

GENDER AND RACIAL IDENTITY, SMOKING NORMS, AND SMOKING BEHAVIORS  
AMONG COLLEGE-AGED AFRICAN AMERICAN WOMEN

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May, 2018

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African American women smoke less than their gender and racial counterparts, yet they face higher risk for smoking-related disease development, disease mortality, and poorer disease related quality of life. Therefore, it is important to identify factors that may contribute to or protect against smoking initiation within this population. Social Identity Theory (SIT) may offer a framework for understanding gender and racial influences on smoking.

SIT posits that individuals strengthen their sense of belonging with social groups by adopting sets of normative perceptions, attitudes, values, and behaviors. Prior research has established associations between gender and racial identity, normative perceptions of smoking, and smoking behavior, therefore smoking may be a behavior that reinforces gender and racial identity. Female gender seems to be protective across the developmental continuum, however African American cultural influences on smoking seem to function differently. In adolescence, racial identity seems to protect against smoking, but mixed findings from research studies with adults show variable results with racial identity appearing to be a risk factor for smoking in some results and a protective factor in other results, and this may be related to changing normative perceptions of smoking for African Americans from adolescence to adulthood. To date, the research examining the aforementioned links between gender and racial identity, perceived

smoking norms, and smoking behavior can be characterized as preliminary. Existing research also lacks a potential unifying theory and measurement, particularly of gender and racial identity, and has been limited in terms of comprehensiveness and comparability across gender and racial domains.

This thesis sought to examine gender and racial influences on smoking behavior in a sample of African American college-aged women guided by the SIT theoretical framework. More specifically, this study sought to (1) comprehensively measure gender and racial identity domains and compare strengths of identity across these two domains, (2) examine perceived gender and racial smoking norms, (3) determine whether gender and racial identity predict smoking behavior, (4) determine whether gender and race-related smoking norms predict smoking behavior, and (5) examine links between gender identity and gender-related smoking norms and links between racial identity and race-related smoking norms.

A total of 168 African American undergraduate women completed an online survey that assessed multiple dimensions of gender and racial identity, normative perceptions of smoking for gender and race, and smoking behavior. On average, participants reported strong, positive feelings towards being women and African American. They also reported that smoking is less typical among the narrower reference group of their female, African American friends, but more typical among the broader reference groups of women in general and African Americans in general. Overall, smoking was perceived to be more normative for African Americans than for women. While the full model of SIT was not supported in terms of the influence of gender or racial identity on norms and smoking, results suggest that having strong positive feelings associated with one's identity as a woman may have a marginal influence on smoking behavior. Overall, smoking behavior among African American women was not strongly influenced by

gender or racial identity and may be best understood in relation to gender- and race-related smoking norms. Clinical implications of these findings and future directions for research are discussed.



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AMONG COLLEGE-AGED AFRICAN AMERICAN WOMEN

A Thesis

Presented to

The Faculty of the Department of Psychology  
East Carolina University

In Partial Fulfillment

of the Requirement for the Degree

Master of Arts in Psychology

by

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May, 2018

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## **CHAPTER I: INTRODUCTION AND LITERATURE REVIEW**

While cigarette use in the United States (U.S.) has gradually declined within the past fifty years, an estimated 42.1 million individuals in the U.S. currently smoke. Smoking continues to be one of the leading causes of preventable death in the United States, claiming 480,000 lives in 2014 alone (USDHHS, 2014). In addition to lives lost, an estimated \$300 billion is lost annually in tobacco-related medical costs and lost productivity due to illness. Smoking can lead to a weakened immune system, and irreversible damage to the circulatory and respiratory systems, resulting in circulatory and respiratory diseases, and cancer (U.S. Department of Health and Human Services [USDHHS], 2014).

While rates of smoking are lower for African American women when compared to their gender and racial counterparts, they face higher risks for smoking-related disease development, poorer disease-related quality of life, and higher mortality (Centers for Disease Control and Prevention [CDC], 2013; USDHHS, 2014). Given these higher risks, it is important to understand factors that contribute to and protect against smoking initiation within this population. Social identity theory (SIT) posits that individuals strengthen their sense of belonging with respective social groups by adopting sets of normative perceptions, attitudes, values, and behaviors (Tajfel & Turner, 1979). SIT may help to shed light on cultural influences on smoking, particularly gender and racial influences, as these are common self-defining markers of identity.

Several studies within youth populations have suggested relationships between gender and racial identity, gender and race-related norms, and smoking behavior consistent with the SIT framework (Alexander, Frohlich, Poland, Haines, & Maule, 2010; Kulis, Marsiglia, & Keith, 2006; Mermelstein, 1999). For African American adolescents specifically, racial identity and

associated norms seem to protect youth against smoking initiation (Holley, Kulis, Marsiglia, & Keith, 2006; Wills, et al., 2007), and female gender and associated norms are also linked to reduced smoking behavior (Kulis, Marsiglia, & Hecht, 2002). African American female youth may be less likely to smoke due to the combined protective effect of gender and racial identity and perceived normative smoking behaviors associated with each identity domain.

Gender identity and gender-related smoking norms are linked to reduced smoking behavior among African American female adolescents and similar trends are found in the adult literature (Alexander, Frohlich, Poland, Haines, & Maule, 2010; Greaves, 1996). In contrast to gender identity and norms, racial identity and race-related smoking norms have been linked to both increased and decreased smoking behavior in adulthood (Brook, J., Zhang, Finch, & Brook, D., & 2010; Webb, Francis, Hines & Quarels, 2007). Taken together, studies conducted among youth and adult populations suggest that gender and racial identity, and gender- and race-related smoking norms are relevant for understanding smoking behaviors among adults. Further exploration of how identity drives this health risk behavior is important in tailoring smoking cessation efforts, particularly for African American women, who may be at higher risk of smoking-related disease incidence and mortality. The purpose of this study is to (1) comprehensively measure gender and racial identity in a sample of African American women enrolled in college, (2) examine the degree to which African American college women perceive smoking to be a normative behavior for their gender and race, (3) determine whether gender and racial identity predict smoking behavior, (4) determine whether gender and race-related smoking norms predict smoking behavior, and (5) examine links between gender identity and gender-related smoking norms, and racial identity and race-related smoking norms.



## **Prevalence and Smoking Patterns among African American Women**

According to the USDHHS, 21.9% of African American women aged 18-25 years old categorize themselves as current cigarette smokers (i.e., any smoking in the past month), with 36.1% of current smokers categorizing themselves as daily users (i.e., smoking everyday within the past month). This may be an under-estimation of actual smoking behaviors for African American women as women within this age group are more likely to smoke in intermittent patterns (Pulvers, Romero, Blanco, Sakuma, Ahluwalia, & Trinidad, 2015; USDHHS, 2014), and some light and intermittent smokers do not consider themselves to be smokers. Given African American women's smoking patterns, they may underestimate their risk for adverse smoking outcomes. Furthermore, due to the varying ways intermittent smoking is defined (e.g., smoking some days within the last month, less than 1 pack/day, less than 15 cig/day, less than 10 cig/day, and smoking 1–39 cig/week), intermittent use does not necessarily reduce the risk of disease development or improve quality of life (Schane, Ling, & Glantz, 2010).

African American women's smoking patterns differ greatly from smoking patterns of other gender and racial groups. Smoking initiation begins in early adolescence for other gender and racial groups and then peaks and declines during early adulthood (Riggs, Chou, Li, & Pentz, 2007). In contrast, African American women tend to initiate smoking during early adulthood (Mickens, Ameringer, Brightman, & Leventhal, 2010; Moon-Howard, 2003), which is correlated with a faster progression to daily smoking and perhaps increased behavioral dependence when compared to those who initiate smoking at earlier ages (Breslau, Fenn, & Peterson, 1993). Additionally, African American women are more likely to continue smoking into older age (Mickens, Ameringer, Brightman, & Leventhal, 2010; Moon-Howard, 2003).

It is possible that smoking is a coping mechanism utilized for stressors that arise in young adulthood (e.g., employment, financial, and caregiver stress). This may be particularly true for African American women, as research by Pulvers and colleagues (2004) indicate that African American women report higher levels of negative affect reduction smoking expectancies when compared to African American men. Given more positive expectancies of smoking, it may be more difficult to quit smoking if stressors persist (Copeland, Brandon & Quinn, 1995), and quitting may be particularly difficult for African American women (Ludman, Curry, Grothaus, Graham, Stout, & Lozano, 2002). Many smoking prevention efforts place emphasis on preventing smoking initiation in early adolescence (Simon, Kong, Cavallo, & Krishnan-Sarin, 2015); however, given smoking patterns for African American women, there may be a need to target smoking initiation in early adulthood for these and other smokers who fit this this smoking initiation pattern

Several studies show that African Americans and women have a more difficult time quitting once they begin to smoke (Gandhi, Foulds, Steinberg, Lu, & Williams, 2009; Royce, Hymowitz, Corbett, Hartwell, & Orlandi, 1993; Ward, Elli, & Jack, 1993). This may be due in part to mentholated brand preferences (Allen & Unger, 2007; Substance Abuse and Mental Health Services Administration [SAMSHA], 2011). Mentholated brands have a more cooling taste, which results in a more pleasurable smoking experience. Despite having a more enjoyable smoking experience, African Americans and women are causing more harm to their bodies as mentholated cigarettes increase the availability of nicotine, tar and other harmful constituents (Clark, Gautam, & Gerson, 1996). In sum, smoking patterns and preferences among African Americans and women increase their risk for dependence and place them at risk for impaired lung functioning and disease development.

## **Biological and Physiological Risks for Nicotine Dependence for African American Women**

African Americans and women also have independent biological factors which, when viewed separately and in combination, make them more vulnerable to nicotine addiction. Studies examining nicotine metabolism across racial/ethnic groups suggest that metabolites of nicotine are higher in African American populations in comparison to other racial groups (Caraballo, et al., 1998; Signorello, Cai, Tarone, McLaughlin, & Blot, 2009; Wagenknecht, et al., 1990). This indicates that African Americans may absorb and retain more cotinine, which may place them at increased risk for nicotine dependence and difficulties with cessation. Literature also suggests that women metabolize nicotine at faster rates than their male counterparts (Perkins & Scott, 2008; Sin, Cohen, Day, Coxson & Paré, 2007), and contraceptive use tends to further increase the rate of nicotine metabolism. As a result, this increases female smokers' blood clot risk and risk of stroke (Benowitz, Lessov-Schlaggar, Swan, & Jacob, 2006).

Previous research has examined biological and behavioral dependence among African American and European American/White women with daily smoking and nicotine metabolism levels. Results reveal that African American women had a significantly shorter time to first cigarette use after waking as well as higher cotinine levels, a measure of nicotine metabolism, despite smoking a similar number of cigarettes (Ahijevych, & Gillespie, 1997). African American and women's increased risk for nicotine addiction provides an additional factor that could partially explain smoking cessation difficulty for individuals within these populations.

## **Biological and Physiological Smoking Disease Risks for African American Women**

In addition to dependence risk, African Americans and women have independent biological and physical factors that contribute to differences in smoking-related disease susceptibility and impaired lung functioning. Examination of lung functioning in respiratory

diseases suggest increased likelihood of disease susceptibility among African Americans in that African Americans regain less lung functioning after quitting smoking in comparison to their other racial counterparts (Glindmeyer, Lefante, Jones, & Weill, 1996). This is likely because African Americans have smaller lungs and diminished lung capacities prior to disease onset, as compared to European Americans (Hankinson, Kinsley, & Wagner, 1996; Johnston, Bland, & Anderson, 1987). Women also have smaller lungs and smaller airflow capacity when compared to men, which can account for greater pulmonary dysfunction after cigarette use among women (Hoffstein, 1986; Martin, Castile, Fredberg, Wohl, & Mead, 1987; Thurlbeck, 1982). Differential lung capacities, in combination with different puff volume, puff frequencies, and inhalation depths may expose women to increased lung damage and may also account for differential disease susceptibility compared to their male counterparts (Taylor, Reid, Pare, & Fleetham, 1988; Woodward, Moohan, & Tunstall-Pedoe, 1998). Compounding the risks associated with smoking, research also suggests that a mutated form of a tumor-suppressing gene is more common among women, therefore potentially placing women at a higher risk for cancer development when exposed to carcinogens through smoking (Dresler, Fratelli, Babb, Everley, Evans, & Clapper, 2000). In sum, when smoking behaviors and preferences among African Americans and women is combined with biological and physical pre-dispositions to disease development, there is an increased the risk for smoking-related morbidity in these populations.

The risks associated with smoking for African American women are evidenced by national rates of disease development and mortality. Smoking related diseases (e.g., cardiovascular disease, cancer, diabetes) were within the top five of ten leading causes of death for African American women in 2013 and death rates for smoking related diseases among African American women surpassed the death rates of men and Whites (CDC, 2013). Studies

examining smoking patterns of individuals with Chronic Obstructive Pulmonary Disease (COPD) suggest that although smoking patterns were similar, African American women were more susceptible to COPD-related lung impairment compared to European American women and men (Chatila, Wynkoop, Vance & Criner, 2003; Dransfield, Davis, Gerald, & Bailey, 2006). Taken together, the combination of these factors suggest a compounded, “double jeopardy” effect for disease development and mortality for African American women (Ferraro, 1987). Given this compounded effect for increased dependence, lung impairment, and increased disease risk, smoking may cause more harm for African American women than their gender and racial counterparts. In order to reduce smoking behaviors and offset the risk of nicotine addiction and disease development among African American women, it is important to gain a better understanding of factors that contribute to and protect against smoking in African American women.

