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Validation and Measurement Invariance of a First-Generation College Student Identity Scale

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VALIDATION AND MEASUREMENT INVARIANCE OF A FIRST-GENERATION

COLLEGE STUDENT IDENTITY SCALE

by

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ABSTRACT

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First-generation college students (FGCS) comprise approximately 56% of the U.S. post-secondary institution population, yet they face substantially more academic, financial, and additional unique issues than continuing-generation college students. Research on FGCS has been steadily growing in recent years, however, literature on identity for this population is sparse. To address these gaps in the literature, the aim of the current study was to adapt, validate, and establish full factorial measurement invariance across Black and White FGCS for a multidimensional quantitative measure of first-generation college student identity. The final sample included 425 current FGCS (81.2% female; $M_{age} = 24.4$ years, $SD = 8.0$) who identified as either Black, African American, Afro-Caribbean, Black African, Other in this category ($n = 196$, 46.1%) or Caucasian, White, European American, White European, Other in this category ($n = 229$, 53.9%). Participants completed an online survey to assess FGCS identity and related constructs. Results yielded a 17 item four-factor FGCS identity scale with good internal consistency scores and provided support for full factorial measurement invariance across Black and White FGCS. Additionally, Black FGCS reported significantly higher FGCS identity exploration and centrality than their counterparts, White FGCS. Finally, external validity was established through associations with related constructs. These findings are the first, to my knowledge, to provide psychometric evaluation of a measure modified to assess FGCS identity so future studies may determine the degree to which this identity domain may moderate the

relationship between stressors and well-being. Limitations and recommendations for future research are discussed.

This thesis is dedicated to my work wife, Julie Rodil (1995-2021). Thank you for always

believing in me when I couldn't believe in myself and reminding me to value progress, not

perfection. Until we meet again my friend.

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CHAPTER I

INTRODUCTION

First-generation college students (FGCS), or students whose parent(s)/legal guardian(s) have not completed a bachelor's degree, account for over half of U.S. post-secondary institution population (RTI International, 2019). It is important to note, there are several definitions used to define who is a FGCS. Toutkoushian et al. (2018) studied the differences in ways that students are defined as FGCS and recommended that researchers' definitions are specific. Thus, for the purposes of this study, FGCS will be defined as students whose parent(s)/legal guardian(s) have not completed a bachelor's degree, which is also consistent with the Department of Education's definition of FGCS (Higher Education Act of 1965). In contrast with their counterparts, continuing generation college students (CGCS), FGCS are more likely to take longer to graduate, drop-out of college, and struggle academically (Cataldi et al., 2018; Ishitani, 2006; Pike & Kuh, 2005). As a result of these academic disparities, research has sought to identify unique stressors faced by FGCS. Although this work has been promising, it is important to identify protective factors that may ameliorate these disparities as well.

Given that healthy identity development is positively associated with well-being and psychosocial functioning in emerging adults (Meca et al., 2015; Schwartz et al., 2016), research has begun to examine identity in FGCS. Prior research has not only indicated FGCS differed in how salient and central being a FGCS is to their sense of self, but also that these differences impact general functioning (Orbe, 2004). However, this research on FGCS identity was qualitative with a low sample size (Orbe, 2004), making results less generalizable to larger populations. Moreover, there is currently no valid quantitative measure of FGCS identity. To fill this crucial gap in the literature, the current study sought to adapt and validate a measure of

FGCS identity which could help researchers and clinicians further understand how to promote positive outcomes for this population.

To help eliminate the achievement gaps between FGCS and their counterparts, identification with being first-generation must be studied comprehensively. To this end, the adaptation of a measure that assesses different aspects of FGCS identity will help further our understanding of this population and the outcomes associated with their group identity. Therefore, the objective of the proposed study was to adapt and validate a multidimensional first-generation college student identity scale (FGCSIS), of FGCS identity. In addition, it is important that this measure generalizes across populations, such as students of different races and ethnicities due to the complex nature of intersecting identities that may play a role in FGCS experiences (Chang et al., 2020; Rodriguez et al., 2016). Therefore, the second objective was to establish full factorial measurement invariance for the FGCSIS across Black and White FGCS. These two groups were selected due to differences between ethnicities/races (Bhutta et al., 2020; Harrell, 2000), and results of the convenience sample. The sample results match the demographics of the ODU student population, as they comprise of approximately 75% of the institution's ethnic/racial groups (NCES, 2020-2021). With the establishment of factorial measurement invariance, future research can adequately compare FGCS identity domain covariances, variances, and means across Black and White FGCS.

Unique Stressors

FGCS experience the same common stressors associated with college as a whole, such as struggling with issues of financial resources for college (Furquim et al., 2017), graduating on time (Ishitani, 2006), and sense of belonging at college (Ostrove & Long, 2007). Beyond these normative stressors, however, FGCS face additional issues associated with their positionality as a

FGCS, such as discrimination (Ellis et al., 2019), family achievement guilt (Covarrubias et al., 2015, 2020), and cultural differences (Stephens et al., 2012a, 2012b) as described below. The following sections will address these topics and explain how measuring FGCS identity can help in understanding these issues.

Discrimination

One of the unique stressors FGCS may experience is discrimination due to their first-gen status. Microaggressions, or "intentional or unintentional brief exchanges that communicate hostile, derogatory, negative slights and insults on an individual or group," are an example of discrimination experienced by marginalized groups (Ellis et al., 2019, p. 266). Ellis and colleagues conducted a qualitative study with over 400 undergraduate FGCS at a predominantly White institution (PWI). Participants completed an online survey with open-ended questions regarding microaggressions and microaffirmations they've experienced regarding their first-generation status; prompts were randomly assigned so that half of the sample would receive the negative example first and the other half would receive the positive example first. Although students reported experiencing microaffirmations or "affirming communications" about being a FGCS, they also reported many negative experiences. These negative experiences included receiving microaggressions from peers, faculty, and staff about being the first in their family to go to college such as low academic expectations, invalidation of academic abilities, and insults of their parents' knowledge, success, and inability to understand university culture. Moreover, FGCS reported feelings of humiliation, isolation, and unsupported as a result of these negative encounters.

Prior research has provided evidence that discrimination toward one's group has negative effects on academic outcomes for racial-ethnic minorities, such that individuals may begin to

fulfill negative stereotypes when they feel strongly connected to the group (Umaña-Taylor et al., 2014). On the other hand, ethnic minority research has shown that group identity serves as a moderator to the relationship between ethnic/racial discrimination and well-being, which is further discussed below in the ethnic identity section. Thus, a measure for FGCS identity could help identify whether stronger identification with FG status moderates the effects of discrimination.

Family Achievement Guilt

In addition to discrimination, FGCS may experience family achievement guilt. Family achievement guilt is defined as "guilt that makes students feel uncomfortable for having more higher education opportunities and college success than their family members" (Covarrubias et al., 2015, p. 2032). Covarrubias and Fryberg (2015) conducted series of studies to examine levels of family achievement guilt in FGCS compared to CGCS, and whether these differences were similar across ethnic groups. The first study in the series examined whether first-generation status and ethnicity (e.g., Latino or White) were associated with different levels of family achievement guilt in students. The sample included over one hundred undergraduates who completed questionnaires on open-ended family achievement guilt and a three-item family achievement guilt scale adapted from the survival guilt. Results yielded that FGCS reported more family achievement guilt than CGCS on both questionnaires, and Latino FGCS only reported more family achievement guilt than White FGCS on the three-item questionnaire (Covarrubias & Fryberg, 2015). In another study, Covarrubias et al. (2015) surveyed 255 undergraduate students to examine the difference between FGCS and CGCS, and White and Mexican descent students, on levels of family achievement guilt, depressive symptoms, and self-esteem. In contrast to prior findings, there were no ethnic differences in family achievement guilt. However, higher levels of

family achievement guilt were associated with lower self-esteem and higher depressive symptoms, and FGCS reported more depressive symptoms than CGCS at higher levels of family achievement guilt (Covarrubias et al., 2015).

More recently, Covarrubias et al. (2020) developed a valid, reliable measure of family achievement guilt to capture the construct more comprehensively. First, researchers conducted focus groups and interviews with over 30 FGCS, which resulted in four main themes to create subscales for the measure including: 1) leaving family behind, 2) having more privileges, 3) becoming different [because of higher education], and 4) experiencing pressures [to succeed]. These themes resulted in a 34-item scale with good internal reliability (α = .94, .93, .88, and .86, respectively) and good test-retest reliability (r = .78 to .85) that was completed by 174 undergraduate FGCS and CGCS. Controlling for income, FGCS scored higher on all four subscales of guilt than CGCS. Moreover, higher levels of guilt predicted higher negative affect, involvement in family roles, and interdependent motives for attending college (discussed below in cultural differences) (Covarrubias et al., 2020). Although research has explored the differences in family achievement guilt between FGCS and their counterparts, our understanding of factors that explains within group variance among FGCS is extremely limited. The degree to which an individual is able to establish a positive view of their sense of self and identity in the context of being a FGCS may explain variation in family achievement guilt. Indeed, identity commitment can be positive when committing to a positive self-aspect, whereas commitment to a negative identity can result in negative psychosocial functioning (Hihara et al., 2018). Thus, if FGCS have a negative affect toward their first-gen status, but are committed to this part of their identity, it may result in higher family achievement guilt.

Cultural Differences

An additional stressor that FGCS struggle with is the navigation of cultural differences between their home and university contexts. Because FGCS parents do not have college degrees, these students typically come from a working-class background, whereas American universities were largely established for middle and upper-class populations (Locke & Trolian, 2018). This cultural discrepancy becomes more salient when considering the norms associated with different social classes. Markus and Kitayama (2010) proposed the mutual constitution of cultures and selves, which posits that the society, institutions, and environments that an individual is exposed to shapes their cultural views, which influences the self's actions, thoughts, and feelings. Further, there are two main types of cultural senses of self, including independent, in which "the primary referent is the individual's own thoughts, feelings, and actions," and interdependent, in which "interaction with others produces a sense of self" (Markus & Kitayama, 2010, p. 423). Applying the theory of mutual constitution of cultures and selves, Stephens et al. (2012a) proposed a cultural mismatch theory with three claims: 1) U.S. college cultures embody independent middle-class norms, 2) the consequences of the focus on these norms depend on the cultural background (independent or interdependent) of the student, 3) this cultural match or mismatch can alter "students' perception of the setting, and construal of tasks required of them in that setting" (p. 1181).

To test the claims of the cultural mismatch theory, Stephens et al. (2012a) conducted a series of studies to examine the relationship between cultural mismatch and FGCS and CGCS. The first study in the series examined whether administrators from top-tier U.S. national universities and liberal arts colleges would report that their institution endorsed more independent (middle-class) or interdependent (working-class) norms. The sample included 261

administrators from 75 colleges, reported as top-tier institutions from the U.S. News and World Report in 2010, who would complete an online or mailed hard-copy survey. To assess the administrators' perceptions of their institution's norms, the survey first asked participants to pick which 5 expectations out of 12 (6 independent, 6 interdependent) on the list best described their institution. The second task included asking participants to select which student expectation out of each 6 pairs of expectations (each including 1 independent and 1 interdependent norm) best reflected their institution. Results yielded that over 70% of administrators endorsed more independent norms over interdependent norms in both tasks (Stephens et al., 2012a). Stephens and colleagues conducted the same study with 119 administrators from 50 second-tier colleges (U.S. News and World Report, 2010). While not as high of a percentage from the first study, this study found that more administrators reported independent items over interdependent items to describe their institution.

The next study in Stephens et al.'s (2012a) series surveyed 1,424 students on their motives for attending college (independent or interdependent) prior to coming to the campus and collected their GPAs at the end of their 1st and 2nd years in college to see if motives for attending college predicted academic achievement. The results yielded that FGCS reported more interdependent motives compared to CGCS and endorsement of interdependent motives negatively predicted GPA at the end of 1st and 2nd years. Moreover, results provided that when controlling for race and SAT scores, motives was a significant mediator of the relationship between social class and GPA. Thus, this study provided evidence that FGCS have more interdependent motives for attending college compared to CGCS and that interdependent motives were associated with poor academic achievement over time. Moreover, these results

provide further evidence for the cultural differences between FGCS and CGCS, and how these differences contribute to the achievement gap.

Finally, in the last two studies of the series, Stephens and colleagues created an institutional cultural mismatch primer by giving students an independent or interdependent welcome letter followed by a verbal reasoning test and a visual spatial test. In both studies, results yielded that CGCS scored similarly on tasks when provided with an independent or interdependent welcome letter. In contrast, FGCS did poorer on tasks when they received an independent welcome letter. Further, FGCS reported that they found the task to be more difficult when presented with an independent welcome letter versus an interdependent one, whereas CGCS reported similar perceived difficulty when given either letter. In a separate study, Stephens et al. (2012b) examined whether students' cortisol levels (measured by saliva collection) and verbal emotional response (analyzed by Linguistic Inquiry and Word Count software) would change when presented with an independent or interdependent welcome letter. Results yielded that when presented with an independent letter, FGCS had a higher increase in cortisol levels and more negative emotional responses than CGCS, however, the difference between student populations was non-significant with interdependent letters. The findings from Stephens and colleagues' series of studies provide evidence that a) U.S. colleges largely represent middle-class culture that endorses independent norms, b) FGCS disproportionately endorse interdependent norms compared to CGCS, and c) this cultural mismatch is associated with negative academic outcomes especially for FGCS. Considering these negative outcomes associated with cultural mismatch, developing a multidimensional measure of FGCS identity my help further understand this dynamic, given that identity has been shown to moderate the

association between cultural stressors and various outcomes (Jetten et al., 2015; Umaña-Taylor et al., 2014).

