, 18*(3), 523-536. doi:10.1111/j.1369-1600.2012.00490.x

Miller, P., Anton, R., Egan, B., Basile, J., Nguyen, S. (2005). Excessive alcohol consumption and hypertension: Clinical implication of current research. *The Journal of Clinical Hypertension*, *7*(6), 346-352. doi:10.1111/j.1524-6175.2004.04463.x

Mulia, N., Ye, Y., Greenfield, T., and Zemore, S. (2009). Disparities in alcohol-related problems among White, Black, and Hispanic Americans. *Alcoholism: Clinical and Experimental Research, 33*(4), 654–662. doi:10.1111/j.1530-0277.2008.00880.x

Muthén, L. K., & Muthén, B. O. (1998 –2014). Mplus: Statistical analysis with latent variables. User's guide (Version 7.31) [Computer software]. Los Angeles, CA: Author.

Mutz, D. (2018) Status threat, not economic hardship, explains the 2016 presidential vote, *Proceedings of the National Academy of the Sciences of the United States of America*,

115(19). E4330-E4339

Nakagawa, S. (2004). A farewell to Bonferroni: the problems of low statistical power and

publication bias. *Behavioral ecology*, *15*(6), 1044-1045. doi: 10.1093/beheco/arh107

Nash, S. G., McQueen, A., & Bray, J. H. (2005). Pathways to adolescent alcohol use: Family

environment, peer influence, and parental expectations. *Journal of Adolescent

Health*, *37*(1), 19-28. doi:10.1016/j.jadohealth.2004.06.004

Nasim, A., Belgrave, F. Z., Jagers, R. J., Wilson, K. D., & Owens, K. (2007). The moderating

effects of culture on peer deviance and alcohol use among high-risk African-American

adolescents. *Journal of Drug Education*, *37*(3), 335-363. doi:10.2190/DE.37.3.g

National Institute on Alcohol Abuse and Alcoholism, Minority Health and Health Disparities.

(2013). *Health Disparities Strategic Plan*. Available at:

https://www.niaaa.nih.gov/alcohol-health/special-populations-co-occurring-

disorders/diversity-health-disparities

National Institute on Alcohol Abuse and Alcoholism. (2014). College drinking. Retrieved

from http://www.niaaa.nih.gov/alcohol-health/special-populations-co-occurring-

disorders/college-drinking

Pelman, M. (2018, October 23). The origin of the term 'intersectionality'. Retrieved from

https://www.cjr.org/language_corner/intersectionality.php

Polen, M., Green, C., Perrin, N., Anderson, B., & Weisner, C. (2010). Drinking patterns, gender

and health I: Attitudes and health practices. *Addiction Research and Theory*, *18*(2), 122-

142. doi:10.3109/16066350903398486

Powers, G., Berger, L., Fuhrmann, D., & Fendrich, M. (2017). Family history density of

substance use problems among undergraduate college students: Associations with heavy

alcohol use and alcohol use disorder. *Addictive behaviors*, *71*, 1-6.

doi:10.1016/j.addbeh.2017.02.015

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interaction

effects in multiple linear regression, multilevel modeling, and latent curve analysis.

Journal of Educational and Behavioral Statistics, *31*, 427–448.

doi:10.3102/10769986031004437

du Prel, J. B., Hommel, G., Röhrig, B., & Blettner, M. (2009). Confidence interval or p-value?:

part 4 of a series on evaluation of scientific publications. *Deutsches Ärzteblatt*

International, *106*(19), 335. doi:0.3238/arztebl.2009.0335

Rehm, J., Baliunas, D., Borges, G., Graham, K., Irving, H., Kehoe, T., . . . Taylor, B. (2010). The

relation between different dimensions of alcohol consumption and burden of disease: An

overview. *Addiction, 105*(5), 817-843. doi:10.1111/j.1360-0443.2010.02899.x

Rockquemore, K.A. (1999). Race and identity: Exploring the biracial experience. Unpublished

doctoral dissertation, University of Notre Dame, Notre Dame, Indiana.