### **Social Identity Theory**

Social identity theory (SIT; Tajfel & Turner, 1979) examines the role of group identity, group-behavior, and intergroup relationships in self-concept. Tajfel (1972) defines group identification as an individual’s awareness of their belonging within a social group. Further, individuals assign a positive emotional value to their group identity. Therefore, individuals who view themselves as connected to their own gender and racial groups are likely to experience pride, increased self-esteem, and emotional well-being as a result of felt-belonging. Hogg (2006) explains that individuals belonging to the same group have an awareness of shared characteristics as well as an awareness of characteristics that distinguish them from out-group members. Individuals create shared characteristics by creating prototypes in the form of sets of normative perceptions, attributes, attitudes, feelings, and behaviors for their in-group. Therefore,

within the context of SIT, it is likely that prototypes may be created by perceptions of behaviors that are typically performed by group members (i.e., descriptive norms or behavioral norms; Cialdini, Reno, and Kallgren, 1990), or they may be inferred by perceptions of appropriateness, acceptability, or approval by other in-group members (i.e., injunctive norms or attitudinal norms; Cialdini, Reno, and Kallgren, 1990; Perkins, 2002). While descriptive and injunctive norms are different, Blanton, Köblitz, and McCaul (2008) mention that descriptive and injunctive norms may co-occur in that “an observed [descriptive]/behavioral norm may imply an unstated [injunctive]/attitudinal norm, and a stated [injunctive norm]/attitude norm may imply an unobserved [descriptive]/behavioral norm”.

The self-categorization theory, a sub-theory of SIT, proposes that prototypes are functional in that they serve as models for expected in-group behaviors (Turner, 1982). Individuals may internalize and engage in behaviors consistent with prototypes in efforts to enhance their social identity, sense of belonging, and sense of entativity (Hogg, & Turner, 1987). Therefore, SIT posits that social identity and related normative perceptions and behaviors are linked.

### **Health Behavior in the Context of Social Identity Theory**

SIT in the context of health behavior suggests that individuals who identify with a social group may perceive that certain health behaviors are prototypical (i.e., normative) of the group. As described above, prototypes may be reflective of normative perceptions of actual health behaviors among in-group members (i.e., descriptive norms), perceptions of appropriateness, acceptability, or approval of certain health behaviors among in-group members (i.e., injunctive norms), and/or attitudes about health behaviors among in-group members. In turn, individuals who identify with a social group may then engage in those prototypical health behaviors to

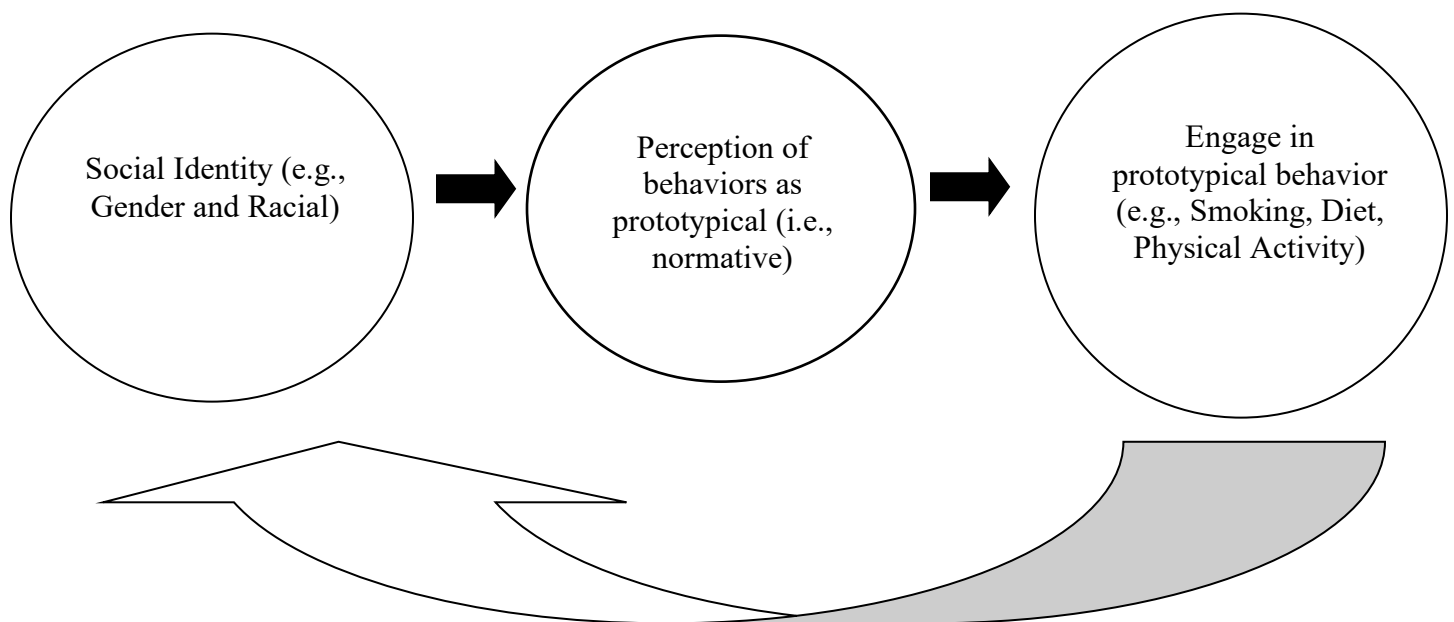
further reinforce social group identification and sense of belonging. A visual representation of SIT in the context of health behavior is shown in Figure 1. SIT and associated social norms have been used to explain several health behaviors. It is likely that health behaviors can be viewed as prototypical behaviors to enhance connection with various racial/ethnic and cultural groups. These health behaviors include the adoption of healthy eating practices (Åström, Rise, 2001; Bisogni, Connors, Devine & Sobal, 2002; Lally, Bartle, & Wardle, 2011), physical activity (de Bruijn, & van den Putte, 2012), and alcohol use among teens (Hamilton & White, 2008). In addition, norms associated with racial and ethnic identity traditions strongly influence food choices within African American and Latino populations (Devine, Sobal, Bisogni, & Connors, 1999).

Components of SIT have also been used to explain smoking behaviors, though the majority of literature has focused on adolescent populations. A consistent finding in the adolescent literature is that adolescents use smoking to facilitate gender-based social belonging and to achieve a more popular image by conforming to perceived norms (Fry, Grogan, Gough, & Connor, 2008; Lennon, Gallois, & Owen, 2004; Mermelstein, 1999; Plumridge, Fitzgerald, Abel, & McDermott, 2002; Schofield, Pattison, Hill, & Borland, 2001, 2003; Stewart-Knox, Sittlington, Rugkåsa, Harrison, Treacy, & Abaunza, 2005). SIT might aid in explaining cultural influences in smoking behavior, particularly the ways in which gender and racial identity influence gender and race-related smoking norms among African American women.

Gender and racial identity, and gender and race-related norms have been used to explain smoking behavior within adolescent populations, however direct associations between identity and gender and race-related smoking norms have not been explored in detail. Identity development is a continuous process that extends throughout the lifespan; therefore, findings in

youth could give hints as to how gender and racial identity operate to influence smoking norms, and smoking behavior among adult populations, specifically for African American women. The sections below will review the literature on how the conceptualization and measurement of gender and racial identity has evolved and how current methodological approaches may help to better elucidate the relationships among identity, smoking norms and smoking behavior.

*Figure 1: Social Identity Theory in the Context of Health Behavior*  
Social Identity Theory



### **Gender Identity Conceptualization and Measurement**

Gender is defined as a set of attitudes, feelings, and behaviors that a culture or society associates with biological sex categories (i.e., male and female; American Psychological Association [APA], 2006). Gender is often thought to be dichotomous in that there are gender-



specific attitudes, feelings, and behaviors set for men and women (Bem, 1974). In sum, gender is a social construct in that individuals learn to associate characteristics with masculinity and femininity depending upon the culture in which those individuals are raised. According to the American Psychological Association (APA), gender identity is defined as “one’s sense of oneself as male, female or transgender” (APA, 2011). Definitions continue to evolve, but ultimately, this definition suggests that gender identity is internally defined.

Consistent with earlier conceptualizations of gender, early measures of gender identity examined self-endorsement of stereotypical masculine/feminine sex roles, behaviors, personality characteristics, and associated psychological adjustment and self-esteem. (Bem 1974; O’Heron & Orlofsky, 1990; Spence, Helmreich, & Stapp, 1975). Stereotypical characteristics for males for example, included being independent, confident, and outspoken, while stereotypical feminine traits included being emotionally expressive and empathic. There are a number of gender identity measures that assess gender identity in this format. Some of these measures include Bem’s Sex Role Inventory (BSRI; Bem, 1974), The Personal Attitudes Questionnaire (PAQ; Spence, Helmreich, & Stapp, 1975), the Attitudes towards Women Scale (AWS; Spence & Helmreich, 1978), the Attitudes towards Marital and Child Rearing Roles (AMCR; Hoffman & Kloska, 1995), and Stockard-Johnson’s Measure of Gender Differences (Gill, Stockard-Johnson, & Williams, 1987).

Using stereotypical masculine and feminine traits as the sole means to categorize gender identity has significant limitations. A primary limitation is that gender traits may not be mutually exclusive to dichotomous categories. Individuals may report traits that are more consistent with the opposite gender (Palan, Areni, & Kiekcer, 1999). Furthermore, with measures of stereotypical gender traits, individuals can score high on both masculinity and femininity, or low

on both masculinity and femininity, suggesting undifferentiated and/or androgynous identities respectively (Blanchard & Freund, 1983). In addition to understanding that characteristics may not be mutually exclusive to one gender, Egan and Perry (2001) highlight additional limitations in measuring gender identity with stereotypical gender personality traits and characteristics. Individuals may not be aware that traits are gender specific; therefore, stereotypical traits may not be an accurate indicator of how individuals evaluate themselves in light of their gender. Egan and Perry (2001) also suggest that these measures assume that individuals feel “pressured” to act in ways consistent with gender roles.

In sum, assessing associations between gender identity and smoking using measures that assume gender trait binaries may provide an oversimplification of the role gender identity plays in behavior. Gender identity is a more complex construct that moves beyond the display of stereotypical gender behaviors and personality characteristics and should include items to assess an individual’s internal experience in relation to their gender.

In efforts to address the limitations noted above, several researchers have developed and advanced a multi-dimensional model of gender identity to account for internal experiences and evaluative judgements of their gender (Egan & Perry, 2001; Tobin, Menon, Menon, Spatta, Hodges, & Perry, 2010). These include examining the degree to which an individual views themselves as similar to, or different from, other group members (i.e., felt gender typicality) and examining the degree to which individuals feel pressured to adhere to stereotypical gender roles and behaviors (i.e., felt gender conformity). Cameron (2004) proposes a three-factor model to operationalize identity. These factors include in-group affect (i.e., whether individuals hold positive or negative views of in-group members), centrality (i.e., the importance of a given group identity to the individual), and in-group ties (i.e., the emotional connection one has with the in-

group and its members). Factors from Cameron's model were derived in such a way that they could be adapted to account for identification with a range of social groups. Factors are not specific to any identity domain and therefore could be applied to various social identities (e.g., gender, race, religion, etc.). It is clear that multi-dimensional measurements of gender identity have strengths that make it a more optimal method of measuring gender identity, primarily in that they capture an individual's internal sense of themselves in respect to gender identity.

### **Gender Identity and Smoking Behavior in Adolescents**

Descriptive and quantitative studies suggest that gender identity influences smoking behavior within adolescent populations. More specifically, affiliation with male gender identity is linked to increased smoking, and affiliation with female gender identity is linked to decreased smoking. In Fry, Grogan, Gough, and Connor (2008) examined how social roles influence smoking among 87 male and female adolescent smokers and non-smokers in group interview format. Participants were recruited utilizing school contacts as well as email and flyer advertisement. Of note, participants indicated that male smoking behavior was driven by a desire to be more "macho". Similarly, Kulis, Marsiglia, and Hecht (2002) found that holding a dominant masculine identity (i.e., having control over others and leadership ability) was related to higher tobacco smoking and overall drug use among middle school-aged male and female adolescents. In the same study, female nurturing identity (i.e., display of empathy, emotional expression, and preferring stereotypical feminine interests) was inversely related to tobacco and marijuana smoking, although these results fell short of significance. Consistent with SIT, findings from the aforementioned studies suggest that gender identity can influence smoking behavior among youth. Future research examining smoking behavior among women might

suggest that not smoking may help to strengthen feminine identity in youth, because being a non-smoker may be more normative for females.

While studies have established associations between gender identity and smoking behavior, gender identity is usually measured using one-dimensional stereotypical gender roles based on societal expectations (Kulis, Marsiglia, & Hecht, 2002). Therefore, it can be argued that these studies have not assessed gender identity as a multi-dimensional construct, inclusive of items to assess internal experience. Comprehensive assessment of gender identity in smoking research may add more to our understanding of links between gender identity and smoking than associations found in previous research. It is possible that some gender identity dimensions may be stronger predictors of smoking behavior than others and it is possible that the internal experience of gender functions differently than the social experience of gender to influence smoking behavior.

### **Gender Smoking Norms and Smoking Behavior in Adolescents**

Normative perceptions of smoking may differ by gender in adolescents. In a study conducted by Fry, Grogan, Gough, and Connor (2008), one adolescent female stated, “I think guys look the part, but girls don’t”. Results from this study suggest that smoking may be perceived to be a normative behavior for males, which, in turn, may contribute to smoking among male adolescents, as this is consistent with other studies that have examined normative perceptions of smoking and smoking behavior (Edwards et al., 2008; Forrester, Biglan, Severson, & Smolkowski, 2007). In contrast, it is speculated that smoking may not be perceived as a normative behavior for women, and this may contribute to reduced smoking behavior among female adolescents. These findings may be consistent with SIT, as they suggest that norm perceptions of social groups can influence behavior, however, given that the quote was provided

by one participant in Fry, Grogan, Gough, and Connor's (2008) study, the normative nature of smoking for men and anti-normative nature of smoking for women has yet to be established as a more representative viewpoint.