Identity Theory

Identity development is a crucial component of emerging adulthood, which has an influence on negative and positive psychosocial outcomes as described below. The most rudimentary explanation of identity can be described as how individuals' answer the question "Who am I?" (Vignoles et al., 2011). However, an individual's answer to this question may vary across a nearly infinite number of characteristics or identity domains (Meca et al., 2015). Moreover, these identity domains can be further broken down into *content*, or the constructs of one's identity such as ethnicity or religion, and *process*, which includes the mechanisms by which an individual's identity is formed (Vignoles et al., 2011). Research attending to the *process* governing identity development has largely drawn on an Eriksonian framework, whereas research attending to the *content* has largely drawn on social identity theory. The following sections will briefly review these two perspectives and how they can be fused together.

Process-Based Perspectives & Neo-Eriksonian Theory

Process-based theories of identity development have largely been rooted in Erikson's (1950, 1968) model of psychosocial development. Erikson (1950, 1968) theorized that identity development is presented as a crisis that begins in adolescence and continues into early adulthood, and individuals try to resolve this crisis by forming a cohesive sense of self. However, Erikson's conceptualization of identity was theoretical and unable to be empirically tested. Thus, Marcia (1966) expanded Erikson's identity theory by operationalizing the major identity processes of *exploration* (examining different identity alternatives) and *commitment* (selection and devotion to one or more alternatives). Further, Marcia (1966) used these processes to create

four identity statuses to categorize individuals' identity development: a) identity diffusion (low exploration/low commitment), b) foreclosure (low exploration/high commitment), c) moratorium (high exploration/low commitment), and d) identity achievement (high exploration/high commitment).

These statuses have been used in research to understand the relationship between identity and various outcomes. For example, in a cross-sectional study with 9,024 college students, Schwartz et al. (2011) used a person-centered approach to classify people into empirically derived groups that were aligned with Marcia's (1966) status framing. Researchers found that in statuses with higher levels of identity commitment (i.e., identity achievement and foreclosure) were associated with higher levels of self-esteem, satisfaction with life, and psychological well-being compared to statuses with low commitment. Further, students in the identity achievement and foreclosure statuses reported the lowest social anxiety and externalizing aggression behavior scores and illicit drug use (Schwartz et al., 2011). Although these theories have advanced understanding identity processes, additional research expands this knowledge for application to identity content. Identity processes give perspective on how individuals form their identity, however, identity content sheds light on the meaning of identity which will be discussed below.

Content-Based Perspectives – Social Identity Theory

Social Identity Theory (SIT; Tajfel, 1981; Tajfel & Turner, 1986) was introduced in the 1970's to explain individual's identification with social groups. Tajfel and Turner (1986) proposed that social identity is the combination of knowledge of and identification with a social group, along with the emotional significance of the membership to that group. Social identity can be contrasted with process-based theories (the way in which individuals form identity) in that there is a focus on content (quality or meaning of identity). One example of identity content

includes *affirmation* or positive feelings toward one's social group (Phinney, 1992). Another example of identity content is identity *centrality*, or how much importance an individual places on an identity domain such as race or religion (Sellers et al., 1998). Identity affirmation and centrality have been associated with positive identity development and better mental health outcomes (Brittian et al., 2013; Douglass et al., 2016; Yip et al., 2006).

Moreover, content-based theory is important for understanding how group identity can serve as a protective factor for various stressors such as discrimination, and thus moderate the relationship between these stressors and well-being (Spears, 2011). Social identity theory posits that individuals aim to create a positive social identity through forming positive attitudes toward their social groups (Tajfel, 1981). Furthermore, when individuals are faced with experiences of discrimination, their awareness of their group identity becomes more salient (i.e., noticeable) (Branscombe et al., 1999). However, when individuals experience discrimination or marginalization, a positive social identification with their social group can serve as a protective factor to their well-being (Tajfel & Turner, 1979). In other words, when individuals with high group centrality encounter discrimination, they will experience fewer negative effects on well-being because they have increased feelings of belongingness and purpose from a strong group membership versus individuals with poor group membership (Jetten et al., 2015).

Ethnic/Racial Identity Theory: A Fusion of Content and Process Approaches

Increasingly, identity theories have emphasized the need for research to attend to both process and content to establish comprehensive models of identity development (Vignoles et al., 2011). A prime example of a field that has moved in this direction is the field of ethnic/racial identity development (Umaña-Taylor et al., 2014; Yip et al., 2006). Although early research has defined and studied process and content separately, more recent research has provided evidence

that they are connected in important ways (Douglass et al., 2016; Meca et al., 2018; Yip et al., 2006). This research has focused on both the significance and meaning of ones' ethnic/racial identity (i.e., content) and on the developmental processes underlying the establishment of an ethnic/racial identity (i.e., process), with the culmination being how these identity components differentially and uniquely predict outcomes of mental health and well-being.

Integrating identity content and process approaches gives a more comprehensive and multidimensional perspective of group identity. In ethnic/racial identity research, this approach allows for understanding of how individuals form an ethnic/racial identity, what that identity means to them, how the processes and content interact, and how well-being can fluctuate based on these components (Yip et al., 2006). For example, Meca et al. (2018) conducted a daily diary study for 12 days with over 800 Hispanic college students to examine the relationship between ethnic identity, U.S. identity, and their association with well-being. Results yielded that centrality for ethnic and U.S. identity predicted ethnic and U.S belonging, and that ethnic centrality moderated the relationship between U.S. belonging and well-being. Overall, this research shows that it can be useful to combine content and process approaches when looking at individuals' social identity.

Moreover, ethnic identity research has shown that group identity serves as a moderator to the relationship between ethnic/racial discrimination and well-being, such that high group identity centrality can serve as a protector against the negative effects of discrimination Sellers et al. (2003) conducted a longitudinal study for two years with a sample of over 500 African American high school students (23% of participants were college students by the second time point), who were surveyed on racial identity, perceived racial discrimination, and psychological distress. Results yielded that higher levels of centrality were associated with lower

levels of psychological distress. In addition, high centrality moderated the relationship between perceived discrimination and psychological distress such that only participants with lower centrality had a significant positive relationship between discrimination and distress. In another study, Hughes et al. (2015) examined ERI closeness (similar to centrality) and evaluation (similar to affirmation) among a sample of 3,750 African American adults from a cross-sectional national survey. Researchers found similar results such that higher levels of closeness were associated with higher self-esteem, mastery, and lower depressive symptoms, however, these associations were opposite for participants with low affirmation. In other words, individuals who reported high closeness, but negative evaluations of their ethnic group reported lower mastery and higher depressive symptoms. These findings suggest that higher group identification may only be beneficial to individuals who also have positive views of their group and may be harmful for individuals with negative group perception.

ERI Measurement. Given the comprehensive approach to identity development and good psychometric properties, the current study drew on two of the most widely used ERI measurements (i.e., the Ethnic Identity Scale and the Multidimensional Inventory of Black Identity) to adapt items for a FGCS identity scale. Phinney (1992) developed the 14-item, Multigroup Ethnic Identity Measure (MEIM) to assess ERI exploration, commitment, and affirmation. However, the MEIM has typically been used with a total score, which in turn limits the ability to examine the distinct components of ERI separately (Umaña-Taylor et al., 2004). To address this issue, Umaña-Taylor and colleagues developed the 17-item, three-factor Ethnic Identity Scale (EIS), which measures ERI exploration, commitment (renamed as resolution), and affirmation as separate constructs. The EIS has substantial support for a strong three-factor structure and good internal consistency in ERI development research (Douglass & Umaña-

Taylor, 2017; Supple, et al., 2006; Umaña-Taylor & Shin, 2007; Yoon, 2011). The current study adapted all 17-items from the EIS affirmation, exploration, and resolution subscales by replacing "ethnicity" with "first-generation college student." Thus, the first three subscales of the first-generation college student identity scale (FGCSIS) include: exploration (i.e., the extent to which FGCS have explored this identity), resolution (i.e., the extent that FGCS know the meaning of their identity), and affirmation (i.e., the positive or negative feelings associated with FGCS status). The practice of adapting previous measures to create a new scale is a consistent procedure in the broader identity literature with scales such as the American Identity Measure (AIM; Schwartz et al., 2012), the United States Identity Scale (USIS; Meca et al., 2020), the Social Class Bicultural Identity Integration Scale (SES-BII; Herrmann & Varnum, 2018), and the Alcohol Self-Concept Scale (ASCS; Lindgren et al., 2013).

In addition, Sellers et al. (1997, 1998) proposed the multidimensional model of racial identity (MMRI) to create a more inclusive understanding of African American identity. The MMRI posits that racial identity is defined as the importance and meaning of one's ethnicity as a part of the self-concept. Similar to the EIS, the MMRI posits that domains of identity content are distinct from one another and should be operationalized as such. To assess the MMRI, Sellers and colleagues (1997) created the Multidimensional Inventory of Black Identity (MIBI), which includes 3 scales that are comprised of 7 individual subscales. The current study adapted 8 items from the MIBI centrality subscale by replacing "ethnicity" with "first-generation college student." Many of the other subscales were not applicable to FGCS identity (e.g., assimilation, nationalist). Thus, the fourth subscale of the FGCSIS includes: centrality (i.e., the extent to which FGCS status prominent to who one is). In summary, it was hypothesized that the FGCSIS

would be comprised of four domains including FGCS identity exploration, resolution, affirmation, and centrality.

Current FGCS Identity Research

As previously noted, research on FGCS identity has been scarce. In a qualitative study, Orbe (2004) interviewed a group of FGCS and FGCS graduates to examine their experiences related to being the first in their family to go to college and discovered that FGCS differ in their awareness of and the importance they place their first-generation status. Through the analysis of identity themes that emerged from the interviews, Orbe (2004) found that FGCS noted how they differed in how central to their identity being first-generation was and that these differences were associated with different outcomes such as academic motivation and stress. These findings suggest that first-generation status for college students is nuanced and should be further explored. However, this study was qualitative, and the sample was relatively small ($n = 79$), which may not be generalizable to a large population of FGCS. Qualitative research is rooted in interpretivism, which "prioritizes the understanding of human behavior over the prediction and generalization of causes and effects" (Carminati, 2018, p. 2096). To this end, Orbe (2004) states that this research should be used to further explore and extend the knowledge of FGCS multidimensional identities. Thus, the adaptation of a quantitative measure of FGCS identity will greatly facilitate future research capacity to examine how these identity processes differentially impact FGCS academic motivation and mental health.

Intersectionality

Although FGCS may have several challenges or stressors in common, first-generation college status is just one aspect of their identities. As discussed in the social identity theory section, individuals have various identities that may be central to who they are and/or have

strong feelings about (Tajfel & Turner, 1986). The concept of intersectionality can be described as the intertwined, overlapping social identities (i.e., class, ethnicity, gender, sexuality), and highlights "the systemic power dynamics that arise as multiple dimensions of social difference interact across individual, institutional, cultural and societal spheres of influence" (Rodriguez et al., 2016, p. 201). Intersectionality is vital to research on college student identity development, and FGCS are no exception (Patton et al., 2016). This is one of the reasons that measurement invariance is conceptually important in validating measures; thus, the intersection of FGCS identity and ethnic/racial identity will be discussed below.

One important intersecting identity to consider for FGCS is ethnic/racial identity. To this point, a little over half of all U.S. FGCS are ethnic/racial minorities and over half of students at minority-serving institutions are FGCS (RTI International, 2019). This is important given the history of ethnic/racial disparities of SES in the U.S. For example, the average parent income among dependent-FGCS is significantly lower than continuing-generation college students (CGCS; RTI International, 2019). However, there has been a lasting substantial economic wealth gap between White and ethnic/racial minority families in the U.S., with White families having disproportionately higher overall financial assets (Bhutta et al., 2020). Moreover, there is a history of system racism and oppression in the U.S. (Harrell, 2000), resulting in ethnic/racial minorities inherently having different challenges from White individuals with social relations and overall well-being. As a result, ethnic/racial minority FGCS identity may be altered from White FGCS identity.

In addition to ethnic/racial differences in SES, research has shown that ethnic/racial minority FGCS report different experiences than White FGCS in higher education. For example, many FGCS experience the cultural mismatch (described in unique stressors section) in higher

education. However, researchers have found that ethnic/racial minority FGCS report different experiences with cultural mismatch that White FGCS. Chang et al. (2020) conducted a series of studies to examine FGCS experience with cultural mismatch and how it affects their coping and help-seeking behaviors. After conducting a pilot study with FGCS to inform questions, Chang and colleagues conducted group interviews with FGCS ($n = 60$) to examine cultural norms and related factors. Although all students expressed concerns of tension between family and university cultural expectations, White and ethnic/racial minority FGCS reported notable differences such that White students described an emphasis on self-expression, whereas ethnic/racial minority students placed importance on self-reliance. Moreover, ethnic/racial minority FGCS reported less utilization of social support for fear of conflict (e.g., criticism, shame, embarrassment). Even though this is only one aspect of intersecting identities for FGCS, it is important to consider when developing identity measures.