Rockquemore, K. A., & Brunsma, D. L. (2002). Socially embedded identities: Theories,

typologies, and processes of racial identity among Black/White biracials. *Sociological*

Quarterly, 43(3), 335-356. doi:10.1111/j.1533-8525.2002.tb00052.x

Satorra, A. (2000). Scaled and adjusted restricted tests in multi-sample analysis of moment

structures. In R. D. H. Heijmans, D. S. G. Pollock, & A. Satorra (Eds.), Innovations in

multivariate statistical analysis. *A Festschrift for Heinz Neudecker* (pp. 233–247).

London, UK: Kluwer Academic Publishers. doi:10.1007/978-1-4615-4603-0_17

Sides, J., Tesler, M., & Vavreck, L. (2018). Hunting where the ducks are: activating support

for Donald Trump in the 2016 Republican primary. *Journal of Elections, Public*

Opinion and Parties, 28(2), 135-156. doi:10.1080/17457289.2018.1441849

Skewes, M. C., & Blume, A. W. (2015). Ethnic identity, drinking motives, and alcohol consequences among Alaska Native and non-native college students. *Journal of Ethnicity in Substance Abuse*, *14*(1), 12-28. doi:10.1080/15332640.2014.958641

Smith, A. M., Phillips, C. M., & Brown, T. L. (2008). Ethnic identity, religiousness, and drinking among African Americans: what's the connection?. *Journal of Ethnicity in Substance Abuse*, *7*(4), 465-479. doi:10.1080/15332640802508192

Stephens, N. M., Hamedani, M. G., & Destin, M. (2014). Closing the social-class achievement gap: A difference-education intervention improves first-generation students' academic performance and all students' college transition. *Psychological science*, *25*(4), 943-953. doi:10.1177/0956797613518349

Stock, M., Gibbons, F., Gerrard, M., Houlihan, A., Weng, C., Lorenz, F., & Simons, R. (2013). Racial identification, racial composition, and substance use vulnerability among African American adolescents and young adults. *Health Psychology*, *32*(3), 237-247. doi:10.1037/a0030149

Substance Abuse and Mental Health Services Administration, National Survey on Drug Use and Health. (2015). Table 6.84B—Tobacco product and alcohol use in past month among persons aged 18 to 22, by college enrollment status: Percentages, 2014 and 2015. Retrieve from https://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015.htm#tab6-84b.

Syed, M., & Azmitia, M. (2009). Longitudinal trajectories of ethnic identity during the college years. *Journal of Research on Adolescence*, *19*(4), 601-624. doi:10.1111/j.1532-7795.2009.00609.x

Syed, M., Walker, L. H., Lee, R. M., Umaña-Taylor, A. J., Zamboanga, B. L., Schwartz, S. J., ... & Huynh, Q. L. (2013). A two-factor model of ethnic identity exploration: Implications for identity coherence and well-being. *Cultural Diversity and Ethnic Minority Psychology*, *19*(2), 143. doi:10.1037/a0030564

Tabachnick, B. G., & Fidell, L. S. (2006). Multivariate analysis of grouped data. In Invited workshop presented to the meeting of the Western Psychological Association, Palm Springs, CA.

Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & WG Austin (Eds.*), Psychology of Intergroup Relations*: 7-24. Chicago: Nelson-Hall

Umaña-Taylor, A., Kornienko, O., & Updegraff, K. (2018). A universal intervention program increases ethnic-racial identity exploration and resolution to predict adolescent psychosocial functioning one year later. *Journal of Youth and Adolescence, 47*(1), 1-15. doi:10.1007/s10964-017-0766-5

Umaña-Taylor, A., Quintana, S., Lee, R., Cross, W., Rivas-Drake, D., Schwartz, S., … Seaton, E. (2014). Ethnic and racial identity during adolescence and into young adulthood: An integrated conceptualization. *Child Development*, *85*(1), 21-39. doi:10.1111/cdev.12196

Umaña-Taylor, A. J., Yazedjian, A., & Bámaca-Gómez, M. (2004). Developing the ethnic identity scale using Eriksonian and social identity perspectives. *Identity: An International Journal of Theory and Research*, *4*(1), 9-38. doi:10.1207/S1532706XID0401_2