### **Gender Identity and Smoking Norms in Adolescents**

Research suggests that there may be a connection between gender identity and smoking norms in adolescents. Mermelstein (1999) examined how ethnicity and gender may influence smoking in a mixed-raced sample of 1,175 male and female adolescents in a group interview format. Among non-European American males and females, smoking was uniformly perceived to be less appropriate for adolescent women. For example, non-European American adolescents indicated that “[Smoking] doesn’t look right for a girl to do”, “girls don’t look right smoking”, and “it’s not ladylike”. Moreover, African American females stressed that smoking interfered with their appearance and smell. Results from Mermelstein’s (1999) study suggest that adolescent girls may use their idea of womanhood as a reference point for smoking behavior. Moreover, adolescent females may perceive that smoking is not appropriate, and possibly not normative for women. This may be particularly true for adolescent African American females given that adolescent African American females in the study provided the aforementioned responses. Consistent with SIT, these results suggest that there may be an association between gender identity and normative perceptions of smoking in adolescents.

### **Summary of Adolescent Literature Examining Gender Identity, Gender Smoking Norms, and Smoking Behavior.**

Existing literature links gender identity and smoking behavior, and normative perceptions of smoking and smoking behavior, but provides only preliminary support for links between gender identity and normative perceptions of smoking. Based on the literature to date, it may be

possible that adolescent females who strongly identify with their gender may be less likely to smoke because it is viewed as not a normative behavior for women.

### **Gender Identity and Smoking Behavior in Adults**

Findings from research with adult males suggest that identification with male gender may influence health behaviors. Wade (2008) examined associations between three different male reference group identity dependent statuses and measures of health and well-being within a sample of 208 African American men. The male reference group identity dependent statuses were characterized by the extent to which men felt psychologically related/connected to other men. Men were then characterized as lacking psychological relatedness to other men, psychologically related to some men, or psychologically related to all men. Results indicated that a lack of psychological relatedness to other men and psychological relatedness to some men were negatively correlated with health promoting behaviors, while psychological relatedness to all men was positively correlated with health promoting behaviors. Given these results, it may be possible that there is a positive association between psychological relatedness and health behaviors for men. More specifically, as men feel more psychologically related to other men, they may be more likely to engage in positive health behaviors. Psychological relatedness parallels in-group ties, a gender identity dimension that was described earlier.

Wade (2008) also examined whether traditional masculine ideology (i.e., adherence to attitudes and behaviors that are consistent with male gender roles, such as avoidance of femininity, self-reliance, aggression, achievement status, and restrictive emotionality; Levant et al., 1992) or non-traditional masculine ideology (i.e., non-adherence to attitudes and behaviors that are consistent with male gender roles; Levant et al., 1992) was related to health and well-being within the sample of 208 African American men. Results indicated that non-traditional

masculine ideology was positively correlated with health promoting behaviors, while traditional masculine ideology was unrelated to health behaviors. Similar to findings that psychological relatedness may be positively associated with health behaviors, it is possible that there is a positive association between non-adherence to traditional male gendered behaviors and health promoting behaviors. More specifically, as men are more non-adherent to traditional male behaviors, they may be more likely to engage in positive health behaviors. Masculine ideology parallels felt-typicality, another gender identity dimension that was described earlier. Wade (2008) also found that non-traditional masculinity mediated the relationship between psychological relatedness and health behaviors. Therefore, it seems that men who feel disconnected from other men but have non-traditional views of masculinity may be more likely to adopt more healthier behaviors as opposed to those who hold more traditional views.

In sum, findings in Wade's (2008) study are consistent with SIT in that they suggest that male gender identity influences behaviors, and, in this case, may influence health behaviors specifically. Wade's (2008) findings also provide preliminary support for examining gender identity and its role in health behavior utilizing multiple dimensions. While there is not yet a large body of literature linking aspects of male gender identity to health behaviors among men, studies examining gender identity and its influence on smoking in women appears lacking altogether. Given this research gap, the heightened smoking-related risks for women, and preliminary research indicating that gender identity dimensions may differentially influence health behavior, a multi-dimensional approach to examining gender identity and related influences on smoking behavior among women is warranted.

### **Gender Smoking Norms and Smoking Behavior in Adults**

Gender-related smoking norms in adults seem to be similar to those of adolescents. Men are met with much less external criticism surrounding smoking, as compared to women (Alexander, Frohlich, Poland, Haines, & Maule, 2010). Moreover, research by Greaves (1996) indicates that smoking elicits internal guilt and self-criticism for women. Results from these studies suggest that smoking is viewed and experienced differently in women as compared to men. More specifically, female smoking may not be acceptable, and possibly not normative for women. Because smoking may be less accepted, women may feel more pressure to avoid smoking, and in turn, may be less likely to smoke. Consistent with SIT, the studies noted above suggest that normative perceptions, particularly injunctive perceptions of smoking, may influence smoking behavior among adults. However, there is still uncertainty regarding what is driving normative perceptions of smoking for women. Gender identity may be a driving factor for adult females.

### **Gender Identity and Smoking Norms in Adults**

Studies examining connections between gender identity and normative perceptions of smoking are scarce, but inferences can be made from literature examining links between perceptions of smoking for women and smoking behavior. More specifically, qualitative studies suggest that smoking may not be an acceptable behavior for women in adulthood. Greaves (1996) found that smoking elicits internal guilt and self-criticism for women. Additionally, Alexander, Frohlich, Poland, Hines, and Maule (2010) found that women who smoke have difficulty resolving smoking with aspects of their feminine identity. It is likely that women feel guilt and self-criticism and have difficulty resolving smoking with their feminine identity because smoking is not feminine-consistent, and in turn, may be less normative for women. Consistent with SIT, inferences from the studies above suggest that there may be a relationship between



gender identity and injunctive normative perceptions of smoking in adulthood. More specifically, based on results from qualitative studies, having a strong feminine identity may be associated with less acceptability, and possibly anti-normative perceptions of smoking for women. Similar to the adolescent literature, the specific role of gender identity in influencing normative perceptions of smoking has been understudied in adults.

While it can be inferred that there are associations between gender identity and gender-related smoking norms in both adolescents and adults, the existing research support has largely come from studies that are qualitative in nature and have come from studies that have examined injunctive norms. Additionally, these studies have not explicitly examined gender identity influences on gender-related smoking norms. SIT is a useful conceptual model for understanding gender influences in smoking behavior because it highlights an understudied link that needs further exploration (i.e., the gender identity-smoking norms link). Future research examining the identity-norms link with quantitative measurement would help to add support to existing qualitative studies that have examined gender identity influences in smoking.

### **Summary of Adult Literature Examining Gender Identity, Gender Smoking Norms, and Smoking Behavior**

Adult studies link gender identity and smoking behavior, injunctive normative perceptions of smoking and behavior, and provide preliminary support for links between identity and injunctive normative perceptions of smoking. While links have been established primarily with injunctive smoking norms, it is possible that descriptive norms may be inferred from injunctive norms. In sum, consistent with a full SIT model and consistent with findings in adolescent literature, it is possible that adult females who strongly identify with their gender may be less likely to smoke because it may not be perceived as a normative behavior for women.

## **Racial Identity Conceptualization and Measurement**

Race often refers to the categorization of individuals based on shared physical traits (Quintana, 2005) and ethnicity is used to describe members who share a common set of cultural traditions, values, and attitudes (Phinney, 1990). Despite the distinction, racial categorization has led to significant, social, psychological, and emotional consequences resulting from racial-socialization and socio-political histories (e.g., discrimination, racism, superiority/inferiority; Helms, 2007). This suggests that values, attitudes, and traditions (e.g., ethnicity) may be representative of an internalized racial identity and as such there may be overlap in the ways in which individuals describe their racial and ethnic identity. This may be particularly true of African Americans, as African Americans tend to use race and ethnic identities interchangeably, and there is not a significant difference when comparing racial and ethnic identification among African American populations (Cokley, 2005).

Cross's Model of Nigrescence (1971) has been used to examine racial identity development among African American/Black populations. Cross suggests that African Americans/Blacks advance through four stages of racial identity: pre-encounter, encounter, immersion/emersion, and internalization. Each stage is characterized by perceptions of racial salience and racial self-concept with implications for feelings, thoughts, and behaviors towards other African Americans/Blacks and Whites. For example, in the pre-encounter stage, an individual may not strongly identify with their race or believe that race is unimportant (i.e., low salience). Therefore, thoughts, feelings and behaviors towards Blacks and other Whites are neutral. In contrast, it is also likely that race can be highly salient to individuals in the pre-encounter stage, such that individuals may have strong, negative feelings towards themselves and other Blacks because they have internalized derogatory, stereotypical views of Blacks that are

dominant in the media or larger society. The encounter stage involves a single event or multiple events that lead an individual to challenge the view that race is not salient. For individuals who hold derogatory views toward self and other Blacks at the pre-encounter stage, the encounter stage may involve becoming aware of those views as a result of a single event or multiple events. The immersion-emersion stage is characterized by strong initial identification (i.e. immersion) with Black culture that requires a negation of other cultures. In the later part of this stage there is an emergence (i.e. emersion) of the view that identification with Black culture does not require demonization of other racial groups. Internalization is the final stage, in which, African Americans/Blacks develop an appreciation of their own race, though attitudes towards other Blacks and Whites may be more neutral after acknowledging the positives and negative attributes of all races (Cross, 1971; 1978). Cross's model has been influential in conceptualizing racial identity, particularly in that later multi-dimensional models of racial identity were inspired by the stages outlined in Cross's Model of Nigrescence (1971).

Several researchers support the use of a multi-dimensional approach to measuring the construct of racial and ethnic identity (Altschul, Oyserman, & Bybee, 2006; Umaña-Taylor et al., 2014). This construct has been termed "ethnic-racial or racial-ethnic" identity in the literature; however, given understanding of the indistinguishability of these constructs among many African Americans, "racial identity" will be the predominant term used in this thesis to refer to both racial and ethnicity identity. When reviewing the literature, however, we will endeavor to use the author's terminology for purposes of accuracy.

Racial identity (inclusive of ethnic identity) has been assessed with a number of different multi-component measures, including a two-factor model proposed by Marcia (1980), a three-factor model proposed by Cameron (2004), and Phinney's Multigroup Ethnic Identity Measure

(MEIM; Phinney, 1990, 1992). Marcia (1980) suggests that exploration (i.e., actively seeking out information to better understand one's own ethnicity), and commitment (i.e., selecting life values that are consistent with one's ethnic group and having a strong attachment and affirmation of one's ethnic group) are key factors in assessing racial identity. Additionally, individuals may map on to one of four profiles based on the presence or absence of exploration and commitment. Identity achievement reflects the presence of exploration and commitment, moratorium reflects the presence of exploration, but absence of commitment, identity foreclosure reflects the presence of commitment, but the absence of exploration, and identity diffusion reflects the absence of exploration and commitment.

Cameron's three factors include in-group affect (i.e., whether individuals hold positive or negative views of in-group members), centrality (i.e., the importance of a given group identity to the individual, and in-group ties (i.e., the emotional connection one has with the in-group and its' members; Cameron, 2004). These factors were described during discussion of gender identity measurement but are also applicable to racial identity.

Phinney's MEIM (1990, 1992) dimensions include: self-identification, participation in social activities and traditions consistent with a particular ethnic group, assessment of positive and negative attitudes towards individuals in their ethnic group, having a sense of connection and pride, and finding a sense of clarity and a secure sense of self (Phinney, 1990; 1992). Phinney's ethnic identity framework has been used to examine substance use behaviors among racial and ethnic minorities, inclusive of tobacco use (Gazis, Connor, & Ho, 1999; Holley, Kulis, Marsiglia, & Kieth, 2006; James, Kim, & Armijo, 2000).

There are a vast number of models and multi-component measures to assess African American/Black racial identity specifically. Some of these measures include: the Racial Identity

Attitude Scale (RIAS; Helms & Parham, 1990), Cross's Racial Identity Scale (CRIS; Vandiver, Cross, Worrell, Fhagen-Smith, 2002), the African Self-Consciousness Scale (ASCS; Baldwin & Bell, 1985, 1990; Stokes, Murray, Peacock & Kaiser, 1994), the Adult and Adolescent Survey of Black Life (Resnicow & Ross-Gaddy, 1997; Resnicow, Soler, Braithwaite, Selassie, & Smith, 1999), and the Multi-dimensional Model of Racial Identity (MMRI; Sellers, Smith, Shelton, Rowley, & Chavous, 1998).

The CRIS and the RIAS were created with Cross's Model of Nigrescence (1971) in mind. The RIAS measures the degree to which African Americans/Blacks possess attitudes that are consistent with each of the stages in the Cross model. The CRIS (Helms & Parham, 1990) places emphasis on the attitudes themselves rather than stage progression (Helms, 1990a). Studies show that some stage-related attitudes in the CRIS and the RIAS have been associated with psychosocial well-being (e.g., internalization is primarily linked to lower amounts of life stress and psychological distress but linked to increased self-esteem and psychological well-being) among African American/Black adolescents and adults (Jones, Cross, & DeFour, 2007; Pieterse & Carter, 2010; Whittaker & Neville, 2010). An extensive body of literature has established that there may be an inverse relationship between psychosocial well-being and smoking behaviors, which suggests an indirect pathway in the racial identity-smoking relationship. However, the CRIS and the RIAS's use in studies examining the racial identity-smoking relationship consistent with the SIT framework is scant.

The ASCS (Baldwin & Bell, 1985, 1990; Stokes, Murray, Peacock & Kaiser, 1994) measures four dimensions of African self-consciousness. These four dimensions include: (1) awareness and acknowledgement of African identity and heritage, (2) prioritization of liberation, development, and survival of Africans and African descendants, (3) participation and value

placed on activities that promote self-knowledge and self-affirmation (e.g., participation in African customs and adoption of African values), and (4) resistance to forces that threaten the survival of African people. Thompson and Chambers (2000) used the ASCS to examine relationships between African self-consciousness and health-promoting behaviors and found that participants with high African self-consciousness engaged in significantly more health-promoting behaviors. While researchers have used the ASCS to examine well-being, and health behavior more broadly, research using this measure to examine the racial-identity-smoking behavior relationship, specifically utilizing a SIT framework, is scarce.