Measurement Invariance

While conceptually important to examine differences in White and Black FGCS, it is also essential for statistical reasons. The purpose of factorial measurement invariance is to ensure that measurements are equivalently interpreted across groups (e.g., sex, ethnic, age) and over time. Without the establishment of measurement invariance, researchers cannot claim actual differences between individuals, rather than these differences being attributed to other elements (e.g., time, methods, group membership; Kline, 2016). In other words, measurement invariance allows for making valid comparisons across groups, such as comparing FGCS identity across Black and White FGCS. Although many psychological research studies do not examine all necessary levels of invariance and/or do not report all findings, this is not good practice (for a

review, see Putnick & Bornstein, 2016). The levels of measurement invariance and their

implications are discussed below.

The type of comparisons that are able to be made depend on the level of measurement

invariance established, in which there are four levels including configural, metric, scalar, and

strict (Kline, 2016). First, configural invariance must be achieved which implies equivalent

model structure across groups. However, configural invariance does not allow for any group

comparisons, but it must be established before moving on to metric invariance. Metric invariance

implies that factor loadings are equivalent across groups, allows for comparison of latent

variances and covariances, and must be established before examining scalar invariance. Scalar

invariance implies that item intercepts are equivalent across groups, allows for comparisons of

latent variances, covariances, and means. At least partial scalar invariance must be demonstrated

before examining strict invariance. While not necessary to establish when making group

comparisons, strict invariance implies that item residuals are equivalent across groups and group

differences can be attributed to actual differences rather than error. In order to ensure the utility

of the FGCSIS identity scale across Black and White FGCS, the current study will examine all

possible levels of factorial measurement invariance.

Current Study

Positive identity development is particularly important during emerging adulthood

(Arnett, 2000; Eichas et al., 2014), a stage of life in which individuals face increased pressure to

make decisions about who they will become (Schwartz, 2016). Moreover, identity processes are

associated with psychosocial functioning, risk behaviors, and well-being (for review, see

Schwartz et al., 2016). Despite the increase in research on different aspects of identity for FGCS,

there is currently no valid comprehensive measure to capture the degree to which FGCS identity

is endorsed. The purpose of the current study was to adapt and establish internal and external validity of a multidimensional measure of FGCS identity. Given that one's status as an FGCS likely represents a group identity, similar to one's ethnic/racial identity, the current study used ethnic identity measures as a foundation (Sellers et al., 1997; Umaña-Taylor et al., 2004) for the adaptation of a measure of FGCS identity with four components: a) exploration, b) commitment, c) affirmation, and d) centrality. A similar process has been followed for the development of measures tapping into U.S. identity (Schwartz et al., 2012; Meca et al., 2020) and military identity (Lancaster & Hart, 2015).

In the current study, the first aim was to establish internal validity and reliability by confirming the factor structure of the First-Generation College Student Identity Scale (FGCSIS) and determining internal consistency. The second aim was to establish full factorial measurement invariance for the FGCSIS across Black and White FGCS. The selection of groups was determined due to previously discussed ethnic/racial differences such as SES and systemic racism (Bhutta et al., 2020; Harrell, 2000) and the demographics of the site of data collection (NCES, 2020-2021). The third aim was to examine if there were any differences in the latent factor means for FGCS identity exploration, resolution, affirmation, and centrality across Black and White FGCS. Finally, the current study sought to establish external (construct) validity through associations of the FGCSIS with the EIS along with independent and interdependent motives for attending college.

The specific aims and hypotheses were as follows:

Aim 1: To determine the underlying factor structure and internal consistency scores for the First-Generation College Student Identity Scale (FGCSIS).

Hypothesis 1: Past research has confirmed a three-factor structure for the Ethnic Identity Scale (EIS; Umaña-Taylor et al., 2004) and a three-factor structure for the Multidimensional Inventory of Black Identity (MIBI; Sellers et al., 1997). Moreover, these studies found that these measures had high internal consistency. Given that the FGCSIS was adapted from all three subscales from the EIS and one from the MIBI, it was hypothesized that the FGCSIS would have a four-factor structure (i.e., FGCS identity exploration, resolution, affirmation, and centrality) and acceptable internal consistency scores.

Aim 2: To test if the FGCSIS is invariant across Black and White college students. Given that there is no prior research evidence for invariance, these analyses were considered to be exploratory, and no hypotheses were made for this aim.

Aim 3: To examine if there are any differences in latent factor means across Black and White college students, if scalar invariance was previously established. Thus, this aim could not be explored unless aim 2 was successful in finding measurement invariance of the FGCSIS. Given that there is no prior research evidence for differences in FGCS identity across Black and White FGCS, these analyses were considered to be exploratory, and no hypotheses were made for this aim.

Aim 4: To establish external (construct) validity through associations of the dimensions of FGCSIS with the dimensions of EIS along with independent and interdependent motives for attending college.

Hypothesis 4a: Prior research in the validation of a United States Identity Scale (USIS) found small to moderate correlations ($r = .01$ to .58) between ethnic/racial and U.S. identity across corresponding dimensions (Meca et al., 2020). Thus, it was hypothesized that the FGCSIS

dimensions would have moderate associations with EIS dimensions, particularly for those that capture similar dimensions (e.g., FGCSIS exploration and EIS exploration).

Hypothesis 4b: Prior research has indicated that FGCS endorse interdependent and independent motives for attending college, however, FGCS endorse more interdependent motives than CGCS (Stephens et al., 2012a). Thus, it was hypothesized that the FGCSIS dimensions would have a stronger correlation with interdependent motives than with independent motives.

CHAPTER II

METHOD

Stage 1 Method

Procedures

An item pool for the First-Generation College Student Identity Scale (FGCSIS) was generated through the adaptation of existing measures (See Appendix A). The method of adapting items from previous measures has been conducted with several identity measures including the American Identity Measure (AIM; Schwartz et al., 2012), the United States Identity Scale (USIS; Meca et al., 2020), the Social Class Bicultural Identity Integration Scale (SES-BII; Herrmann & Varnum, 2018), and the Alcohol Self-Concept Scale (ASCS; Lindgren et al., 2013). The 17-item Ethnic Identity Scale (EIS; Umaña-Taylor et al., 2004) was adapted with "first-generation college student" replacing "ethnicity," for the first three subscales: exploration (Sample item: "I have participated in activities that have taught me about being a first-generation college student"), resolution (Sample item: "I understand how I feel about being a first-generation college student"), and affirmation (Sample item: "I am not happy being a first-generation college student" [Reverse coded]). Umaña-Taylor and colleagues (2004) reported acceptable reliability for these subscales (α = .91, .92, and .86, respectively). An item pool for the centrality subscale was adapted from 8 items on the Multidimensional Inventory of Black Identity (MIBI; Sellers et al., 1997) with "first-generation college student" replacing "Black" (Sample item: "Being a first-generation college student is an important reflection of who I am"). Sellers and colleagues (1997) reported acceptable reliability for this subscale (α = .77). All items on the FGCSIS were rated on a 7-point Likert-type scale that ranges from 1 (*strongly disagree*) to 7 (*strongly agree*), which was adapted from the response scale on the MIBI.

Stage 2 Method

Participants and Recruitment

The inclusion criteria included that participants must be current college students whose

parent(s)/legal guardian(s) have not completed a bachelor's degree, which is the Department of

Education's definition for first-generation college students (Higher Education Act of 1965).

Given that FGCS are less likely to be the traditional college student ages of 18-29 years old,

participants were not excluded above this age range (Wine et al., 2018). Participant recruitment

occurred in two phases. First, students were recruited through Old Dominion University's

psychology departments participant student pool, Sona ($n = 142$, 33.4%; See Appendix B).

Recruitment and data collection through Sona was conducted from March to August 2021. In

addition, email addresses were collected for any first-generation college students currently

enrolled at Old Dominion University in August 2021 from ODU's Office of Institutional

Effectiveness. Recruitment emails ($n = 283$, 66.6%; See Appendix C) were sent to the students

included in the list, including a brief description of the study, compensation for participation, and

a link to the study. Recruitment and data collection through emails was conducted in

approximately three weeks in August 2021.

The total sample size included 475 current first-generation college students. After

removing those with 50% or more missing cases on the first-generation college student identity

scale, the final sample size included 425 participants ($M_{age} = 24.4$ years, $SD = 8.0$). In data

cleaning, participants who were excluded from the final sample due to missing data points were

compared to participants who were included in the final sample to examine if there were any

significant demographic differences (i.e., gender, ethnicity/race, age, socioeconomic status; see

Chapter III). The sample included students who identified as Black, African American, Afro-

Caribbean, Black African, Other in this category (n = 196, 46.1%) and Caucasian, White,

European American, White European, Other in this category (n = 229, 53.9%). Majority of the

sample identified as female (n = 345, 81.2%). All demographic information can be found in

Table 1.

Table 1

Demographic Information

	Black		White		Full Sample	
	n	%	*n*	%	*n*	%
Gender						
Female	166	84.7	179	78.2	345	81.2
Male	28	14.3	44	19.2	72	16.9
Trans (female-to-male)	--	--	2	0.9	2	0.5
Non-Binary	2	1.0	4	1.7	6	1.4
Number of Parents/ Legal Guardians						
1	89	45.4	38	16.6	127	29.9
2	107	54.6	191	83.4	298	70.1
P/LG 1 Descriptor						
Mother	160	81.6	194	84.7	354	83.3
Father	25	12.8	30	13.1	55	12.9
Stepfather	--	--	1	0.4	1	0.2
Grandfather	1	0.5	1	0.4	2	0.5
Grandmother	8	4.1	3	1.3	11	2.6
Other	2	1.0	--	--	2	0.5
P/LG 1 Education						
Less than high school	27	13.8	30	13.1	57	13.4
High school degree	69	35.2	100	43.7	169	39.8
Some college, no degree	75	38.3	78	34.1	153	36.0
Associate's degree	25	12.8	21	9.2	46	10.8
P/LG 2 Descriptor						
Mother	22	11.2	25	10.9	47	11.1
Father	77	39.3	147	64.2	224	52.7
Stepmother	1	0.5	5	2.2	6	1.4
Stepfather	2	1.0	11	4.8	13	3.1
Grandfather	1	0.5	1	0.4	2	0.5
Grandmother	2	1.0	2	0.9	4	0.9
Other	1	0.5	--	--	1	0.2
Not Applicable	1	0.5	--	--	1	0.2
P/LG 2 Education						
Less than high school	21	10.7	21	9.2	42	9.9
High school degree	46	23.5	116	50.7	162	38.1
Some college, no degree	31	15.8	42	18.3	73	17.2
Associate's degree	9	4.6	12	5.2	21	4.9

Table 1

(Continued)

	Black		White		Full Sample	
	n	%	*n*	%	*n*	%
SES						
1 = lowest	34	17.3	39	17.0	73	17.2
2	49	25.0	38	16.6	87	20.5
3	75	38.3	83	36.2	158	37.2
4	33	16.8	55	24.0	88	20.7
5 = highest	5	2.6	13	5.7	18	4.2
Class standing						
Freshman	47	24.0	25	10.9	72	16.9
Sophomore	33	16.8	43	18.8	76	17.9
Junior	54	27.6	61	26.6	115	27.1
Senior	56	28.6	88	38.4	144	33.9
Graduate Student	4	2.0	11	4.8	15	3.5
Other	2	1.0	1	0.4	3	0.7
Student Status						
Full-time	172	87.8	187	81.7	359	84.5
Part-time	23	11.7	42	18.3	65	15.3
GPA						
Below 2.00	14	7.1	4	1.7	18	4.2
2.00-2.50	36	18.4	16	7.0	52	12.2
2.51-3.00	50	25.5	37	16.2	87	20.5
3.01-3.50	56	28.6	59	25.8	115	27.1
3.51-4.00	36	18.4	109	47.6	145	34.1

Note. SES was assessed on an ordinal scale with 1 indicating lowest socioeconomic status and 5 indicating the highest socioeconomic status.

Power analysis. While there is no strict cut-off value for multi-group Confirmatory

Factor Analysis (CFA), researchers have proposed general guidelines for appropriate sample

sizes. For factor analyses, Tinsley and Tinsley (1987) recommend 5 to 10 subjects per item, up to

300 subjects. In contrast, Comrey (1988) suggests that a sample size of at least 200 is adequate

when conducting exploratory factor analyses that include less than 40 items. Regarding CFA,

simulation studies have shown that power for factor analysis increases as the item-to-factor ratio

and magnitude of factor loadings increase and 80% power can be achieved even with relatively

small sample sizes (de Winter et al., 2009; MacCallum et al., 1999; MacCallum et al., 2001).

Moreover, when conducting multi-group analyses, it is essential to have sufficient sample size to

be adequately powered within each group (Brown, 2015). Thus, the proposed study sought to

recruit at least 400 participants (200 Black FGCS and 200 White FGCS).

Procedure

IRB approval was obtained from ODU's Institutional Review Board prior to

disseminating the surveys (approval number: 1732910-4). Online consent was collected by

participants reading a statement acknowledging that they have read the notification statement and

consent to participate on the Qualtrics survey, then clicking yes or no (see Appendix F).

Participants completed the online surveys at their convenience through Qualtrics, the surveys

took approximately 30-60 minutes to complete. All recruitment material included a link to an

online Qualtrics survey (See Appendix D, E) that served to verify eligibility in the study.