Walpole, M. (2003). Socioeconomic status and college: How SES affects college experiences and outcomes. *The review of higher education*, *27*(1), 45-73. doi:10.1353/rhe.2003.0044

Wechsler, H., & Kuo, M. (2003). Watering down the drinks: The moderating effect of college

demographics on alcohol use of high-risk groups. *American Journal of Public Health*, *93*(11), 1929–1933. doi:10.2105/ajph.93.11.1929

Wechsler, H., & Nelson, T. F. (2008). What we have learned from the Harvard School of Public Health College Alcohol Study: Focusing attention on college student alcohol consumption and the environmental conditions that promote it. *Journal of Studies on Alcohol and Drugs*, *69*, 481–490. doi:10.15288/jsad.2008.69.481

Wilbur, T. G., & Roscigno, V. J. (2016). First-generation disadvantage and college enrollment/completion. *Socius*, 2. doi:10.1177/2378023116664351

Wilsnack, R. W., Vogeltanz, N. D., Wilsnack, S. C., & Harris, T. R. (2000). Gender differences in alcohol consumption and adverse drinking consequences: cross-cultural patterns. *Addiction*, *95*(2), 251-265. doi:10.1046/j.1360-0443.2000.95225112.x

World Health Organization (2014). Risk Factors. Retrieved from http://apps.who.int/iris/bitstream/handle/10665/112738/9789240692671_eng.pdf;jsessionid=66ACE7D11EE23C658AD554C66A1E6D89?sequence=1

Yoon, E. (2011). Measuring ethnic identity in the Ethnic Identity Scale and the Multigroup Ethnic Identity Measure-Revised. *Cultural Diversity and Ethnic Minority Psychology,* *17*(2), 144-155. doi:10.1037/a0023361

Yu, & Stiffman. (2007). Culture and environment as predictors of alcohol abuse/dependence symptoms in American Indian youths. *Addictive Behaviors*, *32*(10), 2253-2259. doi:10.1016/j.addbeh.2007.01.008

Zapolski, T. C., Fisher, S., Banks, D. E., Hensel, D. J., & Barnes-Najor, J. (2017). Examining the protective effect of ethnic identity on drug attitudes and use among a diverse youth population. *Journal of youth and adolescence*, *46*(8), 1702-1715. doi:10.1007/s10964-

016-0605-0

Table 1

Bivariate Correlations, Means, and Standard Deviations Among Study Variables for the Minority Individuals (n = 1036) and the White Individuals (n = 814)

	1	2	3	4	5	6	7
1. Alcohol Use	--	.47**	-.07	.00	-.05	.02	-.16
2. AUD Symptoms	.44**	--	.05	.02	-.13**	-.07	-.06
3. ERI Exploration	-.00	.06	--	.45*	-.10**	-.01	-.04
4. ERI Resolution	-.03	-.06	.52**	--	.06	-.01	.04
5. ERI Affirmation	.02	-.17**	.00	.20**	--	-.06	-.01
6. Age	-.01	-.05	-.04	-.06	-.07	--	-.07
7. Gender	-.07*	-.08*	.12**	.12**	.06	.00	--
Minority Individuals							
Mean	2.63	2.16	2.63	3.30	3.80	18.45	1.71
SD	.93	2.27	.93	.73	.47	.39	.46
White Individuals							
Mean	3.17	3.07	1.71	2.64	3.67	18.48	1.68
SD	.97	2.67	.85	.90	.58	.37	.48

Note. Correlations for the Minority Groups (i.e., Asian, Black, Latinx, Multiracial) are below the diagonal; correlations for the White group are above the diagonal.

*p < .05. **p < .01. *** p < .001.

Table 2

Final Unconstrained Path Analysis of the Associations between Ethnic-Racial Identity and Alcohol Use Outcomes Moderated by Ethnicity/Race among Asian (n = 385), Black (n = 420), Latinx (n = 112), and Multiracial (n = 119) College Students.