The Adult Survey of Black Life and its adolescent version, the Adolescent Survey of Black Life, is comprised of four scales to assess Black identity. Dimensions include an assessment of individuals' attitudes about being Black, attitudes towards engaging in African/Black customs and traditions, learning about Black history, etc., and an assessment of personal attitudes towards Whites, and perceptions of racism. The initial adult scale included dimensions to measure the degree to which individuals wanted to have more White friends, or live in integrated neighborhoods, and interpersonal trust, though this dimension is not included in the adolescent scale because researchers were conflicted about whether the dimension reflects a positive or negative aspect of Black identity. Interpersonal trust was not included as, on the surface, it did not fit with the aforementioned dimensions (i.e., pro-Blackness, anti-Whiteness, perceptions of racism). In sum, pro-Blackness, anti-Whiteness, and perceptions of racism are key dimensions in developing an emotional, spiritual connection to African people, history and culture in the African Motherland (i.e., Afrocentricity). The adolescent version of the survey of Black life has been used to examine relations between ethnic identity and attitudes towards substance use (i.e., cigarettes, marijuana, and alcohol; Corneille & Belgrave, 2007).

The MMRI suggests that an African American/Black individual's self-concept depends on the significance and meaning that an individual assigns to their identity. With this understanding in mind, the MMRI consists of four dimensions to measure racial identity. These include: racial salience (i.e., the extent to which race is relevant part of one's self-concept at a given point in time and can vary in context), racial centrality (i.e., the degree to which extent to which an individual normally defines him or herself in terms of race tends to be more static), racial ideology (i.e., an individual's set of beliefs, opinions, and attitudes with respect to ways individuals feel members of their race should live and interact with society), and racial regard (i.e., affective and evaluative judgement of respective racial groups). While this model can be applied to all races, it has primarily been used among African American/Black populations (Rogers, Scott, & Way, 2015). The Multidimensional Inventory of Black Identity is the measure associated with this model (MIBI). The MIBI has been used in studies establishing indirect relations between psychosocial factors (e.g., stress, self-esteem) and substance use behaviors among African Americans/Blacks (Fuller-Rowell, Cogburn, Brodish, Malanchuck, & Eccles, 2012), however, research using this measure to examine the racial identity-smoking behavior relationship using a SIT framework is scarce.

Based on the research conducted to date, it is clear that racial identity is a complex construct that is best measured with multiple dimensions. While the labels of the dimensions across various measures of racial (and ethnic) identity vary, there seems to be multiple points of convergence. First, models suggest that it is important to assess the personal relevance of racial identity (i.e., racial importance). Second, these models suggest that it is important to consider whether an individual has positive, negative, or neutral feelings towards individuals within their racial (and ethnic) group (i.e., emotional valence and ethnic pride). Third, these models suggest

that is important to assess the sense of connection one has with their respective racial group (i.e., connection). Fourth, it is important to assess the degree to which one is engaging in customs, traditions, and has adopted values and beliefs that are typical of respective racial groups (i.e., engagement/participation). In sum, racial importance, emotional valence, connection and pride, and engagement/participation are common across multiple models and measures of racial identity, which suggests these dimensions are key in understanding racial identity.

Studies provide support for links between multiple identity dimensions (i.e., racial importance, connection, emotional valence, and engagement/participation) and health behaviors (Cogbill, Sanders, Thompson, & Deshpande, 2011; Corneille & Belgrave, 2007; Devine, Sobal, Bisogni, & Connors, 1999; Holley, Kulis, Marsiglia, & Kieth, 2006). In a qualitative study, Devine, Sobal, Bisogni, and Connors (1999) examined how ethnicity was enacted in food choices among 86 Black, Latino, and White men and women using semi-structured interviews. A major theme identified was that food selection and consumption was determined by traditional racial/ethnic food practices. This suggests that food choices are influenced by the engagement/participation, a dimension of racial identity previously identified as important (Devine, Sobal, Bisogni, & Connors, 1999).

In another study, Cogbill, Sanders, Thompson, and Deshpande (2011) found that high collectivism, a construct similar to racial connection, was associated with meeting physical activity recommendations among 446 African American men and women. In the previous study, collectivism was measured using selected items from the ASCS (Baldwin, & Bell, 1985). Corneille and Belgrave (2007) found that higher racial identity scores was associated with lower drug use intention among 175 African American female adolescents. Corneille and Belgrave (2007) used the Adolescent Survey of Black Life (Resnicow & Ross-Gaddy, 1997; Resnicow, et



al., 1999) to measure racial identity, which was inclusive of items that assessed constructs similar to racial importance, emotional valence, and connection. Lastly, Holley, Kulis, Marsiglia, and Kieth (2006) found that ethnic identity, inclusive of engagement in ethnic activities, sense of connection, and emotional valence was associated with lower 30-day and lifetime substance use within three mixed-raced samples of adolescents. The sample sizes varied from moderately large (i.e.,  $n = 301$ , and  $n = 346$ ), to small (i.e.,  $n = 61$ ). The identity dimensions in Holley, Kulis, Marsiglia, and Kieth's (2006) study were measured using the MEIM (Phinney, 1990, 1992). In sum, racial identity dimensions influence engagement in health behaviors. Given their influence in health behaviors, it seems that racial identity influences may also translate to smoking behavior.

### **Racial Identity and Smoking Behavior in Adolescents**

Aspects of racial and ethnic identity influence smoking behavior within adolescent populations. In a sample of mixed-raced adolescents, ethnic pride, (i.e., emotional valence) protected against ethnic minority youth's susceptibility to smoking, history of ever trying a cigarette, and smoking within the past month (Kong, Camenga, Cavallo, Connell, Pflieger, & Krishnan-Sarin, 2012). Traditions and customs seem to influence smoking behaviors, and increased engagement in behaviors, speech, and activities consistent with ethnic identities was associated with decreased smoking among 408 adolescents from different racial/ethnic groups (Marsiglia, Kulis, & Hecht, 2001). Holley, Kulis, Marsiglia, and Kieth (2006) found that Hispanic/Latino adolescents who reported a higher degree of ethnic identity reported significantly lower odds of lifetime engagement in substance use and substance use in the past thirty days, and this was inclusive of smoking behavior. While researchers used a scale to assess engagement in ethnic behaviors, sense of connection, and emotional valence, ethnic identity influences were examined using total ethnic identity score and it is unclear as to which dimensions had a

stronger influence on 30-day and lifetime use. Consistent with the SIT framework, one could argue that high/strong racial identity in adolescence may be predictive of less smoking.

Understanding that racial identity is a multi-dimensional construct, other researchers have sought to determine how multiple identity dimensions may influence smoking behavior in adolescents. Gazis, Connor, and Ho (1999) examined relationships between two cultural identity dimensions (i.e., Affirmation/Belonging, and Exploration/Participation), and smoking behaviors among indigenous and non-indigenous middle school-aged Australian youth. Results indicated that Affirmation/Belonging was not a statistically significant predictor of smoking behavior in either group, however Exploration/Participation was a marginal predictor of cigarette smoking within indigenous adolescents. While results were found to be not statistically significant in Australian populations, findings from Gasiz, Connor, and Ho's (1999) provide some preliminary support for examining racial identity and its role in smoking behavior utilizing multiple racial identity dimensions; however, links between multiple racial identity dimensions and their influence on smoking behavior needs to be further explored, particularly within samples of African American women.

The findings in aforementioned studies examining racial identity influences on smoking behavior in adolescent populations are collectively mixed and weak, but they provide some preliminary support to posit that dimensions of racial identity may influence smoking. However, some racial identity dimensions have yet to be examined in relation to smoking (i.e., racial importance/salience), and particularly to smoking among African American women, therefore additional research utilizing a multi-dimensional approach to measuring racial identity is warranted.

### **Racial Smoking Norms and Smoking Behavior in Adolescents**

The risk or protective nature of ethnic identity is dependent upon the racial-ethnic group examined and the normative perceptions of tobacco use and smoking within the respective racial-ethnic group. Many studies show that parental/familial approval or disapproval of smoking influences minority youth's smoking behaviors. In Kong and colleagues' (2012) study, parental disapproval in combination with ethnic pride helped to reduce smoking risk among ethnic minorities of different racial and ethnic groups. Consistent with SIT, adolescents belonging to the previously mentioned racial groups may be less likely to smoke, because smoking is not approved, and perhaps less normative for their respective racial groups.

Additional research studies show that tobacco use may be less normative among Hispanic/Latino and Asian American youth. In studies conducted among Hispanic/Latino youth, ethnic identity was associated with non-smoking norms and less use of cigarettes and other substances (Marin, Otero-Sabogal, Sabogal, & Perez-Stable, 1989). Studies examining acculturation and its effect on smoking among racial-ethnic minority youth further suggest broader cultural norm influences, as acculturated Hispanic/Latino and Asian-American youth are more likely to engage in smoking and other drug use (Chen, Unger, Cruz, & Johnson, 1999; Holley, Kulis, Marsiglia, & Keith, 2006; Parker, Sussman, Crippens, Elder, & Scholl, 1998). It is suggested that youth within these groups may have engaged in smoking to fit in with dominant American culture, even though smoking may not be a traditional behavior for Hispanic/Latinos or Asians. Despite acculturative influences of the broader society, racial identity may still have an important influence on smoking. Consistent with SIT, smoking may be perceived as less normative within Hispanic/Latino and Asian cultures and this may account for less smoking behavior within these populations.

Compared to smoking in African American, Hispanic/Latino, and Asian American youth, tobacco use may be more normative within American Indian and Alaskan Native cultures, which may account for increased smoking behavior among individuals within this racial/ethnic group. Tobacco has historic roots in cultures of American Indian and Alaskan Native individuals and has been used for medicinal purposes and for traditional ceremonies (Hodge, 2002). In fact, interviews from American Indian/Alaskan native adolescents suggest that their parents were permissive towards smoking, and perhaps encouraged smoking initiation at young ages (Mermelstein, 1999). Given these associations, American Indian and Alaskan Native adolescents may have more positive attitudes toward smoking in comparison to their ethnic majority counterparts, and given more positive attitudes toward smoking, it may be possible that smoking may be more normative in American Indian and Alaskan Native culture. In turn, American Indian and Alaskan Native adolescents may be more likely to smoke.

With regard to African American adolescents specifically, several studies suggest that smoking is not considered to be an aspect of Black culture, and therefore, connection with African American identity serves a protective function among African American adolescents. Wills and colleagues (2007) found ethnic pride (i.e., being happy about African American/Black) to be a prominent protective factor against cigarette and marijuana smoking, and alcohol use among rural African American school-aged youth. Correlations were not strong, though ethnic pride (i.e., emotional valence) was significant and positively correlated with African American youth's self-confidence to abstain and resist substance use. Additionally, ethnic esteem was negatively correlated with willingness to engage in substance use and was also negatively correlated with favorable social perceptions of a substance use prototype (e.g., the type of person that is likely to engage in substance use behavior; Wills et al., 2007). While norms were not

specifically examined as a mediating variable in this study, results, in combination with work by Cross (1995) and Mermelstein (1999) suggest that substance use may not be representative of African American identity. Therefore, engaging in smoking or substance use would not be a preferred method to affiliate with the African American racial/ethnic identity.

### **Racial Identity and Smoking Norms in Adolescents**

Studies specifically examining associations between racial identity and smoking norms among adolescent populations are scarce. While ethnic identity measures administered did not have acceptable internal consistency (e.g.,  $\alpha < .70$ ) in Holley, Kulis, Marsiglia, and Keith's (2006) study, results indicate that higher ethnic identity scores predicted anti-drug use norms among two moderately large (i.e.,  $n = 301$ , and  $n = 346$ ) and 1 smaller (i.e.,  $n = 61$ ) sample of Hispanic/Latino adolescents. Results may further suggest that smoking is not normative for Hispanic/Latino culture. Qualitative results from Mermelstein's (1999) study suggest that parents of ethnic-minority adolescents impose strict punishments if they engage in smoking behaviors, particularly for African American, Asian-American and Hispanic/Latino adolescents. Given results of these studies, anti-smoking messages that African American, Asian-American, and Hispanic/Latino adolescents receive from family may reflect broader race-related anti-smoking attitudes, and possibly anti-smoking norms, as injunctive and descriptive norms may co-occur (Blanton, Köblitz, and McCaul (2008). Consistent with SIT, these studies suggest that there may be a relationship between racial identity and normative perceptions of smoking.

Taken together results from the previously mentioned studies suggest that attitudes and perceptions of smoking may be racially-driven in adolescence. More specifically, studies examining racial identity and smoking behavior, smoking attitudes and perceptions of smoking, and smoking behavior for African Americans may suggest that smoking may be viewed as less

acceptable, and potentially perceived as less normative for African American adolescents, as injunctive and descriptive norms may co-occur (Blanton, Köblitz, and McCaul, 2008). While results suggest that ethnic identity may predict normative perceptions of smoking in adolescents, more research examining strength of racial identification and how it predicts normative perceptions of smoking (both anti-smoking, and pro-smoking) is warranted, particularly within samples of African Americans, and African American women, given significant smoking-related health risks that they face.

### **Summary of Adolescent Literature Examining Racial Identity, Racial Smoking Norms, and Smoking Behavior**

Research studies conducted with adolescents link racial identity to smoking behavior, normative perceptions of smoking to smoking behavior, and provide preliminary support for links between racial identity and normative perceptions of smoking. While links have been established primarily with injunctive smoking norms, it is possible that descriptive norms may be inferred from injunctive norms . In sum, consistent with a full SIT model, it seems that African American adolescents who strongly identify with their race may be less likely to smoke because it may not normative behavior for African Americans. While this seems to be the pattern within adolescent populations, similar patterns between racial identity and race-related smoking norms have not been established among adult populations.