Specifically, participants were asked for their age whether they were a current college student,

and their parent/guardian(s) educational level. Any participants that answered that they are a

current college student, they are at least 18 years old, or that their parent/guardian(s) do not have

a bachelor's degree or higher were immediately redirected to the main survey. Participants were

also asked questions about their ethnicity, their socioeconomic status, and their gender to ensure that they could not manipulate eligibility requirements. The data in the eligibility screener was not used.

Upon completing the eligibility survey, and meeting the eligibility criteria, participants were redirected to the main survey with the FGCSIS (see Appendix B). There, participants read the notification statement, verified that they consent to participate, were at least 18 years old, and that their parent/guardian(s) do not have a bachelor's degree or higher (see Appendix F). No identifying information was collected as part of the primary survey. Participants recruited from Sona were asked whether they would like to receive Sona credit or be entered in a raffle where 1 in 50 participants will win a $50 gift card, and students from the email list were only asked to provide an email to be entered in the raffle.

Next, participants were automatically directed to an incentives survey where they were asked to provide their email address or Sona ID, for the purpose of issuing incentives. By splitting the incentive Qualtrics survey from the primary survey, it ensured that participants' survey responses could not be linked to their identifying information (Sona ID, email address). The participants recruited through the psychology student pool received class credit in exchange for completing the survey. Participants who were not recruited through Sona were entered into a raffle for a $50 amazon gift card.

Measures

First-Generation College Student Identity. The First-Generation College Student Identity Scale (FGCSIS) 25-item scale was used to assess first-generation college student identity exploration, resolution, affirmation, and centrality. The FGCSIS was created by adapting the Ethnic Identity Scale (EIS; Umaña-Taylor et al., 2004) and the Multidimensional Inventory

of Black Identity (MIBI; Sellers et al., 1997). The FGCS identity exploration subscale consists of 7 items (α = .87; sample item: "I have participated in activities that have taught me about being a first-generation college student"). The FGCS identity resolution subscale consists of 4 items (α = .91; sample item: "I understand how I feel about being a first-generation college student"). The FGCS identity affirmation subscale consists of 6 items (α = .89; sample item: "I am not happy with being a first-generation college student" [reverse coded]). The FGCS identity centrality subscale consists of 8 items (α = .87; sample item: "Being a first-generation college student is an important reflection of who I am"). All items were rated on a 7-point Likert-type scale that ranges from 1 (*strongly disagree*) to 7 (*strongly agree*). The scale is provided in Appendix B.

Ethnic Identity. The Ethnic Identity Scale (EIS; Umaña-Taylor et al., 2004) was used to assess ERI exploration, resolution, and affirmation with 17 items. The ERI exploration subscale consists of 7 items (α = .77; sample item: "I have participated in activities that have taught me about my ethnicity"). The FGCS identity resolution subscale consists of 4 items (α = .76; sample item: "I understand how I feel about my ethnicity"). The FGCS identity affirmation subscale consists of 6 items (α = .90; sample item: "I am not happy with my ethnicity" [reverse coded]). All items were rated on a 5-point Likert-type scale that ranges from 1 (strongly disagree) to 5 (strongly agree). The scale is provided in Appendix B.

Motives for Attending College. To assess interdependent and independent motives for attending college, 12 items from Stephens et al. (2012a) were used. The interdependent subscale consists of 6 items (α = .85; sample item: "I decided to enroll in college to help my family out after I'm done with college"). The independent subscale consists of 6 items (α = .91; sample item: "I decided to enroll in college to become and independent thinker"). All items were rated

on a 5-point Likert-type scale that ranges from 1 (strongly disagree) to 5 (strongly agree). The scale is provided in Appendix B.

Demographics. Demographics included questions that assessed age, parental education, gender, ethnicity, socioeconomic status, major, class standing, student status, and GPA. Demographic questions are provided in Appendix C.

Analytic Plan

Prior to analyses, the data were cleaned and the statistical assumptions for each analysis were conducted. To assess normal distribution, skewness and kurtosis scores for each variable were assessed based on a +/- 2.00 criteria. If non-normality was detected, data would be transformed to change their distribution. Boxplots were used to determine if there were any univariate outliers. If univariate outliers were detected, they would be addressed by Winsorizing them to the next highest value.

The analytic process was completed in four steps in Mplus v8.6 (Muthén and Muthén, 1998-2017). First, a confirmatory factor analysis (CFA) with a robust maximum likelihood estimator (MLR) was used to verify the four-factor structure in comparison to the two previously established measures (MIBI; Sellers et al., 1997; EIS; Umaña-Taylor et al., 2004). The comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR) were used to evaluate model fit. According to Little's (2013) suggested values good fit is represented as $CFI \geq .95$, $RMSEA \leq .06$, and $SRMR \leq .061$; adequate fit as $CFI = .90-.95$, $RMSEA = .06-.08$, and $SRMR = .06-.08$; and mediocre fit as $CFI = .85-.90$, $RMSEA = .08-.10$, and $SRMR = .08-.10$. Items were retained if they had a factor loading of $\geq .60$ (Matsunaga, 2010). Cronbach's alpha was calculated for each of the subscales to test internal consistency.

The second step included testing measurement invariance through multigroup CFA models with a robust maximum likelihood estimator (MLR) to determine factorial invariance of FGCS identity exploration, resolution, affirmation, and centrality across Black and White FGCS. For establishment of metric, scalar, and strict invariance, changes in fit indices were examined. Given its sensitivity to large sample sizes, the χ2 test was not examined to determine changes in fit for invariance testing (Brown, 2015). Instead, Chen's (2007) recommendations for examining changes in fit indices for measurement invariance when the sample is greater than 300 participants were applied where noninvariance would be signified by changes of ≥ (-.010) in CFI, as well as a change of ≥ .015 in RMSEA or a change of ≥ .030 in SRMR for factor loadings, and ≥ (-.010) in CFI, supplemented by a change of ≥ .015 in RMSEA or a change of ≥ .010 in SRMR for intercept or residuals.

First, the current study sought to establish configural invariance, which establishes sufficient model structure across both groups. Configural invariance must be established before examining other levels of invariance. To test configural invariance, a multi-group CFA of the FGCSIS was conducted with no constraints for loadings or intercepts across groups. Configural invariance would be established if the model produced good model fit (Little, 2013). Once configural invariance was established, the current study sought to establish metric invariance, which confirms that item factor loadings, or factor-item relationships, are similar across groups. Additionally, obtaining metric invariance is necessary for examining scalar invariance and allows for factor variance and covariance comparisons across groups. To test metric invariance, the multi-group CFA of the FGCSIS was conducted with item factor loadings constrained to be equivalent across groups and compared fit indices changes from the configural model.

After establishing metric invariance, the current study sought to establish scalar invariance, which verifies that item intercepts are similar across groups. Scalar invariance is essential in that it allows true mean comparisons across groups. To test scalar invariance, the multi-group CFA was conducted with item factor loadings and item intercepts constrained to be equivalent across groups and compared fit indices changes from the metric model. After all prior measurement invariance levels were established, the current study sought to establish strict invariance, which assumes that residual variances are similar across groups. While not required to compare means across groups, strict invariance is the highest level of invariance that can be established by claiming that any unexplained variance for each item is the same across groups. To test strict invariance, the multi-group CFA was conducted with item factor loadings, item intercepts, and residual variances constrained to equality across groups and compared fit indices changes from the scalar model.

Latent factor mean differences are not appropriate to test if measurement invariance has not been established because true differences cannot be examined if the factor is not being measured equivalently across groups. Thus, after establishing measurement invariance, latent factor mean differences were examined. To examine latent mean differences, one group must be the comparison by constraining means to 0. Therefore, latent factor means were specified as 0 for Black FGCS as the comparison group, and White FGCS identity exploration, resolution, affirmation, and centrality means were assessed in comparison.

Finally, the current study sought to establish construct validity of the FGCSIS. These analyses were examined in Mplus v8.6 (Muthén and Muthén, 1998-2017) with a robust maximum likelihood estimator (MLR). To establish construct validity, the correlational relationships between the four factors of the FGCSIS and the three factors of the EIS

(affirmation, exploration, resolution), as well as interdependent and independent motives for attending college were examined. Variables were examined as observed total scores.

CHAPTER III

RESULTS

Data Cleaning

Before analyses were conducted, the data were cleaned in SPSS 27. In terms of missing

data, 7.4% ($n = 35$) of participants did not respond to any of the items and 3.2% ($n = 15$) of

participants did not respond to over half of the items on the FGCSIS, the remaining participants

completed 100% of the scale. As a result, participants with 50% or more missing data points ($n = 50$)

were compared to those with no missing data in terms of demographic characteristics.

To determine differences for gender and ethnicity/race, chi-square tests were conducted. When

comparing missing to non-missing participants, gender was not significantly different between

groups $\chi^2(3, N = 475) = 0.62$, $p = .893$. Moreover, ethnicity/race was also not significantly

different between groups $\chi^2(1, N = 475) = 2.53$, $p = .111$. Participants' age and SES differences

were tested by t-tests. When comparing missing to non-missing participants, age was not

significantly different between groups $t(470) = 0.44$, $p = .664$. Moreover, SES was also not

significantly different between groups $t(472) = -1.07$, $p = .284$. Given that there were no

significant differences between the two groups on relevant demographics, the participants with

50% or more missing data were removed, resulting in a final sample size of 425.

Next, the data were examined for univariate outliers by producing boxplots for each item

for each group. Upon examination of boxplots, 13 extreme outliers were detected for items 2, 15,

16, and 17. As a result, these outliers were Winsorized by changing the value to the next highest

value. Normality was examined through histograms, skewness, and kurtosis scores. First-

Generation College Student Identity Scale scores were normally distributed. Item statistics are

displayed in Table 2.

Table 2

Item Statistics

Item	Min	Max	Mean(SD)	Skew	Kurtosis
FGCSIS1	1	7	5.9(1.3)	-1.11	0.29
FGCSIS2	1	7	6.0(1.2)	-1.24	0.47
FGCSIS3	1	7	4.8(2.0)	-0.34	-1.20
FGCSIS4	1	7	5.7(1.6)	-1.09	0.33
FGCSIS5	1	7	4.8(1.9)	-0.35	-1.22
FGCSIS6	1	7	5.6(1.5)	-0.96	0.08
FGCSIS7	1	7	3.0(1.9)	0.79	-0.64
FGCSIS8	1	7	4.6(1.8)	-0.45	-0.68
FGCSIS9	1	7	2.7(1.8)	0.97	-0.32
FGCSIS10	1	7	2.6(1.7)	1.03	-0.16
FGCSIS11	1	7	2.9(1.8)	0.72	-0.84
FGCSIS12	1	7	3.1(1.9)	0.52	-1.16
FGCSIS13	1	7	2.8(1.8)	0.84	-0.59
FGCSIS14	1	7	5.0(1.8)	-0.77	-0.40
FGCSIS15	1	7	5.4(1.4)	-1.03	0.52
FGCSIS16	1	7	5.5(1.5)	-1.07	0.51
FGCSIS17	1	7	5.3(1.5)	-1.00	0.33
FGCSIS18	1	7	3.2(1.8)	0.49	-0.89
FGCSIS19	1	7	4.0(1.9)	-0.08	-1.17
FGCSIS20	1	7	2.9(1.7)	0.65	-0.64
FGCSIS21	1	7	3.9(1.9)	0.05	-1.20
FGCSIS22	1	7	3.5(1.7)	0.15	-0.91
FGCSIS23	1	7	3.1(1.7)	0.48	-0.78
FGCSIS24	1	7	3.7(1.9)	0.05	-1.13
FGCSIS25	1	7	2.9(1.8)	0.78	-0.38

Note. FGCSIS = First-Generation College Student Identity Scale. Min = Minimum Score. Max = Maximum Score. SD = Standard Deviation. Item statistics reflect scores after winsorizing.

Aim 1 – Confirmatory Factor Analysis

Upon conducting a confirmatory factor analysis for the entire sample, the four-factor

FGCSIS model 1 provided adequate to mediocre fit [CFI = 0.871, RMSEA = 0.077, SRMR =

0.066]. First, item factor loadings were examined to determine if they met established standards

(≥ .60; Matsunaga, 2010). As such, item 8 ("I have experienced things that reflect being a first-

generation college student, such as eating food, listening to music, and watching movies") was

removed in model 2 for having a low factor loading (0.18). Conceptually, this made sense given

this item was originally created to reflect exploring ethnic/racial culture and is less applicable to

being a FGCS. Further, item 25 ("Being a first-generation college student is not a major factor in

my social relationships") was removed in model 3 for having a low factor loading (0.46), as well

as item 18 ("Overall, being a first-generation college student has very little to do with how I feel

about myself") was removed in model 4 for having a low factor loading (0.55).

To improve model fit, the modification indices (M.I.) were examined. Upon examining

M.I., item 1 ("My feelings about being a first-generation college student are mostly negative";

reverse coded) and item 2 ("I feel negatively about being a first-generation college student";

reverse coded) had the highest M.I. value in WITH statements. To produce a more parsimonious

model, the item with the lowest loading was removed in model 5, which was item 1 (.70). Next,

item 22 ("I have a strong sense of belonging to first-generation college students") and item 23 ("I

have a strong attachment to other first-generation college students") had the highest M.I. value in

WITH statements. Therefore, the item with the lowest loading was removed in model 6, which

was item 23 (.67). Finally, item 10 ("I have read books/magazines/newspapers or other materials

that have taught me about being a first-generation college student") and item 12 ("I have learned

about being a first-generation college student by doing things such as reading (books, magazines,

newspapers), searching the internet, or keeping up with current events") had the highest M.I. value in WITH statements. Therefore, the item with the lowest loading was removed in model 7, which was item 12 (.70). With these modifications, the final 19 item four-factor full model included provided good fit on all model fit indices [CFI = 0.953, RMSEA = 0.055, SRMR = 0.048]. Changes in fit upon removing items are displayed in Table 3.