Path	Estimate (*SE*)			
	Asian	Black	Latinx	Multiracial
ERI Exp → Alcohol Use	.07 (.29)	.06 (.31)	.14 (.25)	-.20 (.07)
ERI Res → Alcohol Use	-.09 (.30)	.01 (.93)	**-.37 (.02)***	**.29 (.02)***
ERI Aff → Alcohol Use	-.07 (.39)	.05 (.64)	.14 (.59)	-.07 (.78)
ERI Exp → Alcohol Dependence Symptoms	.35 (.08)	**.39 (.02)***	.32 (.33)	-.33 (.27)
ERI Res → Alcohol Dependence Symptoms	-.28 (.27)	-.26 (.27)	-.57 (.19)	.09 (.81)
ERI Aff → Alcohol Dependence Symptoms	**-.64 (.004)****	**-.65 (.02)****	-.42 (.51)	-.50 (.44)

Note. ERI = ethnic-racial identity. Exp = exploration. Res = resolution. Aff = affirmation. Unstandardized path estimates displayed. Significant paths are bolded. * $p < .05$. ** $p < .01$. *** $p < .001$.
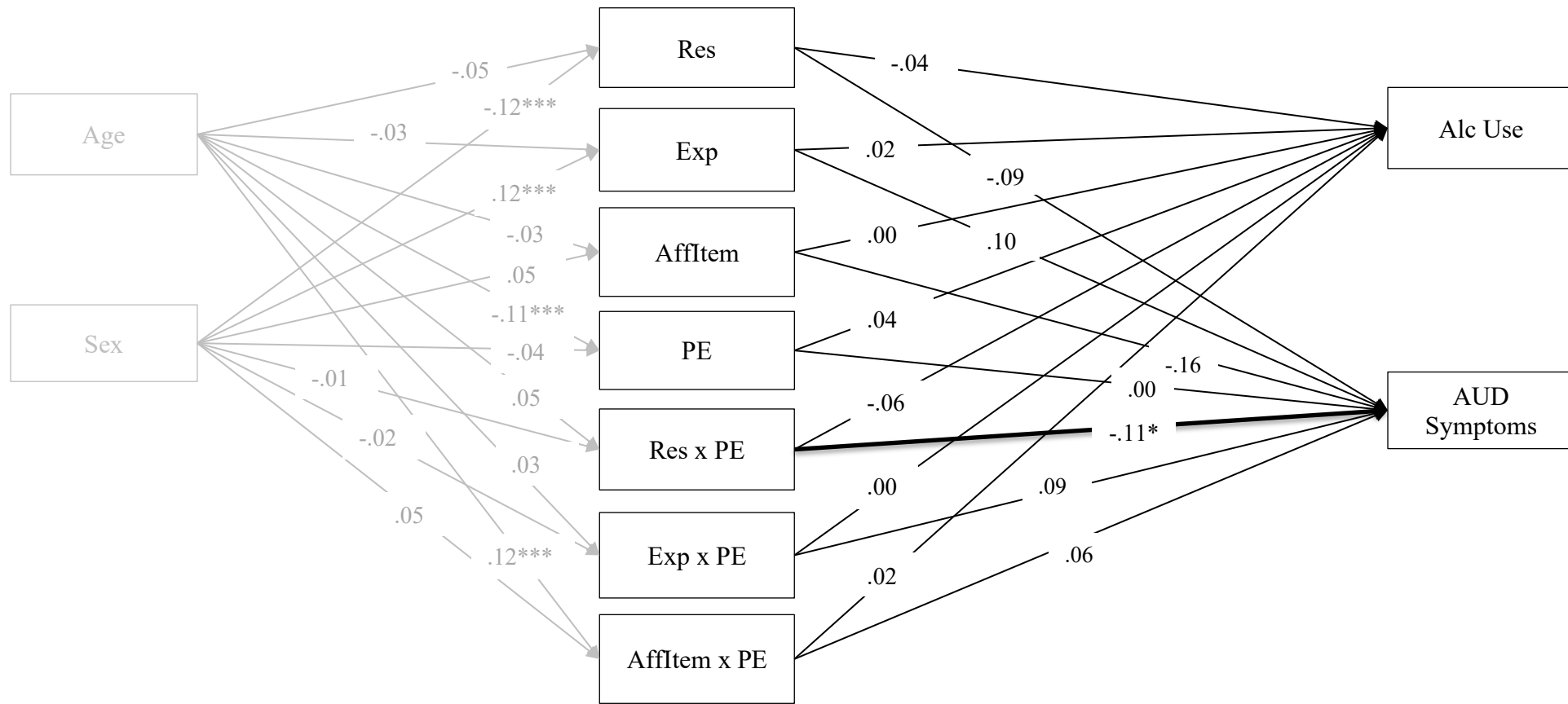
Figure 1. Final model for minority individuals with Parent Education. Bolded paths indicate significant pathways. Control paths are in grey. Res = resolution; Exp = exploration; AffItem = 1-item affirmation; PE = parent education. Sex was coded as 1 = male and 2 = female. Standardized path estimates are presented.