### **Racial Identity and Smoking Behavior in Adults**

Ethnic identification has been linked to decreased smoking behavior among adults from several minority groups (Chae, Takeuchi, Barbeau, Bennett, Lindsey, & Krieger, 2008), and similar trends have been discovered within varying samples of African Americans. Brook, Zhang, Finch, and Brook (2010) demonstrated that low ethnic identity in adolescence predicted

later substance use among African American and Puerto Rican adults, however, individual identity dimensions that make-up ethnic identity were not described. In an earlier longitudinal study, Brook and Pahl (2005) found that two aspects of African American identity (i.e., attachment to nuclear and extended family, and church attendance) were negatively correlated with adulthood drug use. Brook and Pahl (2005) also found that connection with other African American friends was protective against rebellious behaviors, which, in turn, protected against substance use in later adulthood. The ethnic identity dimensions that were examined in the aforementioned studies are similar to dimensions in Cameron's three-factor model of identity (e.g., in-group affect, in-group ties). Consistent with SIT, these studies suggest that stronger racial identity may be associated with decreased smoking risk among African American and Hispanic/Latino young adults.

Studies inclusive of several racial minority groups suggest that high racial identification is linked to reduced smoking, however, studies specifically examining racial identification and smoking behavior among African American young adults are conflicting. In a sample of female African American young adult college students, adopting religious beliefs and family sharing consistent with African American tradition, was protective against tobacco and marijuana smoking (Nasim, Corona, Belgrave, Utsey, & Fallah, 2007). Studies conducted by Landrine and Klonoff (1996, 1999) and Landrine and Corral (2014) suggest that African American women who hold traditional religious family values and those that are fully engaged in African American culture and community are more likely to engage in smoking behavior. Consistent with SIT, there is a relationship between racial identity and smoking. However, studies specifically examining the role of racial identification among African Americans suggest that

high racial identification may be linked to both increased and decreased smoking behavior among African American women.

Overall, results from studies examining the role of racial identification in smoking behavior for African American adults seem to be conflicting. Some studies suggest that racial identity may contribute to reduced smoking, while other studies suggest that racial identity may contribute to increased smoking. It is important to note that there are significant limitations in the aforementioned studies. Similar to limitations in the adolescent literature, racial identity dimensions in research with adults were either not defined or measures did not reflect the multidimensionality proposed by previous racial identity models. Given findings and gaps within the adult literature, further exploration of racial identity and its influence on smoking behavior in adults utilizing a more comprehensive, multi-dimensional approach to defining and measuring racial identity is warranted. It is particularly important to expand this research to African American women given their elevated smoking-related health risks.

### **Racial Smoking Norms and Smoking Behavior in Adults**

Normative perceptions of smoking may influence actual smoking behavior among African American adults. In a study conducted among African Americans at historically Black colleges, African Americans overestimated smoking prevalence among their peers. Moreover, students who overestimated peer tobacco use were 6.42 and 5.47 times more likely to smoke in the last 30 days, and the last year respectively (Edwards et al., 2008). It is not clear whether results are based on the perceived prevalence of cigarette/tobacco smoking alone or whether results also included perceived prevalence of marijuana usage; however, results from this study suggests that smoking is perceived to be normative and representative of African American identity for adults in college. Consistent with SIT, results from this study suggest that there is a



relationship between normative perceptions of smoking and smoking behavior among college-aged African Americans. More specifically, as smoking is perceived to be more normative for African American peers, African American students were more likely to smoke.

### **Racial Identity and Smoking Norms in Adults**

Among adults, studies examining normative perceptions of smoking for Black adults suggest that smoking behaviors may be racially-driven. Webb, Francis, Hines, and Quarels (2007) examined perceived smoking prevalence among low-income, African American smokers. Results suggest that study participants believed that smoking is expected for Black adults. One participant in this study specifically stated, “I always see Black people smoking no matter where I go. You know what I’m saying? Everybody be lighting up. Hospitals, outside of concerts. Anything like that, people be lighting up. African Americans smoke.” As previously described, Edwards and colleagues (2008) found that African American college students overestimated peer tobacco use. While peer smoking norms in Edwards and colleagues’ (2008) study may not have been measured as race-specific norms, it can be assumed that African American students’ normative smoking perceptions were derived from other African American students given that they were attending a predominately Black institution (PBI).

In addition to examining associations between racial norms related to smoking and actual smoking behavior, there is also literature to suggest that the perceived normativeness of cigarette brands influence smoking behaviors in African American populations as well. In a study conducted by Allen and Unger (2007), African Americans were more likely to purchase and smoke mentholated brands if they believed that more African Americans smoked mentholated cigarettes. In sum, consistent with SIT, results from the aforementioned studies suggest that racial identity and normative of perceptions of smoking may be related. More specifically,

normative perceptions of smoking may be race-specific, and these studies highlight the importance of exploring race-specific norms for smoking.

### **Summary of Adult Literature Examining Racial Identity, Racial Smoking Norms, and Smoking Behavior**

Adult literature examining the three links of the SIT model (identity-smoking behavior, normative perceptions of smoking-smoking behavior, identity-normative perceptions of smoking) support links between racial identity and smoking behavior, normative perceptions of smoking and smoking behavior, and there is preliminary support for the racial identity-normative perceptions of smoking. More specifically, strong identification with African American identity may be linked to increased and decreased smoking, primarily in that it is not clear whether smoking may be more or less normative for African Americans in adulthood. Given inconsistencies, the role of racial identity, race-related perceptions of smoking, and smoking behavior needs to be further explored in adulthood.

### **Multiple Identity Conceptualization and Parallel Measurement of Gender and Racial Identity**

Individuals belong to multiple cultural and social groups simultaneously, therefore, it may be important to examine the relative influences of multiple identities on smoking behavior. A few studies have examined gender and racial identification and their relative influence on smoking behaviors simultaneously, but not in a way that gender and racial identity influences can be directly compared to one another. Greaves and colleagues (2012) examined associations between smoking behaviors and gender and ethnic identity among First Nations (indigenous) Canadian adolescents. Among girls, lower scores on a scale measuring aggressive masculinity was significantly associated with current smoking. Among boys, current smoking was

significantly associated with higher scores on a scale measuring affective femininity. Placing emphasis on findings related to associations between ethnic identity and smoking, current smoking was associated with lower scores on an acculturation scale (i.e., displaying traits consistent with White/Canadian identity), suggesting that smoking may be representative of participants' respective indigenous cultures. While this study examined gender and racial influences simultaneously and results suggest that both gender and ethnic identity were linked to smoking behavior, measurement is a limiting factor in meaningfully comparing the strengths of identification and influence on smoking, as gender and racial identity measures were focused on one dimension of gender and racial identity. Furthermore, this study assessed dissimilar dimensions of gender and racial identity. As of now, due to limited research conducted to date and measurement limitations, it is unclear as to which identity domain, gender or race, is more central to African American women, and whether one domain has a stronger influence on smoking behaviors. There is a need to conduct studies using measurement approaches that allow for direct comparisons across identity domains.

Few identity researchers have sought to develop ways to assess multiple identities simultaneously. While this line of research is still a significant area of opportunity, two approaches exist. Stirratt, Meyer, Ouellette, and Gara (2008) propose an intersectional approach which examines attributes associated with identities individually, as well as the synergized characteristics. The complexities of multiple group identification and their influence on smoking behavior is gaining interest, though research is still in its early stages. An intersectional approach may provide room to assess aspects of multiple identities that may be relevant in examining associations among identity, smoking norms, and smoking behavior of African American women (i.e., emotional valence, importance, and identity superordinancy). However, using an

intersectional approach to conceptualize and assess gender and racial identity influences in smoking behavior of African American women may be premature given the current state of the literature in this area.

Wilson and Leaper (2015) propose a parallel approach that offers a logical next step in this area of research. They created the multi-dimensional model of ethnic-racial and gender identity, a five-factor model to measure both gender and racial identity integrating the three dimensions from Cameron's three factor model of identity (2004) and dimensions from Egan and Perry's (2001) multi-dimensional model of gender identity (i.e., level of importance one has for their respective identity groups, affective evaluation, connection and sense of pride). In this integrated measure, these dimensions are labeled centrality, in-group affect, in-group ties, felt-typicality, and felt-conformity pressure. Some of the aforementioned dimensions and their influence on smoking behavior have been more commonly examined in gender (e.g., felt-typicality, felt-conformity pressure), but not in race. Whereas other dimensions have been examined in racial identity, but not in gender (e.g. centrality, in-group affect, in-group ties). Wilson and Leaper's (2015) measure is one of the first to merge identity dimensions from previous literature and to measure gender and racial identity in a parallel fashion. Therefore, use of this measure will allow for more comprehensive and comparative assessment of the strength of gender and racial identification, as well as provide a more rigorous methodological approach to examining associations among gender and racial identity, smoking norms and smoking behaviors, among African American college-aged women.

### **Normative Perceptions of Smoking across Reference Groups**

Research suggests that normative perceptions of smoking may vary by social distance of reference groups. Phua (2013) examined associations between social identification with best

friends, colleagues, and family, injunctive and descriptive norms of smoking for each reference group, and smoking cessation self-efficacy among adults. Results indicated that injunctive norms (i.e., approval/disapproval) of best friends had a stronger effect on smoking cessation self-efficacy, when compared to injunctive norms of family members and colleagues. However, family members' descriptive norms (i.e., actual smoking behavior) had the greatest effect on smoking self-efficacy, when compared to that of best friends, and colleagues. Results from this study showed that smoking norms differed by reference group and differed in their influence on smoking behaviors.

While actual smoking behavior of best friends was not a stronger predictor of smoking behavior in Phua's (2013) study of adults of varying ages, several studies show that individuals may be more susceptible to peer smoking behavior in emerging adulthood (Bertholet, Faouzi, Studer, Daeppen, & Gmel, 2013; Edwards et al, 2008; Fry, Grogan, Gough & Conner, 2008; Javier, Belgrave, Hill, & Richardson, 2013). Moreover, individuals in emerging adulthood may overestimate peer smoking behavior (Bertholet, N., Faouzi, Studer, Daeppen, & Gmel, 2013; Edwards et al, 2008; Javier, Belgrave, Hill, & Richardson, 2013), suggesting that smoking behavior may be driven by perceived smoking behavior instead of their peers' actual smoking behavior. Taken together, results from the aforementioned studies suggest that peers may have a stronger influence on smoking behavior, when compared to other reference groups because peers are a more proximal and specific reference group.

The studies noted above did not focus on gender or race, however gender and race are additional forms of social identification and salient demographic factors that individuals identify with. Given that normative perceptions of smoking may vary by reference group, and normative perceptions of smoking for reference groups may differentially predict smoking behavior, it

seems beneficial to examine whether there are differences in normative perceptions of smoking for female and African American friends, and normative perceptions of smoking for gender and race more broadly for African American women. Additionally, it would be beneficial to determine whether normative perceptions of smoking for broad or more specific gender and racial groups differ in their influence on smoking behavior for African American women.

### **Gender and Racial Identity, Smoking Norms, & Smoking Behavior: Clinical Implications**

Examining aspects of gender and racial identification and smoking may have significant implications for improving existing smoking cessation interventions. Nollen and colleagues (2007) examined the effectiveness and utility of a culturally tailored smoking cessation intervention among African Americans. Educational materials used in the culturally tailored group informed participants about racially-targeted advertising practices, barriers to cessation, increased life stress, cigarette mentholation, and ways to find support within the Black community and religion, while the standard of care group received basic quit information. In the intervention group, individuals who endorsed having a higher degree of Afrocentric Identity (AI) were slightly more likely to quit smoking than those with low AI, however, results were not statistically significant. Findings suggest that tailored interventions for African Americans may be more useful for those who report stronger affiliation African American/Afrocentric Identity. It is also likely that culturally tailored smoking prevention and interventions may need stronger cultural components, and results from studies comparing gender and racial identity could aid in identifying such intervention components.

One solution may lie in strengthening identity dimensions that are linked to favorable smoking behaviors. For educational interventions, it may be beneficial to include educational information on gender and race-related factors that influence smoking behaviors. For

psychosocial interventions, it may be efficacious to identify and challenge culturally-based smoking norms that contribute to smoking behavior, or to cognitively reframe/restructure gender and/or race-related smoking beliefs that contribute to smoking behavior. Psychosocial interventions may also aid in identifying behavioral alternatives, in lieu of smoking, to increase strength of identification with dimensions that are linked to favorable smoking behaviors. In sum, further research examining smoking behavior from a SIT framework may aid in identifying additional components to target multiple mechanisms that may contribute to smoking among African American populations.

### **Additional Factors that Influence Smoking Behaviors among African American Women**

In addition to gender and racial identity, and gender- and race-related smoking norms, there are additional factors that influence smoking behaviors among African American women. These factors include age of smoking initiation, socioeconomic status, educational attainment, relationship status, brand preferences as an indicator of nicotine exposure, and nicotine dependence. Each of these factors are discussed below:

**Age of smoking initiation.** An extensive body of literature has established associations between age of smoking initiation and smoking behavior. Generally, those who initiate smoking earlier during adolescence (i.e., ages 13-17) report longer duration of smoking behavior, difficulty with cessation later in life, heavy daily smoking, and increased risk for nicotine dependence, compared to those who initiate smoking in later adulthood. While this seems to be the general trend, African American women tend to initiate smoking at later ages in comparison to their racial and gender counterparts, with the average age of smoking initiation for African American women being 19 (Moon-Howard, 2003). African American women are also more likely to continue to smoke into older age (Mickens, Ameringer, Brightman, & Leventhal, 2010;

Moon-Howard, 2003). This suggests that it is important to consider age at smoking initiation when examining associations among identity, smoking norms, and smoking behavior in this population.