As displayed in Table 4, all item standardized factor loadings were ≥ .60. To test internal consistency, Cronbach's alpha was computed for each subscale after all model changes were complete. The reliability coefficients for the total sample were within acceptable ranges (Nunnally & Bernstein, 1994) including α = .91 (exploration), α = .91 (resolution), α = .89 (affirmation), and α = .85 (centrality).

Table 3

Fit Indices after Item Deletion

Model	χ^2(df)	CFI	RMSEA (90% CI)	SRMR
Model 1	945.23 (269)	.871	.077 (.072, .082)	.066
Model 2	881.93 (246)	.876	.085 (.072, .084)	.064
Model 3	823.19 (224)	.880	.079 (.074, .085)	.061
Model 4	744.83 (203)	.887	.079 (.073, .085)	.055
Model 5	559.48 (183)	.916	.070 (.063, .076)	.052
Model 6	427.88 (164)	.938	.062 (.054, .069)	.050
Model 7	332.041 (146)	.953	.055 (.047, .063)	.048

Table 4

Factor Loadings for Four-Factor Model

Factor	Item	Standardized Loading
Affirmation	I feel negatively about being a first-generation college student. (R)	.67
	I wish I was not a first-generation college student. (R)	.78
	I am not happy with being a first-generation college student. (R)	.79
	If I could choose, I would prefer to not be a first-generation college student. (R)	.83
	I dislike being a first-generation college student. (R)	.83
Exploration	I have not participated in any activities that would teach me about being a first-generation college student. (R)	.63
	I have attended events that have helped me learn more about being a first-generation college student.	.86
	I have read books/magazines/newspapers or other materials that have taught me about being a first-generation college student.	.75
	I have participated in activities that have exposed me to being a first-generation college student.	.90
	I have participated in activities that have taught me about being a first-generation college student.	.94
Resolution	I am clear about what being a first-generation college student means to me.	.78
	I understand how I feel about being a first-generation college student.	.87
	I know what being a first-generation college student means to me.	.93
	I have a clear sense of what being a first-generation college student means to me.	.86
Centrality	In general, being a first-generation college student is an important part of my self-image.	.83
	My destiny is tied to the destiny of other first-generation college students.	.63
	Being a first-generation college student is unimportant to my sense of what kind of person I am. (R)	.65
	I have a strong sense of belonging to first-generation college students.	.70
	Being a first-generation college student is an important reflection of who I am.	.86

Note. (R) = reverse coded.

After establishing good model fit for FGCSIS model structure, inter-factor correlations were examined (see Table 5). FGCS identity exploration was positively and significantly correlated with FGCS identity resolution ($r = .22$, $p < .001$) and FGCS identity centrality ($r = .33$, $p < .001$). However, FGCS identity exploration had no significant association with FGCS identity affirmation ($r = .02$, $p = .773$). Additionally, FGCS identity affirmation had a significant positive correlation with FGCS identity resolution ($r = .26$, $p < .001$). In contrast, FGCS identity affirmation had no significant association with FGCS identity centrality ($r = -.06$, $p = .317$). Last, FGCS identity centrality was positively and significantly correlated with FGCS identity resolution ($r = .31$, $p < .001$).

Table 5

Inter-Factor Correlations

	F1	F2	F3	F4
F1. Exploration				
F2. Resolution	.22*			
F3. Affirmation	.02	.26*		
F4. Centrality	.33*	.31*	-.06	

Note. * $p < .001$

Aim 2 – Measurement Invariance of FGCSIS Across Ethnicity/Race

To test configural invariance, a multi-group CFA of the four-factor FGCSIS was conducted without constraining any values. This allows for establishing model structure for Black and White FGCS on the FGCSIS. The multi-group CFA provided good fit to the data on two of three fit indices [CFI = 0.933, RMSEA = 0.063, SRMR = 0.061]. Given that fit indices provided adequate to good fit, configural invariance was supported across Black and White college students, establishing FGCSIS model structure across both groups.

Second, metric invariance was tested by constraining the factor loadings to be equal. To test this, a multigroup CFA was conducted with numbers (e.g., (1) (2)) placed next to each item factor loading, with number constraints matching across groups. Therefore, item factor loadings were set to be equal across groups. This allows for ensuring that latent FGCSIS factors and their respective items' relationships are similar across Black and White FGCS. The model provided adequate to good fit to the data [CFI = 0.945, RMSEA = 0.058, SRMR = 0.062]. In comparing the configural and metric invariance models, changes in fit indices provided support for metric invariance [ΔCFI = -.001, ΔRMSEA = -.001, ΔSRMR = .005].

Once metric invariance was established, scalar invariance was tested by constraining intercepts to be equal. To test this, the previous multigroup CFA was conducted with number constraints next to item factor loadings across groups, however, number constraints were also placed next to each item intercept. Therefore, item factor loadings and item intercepts were set to be equal across groups. The model provided adequate fit to the data [CFI = 0.935, RMSEA = 0.061, SRMR = 0.076]. In comparing the metric and scalar invariance models, changes in fit indices yielded significant differences [ΔCFI = -.010, ΔRMSEA = .003, ΔSRMR = .014]. As a result, constraints were released for individual item intercepts and changes in model fit indices were examined to determine which item had the most significant impact on model fit. After

examining changes in model fit indices upon releasing each individual item intercept constraint, it was determined that item 19 ("In general, being a first-generation college student is an important part of my self-image") had the most significant negative impact on model fit [ΔCFI = -.006, ΔRMSEA = -.003, ΔSRMR = -.006]. Therefore, item 19 was removed from the model.

To re-test configural invariance after omitting item 19, the multi-group CFA of the four-factor FGCSIS was estimated anew. The multi-group CFA provided good fit to the data on two of three fit indices [CFI = 0.947, RMSEA = 0.060, SRMR = 0.057]. The subsequent metric invariance model provided adequate to good fit to the data on all fit indices [CFI = 0.948, RMSEA = 0.057, SRMR = 0.066] and was not associated with a significant decline in model fit [ΔCFI = .002, ΔRMSEA = -.003, ΔSRMR = .007]. Regarding scalar invariance, although the model provided adequate fit to the data [CFI = 0.937, RMSEA = 0.061, SRMR = 0.076], it once again yielded significant differences [ΔCFI = -.011, ΔRMSEA = .004, ΔSRMR = .010]. After examining changes in model fit indices upon releasing each individual item intercept constraint, it was determined that item 20 ("My destiny is tied to the destiny of other first-generation college students") had the most significant negative impact on model fit [ΔCFI = -.003, ΔRMSEA = -.001, ΔSRMR = -.002]. Therefore, item 20 was removed from the model.

The multi-group CFA without items 19 and 20 provided good fit to the data on all three fit indices [CFI = 0.959, RMSEA = 0.054, SRMR = 0.058]. Moreover, the metric invariance model provided good fit to the data on two of the three fit indices [CFI = 0.960, RMSEA = 0.052, SRMR = 0.068]. In comparing the configural and metric invariance models, changes in fit indices provided support for metric invariance [ΔCFI = .001, ΔRMSEA = .002, ΔSRMR = -.010]. Finally, the scalar invariance model provided good fit to the data on two of the three fit indices [CFI = 0.950, RMSEA = 0.056, SRMR = 0.077]. In comparing the metric and scalar

invariance models, changes in fit indices provided support for scalar invariance [ΔCFI = -.010, ΔRMSEA = -.004, ΔSRMR = -.009].

Given that scalar invariance was supported, strict invariance was examined next by constraining residual variances to be equal. To test this, the previous multigroup CFA was conducted with number constraints next to item factor loadings, item intercepts, and item residual variances. Therefore, item factor loadings, item intercepts, and item residuals were set to be equal across groups. The model provided adequate to good fit to the data on two of the fit indices [CFI = 0.941, RMSEA = 0.059, SRMR = 0.086]. In comparing the scalar and strict invariance models, changes in fit indices provided support for strict invariance [ΔCFI = -.008, ΔRMSEA = .003, ΔSRMR = .009]. All model fit indices and changes in fit indices can be found in Table 6.

After removing additional items to establish measurement invariance, the final 17 item four-factor full model included provided good fit on all model fit indices [CFI = 0.962, RMSEA = 0.052, SRMR = 0.050]. Standardized factor loadings for all items in the final model are included in Table 7. After removing additional items for invariance analyses, Cronbach's alpha was re-computed for each subscale. The final reliability coefficients for the total sample were within acceptable ranges (Nunnally & Bernstein, 1994) including α = .91 (exploration), α = .91 (resolution), α = .88 (affirmation), and α = .78 (centrality).

Table 6

Measurement Invariance Model Fit Comparisons of the FGCSIS

Model	Satorra-Bentler Scaled χ^2(df)	CFI	ΔCFI	RMSEA	ΔRMSEA	SRMR	Δ SRMR
Configural	674.79 (364)	.933		.063 (.056, .071)		.061	
Metric	693.84 (381)	.933	.000	.062 (.055, .069)	-.001	.065	.004
Scalar	758.69 (402)	.923	-.010	.065 (.058, .072)	.003	.078	.013
After removing item 19							
Configural	452.10 (258)	.947		.060 (.050, .068)		.057	
Metric	466.02 (276)	.948	.002	.057 (.048, .066)	-.003	.066	.007
Scalar	522.75 (294)	.937	-.011	.061 (.052, .069)	.004	.076	.010
After removing item 20							
Configural	364.29 (223)	.959		.054 (.043, .064)		.058	
Metric	380.23 (243)	.960	.001	.052 (.041, .061)	.002	.068	-.010
Scalar	435.05 (260)	.950	-.010	.056 (.047, .065)	-.004	.077	-.009
Strict	479.90 (277)	.941	-.008	.059 (.050, .067)	.003	.086	.009

Table 7

Factor Loadings for Final Four-Factor Model

Factor	Item	Standardized Loading
Affirmation	I feel negatively about being a first-generation college student. (R)	.67
	I wish I was not a first-generation college student. (R)	.78
	I am not happy with being a first-generation college student. (R)	.79
	If I could choose, I would prefer to not be a first-generation college student. (R)	.83
	I dislike being a first-generation college student. (R)	.83
Exploration	I have not participated in any activities that would teach me about being a first-generation college student. (R)	.63
	I have attended events that have helped me learn more about being a first-generation college student.	.86
	I have read books/magazines/newspapers or other materials that have taught me about being a first-generation college student.	.75
	I have participated in activities that have exposed me to being a first-generation college student.	.90
	I have participated in activities that have taught me about being a first-generation college student.	.94
Resolution	I am clear about what being a first-generation college student means to me.	.78
	I understand how I feel about being a first-generation college student.	.87
	I know what being a first-generation college student means to me.	.93
	I have a clear sense of what being a first-generation college student means to me.	.86
Centrality	Being a first-generation college student is unimportant to my sense of what kind of person I am. (R)	.66
	I have a strong sense of belonging to first-generation college students.	.67
	Being a first-generation college student is an important reflection of who I am.	.90

Note. (R) = reverse coded.

Aim 3 – Latent Factor Mean Differences Across Ethnicity/Race

Once configural, metric, scalar, and strict measurement invariance were confirmed, latent factor mean differences for FGCS identity exploration, resolution, affirmation, and centrality were examined (see Table 8). To produce latent means, Black students' FGCSIS means were constrained to 0 as the comparison group and White students' FGCSIS means were examined in comparison to the comparison groups' scores. Results yielded that FGCS identity exploration was significantly different between Black and White college students ($\bar{x}$ = -0.29, p < .05), such that White college students reported lower FGCS identity exploration than Black college students. Additionally, results yielded that FGCS identity centrality was significantly different between Black and White college students ($\bar{x}$ = -0.55, p < .001), such that White college students reported lower FGCS identity centrality than Black college students. There were no significant differences between Black and White college students on FGCS identity affirmation ($\bar{x}$ = 0.10, p = .317) or resolution ($\bar{x}$ = 0.01, p = .931).

As a post-hoc analysis, we sought to determine whether these differences across ethnicity/race held after accounting for SES. Towards this end, we estimated a confirmatory factor model and let ethnicity/race and SES predict scores on the FGCSIS subscales. SES had a significant positive relationship with FGCS affirmation (β = .24, p < .001), such that FGCS with higher SES reported higher FGCS affirmation. On the other hand, SES had a significant negative relationship with FGCS centrality (β = -.11, p = .047), such that FGCS with greater SES reported lower FGCS centrality. There were no significant relationships between SES and FGCS exploration (β = .01, p = .910), or resolution (β = .09, p = .097). Consistent with prior findings, after controlling for SES, ethnicity/race was significantly associated with FGCS identity exploration (β = -.14, p = .005) and centrality (β = -.25, p < .001), indicating these mean

differences were not simply due to SES. Once again, there were no significant associations between ethnicity/race and either FGCS identity affirmation ($\beta = .03$, $p = .545$) or resolution ($\beta = -.00$, $p = .975$).