*p ≤ .05. ** p ≤ .01. *** p ≤ .001.
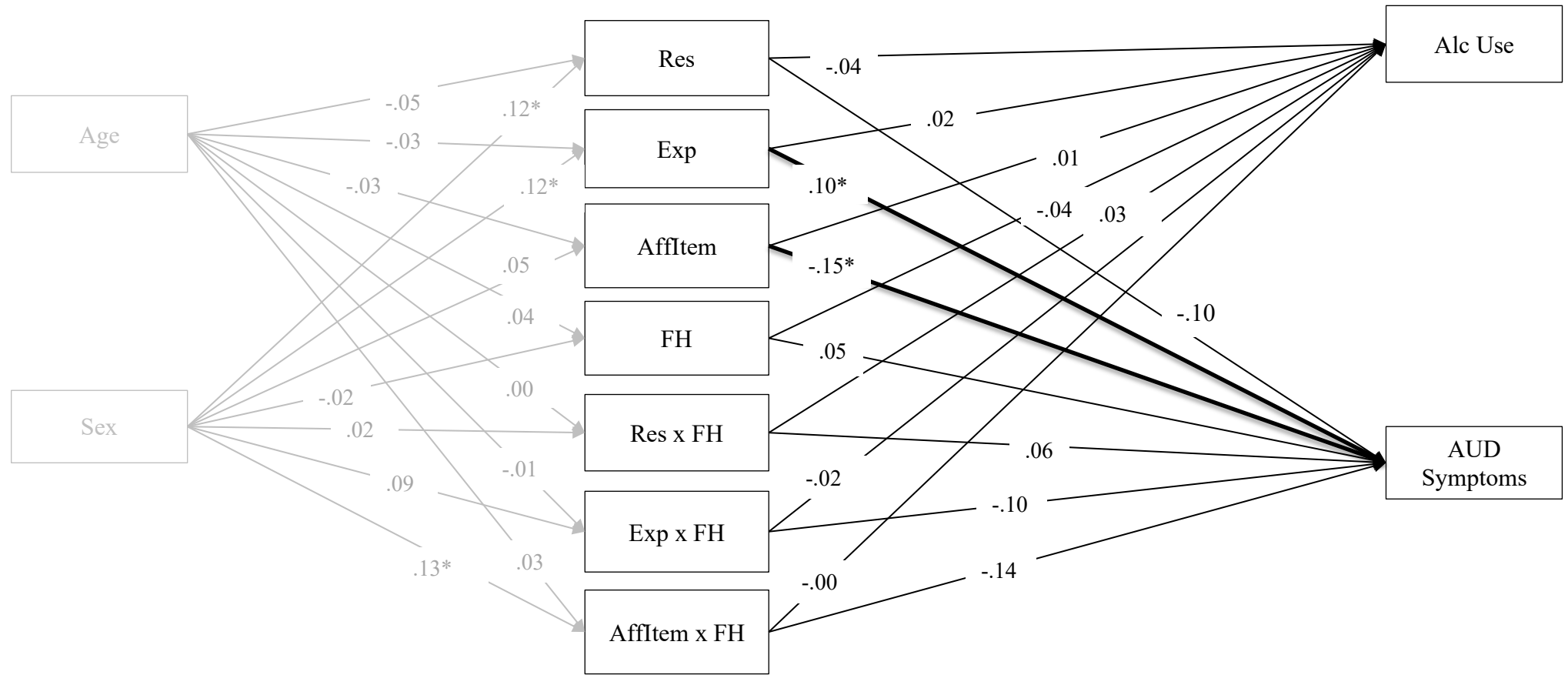
Figure 2. Final model for minority individuals with family history of alcohol problems. Bolded paths indicate significant pathways. Control paths are in grey. Res = resolution; Exp = exploration; AffItem = 1-item affirmation; FH = family history of alcohol problems. Sex was coded as 1 = male and 2 = female. Standardized path estimates are presented.
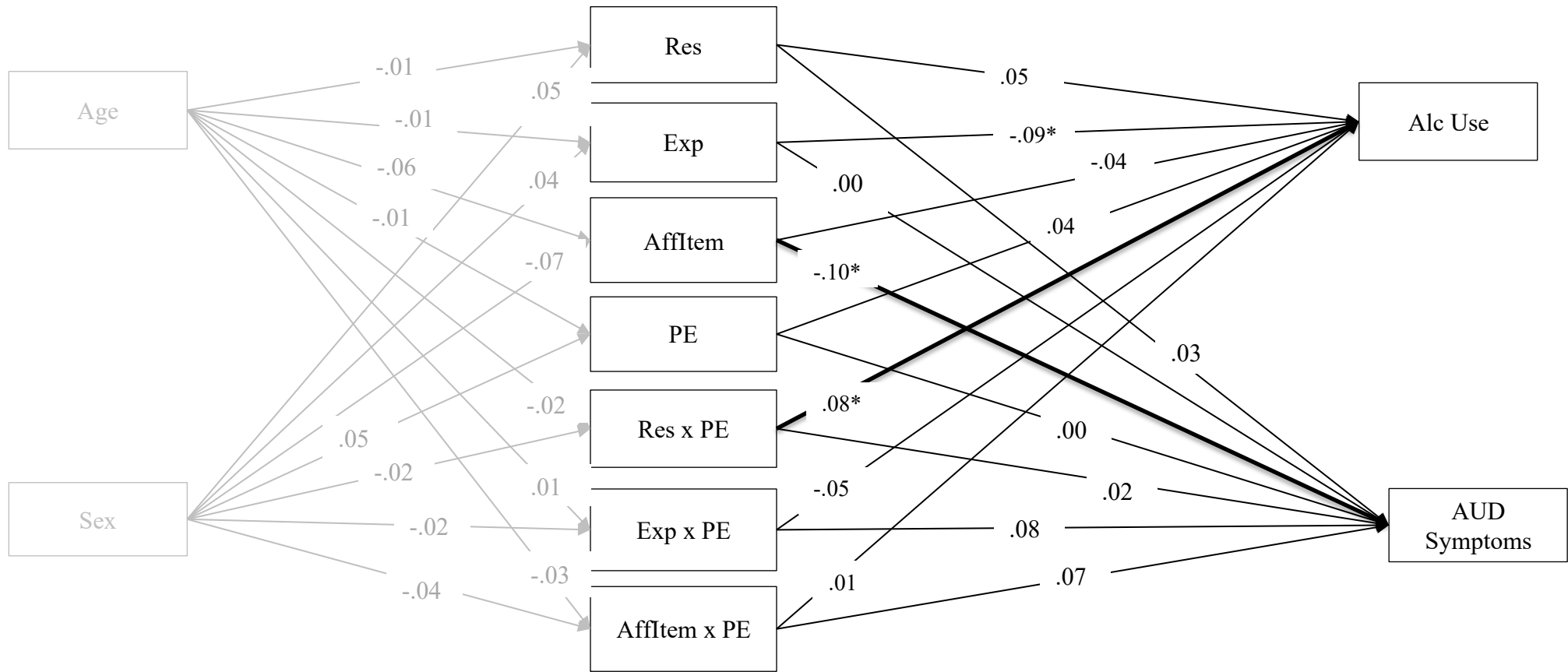*p ≤ .05. ** *p* ≤ .01. *** *p* ≤ .001.