**Socioeconomic status/income.** There is an inverse relationship between income and smoking prevalence. In a nation-wide study examining causes of chronic disease development among African American women, higher income was correlated with never smoking and initiating smoking at later ages. Furthermore, odds of current smoking for African American women increased as the percentage of individuals living below the poverty line increased (Datta, Subramanian, Colditz, Kawachi, Palmer, & Rosenberg, 2006). King and colleagues (2006) found similar trends. Among college participants, specifically, parental education has been used as a proxy for SES (Hestick, Perrino, Rhodes, & Snyder, 2001; Wilson & Leaper, 2015). Given that SES/income influences smoking behaviors among African American women, it is an important factor to consider in examining the associations between identities, smoking norms, and smoking behavior.

**Educational attainment.** An extensive body of literature shows that there is an inverse relationship between educational attainment and smoking behavior among African American women. African American women who earned less than a college degree were 4.4 times more likely to be current smokers than those who earned a bachelor's degree or higher, and as level of education increased, smoking odds decreased (Datta, Subramanian, Colditz, Kawachi, Palmer, & Rosenberg, 2006). Similarly, in studies conducted by Ensminger, Smith, Juon, Pearson, and Robertson (2009), King and colleagues (2006), and Webb and Carey, (2008), African American women who had higher levels of education were significantly less likely to engage in smoking behaviors, and vice versa. In sum, educational attainment seems to play a significant role in



smoking behaviors among African American women, and therefore it is an important factor to consider in examining associations among racial identity, smoking norms, and smoking behavior. In studies examining smoking behaviors among college-aged students, education level has been measured using class standing (e.g., freshman, sophomore, junior, senior, etc.; Hestick, Perrino, Rhodes, & Snyder, 2001).

**Relationship status.** Relationship status also seems to be associated with smoking behaviors among African American women, but research studies offer conflicting information. In one study, cohabitation (i.e., having or living with a partner) and separation (i.e., living apart from spouse but not officially divorced) were associated with increased smoking odds among African American women (Datta, Subramanian, Colditz, Kawachi, Palmer, & Rosenberg, 2006). Others suggest that African American women who are in committed relationships (e.g., marriage) report more favorable smoking behaviors (i.e., never smoking, initiating smoking at later ages, and quitting) than women who are not in committed relationships (King et al., 2006). Despite the conflicting outcomes in the aforementioned studies, there seems to be a link between relationship status and smoking behavior among African women. Therefore, it is necessary to assess the role that relationship status has on smoking behavior when examining associations among gender and racial identity, smoking norms, and smoking behaviors.

**Product preferences and risk for nicotine exposure.** Research suggests that women and African Americans have preferences for unfiltered and mentholated/flavored tobacco products (Allen & Unger, SAMSHA, 2011; USDHHS, 2014). Unfiltered and mentholated/flavored tobacco products are associated with increased nicotine dependence and increased smoking behavior. In relation to tobacco product filtration and risk for nicotine dependence, unfiltered cigarettes contain up to 38mg of tar and 2.7mg of nicotine (Hoffman,

1997), while filtered cigarettes yield lower amounts of tar and nicotine (i.e., 0.9- 14.4, and 0.1- 1.0 respectively; Counts, Morton, Laffoon, Cox, & Lipowicz, 2005; Hoffman, 1997). This suggests that unfiltered cigarettes preferences are linked to increased consumption of cigarettes' harmful constituents. Statistics suggest that African American women may have higher rates of cigar and multiple tobacco use compared to other racial/ethnic women in similar age ranges (USDHHS, 2014). Cigars tend to be unfiltered and have nicotine contents that are 17 times higher than amounts found in cigarettes (Djordjevic, & Doran, 2009).

In relation to tobacco product mentholation/flavoring and risk for nicotine dependence, studies comparing cigarette smoking behavior among female menthol and non-menthol cigarette smokers show that menthol cigarette smokers have their first cigarette after waking 18 minutes earlier than non-menthol smokers (Ahijevych, & Parsley, 1999). Furthermore, a large retrospective study showed that more menthol smokers tend to smoke within five minutes of waking compared to non-menthol smokers (i.e., 24.3%, and 19.9% respectively; Ahijevych, & Garrett, 2004). It is possible that the cooling taste of menthol makes menthol smokers smoke more cigarettes, and in turn, consume more of the harmful, addictive constituents in cigarettes smoke. Additionally, consumption of the harmful, addictive constituents found in cigarette smoke may be linked to increased nicotine dependence and smoking behavior. It is possible that flavoring in cigar products (i.e., little cigars, cigarillos, and large cigars) may also serve the same function. In sum, data on patterns of use of tobacco products based on filtration and mentholation/flavoring and related smoking behaviors suggest that is important to assess brand preferences (i.e., tobacco product filtration and mentholation) when examining associations among identity, smoking norms, and smoking behavior among African American women. Such brand preferences may serve as a proxy (with limitations) for tobacco and nicotine exposure.

**Nicotine dependence.** While cigarette, cigar, and cigarillo smoke contain a number of harmful constituents, nicotine is considered to be one of the most addictive (Kandel, 2003). An extensive body of literature has documented the effects of nicotine dependence and smoking behavior in that increased dependence is linked to increased smoking behavior and difficulty with cessation (Breslau, & Peterson, 1996; USDHHS, 2014). Therefore, it is necessary to assess the role that nicotine dependence has on smoking behavior, when examining associations among identity, gender and race-related smoking norms, and smoking behaviors.

**Body image and motivation for weight control.** Several studies suggest that women may smoke to achieve the aspirational thin, female body type (Alexander, Frohlich, Poland, Haines, and Maule, 2010; Waldron, 1991; Zucker, Harrell, Miner-Rubino, Stewart, Pomereau, & Boyd, 2003). While weight control may be a primary reason for smoking among women in general, research suggests that weight control may be less of a motivating factor for smoking behavior among African American women. In a study examining means of weight control among a multi-ethnic sample of adolescent females, adolescents belonging to racial/ethnic groups other than African American/Black were more likely to smoke for weight loss or weight control reasons (Pulvers et al, 2004). Research also shows that African American populations prefer heavier female body types. Among college samples of African American and European/Caucasian women, Black women held body-size ideals that were less thin (Rucker & Cash, 1992). Taken together, results from these studies suggest that African American women may be less likely to smoke for weight control reasons as a thin body image is less desirable, which lends less credence for considering weight control motivation as a potential covariate when examining associations among identity, smoking norms, and smoking behavior.

Overall, age of smoking initiation, socioeconomic status, educational attainment, relationship status, brand preferences, and nicotine dependence are potential covariates to consider when examining the relationships among racial and gender identity, smoking norms, and smoking behaviors.

### **Research Questions**

The primary research questions for this project are:

1. To what degree do African American women identify with their gender and race?
2. To what degree do African American women perceive smoking to be normative for their gender and race?
3. Does gender and racial identification predict smoking behavior among African American women?
4. Does the degree to which smoking is perceived as normative for gender and race predict smoking behavior among African American women?
5. Do gender and racial identity dimensions predict the degree to which smoking is perceived to be normative for African American women?

## **CHAPTER II: METHODS**

### **Participants**

A total of 168 African American college women were screened and recruited from East Carolina University. The gender distribution of students at this institution is approximately 58% female and 42% male, with African American female students making up about 10% of the undergraduate student population (East Carolina University Institutional Planning Assessment, and Research, n.d). Students meeting the age, race, and gender requirements described above were eligible to participate.

### **Procedure**

Of the 168 participants, 162 were students enrolled in introductory psychology courses, and were screened through the online SONA system used by the Department of Psychology. The SONA system screens students based on demographic factors relevant to ongoing research studies and matches students with the studies for which they are eligible to participate. Approximately 2000 to 2500 students interact with SONA within an academic school year. Therefore, based on the gender and race distribution described above, an estimated 200-250 students were eligible for participation, and nearly 80% of eligible participants volunteered for the study. Eligible participants received 0.5 hours of course credit, which was commensurate with a maximum time commitment of 30 minutes. Email advertisements were also sent to executive board members of campus organizations requesting volunteers for the research project and an additional six students agreed to participate. Students recruited through email advertisement responded to additional age, race, and gender screening items in Qualtrics and enrolled after meeting the eligibility criteria for age, gender and race.

After participants were screened and presented with the opportunity to participate in the study, they were directed to complete a Qualtrics web-based survey. The survey contained

information about the purpose of the study and requested electronic consent prior to survey administration. The survey included self-report items, which assessed demographics, risk for nicotine exposure, nicotine dependence, smoking behaviors, and gender and racial identification. At the conclusion of the study, participants were debriefed and given information about smoking cessation resources.

## **Measures**

**Demographics.** Demographic data collected included variables that influence smoking behaviors among African American women but modified to accurately assess these variables within a college sample. These variables include age, SES, relationship status, and education level.

**Smoking behavior.** Smoking behavior was measured in three ways:

**Smoking status.** Participants were asked to select their smoking status. “Non-Smokers” consisted of participants who have never tried smoking cigarettes/cigars/cigarillos, “Former Smokers” consisted of participants who smoked in the past, but did not smoke in the past 30 days, and “Current Smokers” consisted of participants smoked within the past 30 days. Non-Smokers and Former Smokers were recoded into a “Non-Smoker” category.

**Smoking quantity-frequency (QF).** Those who identified as “Current-Smokers” were asked to provide the number of days they smoked on average in the past 30 days, and the number of cigarettes, cigars, or cigarillos that they smoked per day on average. The average number of days smoked in the past 30 days was multiplied by the average number of cigarettes, cigars, or cigarillos to yield a measure of smoking quantity-frequency.

**Smoking onset.** At the conclusion of the smoking items, participants who identified as current smokers were asked to provide the age at which they began smoking regularly.

**Increased risk for nicotine exposure.** Participants who indicated that they smoked within the past 30 days were asked to provide the name of their preferred cigarette brand(s), as well as indicate brand categorization (i.e., mentholated/flavored or non-mentholated/unflavored, filtered or unfiltered). This information was recoded into a categorical “increased risk for nicotine exposure” variable (i.e., “Yes or No”). Preference for filtered and/or mentholated brands was indicative of nicotine exposure risk.

**Nicotine dependence.** Participants who endorsed smoking behavior completed the Hooked on Nicotine Checklist (HONC) as a measure of nicotine dependence. The HONC is a 10-item questionnaire designed to measure diminished autonomy (e.g., lack of control) over smoking (e.g., “Have you ever tried to quit smoking but couldn’t?”, “Do you ever have strong cravings to smoke?”). Participants were asked to provide “Yes” or “No” answers to each item and the number of items endorsed is proportional to the degree of diminished autonomy (DiFranza et al., 2002). Higher scores reflect a higher degree of diminished autonomy. This measure has been shown to have high internal consistency within adult populations (e.g.  $\alpha = .83$  and  $.92$ ) and correlates well with other measures of nicotine dependence, and self-report measures of smoking behavior (Wellman, DiFranza, Savageau, Godiwala, Friedman, & Hazelton, 2005; Wellman, et al., 2006).

**Gender and racial identity.** Gender and racial identity was measured using five dimensions outlined in Wilson and Leaper’s (2015) multi-dimensional measure of gender and ethnic-racial identity. While Wilson and Leaper’s (2015) measure assesses aspects of ethnic and racial identity, research questions examined in this study do not warrant differentiation between the two constructs and was referred to as “racial identity”. This measure consists of 26 items to

assess five identity dimensions (e.g., centrality, in-group affect, in-group ties, felt-typicality, and felt-conformity pressure).

**Centrality.** The first four items of the scale make up the centrality dimension. Centrality refers to the perceived importance of a one's social identity to one's self concept (e.g., "In general, being a [identity in-group] is an important part of my self-image).

**In-group affect.** Items 5 to 8 make up the in-group affect dimension. In-group affect refers to positive or negative attributions one has towards belonging to a group (e.g., "Generally, I feel good when I think about myself as a [identity in-group].").

**In-group ties.** In-group ties refers to the psychological connectedness and emotional closeness one feels to group members (e.g., "I feel strong ties to other [identity in-group]"). This dimension is comprised of items 9 through 12.

**Felt-typicality.** Felt-typicality dimension is measured with items 13 through 18. Together these items examine the degree to which one perceives themselves to be representative of the group (e.g., "I think that I am a good example of what it means to be [identity in-group]").

**Felt-conformity pressure.** Felt-conformity pressure is measured with the last 8 items in the measure. Felt-conformity pressure refers to the degree to which individuals feel pressured to adhere to social norms (e.g., "The [identity group] I know would be upset if I wanted to do things [identity out-group] usually do.").

For all subscales, participants were asked to indicate their level of agreement with each statement on a five-point Likert scale (e.g., 1 = "Disagree Strongly", 2 = "Disagree", 3 = "Neither Agree nor Disagree/Neutral", 4 = "Agree", and 5 = "Strongly Agree"). A point value was assigned to each level of agreement. Scores on items in each dimension were averaged to



yield a mean rating, and were interpreted on a continuum (e.g., higher scores indicate a stronger degree of centrality, in-group ties, in-group affect, felt-typicality, and felt-conformity pressure).

The inter-item reliability coefficients (Cronbach alpha) for the respective gender and racial dimensions for the scales are provided in the original study (Wilson & Leaper, 2015). All subscales have demonstrated sufficient internal consistency in measuring gender and racial identity dimensions within samples of White European American, Latino/a, and Asian American/Pacific Islander emerging adults (e.g.,  $\geq .70$ ). The number of African American participants in the original study by Wilson and Leaper (2015) was not sufficient to calculate internal consistency for African American college students; however internal consistency reliability coefficients were obtained for the current study to ensure the scale performed appropriately within samples of African Americans. Subscales that did not meet sufficient internal consistency reliability (e.g.,  $\geq .70$ ) were not included in primary analyses.