Table 8

Latent Factor Mean Differences

Means	Estimate	S.E.	Est./S.E.	*p*
Exploration	-0.29	.10	-2.82	.005
Resolution	0.01	.10	0.09	.931
Affirmation	0.10	.10	1.00	.317
Centrality	-0.55	.12	-4.57	.000

Note. Estimates are differences from reference group, Black FGCS were set as the reference group.

Aim 4 – External Validation

The final step of validation utilized Mplus v8.6 (Muthén and Muthén, 1998-2017) to establish construct validity by examining the correlational relationship between the four factors of the FGCSIS and interdependent and independent motives for attending college, as well as the three factors of the EIS (affirmation, exploration, resolution). Variables were examined as observed total scores. All correlations between the FGCSIS with EIS and motives for attending college are presented in Table 9. To determine if the correlational relationships between FGCSIS and interdependent motives, and FGCSIS and independent motives were significantly different, Steiger's (1950) dependent correlations difference tests were used through Lee and Preacher's (2013) interactive calculator. The interactive calculator compares two correlation coefficients by converting them into z scores and computing an asymptotic z test.

In terms of FGCSIS exploration, there was a significant positive correlation with EIS exploration ($r = .31$, $p < .001$) and EIS resolution ($r = .13$, $p = .011$). However, FGCSIS exploration had no significant correlation with EIS affirmation ($r = -.02$, $p = .648$). Moreover, FGCSIS exploration had a significant positive correlation with interdependent motives ($r = .24$, $p < .001$) and independent motives ($r = .10$, $p = .024$). The correlation between FGCSIS exploration and interdependent motives was significantly stronger than the correlation between FGCSIS exploration and independent motives ($z = 2.72$, $p = .003$). With regard to FGCSIS resolution, there was a significant positive correlation with EIS resolution ($r = .30$, $p < .001$) and EIS exploration ($r = .12$, $p = .020$). However, FGCSIS exploration had no significant correlation with EIS affirmation ($r = .10$, $p = .068$). Further, FGCSIS resolution had a significant positive correlation with interdependent motives ($r = .24$, $p < .001$) and independent motives ($r = .21$, $p < .001$). The correlation between FGCSIS resolution and interdependent motives was not

significantly different from the correlation between FGCSIS resolution and independent motives ($z = 0.58$, $p = .280$). Although EIS affirmation was not significantly associated with FGCSIS, the magnitude of correlation was comparable to those that were statistically significant.

Additionally, FGCSIS affirmation had a significant positive correlation with EIS affirmation ($r = .16$, $p = .003$) and EIS resolution ($r = .23$, $p < .001$). However, FGCSIS affirmation had no significant correlations with EIS exploration ($r = .04$, $p = .448$), interdependent motives ($r = -.01$, $p = .769$), or independent motives ($r = .07$, $p = .144$). The correlation between FGCSIS affirmation and interdependent motives was not significantly different from the correlation between FGCSIS affirmation and independent motives ($z = -1.49$, $p = .068$). Finally, FGCSIS centrality, had a significant positive correlation with four out of the five constructs including EIS exploration ($r = .31$, $p < .001$), EIS resolution ($r = .16$, $p = .003$), interdependent motives ($r = .52$, $p < .001$) and independent motives ($r = .29$, $p < .001$). The correlation between FGCSIS centrality and interdependent motives was significantly stronger than the correlation between FGCSIS centrality and independent motives ($z = 4.90$, $p < .001$). In contrast, FGCSIS centrality had no significant correlation with EIS affirmation ($r = .07$, $p = .153$).

Table 9

Construct Validity Correlations

	Interdependent	Independent	EIS_E	EIS_R	EIS_A
FGC_E	.24**	.10*	.31**	.13*	-.02
FGC_R	.24**	.21**	.12*	.30**	.10
FGC_A	-.01	.07	.04	.23**	.16*
FGC_C	.52**	.29**	.31**	.16*	.07

Note. * $p < .05$, ** $p < .001$

CHAPTER IV

DISCUSSION

The purpose of the current study was to adapt and validate a scale of first-generation college student (FGCS) identity. Although prior studies have explored individual differences in student's self-identification as FGCS qualitatively (Orbe, 2004), the present study is the first to capture this multidimensional construct quantitatively. Towards this end, the current study drew on ethnic/racial identity (ERI) development research, (Phinney, 1992; Sellers et al., 1997; Umaña-Taylor et al., 2004). Literature on ERI has effectively fused identity content, which draws on social identity theory (SIT; Tajfel, 1981; Tajfel & Turner, 1986), with identity process theory (Erikson, 1950, 1968; Marcia, 1966). Given that FGCS status is a social identity similar to ERI, the Ethnic Identity Scale (EIS; Umaña-Taylor et al., 2004) and the Multidimensional Inventory of Black Identity (MIBI; Sellers et al., 1997) were used as models in the creation of the First-Generation College Student Identity Scale (FGCSIS).

In addition, the current study sought to test whether FGCS identity is assessed equally (i.e., measurement invariance) across Black and White college students through the FGCSIS. Moreover, the study sought to determine the degree to which they differ in their identification with first-generation status (i.e., latent mean differences). ERI is an important intersectional identity of FGCS due to differences in SES background (Bhutta et al., 2020), racism and oppression (Harrell, 2000), and experiences as a FGCS (Chang et al., 2020). Thus, it is essential to ensure that FGCS identity is assessed equally across Black and White FGCS and examine if there are differences in the levels of identity process and content domains across groups. The present study not only supported the validity of the factor structure and internal consistency reliability of the FGCSIS but provided evidence indicating full factorial measurement invariance

for the FGCSIS across Black and White FGCS. These findings are important statistically to be able to make comparisons across groups (Kline, 2016), but also due to differences in the intersecting identity of ethnicity/race (Patton et al., 2016). Additionally, there were significant mean differences between Black and White FGCS on two (i.e., exploration and centrality) of the four subscales, which will be discussed below.

Aim 1: Internal Validity and Reliability

The final model of the FGCSIS provided good fit to the data with 17 items and a four-factor structure, which supported my hypothesis. The establishment of a four-factor structure is indicative of the FGCS identity domains being distinct, which provides implications for the broader identity literature. One of the debates in the broader identity literature is the notion that identity dimensions (process and content), while related, are distinct and should be treated and measured as such (Meca et al., 2018; Schwartz et al., 2014; Umaña-Taylor et al., 2014). For example, the Multigroup Ethnic Identity Measure (MEIM; Phinney, 1992) was created and widely used for assessing ERI. However, this measure did not allow for assessing ERI dimensions separately. As a result, Umaña-Taylor and colleagues (2004) developed the EIS. Similarly, the four-factor structure provides further support that identity is a multifaceted, multidimensional construct, which should be studied as such. In light of the fact that my study, coupled by studies in Ethnic Identity (Umana-Taylor et al., 2004) and U.S. Identity (Meca et al., 2020) have further differentiated between process and content dimensions of their respective identity domains, the current study provides greater evidence for the need for research across identity domains to draw on this integrative multidimensional model.

In establishing the good-fitting model, three items were deleted due to low factor loadings and three items were deleted due to high error correlations with other items, which

resulted in a good-fitting model. First, one item (i.e., "I have experienced things that reflect being a first-generation college student, such as eating food, listening to music, and watching movies") was removed from FGCS exploration. Given that this item was originally created to discuss exploration of ones' ethnic/racial culture (Umaña-Taylor et al., 2004), this item does not conceptually reflect exploration of first-generation status which is not inherently tied to specific cultural practices. Next, two items (i.e., "Being a first-generation college student is not a major factor in my social relationships" and "Overall, being a first-generation college student has very little to do with how I feel about myself") were removed from FGCS centrality. These low loadings could be attributed to the fact that they were negatively worded. Some researchers argue that mixing negatively- and positively worded items can harm the quality of scales (Dalal & Carter, 2015; Roszkowski & Soven, 2010). Moreover, for the EIS, researchers have found negatively worded items to be problematic in establishing a good-fitting model and measurement invariance (White et al., 2011). Finally, after addressing modification indices, three additional items were removed. All items were highly correlated with other items that were very similarly worded. To improve the model, the items that had the poorest factor loading were removed. One item from FGCS affirmation (i.e., "My feelings about being a first-generation college student are mostly negative"), one item from FGCS exploration (i.e., "I have learned about being a first-generation college student by doing things such as reading (books, magazines, newspapers), searching the internet, or keeping up with current events"), and one item from FGCS centrality (i.e., "I have a strong attachment to other first-generation college students") were removed from their respective factors.

Relationships between FGCS Identity Domains

Further, inter-factor correlations for FGCS identity dimensions were examined. In terms of identity process dimensions, FGCS identity exploration had a weak significant positive association with FGCS identity resolution. This finding is somewhat consistent with ERI literature that has indicated identity processes have a positive association, however, this association tends to be stronger ($r = .48$ to .60) than the one found in the current study (Umaña-Taylor et al., 2004; Yip et al., 2006). These findings could be attributed to the fact that ERI may simply be a more salient identity dimension to individuals and those around them than FGCS identity, particular in light of systemic and institutional barriers that have been erected centered on ethnicity and race (Bhutta et al., 2020; Chang et al., 2020; Harrell, 2000). Moreover, it is worth noting that FGCS status can only be known if one is aware of that status and discloses that information with others. In contrast, when examining identity content dimensions, FGCS identity affirmation did not have a significant association with FGCS identity centrality. These findings are surprising given that prior research has found positive associations between identity content dimensions (Umaña-Taylor et al., 2004; Yip et al., 2006). These results could be due to a lack of pride in one's FGCS status, even if FGCS status is an important part of how they identify. Given that FGCS status is generally associated with a deficit perspective, the relative importance a person places on a FGCS may not explicitly result in feeling positively about this aspect of their identity. In contrast, broader contextual and institutional factors, including how FGCS is framed, may play a stronger role.

In addition to the associations within identity dimensions, there were also significant associations across identity processes and identity content dimensions. Consistent with prior ERI literature (Umaña-Taylor et al., 2004; Yip et al., 2006), FGCS identity centrality had a moderate

significant positive association with both FGCS identity processes (i.e., exploration and resolution). Thus, similar to other social identities, for those who are aware of and have processed their FGCS status, this aspect of their identity becomes more important to who they are. Moreover, FGCS identity resolution had a weak significant positive association with FGCS identity affirmation, whereas exploration had a negligible non-significant positive association with FGCS identity affirmation. These findings are also somewhat consistent with prior research, such that resolution and affirmation have a low but significantly positive association, however, exploration has also been found to have a significantly low positive association with affirmation (Umaña-Taylor et al., 2004; Yip et al., 2006). In other words, for students who have resolved what their FGCS status means to them, it may be easier to form positive feelings around this identity. At the same time, the lack of association between exploration and affirmation may point to the fact that just because students have explored their FGCS status, does not necessarily indicate that they know their feelings toward that identity yet.

Aim 2: Measurement Invariance

The current study sought to demonstrate full factorial measurement invariance for the FGCSIS across Black and White FGCS. After removing two items from FGCS centrality (i.e., "In general, being a first-generation college student is an important part of my self-image" and "My destiny is tied to the destiny of other first-generation college students"), configural, metric, scalar, and strict invariance were successfully established among the current sample. This is notable given that strict invariance is the highest level of invariance. Moreover, strict invariance is considerably under established and/or underreported in psychological research (for a review, see Putnick & Bornstein, 2016). The establishment of full factorial measurement invariance has several implications for the FGCSIS. The demonstration of measurement invariance implies that

the FGCSIS is interpreted equivalently across Black and White FGCS. Statistically speaking, the FGCSIS displayed equivalent model structure, item factor loadings, item intercepts, and item residuals across groups. More importantly, this indicates that latent covariance, variance, and means can be confidently compared across Black and White FGCS. In addition, because item residuals were equivalent across groups, these comparisons can be made with the implication that they are not due to error.

From a conceptual standpoint, it is somewhat surprising that Black and White FGCS interpreted the FGCSIS similarly given the evidence from prior research that ethnic/racial minorities experience lower SES backgrounds (Bhutta et al., 2020), systemic racism and oppression (Harrell, 2000), and more negative experiences as a FGCS (Chang et al., 2020) compared to White FGCS. While Black and White FGCS have different experiences based on their ethnic/racial background, these findings suggest that FGCS status is also an important social identity to their identity development, and that students may experience FGCS identity development more similarly than not. This shared identity experience could be due to the shared nature of marginalization of FGCS status "based on their perceived differences from the dominant status quo" (Hands, 2020, p. 613). As previously discussed, FGCS share similar experiences with microaggressions toward their status (Ellis et al., 2019), family achievement guilt (Covarrubias et al., 2015, 2020), and cultural differences (Stephens et al., 2012a). These findings may also be attributed to the adaptation methods, such that three of the subscales were adapted from the EIS, which has been found to be invariant (Umaña-Taylor & Shin, 2007).

Aim 3: Latent Factor Mean Differences

In terms of latent means, there were some notable differences between Black and White FGCS that held even after accounting for socio-economic status. White students not only

reported lower FGCS identity exploration than Black students, but they also reported significantly lower FGCS identity centrality. On the other hand, there were no significant differences between White and Black students in terms of FGCS identity resolution and affirmation. As previously discussed, intersectionality is important to note when examining differences in FGCS identity between White and Black students. For example, FGCS may experience "identity collapse, wherein observers make assumptions about one less visible aspect of a person's identity based on assumptions about the more visible identity markers" (Gray et al., 2018, p. 1238). More specifically, ethnic/racial minority FGCS have reported experiences of assumptions from others that they are from a low social class background, whereas White FGCS reported the opposite, assumptions of being from a middle/upper social class background (Gray et al., 2018). As a result of these identity projections, Black FGCS may be more prone to examining their FGCS status due to others' verbal presumptions, and/or FGCS status being central to their sense of self if these presumptions are encountered often.