Figure 3. Final model for White individuals with Parent Education. Bolded paths indicate significant pathways. Control paths are in grey. Res = resolution; Exp = exploration; AffItem = 1-item affirmation; PE = parent education. Sex was coded as 1 = male and 2 = female. Standardized path estimates are presented.

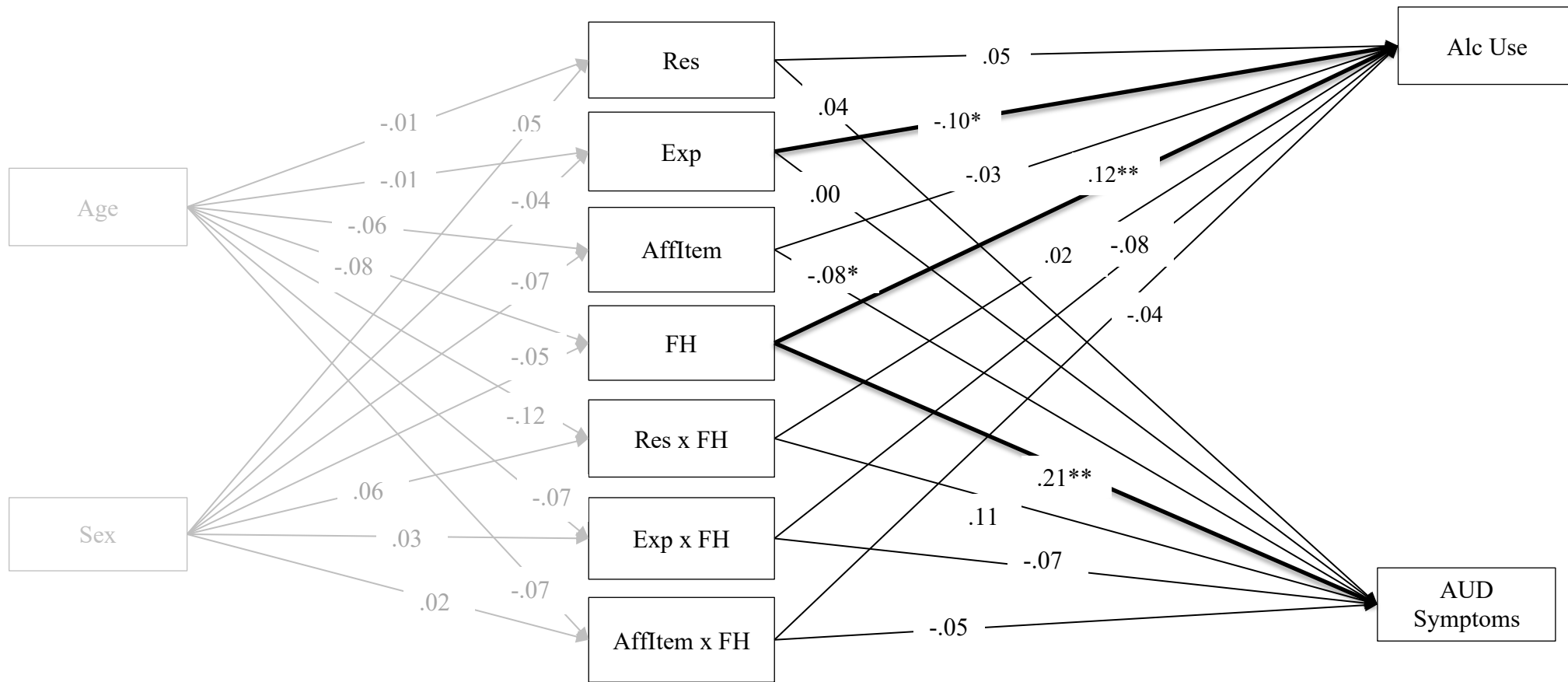*p ≤ .05. ** *p* ≤ .01. *** *p* ≤ .001.

Figure 4. Final model for White individuals with family history of alcohol problems. Bolded paths indicate significant pathways. Control paths are in grey. Res = resolution; Exp = exploration; AffItem = 1-item affirmation; FH = family history of alcohol problems. Sex was coded as 1 = male and 2 = female. Standardized path estimates are presented.
*p ≤ .05. ** *p* ≤ .01. *** *p* ≤ .001.