**Gender and racial smoking norms.** Gender- and race-related smoking norms were assessed with three statements adapted from a measure of adolescent smoking beliefs in McCool, Cameron, and Petrie's (2005) study. These statements include: "Smoking is common among [identity in-group]", "Smoking is normal for [identity in-group]", and "It is normal to see [identity-in group] individuals smoking when they are in social situations." Gender and Racial Smoking Norms were also assessed by assessing gender and racial friend norms by modifying the statements above (e.g., "Smoking is common among [identity in-group] friends", "Smoking is normal for my [identity in-group] friends", and "It is normal to see [identity in-group] friends smoking when they are in social situations Participants were asked to indicate their level of agreement with each statement on a six-point Likert scale (e.g., 1 = "Strongly Disagree, and 5 = "Strongly Agree"). A point value was assigned to each level of and scores on items in each

dimension were averaged to yield a mean rating for perceived gender and racial smoking normativity. Higher scores are reflective of greater perceived normativity. This measure has been shown to be a reliable measure of perceived smoking prevalence ( $\alpha = .76$ ).

**Validity check.** Participants were presented with five validity items to ensure that they were reading survey items thoroughly and responding appropriately. Sample validity items included “Please respond neither agree nor disagree to this question”, and “I have lived on the moon.” Validity items appeared at the end of each measure and were regularly dispersed throughout the survey. Respondents were excluded if they answered fewer than 80% of the validity items correctly.

### **Power Analysis**

This study was powered to answer the primary research question of interest (i.e., research question 3) using linear regression analyses. While literature predicting perceived smoking norms from gender and racial identity among adult populations is scarce, Holley, Kulis, Marsiglia, and Keith (2006) examined racial identity as a predictor of perceived substance use norms within a multi-ethnic sample of adolescents, while controlling for age, gender, and ethnicity. Using effect sizes from this study ( $f^2 = .050$ ), an a priori power analysis was conducted based on linear regression analysis (power = .80), Type I error rate = .05, and indicated that 159 participants are needed to detect  $R^2$  changes associated with identity dimensions, while controlling for potential covariates.

### **Data Analyses**

At the conclusion of the study, data were downloaded from Qualtrics and analyzed using IBM SPSS Statistics 24 software. Descriptive statistics (i.e., mean, median, mode, standard deviation, skewness and kurtosis), were obtained for demographic and key study variables (i.e.,

gender and racial identity, gender and racial smoking norms, smoking behavior). Belsley, Kuh, and Welsch's (1980) procedure was used to assess collinearity between predictor variables. This procedure first involved computing condition indices for predictor variables. Condition indices of 15 or greater are indicative of possible problems with collinearity (Belsley, Kuh, & Welsch, 1980). Second, variance decomposition proportions of predictors with condition indices greater than 15 were examined. Variance decomposition proportions refer to the proportion of variance of the intercept and each of the regression coefficients associated with the predictor. Generally, variance proportions over 0.5 for two or more coefficients indicate the presence of collinearity (Belsley, Kuh, & Welsch, 1980). Additionally, preliminary zero-order correlation, chi-square, fisher's exact tests, and ANOVA analyses were used to identify which demographic variables should be analyzed as covariates in primary analyses. Primary analyses conducted included linear and logistic regressions as detailed below.

**Research question 1.** To what degree do African American women identify with their gender and race?

Descriptive statistics were used to calculate the mean gender and racial identity scores (e.g., centrality, in-group affect, in-group ties, felt-typicality, and felt-conformity pressure) and scores were interpreted on a continuum. One-sample *t*-tests were used to determine whether mean scores differed significantly from neutral (the scale midpoint). Bivariate correlations were also used to examine associations between each gender identity dimension, and its corresponding racial identity dimension.

**Research question 2.** To what degree do African American women perceive smoking to be normative for their gender and race?

Descriptive statistics were used to calculate the mean normative gender and racial smoking norm scores, and scores were interpreted on a continuum. One-sample *t*-tests were used to determine whether mean scores differed significantly from neutral (the scale midpoint).

**Research question 3.** Does gender and racial identification predict smoking behavior Among African American women (i.e., smoking status and Smoking QF)?

*Smoking status.* Logistic regression analyses were used to determine whether gender and racial identity dimensions (i.e., centrality, in-group affect, in-group ties, felt-typicality, and felt-conformity pressure) predicted smoking categorization (e.g., Non-Smoker and Current Smoker), while controlling for any covariates identified in preliminary analyses.

*Smoking QF.* Linear regression analyses were used to examine whether, among smokers, gender and racial identity dimensions (i.e., centrality, in-group affect, in-group ties, felt-typicality, and felt-conformity pressure) predicted smoking QF, while controlling for any covariates identified in preliminary analyses.

**Research question 4.** Does the degree to which smoking is perceived as normative for gender and race predict smoking behavior among African American women?

*Smoking status.* Logistic regressions were used to assess whether normative perception of gender and racial smoking predicted smoking status (e.g., Non-Smoker vs. Current Smoker [includes Current Daily Smoker and Current Intermittent Smoker]), while controlling for any covariates identified in preliminary analyses.

*Smoking QF.* Linear regressions were used to examine whether normative perceptions of smoking for gender and racial predicted smoking QF, while controlling for covariates.

**Research question 5.** Do gender and racial identity dimensions predict the degree to which smoking is perceived to be normative for African American women?

Linear regression analyses were used to determine whether gender and racial identification across multiple dimensions (i.e., centrality, in-group affect, in-group ties, felt-typicality, and felt-conformity pressure), predicted the degree to which smoking is perceived to be a normative behavior for gender or race, while controlling for any covariates identified in preliminary analyses.

## CHAPTER III: RESULTS

### Participant Demographics

A total of 168 participants were recruited for this study. Four participants were excluded as their scores on validity items were below the value for inclusion, and seven more provided incomplete survey responses. Therefore, eleven participants were excluded from further analysis resulting in a final sample of 157 participants. Participants' ages ranged from 18 to 22 years ( $M = 18.55$ ,  $SD = 0.87$ ). Participants were primarily single (97.5%), first-year undergraduates (75.2%). The range of mothers' highest education level was as follows: 17.8 % graduate degree, 24.2 % bachelor's degree, 45.2% high school diploma, and 3.8 % no high school diploma. The majority of participants in the sample categorized themselves as non-smokers (91.7%). Of the 157 participants, there were 13 smokers. Their ages ranged from 18 to 21 ( $M = 18.69$ ,  $SD = 0.95$ ), the mean age of smoking onset was 17.54 ( $SD = 1.33$ ), and smokers had been smoking for a mean duration of 15.77 months ( $SD = 12.16$ ). Smokers were also primarily single (92.3%), first-year undergraduates (61.5%). The range of mothers' highest education level was as follows: 23.1% graduate degrees, 7.7% bachelor's degree, and 69.2% high school diploma. Demographic characteristics of the sample are shown in Table 1.

### Descriptive Statistics for Smoking Characteristics

The number of days that participants smoked per month ranged from 1 to 30 ( $M = 10.92$ ,  $SD = 2.88$ ), and the number of cigarettes, cigars, and cigarillos smoked per day ranged from 0 to 3 ( $M = 1.54$ ,  $SD = .33$ ). Smoking QF, multiplying quantity and frequency reports of the 13 smokers, ranged from 0 to 90 ( $M = 22.85$ ,  $SD = 28.08$ ). Descriptive analysis of responses on the HONC revealed that the severity of nicotine dependence ranged from 0 to 5 ( $M = 1.67$ ,  $SD = 1.61$ ). Of the 13 smokers, only nine participants endorsed one or more items indicative of

nicotine dependence, and four did not respond or did not endorse nicotine dependence. While 33.33% ( $n=4$ ) of the smokers did not indicate preferences for unfiltered or mentholated/flavored cigarettes, 8.33% ( $n=1$ ) percent reported a preference for unfiltered cigarette use only, 16.67% ( $n=2$ ) reported a preference for mentholated/flavored cigarette use only, and 41.67% ( $n=5$ ) preferred both, all of which were indicative of increased nicotine exposure risk. One smoker elected not to provide information on preferences for mentholated or filtered cigarettes. In sum, participants who reported smoking can be characterized as late onset smokers. Additionally, smokers reported low frequency of smoking days per month, with moderate cigarette, cigar, or cigarillo quantity smoked on days when smoking occurred. Also given the reported preferences for mentholated/filtered nicotine products, the majority of smokers (75%) reported risk for higher nicotine exposure. Smoking behavior of smokers in the current sample is shown in Table 2.

### **Preliminary Analyses**

**Internal consistency reliability.** Internal consistency reliability was assessed for dimensions of gender and racial identity, gender and racial smoking norms, and nicotine dependence.

**Gender and racial identity.** Apart from gender and racial felt-conformity pressure, all scales demonstrated adequate internal consistency ( $\alpha > .70$ ). Cronbach alphas for gender and racial felt-conformity pressure were .64, and .55 respectively and were not included in further analysis as it is likely that reliable conclusions cannot be drawn from these data. The inter-item reliability coefficients for the gender and racial identity dimensions in the current sample are listed in Table 3.

**Gender and racial smoking norms.** The adapted version of McCool, Cameron, and Petrie's (2005) items performed appropriately with all scales demonstrating sufficient reliability (gender smoking norms  $\alpha = .77$ , gender friend smoking norms  $\alpha = .95$ , racial smoking norms  $\alpha = .87$ , and racial friend smoking norms  $\alpha = .97$ ).

**Nicotine dependence.** The Hooked-on Nicotine Checklist (HONC) was used to describe characteristics of smokers, however, due to sampling limitations, there was not enough power to reliably assess internal consistency. Therefore, a reliability coefficient was not calculated for this measure. While this measure was initially included to control for nicotine dependence, it was not included as a control variable in subsequent analyses.

### **Descriptive Analyses**

Descriptive statistics (e.g., mean, standard deviation, skewness and kurtosis), were obtained for identity and norms. Scores for gender centrality, gender in-group affect, gender in-group ties, and gender felt-typicality, ranged from 1 to 5 ( $M = 3.60$ ,  $SD = .73$ ), 2.5 to 5 ( $M = 4.32$ ,  $SD = .63$ ), 1.5 to 5 ( $M = 3.48$ ,  $SD = .76$ ), and 1.67 to 4.67 ( $M = 3.20$ ,  $SD = .58$ ) respectively. Scores for racial centrality, racial in-group affect, racial in-group ties, and racial felt-typicality ranged from 1 to 5 ( $M = 3.96$ ,  $SD = .76$ ), 2.5 to 5 ( $M = 4.28$ ,  $SD = .83$ ), 1 to 4.83 ( $M = 3.58$ ,  $SD = .88$ ), and 1 to 5 ( $M = 3.23$ ,  $SD = .61$ ) respectively. Scores for gender smoking norms, gender friend smoking norms, racial smoking norms and racial friend smoking norms ranged from 1 to 5 ( $M = 2.99$ ,  $SD = .76$ ), 1 to 5 ( $M = 2.17$ ,  $SD = 1.06$ ), 1 to 5 ( $M = 3.37$ ,  $SD = .80$ ), and 1 to 5, ( $M = 2.43$ ,  $SD = 1.21$ ) respectively. These results are reported in Table 4.

Evaluation of skewness and kurtosis of key study variables was relevant for covariate analyses. Apart from racial in-group affect and smoking QF, all variables were normally distributed. Racial in-group affect was significantly non-normally distributed (Kolmogorov-



Smirnov = .104,  $p < .001$ ) with a skewness of -1.56 (SE = .39), and kurtosis of 2.74 (SE = .39), and smoking QF was non-normally distributed with a skewness of 1.40 (SE = .62), and kurtosis of 1.36 (SE = 1.19), (Kolmogorov-Smirnov = .511,  $p < .001$ ). Non-parametric methods (i.e., spearman's  $\rho$ , and Welch's adjusted  $F$  ratio) were used to examine associations between non-normally distributed variables. Normality of independent variables is not assumed for regression analyses; therefore, data transformations were not warranted.

### **Collinearity Analyses**

None of the gender or racial identity predictors met both criteria for collinearity (CI's above 15 and high variance proportions shared with 2 or more predictors), however, the CI for felt-typicality was significantly above 15 for both gender and racial identity (greater than 20) which departed markedly from the CI's of the other potential predictors. This substantial departure from the other CI's has been noted as worthy of consideration in model building (Pedhazur, 1997) and was the basis for taking the conservative approach from removing felt-typicality from models testing Research Questions 3 and 5. As a result, three-dimensional models were used to determine whether gender and racial identity predicted normative perceptions of smoking and smoking behavior. Models for gender and racial identity included the dimensions of centrality, in-group affect, and in-group ties. Results of the multi-collinearity analysis are shown in Table 5.

### **Covariate Analyses**

#### **Age and Dependent Variables.**

*Age, gender friend smoking norms, and racial friend smoking norms.* Age was significantly positively correlated with gender friend smoking norms ( $\rho = .22$ ,  $p < .01$ ), suggesting that as age increased, smoking was perceived to be more normative for female

friends. Age was also significantly positively correlated with racial friend smoking norms ( $\rho = .19, p < .05$ ), suggesting that as age increased, smoking was perceived to be more normative for African American friends.

***Age, gender smoking norms, racial smoking norms, smoking status, and smoking QF.***

Results from Spearman's  $\rho$ , independent samples  $t$ -tests, and Pearson's correlations revealed that age was not associated with differences in gender smoking norms, racial smoking norms, smoking status, and smoking QF, suggesting there was not a need to control for age when examining identity-related predictors of these variables. However, age was associated with gender friend smoking norms, and racial friend smoking norms, and was used as a covariate in subsequent predictive analyses.