Moreover, previous research has provided evidence that personal and social identities have a bidirectional relationship (Meca et al., 2017), and that these identities have a bidirectional relationship with life experiences (Azmitia et al., 2008). In other words, one identity domain (personal, cultural, social) may provoke identity development in another domain. Further, prior research has provided that ethnic minorities report higher levels of ethnic identity exploration and centrality (Meca et al., 2015; Umaña-Taylor et al., 2004). Thus, Black FGCS may have higher levels of ethnic identity exploration and centrality, which in turn encourages exploration and centrality of their FGCS status.

Aim 4: External Validity

Finally, the current study sought to establish external construct validity through associations of the FGCSIS with other constructs. Given that three of the four subscales (exploration, resolution, and affirmation) of the FGCSIS were adapted from the EIS, and prior work has established positive correlations among social identity domains (Meca et al., 2020), it was hypothesized that the FGCSIS dimensions would be correlated with the EIS dimensions, particularly for those that capture similar dimensions (e.g., FGCSIS exploration and EIS exploration). This hypothesis was mostly supported in the findings. For example, each similar dimension did have a significant relationship including FGCSIS exploration, resolution, and affirmation with EIS exploration, resolution, and affirmation respectively. As noted, these findings are similar to prior research in the validation of a United States Identity Scale (USIS) that found moderate correlations between ethnic/racial and U.S. identity across corresponding dimensions (Meca et al., 2020). However, it is worth noting that EIS affirmation was not significantly related to any of the other FGCSIS dimensions including exploration, resolution, and centrality. These findings are somewhat consistent with the FGCSIS inter-factor correlations such that high centrality or exploration of FGCS identity does not automatically signify that FGCS know their feelings toward that identity.

In addition to ethnic/racial identity dimensions, the current study sought to establish external construct validity through associations with interdependent and independent motives for attending college. Prior research has indicated that culture is an important part of FGCS experiences in higher education, particularly in terms of their motives for attending college (Stephens et al., 2012a, 2012b). The two cultural motives that have been identified reflect interdependent (other-focused) and independent motivations (self-focused; Markus & Kitayama,

2010). While prior research has shown that FGCS endorse both types of motives, these findings also provide that FGCS are more likely to endorse interdependent motives over independent motives. Thus, it was hypothesized that the FGCSIS dimensions would be moderately correlated with both dimensions, but that these relationships would be stronger for interdependent motives. The hypothesis was supported for three of the four FGCSIS dimensions (exploration, resolution, and centrality). However, only two of these relationships had significantly stronger correlations (exploration and centrality). These findings are noteworthy given that prior research has indicated that greater endorsement of interdependent motives has been associated with lower academic performance and higher stress levels for FGCS when universities focus on independence (Stephens et al., 2012a, 2012b). However, prior research has also provided evidence that when FGCS view their selves as having a harmonious, integrated bicultural identity in terms of identifying with middle class (interdependent) and middle-class (independent) cultures, this integration is associated with better well-being, mental health, and academic success (Herrmann & Varnum, 2018). On the other hand, the absence of association between FGCSIS affirmation and both motives indicates that how FGCS feel about their FGCS status may not be important in terms of their motivations behind attending college.

Limitations

The findings from the current study should be interpreted with consideration of several limitations. First, the data were collected during the global COVID-19 pandemic (March - September 2021). As a result, this may have affected participants responses due to effects of the pandemic such as illness, virtual courses, inability to participate in in-person FGCS activities, etc. Second, the FGCSIS was evaluated with a sample of participants who identified as Black or White, which excludes the perspectives of other ethnic/racial groups enrolled in post-secondary

education in the U.S. Other ethnic/racial groups were excluded from the current study due to low sample sizes (n < 100), which are inadequate for multigroup analyses. The sample was also primarily female (80%), whereas the host institution as well as the national FGCS population, is approximately 60% female. Therefore, there may be sampling bias, and the sample may not be as representative as the broader FGCS population. Another limitation to consider is that the definition of first-generation status (students whose parent(s)/legal guardian(s) have not completed a bachelor's degree; Higher Education Act of 1965) in the current study may have produced different results than if another definition was utilized. While many researchers use this definition (Chang et al., 2020; Covarrubias et al., 2020; Garriott & Nisle, 2018; Herrmann & Varnum, 2018), some researchers are more limiting in their definitions such as students whose parents have enrolled, but not earned a degree from a post-secondary institution or students whose parents have completed degrees at 2-year institutions (i.e., associates) are not considered FGCS (Toutkoushian et al. 2018). Thus, the findings may differ if another FGCS status is used.

Additionally, it should be noted that the identity domain in which items were adapted from has important differences from FGCS identity, such that ethnic/racial identity is something that can be visually recognizable for some, but not all cases, and shared with family members. FGCS status is an identity that must be disclosed for others to know and is inherently not shared with family as these students are the first to experience this identity in their immediate family. To this end, FGCS centrality only obtained three items in the final model, which could be attributed to item adaption methods. Finally, the current study was conducted at a large minority serving institution in the southeast. Consequently, the results may not apply to FGCS in other regions or types of institutions in the U.S, such that FGCS status may hold a different meaning in

different geographic locations or post-secondary institutions such as predominantly White institutions.

Future Directions

There are several recommendations for future directions to inform this field of research. In terms of limitations of this study, future research should aim to establish measurement invariance across other ethnic groups. The FGCS population in the U.S. is also comprised of students who identify as Hispanic/Latinx, Asian, Native American, and multi-racial (RTI International, 2019), and should be included in future research. In addition, given that the sample was primarily female, future research should aim to obtain a more representative sample in terms of gender. Moreover, given the variety of ways FGCS status is defined, future studies should investigate if the FGCSIS works similarly across different 'FGCS.' For example, future research can explore whether students with a parent who has some college experience, but no degree, significantly differ from those whose parents have no college experience. Additionally, given that participant recruitment and participation was greatly affected by COVID-19, qualitative refinement methods of the scale were not completed. As discussed, FGCS identity dimensions had several similarities compared to prior ERI research, however, there were still some notable differences. It may be beneficial to conduct interviews/focus groups with FGCS to confirm that the scale encompasses all important aspects of FGCS identity and eliminate or change aspects that are not reflective of this identity. Two identity dimensions that may be particularly important to consider in future research include disclosure and salience. As noted above, first-gen status is not a visible identity and must be disclosed in order for others to know about. This aspect of FGCS identity is similar to sexual minority identity, such that FGCS may have reason to conceal this marginalized identity due to surrounding stigma associated with that identity. Self-

concealment and concealment motivation subscales have been created in prior research to capture how sexual minorities purposively do not disclose their sexual identity (LGIS; Mohr & Fassinger, 2000; LGBIS; Mohr & Kendra, 2011). These scales could be used in future research to create an additional concealment subscale for FGCS identity. Overall, understanding whether/how FGCS disclose this identity and how salient FGCS status is to them may be important in further understanding this identity domain.

As previously mentioned, identity can serve as a predictor or moderator to stressors, well-being, and psychosocial functioning (Hughes et al., 2015; Schwartz et al., 2011; Sellers et al., 2003). Given that there is now a quantitative measure for FGCS identity, these associations can be quantitatively explored. For example, future research could examine if FGCSIS identity dimensions moderate the relationship between stressors and mental health outcomes, similar to ERI centrality moderating the relationship between perceived discrimination and psychological distress (Sellers et al., 2003). Further, researchers could test if the relationship between FGCS identity centrality and mental health is dependent on how FGCS feel about their FGCS status (affirmation), similar to Hughes and colleagues (2015) findings that ERI centrality did not have a positive effect on mental health when ERI affirmation was low. More specifically, future research could explore differences between FGCS in terms of identity and how those identity dimensions are associated with the unique stressors such as discrimination (Ellis et al., 2019), family achievement guilt (Covarrubias et al., 2015, 2020), and cultural differences (Stephens et al., 2012a, 2012b). Findings on FGCS identity development may inform counseling, interventions, and/or programming for this population.

CHAPTER V

CONCLUSIONS

The current study advances the existing literature on first-generation college students (FGCS) by adapting and validating a measure of FGCS identity that captures processes and content of identity development. As such, future research can quantitatively explore FGCS identity differences between FGCS. Further, by establishing measurement invariance across Black and White FGCS, future research can look at differences in identity development with academic, psychosocial, mental health outcomes between these groups. Moreover, group mean differences were found between Black and White FGCS such that White FGCS reported lower FGCS identity exploration and centrality. These findings could be extended in future research by exploring what are the possible mechanisms underlying these differences.

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APPENDIX A

ELIGIBILITY SCREENER

Thank you for your interest in the First-Generation College Student Identity Survey (FGCSIS) study. The current study examines the experiences of first-generation college students.

To determine eligibility, we have to ask you some questions. The screening is voluntary and confidential. You can refuse to answer any question or withdraw your participation at any time by exiting this window. Although some of the questions are of a sensitive nature, it is not anticipated that there will be any risks associated with participating in the screening, beyond the risks that you might experience in your reactions to everyday occurrences. Questions about the research can be directed to Dr. Glenn at cglenn@odu.edu, and questions about your rights as a research volunteer can be directed to Dr. Tancy Vandecar-Burdin, the current chair of the Institutional Review Board, at 757-683-3802, or the Old Dominion University Office of Research, at 757-683-3460.

Please click the button at the bottom right of your browser window to continue.

1. Are you a current college student?
   a. Yes
   b. No
2. What is your age?
3. How many parents/legal guardians did you have growing up?
   a. 0 Parent/Legal Guardian
   b. 1 Parent/Legal Guardian
   c. 2 Parent/Legal Guardian
4. What descriptor would best be used for Parent/Guardian #1?
   a. Mother
   b. Father
   c. Stepmother
   d. Stepfather
   e. Grandfather
   f. Grandmother
   g. Other
5. What descriptor would best be used for Parent/Guardian #2?
   a. Mother
   b. Father
   c. Stepmother
   d. Stepfather
   e. Grandfather
   f. Grandmother
   g. Other
6. What is the highest level of education completed by your Parent/Guardian #1?

a. Less than high school
b. High school degree
c. Some college; no degree
d. Associate's degree
e. Bachelor's degree
f. Master's degree
g. Doctoral degree
h. Other: _____

7. What is the highest level of education completed by your Parent/Guardian #2?
    a. Less than high school
    b. High school degree
    c. Some college; no degree
    d. Associate's degree
    e. Bachelor's degree
    f. Master's degree
    g. Doctoral degree
    h. Other: _____

8. What is your gender?
    a. Male
    b. Female
    c. Trans (male-to-female)
    d. Trans (female-to-male)
    e. Non-binary
    f. Do not wish to disclose
    g. Other: _____

9. Your ethnicity (choose one):
    a. Black, African American, Afro-Caribbean, Black African, Other in this category.
    b. Caucasian, White, European American, White European, Other in this category.
    c. East Asian, Asian American, Amerasian, Asian-Caribbean, South Asian, South Asian American, of South Asian heritage, Other in this category.
    d. Latino/a, Hispanic, Spanish, Latin American, of Spanish speaking- South American/Caribbean heritage, Other in this category.
    e. Middle Eastern, Arab, Non-Black North African, Other in this category.
    f. Biracial or Multiracial
    g. Other (please specify): _____

10. Growing up, how much were finances an issue for you or your immediate family?
    a. Difficulty meeting my/my family's basic needs
    b. Barely able to meet my/my family's basic needs
    c. Once-in-a-while have difficulty covering my/my family's basic needs
    d. No difficulty covering basic needs
    e. Have extra money each month

For non-SONA Participants.

11. Please enter your email address to ensure your eligibility. To be eligible you must have a university/college email (.edu).

End of Survey

If they are eligible from SONA:

Based on your responses, you are eligible to participate in our study. If you decide to participate, then you will be redirected the survey now. The survey will take approximately 60 minutes to complete and you can either select to receive 1 Sona research credit for completing it or be entered in a raffle for a $50 gift card for every 1 in 50 participants (after verifying eligibility). Are you interested in participating in the First-Generation College Student Identity Survey (FGCSIS) study?

- Yes, I am interested
- No

If they are eligible from non-SONA:
Thanks for your response. Once we have deterimined your eligibility, we will email you a link to the survey.

If they select "No", they will receive this message:

Thank you for your interest in our study and taking the time to answer our questions.

If they select "Yes, I am interested", they will be directed to the separate study Qualtrics survey.

APPENDIX B

MEASURES

Adapted First-Generation College Student Identity Scale

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree

Affirmation Subscale

1. My feelings about being a first-generation college student are mostly negative.
2. I feel negatively about being a first-generation college student.
3. I wish I was not a first-generation college student.
4. I am not happy with being a first-generation college student.
5. If I could choose, I would prefer to not be a first-generation college student.
6. I dislike being a first-generation college student.

Exploration Subscale

7. I have not participated in any activities that would teach me about being a first-generation college student.
8. I have experienced things that reflect being a first-generation college student, such as eating food, listening to music, and watching movies.
9. I have attended events that have helped me learn more about being a first-generation college student.
10. I have read books/magazines/newspapers or other materials that have taught me about being a first-generation college student.
11. I have participated in activities that have exposed me to being a first-generation college student.
12. I have learned about being a first-generation college student by doing things such as reading (books, magazines, newspapers), searching the internet, or keeping up with current events.
13. I have participated in activities that have taught me about being a first-generation college student.

Resolution Subscale

14. I am clear about what being a first-generation college student means to me.
15. I understand how I feel about being a first-generation college student.
16. I know what being a first-generation college student means to me.
17. I have a clear sense of what being a first-generation college student means to me.

Centrality Subscale

18. Overall, being a first-generation college student has very little to do with how I feel about myself.

19. In general, being a first-generation college student is an important part of my self-image.
20. My destiny is tied to the destiny of other first-generation college students.
21. Being a first-generation college student is unimportant to my sense of what kind of person I am.
22. I have a strong sense of belonging to first-generation college students.
23. I have a strong attachment to other first-generation college students.
24. Being a first-generation college student is an important reflection of who I am.
25. Being a first-generation college student is not a major factor in my social relationships.

Ethnic Identity Scale

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

Affirmation Subscale

1. My feelings about my ethnicity are mostly negative.
2. I feel negatively about my ethnicity.
3. I wish I were of a different ethnicity.
4. I am not happy with my ethnicity.
5. If I could choose, I would prefer to be of a different ethnicity.
6. I dislike my ethnicity.

Exploration Subscale

7. I have not participated in any activities that would teach me about my ethnicity.
8. I have experienced things that reflect my ethnicity, such as eating food, listening to music, and watching movies.
9. I have attended events that have helped me learn more about my ethnicity.
10. I have read books/magazines/newspapers or other materials that have taught me about my ethnicity.
11. I have participated in activities that have exposed me to my ethnicity.
12. I have learned about my ethnicity by doing things such as reading (books, magazines, newspapers), searching the internet, or keeping up with current events.
13. I have participated in activities that have taught me about my ethnicity.

Resolution Subscale

14. I am clear about what my ethnicity means to me.
15. I understand how I feel about my ethnicity.
16. I know what my ethnicity means to me.
17. I have a clear sense of what my ethnicity means to me.

Motives for Attending College

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

I decided to enroll in college to:

Interdependent Subscale

1. Help my family out after I'm done with college
2. Be a role model for people in my community
3. Bring honor to my family
4. Show that people with my background can do well
5. Give back to my community
6. Provide a better life for my own children

Independent Subscale

7. Expand my knowledge of the world
8. Become an independent thinker
9. Explore new interests
10. Explore my potential in many domains
11. Learn more about my interests
12. Expand my understanding of the world

APPENDIX C

DEMOGRAPHICS

1. Are you a current college student?
   a. Yes
   b. No

2. What is your age?

3. How many parents/legal guardians did you have growing up?
   a. 0 Parent/Legal Guardian
   b. 1 Parent/Legal Guardian
   c. 2 Parent/Legal Guardian

4. What descriptor would best be used for Parent/Guardian #1?
   a. Mother
   b. Father
   c. Stepmother
   d. Stepfather
   e. Grandfather
   f. Grandmother
   g. Other

5. What descriptor would best be used for Parent/Guardian #2?
   a. Mother
   b. Father
   c. Stepmother
   d. Stepfather
   e. Grandfather
   f. Grandmother
   g. Other

6. What is the highest level of education completed by your Parent/Guardian #1?
   a. Less than high school
   b. High school degree
   c. Some college; no degree
   d. Associate's degree
   e. Bachelor's degree
   f. Master's degree
   g. Doctoral degree
   h. Other: _____

7. What is the highest level of education completed by your Parent/Guardian #2?
    a. Less than high school
    b. High school degree
    c. Some college; no degree
    d. Associate's degree
    e. Bachelor's degree
    f. Master's degree
    g. Doctoral degree
    h. Other: _____

8. What is your gender?
    a. Male
    b. Female
    c. Trans (male-to-female)
    d. Trans (female-to-male)
    e. Non-binary
    f. Do not wish to disclose
    g. Other: _____

9. Your ethnicity (choose one):
    a. Black, African American, Afro-Caribbean, Black African, Other in this category.
    b. Caucasian, White, European American, White European, Other in this category.
    c. East Asian, Asian American, Amerasian, Asian-Caribbean, South Asian, South Asian American, of South Asian heritage, Other in this category.
    d. Latino/a, Hispanic, Spanish, Latin American, of Spanish speaking- South American/Caribbean heritage, Other in this category.
    e. Middle Eastern, Arab, Non-Black North African, Other in this category.
    f. Biracial or Multiracial
    g. Other (please specify): _____

10. Growing up, how much were finances an issue for you or your immediate family?
    a. Difficulty meeting my/my family's basic needs
    b. Barely able to meet my/my family's basic needs
    c. Once-in-a-while have difficulty covering my/my family's basic needs
    d. No difficulty covering basic needs
    e. Have extra money each month

11. What is your major?

12. What is your current class standing?
   a. Freshmen
   b. Sophomore
   c. Junior
   d. Senior
   e. Graduate
   f. Other:_____

13. What is your student status?
   a. Full-time (12 or more credit hours)
   b. Part-time (less than 12 credit hours)

14. What is your cumulative GPA?
   a. Below 2.00
   b. 2.00-2.50
   c. 2.51-3.00
   d. 3.01-3.50
   e. 3.51-4.00

APPENDIX D

SONA RECRUITMENT POSTING

Study Name	First-Generation College Student Identity Survey (FGCSIS)
Abstract	This online study consists of a computerized survey to determine eligibility to complete a survey that will be examining the experiences of first-generation college students.
Description	This online study consists of a computerized survey to determine eligibility to complete a survey that will be examining the experiences of first-generation college students. The purpose of this study is to adapt a scale to capture first-generation college student identity. The knowledge gained from this study will help us gain insight that we can better understand and be able to support the experiences of first-generation college students. The computerized survey takes approximately 30- 60 minutes. To participate, you must be a college student whose parent(s)/legal guardian(s) have not completed a bachelor's degree and over the age of 18.
Prescreen Restrictions	No
Duration	30-60 minutes
Credits	1.0 Credits
Researcher	**Catherine Glenn**
Principal Investigator	**Catherine Glenn**
Participant Sign-Up Deadline	24 hours before the study is to occur
Participant Cancellation Deadline	24 hours before the study is to occur

APPENDIX E

EMAIL RECRUITMENT

Hello first-generation college students,

We are researchers from Old Dominion University, and we are conducting a study to understand the experiences of current first-generation college students. The information from this survey will be used to help us better understand and be able to support the experiences of first-generation college students.

Based on your responses, you are eligible to participate in our study. The survey will take approximately 60 minutes to complete, and you will be entered in a raffle for a $50 gift card for every 1 in 50 participants (after verifying eligibility). Your responses will be entirely anonymous and thus, it will be impossible to link your responses back to you. Neither your name nor any identifying information will appear in this survey.

Your answers will help us further understand and be able to support the experiences of first-generation college students. To view the survey and be entered into a raffle, please go to [insert link] and complete the survey. Once you are finished, you will be directed to another survey asking you to input your email for the raffle. If you have any questions, please feel free to contact us via email at kalli007@odu.edu Thank you very much for your consideration and for participating in this survey.

Sincerely,

Kelsie Allison
Health Psychology Graduate Student
Old Dominion University

Dr. Catherine Glenn
Assistant Professor
Old Dominion University

APPENDIX F

NOTIFICATION STATEMENT

OLD DOMINION UNIVERSITY

Project Title: First-Generation College Student Identity Survey (FGCSIS)

Introduction: The purposes of this form is to give you information that may affect your decision whether to say YES or NO to participation in this research.

Principal Investigators:

- Catherine Glenn, Ph.D., Assistant Professor, Department of Psychology, Old Dominion University.

Co-Investigators:

- Kelsie Allison, B.A., Graduate Student, College of Sciences, Department of Psychology.

Study Personnel:
- Taylor Webb, Undergraduate Research Assistant, Team on Acculturation, Risk, and Development of Identity and Self (TARDIS), Old Dominion University.
- Brittani Garcia, Undergraduate Research Assistant, Team on Acculturation, Risk, and Development of Identity and Self (TARDIS), Old Dominion University.
- Isis Cowan, Undergraduate Research Assistant, Team on Acculturation, Risk, and Development of Identity and Self (TARDIS), Old Dominion University.

Description of Research Study: The purpose of this study is to adapt a scale to capture first-generation college student identity. The knowledge gained from this study will help us gain insight that we can better understand and be able to support the experiences of first-generation college students.

Neither your name nor any identifying information will appear in this survey. If you say YES to participating in this study, then your participation will last approximately 30-60 minutes. Approximately 800 students will be participating in this study.

Exclusionary Criteria: To participate, you must be a current college student whose parent(s)/legal guardian(s) have not completed a bachelor's degree or higher and at least 18 years old. The aggregated results of this study may be used in reports, presentations, and publications, but your responses cannot be traced back to you.

Cost and Payments: If you decide to participate in this study, you will receive **one credit hour** points via SONA Research Systems for your participation **or** you will be entered in a raffle for a $50 gift card. We advise before completing the survey, that you check with your course instructors as to whether or not any additional course credit will be given for completing the

survey. Equivalent credits may be obtained in other ways. You do not have to participate in this study, or any study, in order to obtain this credit.

Risks and/or discomforts: There are no known long-term risks to you as a participant in this study. The questionnaires used in the study have been used in other studies involving adults of various ages and ethnicities. You may however experience discomfort or distress at answering some of the questions. If you feel discomfort at any time, you may skip any question that you do not want to answer. You also have the right to withdraw from the study entirely, and you will not lose any benefits to which you would otherwise be entitled.

Benefits: There are no specific benefits you may reasonably encounter from participating in this study, however your help will serve to aid us in understanding issues important to college students. Specifically, participation in the current study has several potential implications for future research. Specifically, the validating the identity measure will be instrumental in providing a better and more comprehensive operationalization of identity development among first-generation college students.

New Information: If the researchers find new information during this study that would reasonably change your decision about participating, then they will give it to you.

Confidentiality: Your responses will be entirely anonymous and thus, it will be impossible to link your responses back to you. Your information will be stored using a study code number that cannot be used to identify you. Research records will be stored on a secure network drive or password-protected computer, and only the research team will have access to these records.

Withdrawal Privilege: It is OK for you to say NO. Even if you say YES now, you are free to say NO later, and withdraw from the study at any time. Your decision will not affect your relationship with Old Dominion University, or otherwise cause a loss of benefits to which you might otherwise be entitled. The researchers reserve the right to withdraw your participation in this study, at any time, if they observe potential problems with your continued participation.

Voluntary Consent: By clicking the next button, you are saying several things. You are saying that you have read this form or have had it read to you, that you are satisfied that you understand this form, the research study, and its risks and benefits, and that you are at least 18 years of age. The researchers should have answered any questions you may have had about the research. If you have any questions later on, then the researchers should be able to answer them:

Catherine Glenn, Ph.D.
Responsible Project Investigator
Department of Psychology, MGB 134B
Email: cglenn@odu.edu

Kelsie Allison, B.A.
Co-Investigator
Department of Psychology
Email: kalli007@odu.edu

I have read and understood the information above and volunteer to participate in this study.

- Yes, I have read and understood the information above and volunteer to participate in this study.
- No, I do not volunteer to participate in this study.

VITA

Kelsie K. Allison

EDUCATION

Ph.D.   Health Psychology, Old Dominion University   Expected December 2023

M.S.   Psychology, Old Dominion University   Expected May 2022

B.A.   Christopher Newport University, Newport News, VA   2015 – 2018
          Major: Psychology // Minor: Literature

HONORS AND AWARDS

Outstanding Psychology Graduate Student Teaching Award, Old   2021
Dominion University, Norfolk, VA
Dean's List, Christopher Newport University, Newport News, VA   Spring 2016 – Fall 2018

RESEARCH EXPERIENCE

Graduate Research Assistant   Fall 2019 – Present
Team on Acculturation, Risk, and the Development of Identity and Self (TARDIS), Dr. Alan
Meca, The University of Texas at San Antonio, San Antonio, TX

Graduate Research Assistant   Spring 2021 – Present
Youth Risk and Resilience Lab (YR2), Dr. Catherine Glenn, Old Dominion University, Norfolk,
VA

SELECTED PUBLICATIONS

Allison, K. K., Meca, A., Cruz, B., & Webb, T. (under review). Measurement invariance for the
Ethnic Identity Scale across Black and White emerging adults. *Identity: An International Journal
of Theory and Research.*

Rodil, J. C., Meca, A., **Allison, K. K.,** Martinez-Fuentes, S., Cowan, I., & Gonzales-Backen, M.
A. (2022). Measurement invariance testing for the United States identity scale (USIS) across
non-Hispanic Black and White college students. *International Journal of Intercultural
Relations*, *86*, 134-144.

Meca, A., **Allison, K. K.,** Kubilus, R., Olthuis, J. V., Merrill, J., E., Zamboanga, B. L., Wyrick,
D., Milroy, J. J., & Carr, K. (2021). Dimensions of athletic identity and their associations with
drinking behaviors among NCAA college athletes: A national study. *Journal of Youth and
Adolescence. 50*(12), 2363-2373.