**Mother's education and dependent variables.** Results from preliminary covariate analyses for mother's education and dependent variables are provided below:

***Mother's education, gender smoking norms, and racial smoking norms.*** An ANOVA showed that there were significant differences between gender smoking norms, and racial smoking norms across varying levels of mother's education level [ $F(5,151) = 4.309, p < .01$ ;  $F(5,151) = 2.38, p < .05$  respectively]. As mother's education was used as a proxy for SES, the result indicates that as SES increases, normative perceptions of smoking for women and African Americans increase. Results suggest that there is a need to control for mother's education when predicting gender smoking norms.

***Mother's education, gender and racial friend smoking norms, and smoking behavior.*** Welch's adjusted  $F$  ratio, chi-square tests of independence, and Fisher's exact tests showed that there were not significant differences in gender and racial friend smoking norms across mother's education levels, nor were there differences in smoking status across mother's education levels.

There was not enough variation in mother's education level among smokers to warrant analyses to determine whether mother's education co-varied with smoking QF. This suggests that there is not a need to control for mother's education in subsequent analyses predicting these variables.

**Student status and dependent variables.** ANOVAs, chi-square tests of independence, showed that gender smoking norms, gender friend smoking norms, racial smoking norms, and racial friend smoking norms did not vary by student status, indicating that there was no need to control for student status when predicting these variables. There was not enough variation in student status among smokers to warrant analysis of this variable as a potential covariate in analyses predicting smoking status.

**Relationship status and dependent variables.** Most participants reported that they were single (i.e., not married; 97.5%) and there was no additional assessment to collect data on the range of non-married relationships more typical of college-aged women. Therefore, there was not enough variation in relationship status to warrant covariate analysis across outcome variables.

**Increased risk for nicotine exposure.** Correlations between nicotine exposure and smoking QF were not statistically significant, suggesting that there was no need to control for nicotine exposure when predicting smoking QF as nicotine exposure did not co-vary with smoking QF.

**Summary of covariate analyses.** In sum, covariate analyses indicated there was a need to control for age when predicting gender friend smoking norms, and racial friend smoking norms, and a need to control for mother's education when predicting gender smoking norms and racial smoking norms. Results from covariate analyses are shown in tables 6-10.

## **Primary Analyses**

**Research question 1.** To what degree do African American women identify with their gender and race?

Descriptive statistics were used to calculate the mean gender and racial identity scores and scores were interpreted on a continuum. One-sample *t*-tests were used to determine whether mean scores differed significantly from neutral. Bivariate correlations were also used to examine the nature of the relationship between each gender and racial identity dimension.

**Gender identity.** The mean scores (in order of strongest to weakest) were gender centrality [3.60 (*SD* = .73)], gender in-group affect (4.32 [*SD* = .63]), gender in-group ties (3.48 [*SD* = .76]), and gender felt-typicality (3.20 [*SD* = .58]). Results from one sample *t*-tests showed that mean scores for all gender identity dimensions were significantly above neutral (gender in-group affect,  $t(155) = 10.32, p < .001$ ; gender centrality,  $t(156) = 7.95, p < .00$ ; gender in-group ties,  $t(156) = 4.36, p < .00$ ; and gender felt-typicality,  $t(155) = 26.11, p < .001$ ). While results do not indicate any statistically significant differences between strength of identity dimensions, there are descriptive differences between 3 of the gender dimensions, as compared to gender in-group affect. The majority of scores for gender centrality, gender in-group ties, and gender felt-typicality were clustered around the mean. Moreover, scores for gender centrality, gender in-group ties, and gender felt-typicality fell slightly above the category of “neutral/neither agree nor disagree”. This suggests that on average, participants somewhat agreed that being a woman was an important aspect of their self-concept, they somewhat agreed that they were psychologically and emotionally connected with other women, and they somewhat agreed that they were representative of women. In contrast, mean scores for gender in-group affect were clustered towards the higher end of the scale. Additionally, participants' scores on gender in-group affect

fell above the “agree” range, which was indicative of stronger, positive feelings about being women in comparison to the other gender identity dimensions.

**Racial identity.** The mean scores (in order of strongest to weakest) were racial in-group affect (4.28 [ $SD = .83$ ]), racial centrality (3.96 [ $SD = .76$ ]), racial in-group ties (3.58 [ $SD = .88$ ]), and racial felt-typicality were and (3.23 [ $SD = .61$ ]). Results from one sample  $t$ -tests showed that mean scores for all identity dimensions were significantly above neutral (racial felt-typicality,  $t(156) = 4.76, p < .001$ ; racial in-group ties,  $t(155) = 8.25, p < .001$ ; racial centrality,  $t(156) = 15.90, p < .001$ ; racial in-group affect,  $t(155) = 19.33, p < .001$ ). While mean differences between dimensions were not statistically significant, there are descriptive differences in the strength of three of the racial identity dimensions as compared with racial in-group affect. Participants mean scores for racial felt-typicality, racial in-group ties, and racial centrality were clustered near the mean. Moreover, participants’ scores on racial felt-typicality, racial in-group ties, and racial centrality fell above “neutral/neither agree nor disagree” but were considerably all lower than “agree.” These results suggest that on average participants somewhat agreed that they were representative of African Americans, that they were psychologically and emotionally connected to other African Americans, and that being African Americans was important to their self-concept. In contrast, participants’ scores on racial in-group affect were clustered towards the higher end of the scale. Racial in-group affect scores generally fell in the “agree” range, which was indicative of stronger, positive feelings about being African Americans when compared to scores on other racial identity dimensions. A visual representation of results from one-sample  $t$ -tests are shown in Figure 2.

**Correlational analysis of gender and racial identity.** There were significant correlations between gender and racial in-group affect ( $r = .48, p < .001$ ), gender and racial in-group ties, ( $r =$

.41,  $p < .001$ ) and gender and racial centrality ( $r = .40, p < .001$ ), and gender and racial felt-typicality ( $r = .33, p < .001$ ). As gender and racial identity dimensions were highly correlated with one another and means were significantly above neutral, results suggest that gender and racial identity are similarly positive aspects of identity among African American women. Results from bivariate correlations between gender and racial identity dimensions are shown in Table 10.

In sum, results from one sample  $t$ -tests suggests that there are similar trends in the strength of racial and gender identity dimensions. Results from bivariate correlations suggest that across gender and racial identity domains, the specific identity dimensions examined are positively associated with one another, with few participants in the sample reporting disagreement. These results suggest that gender and race are similarly favorable, self-defining markers for African American women.

**Research question 2.** To what degree do African American women perceive smoking to be normative for their gender and race?

Descriptive statistics were used to calculate the mean normative gender and racial smoking norm scores, and scores were interpreted on a continuum. One-sample  $t$ -tests were used to determine whether mean scores differed significantly from neutral.

The mean normative gender, gender friend, racial, and racial friend smoking norms were 2.99, 2.17, 3.37, and 2.43, respectively. One sample  $t$ -tests indicated that participants' scores for gender smoking norms were not significantly lower than neutral ( $t(156) = -0.14, p > .05$ ) indicating that smoking was perceived as neither normative nor non-normative for women in general. Scores for gender friend smoking norms were significantly below neutral ( $t(156) = -9.88, p < .001$ ), indicating that smoking may be perceived as non-normative for female friends. Participant scores for racial smoking norms were significantly above neutral ( $t(156) = 5.71, p <$

.001) indicating that smoking may be perceived by participants as normative for African Americans as the broader reference group. By contrast, scores for racial friend smoking norms were significantly below neutral ( $t(153) = -5.82, p < .001$ ) indicating that participants perceived smoking to be less normative for their African American friends, as a more specific reference group. Across all four smoking norms evaluated, participants perceived smoking to be more normative for African Americans, and less normative for their African American friends, women in general, and female friends. A visual representation of results from research question 2 is shown in Figure 3.

**Research question 3.** Does gender and racial identification predict smoking behavior (i.e., smoking status and smoking QF among African American women?)

*Gender identity dimensions, smoking status, and smoking QF.* Results from analyses examining gender identity, smoking status, and smoking QF are provided below:

*Predicting smoking status from gender identity dimensions.* A logistical regression was conducted to predict smoking status from gender centrality, gender in-group affect, and gender in-group ties. The logistic regression model was not statistically significant  $\chi^2(3, N = 156) = 4.70, p = .20$ , indicating that gender identity dimensions did not predict smoking status in the sample. The Wald test indicated that gender in-group affect marginally contributed to the prediction model ( $Wald = 3.08, p = .08$ ). Results from the logistic regression predicting smoking status from gender identity variables are shown in Table 12.

*Predicting smoking QF from gender identity dimensions.* As there were only 13 smokers within the sample, sample size restricted predictive analysis to determine whether gender identity dimensions predicted smoking QF among smokers.

***Racial identity dimensions, smoking status, and smoking QF.*** Results from analyses examining racial identity, smoking status, and smoking QF are provided below:

*Predicting smoking status from racial identity dimensions.* A logistic regression was conducted to predict smoking status from racial centrality, racial in-group affect, and racial in-group ties. The logistic regression model was not statistically significant  $\chi^2 (3, N = 156) = 2.63$ ,  $p = .45$ , indicating that racial identity dimensions did not predict smoking status within the sample. Results from the logistic regression predicting smoking status from racial identity variables are shown in Table 13.

*Predicting smoking QF from racial identity dimensions.* As there were only 13 smokers within the sample, sample size restricted predictive analysis to determine whether racial identity dimensions predicted smoking QF among smokers.

**Research question 4.** Does the degree to which smoking is perceived as a normative behavior for gender and race predict smoking behavior among African American women?

***Gender smoking norms, smoking status, and smoking QF.*** Results from analyses examining gender smoking norms, smoking status, and smoking QF are provided below:

*Predicting smoking status from gender smoking norms.* A logistic regression was conducted to predict smoking status using gender smoking norms. The logistic regression model was not statistically significant  $\chi^2 (1, N = 157) = 0.09$ ,  $p = .77$ , indicating that gender smoking norms did not help to predict smoking status within the sample.

*Predicting smoking status from gender friend smoking norms.* A logistical regression was conducted to predict smoking status using gender friend smoking norms. The logistic regression model was statistically significant  $\chi^2 (1, N = 157) = 25.62$   $p < .001$ . The model explained 34.6% (*Naglekerke's R*) of the variance in smoking status and correctly classified 91.7% of cases,



however, the model performed differently across smoking status as it classified 7.7% of smokers, and 99.3% of non-smokers. The Wald test indicated that gender friend smoking norms contributed significantly to the prediction model, ( $Wald = 16.06, p < .001$ ), with a corresponding odds ratio indicating that with each standard deviation increase in gender friend smoking norms, African American women were 5.3 times more likely to be smokers. Results from the logistic regression predicting smoking status from gender smoking norms, and gender friend smoking norms are shown in Table 14.

*Predicting smoking QF from gender smoking norms, and gender friend smoking norms.* As there were only 13 smokers within the sample, sub-sample size was a constraint in conducting predictive analysis to determine whether gender smoking norms and gender friend smoking norms predicted smoking QF.

***Racial smoking norms, smoking status, and smoking QF.*** Results from analyses examining racial smoking norms, smoking status, and smoking QF are provided below:

*Predicting smoking status from racial smoking norms.* A logistical regression was conducted to predict smoking status using racial smoking norms. The logistic regression model was statistically significant  $\chi^2 (1, N = 157) = 11.61, p < .01$ . The model explained 16.4 % (*Naglekerke's R*) of the variance in smoking status and correctly classified 91.7% of cases, however, the model performed differently across smoking status as it did not classify any smokers and classified 100% of non-smokers. The Wald test indicated that racial smoking norms contributed significantly to the prediction model, ( $Wald = 8.22, p < .01$ ) with a corresponding odds ratio indicating that with each standard deviation increase in racial smoking norms, African American women were 3.8 times more likely to be smokers.

*Predicting smoking status from racial friend smoking norms.* A logistic regression was conducted to predict smoking status using racial friend smoking norms. The logistic regression model was statistically significant  $\chi^2(1, N = 154) = 18.30, p < .001$ . The model explained 25.5% (Nagelkerke's *R*) of the variance in smoking status and correctly classified 91.6% of cases, however, performed differently across smoking status as it did not classify any of the smokers, and classified 100% of non-smokers. The Wald test indicated that racial friend smoking norms contributed significantly to the prediction model, ( $Wald = 12.51, p < .001$ ), with a corresponding odds ratio indicating that with each standard deviation increase in racial friend smoking norms, African American women were 4.2 times more likely to be smokers. Results from the logistic regression predicting smoking status from racial smoking norms, and racial friend smoking norms are shown in Table 15.

*Predicting smoking QF from racial smoking norms, and racial friend smoking norms.* As there were only 13 smokers within the sample, sample size was a constraint in conducting predictive analysis to determine whether racial smoking norms and racial friend smoking norms predicted smoking QF.

**Research question 5.** Do gender and racial identity dimensions predict gender and racial smoking norms?

*Gender identity, gender smoking norms, and gender friend smoking norms.* Results from analyses examining gender identity, gender smoking norms, and gender friend smoking norms are provided below:

*Predicting gender smoking norms from gender identity dimensions.* A hierarchical multiple regression analysis was performed to determine whether gender identity dimensions predicted gender smoking norms. Mother's education (SES proxy) was entered first, followed by

the gender identity variables. After controlling for the effects of mother's education (SES proxy), gender identity dimensions did not significantly improve prediction of gender smoking norms ( $R^2$  change = .02,  $F = 1.12$ ,  $p = .34$ ).

*Predicting gender friend smoking norms from gender identity dimensions.* A hierarchical multiple linear regression analysis was performed to determine whether gender centrality, gender in-group affect, and gender in-group ties predicted gender friend smoking norms. Age was entered into the first step, followed by the gender identity dimensions. After controlling for the effect of age, gender identity dimensions did not significantly improve prediction of gender friend smoking norms ( $R^2$  change = .01,  $F = .45$ ,  $p = .73$ ). Results from hierarchical regression analyses for gender identity dimensions predicting gender smoking norms and gender friend smoking norms are shown in Table 16.

***Racial identity, racial smoking norms, and racial friend smoking norms.*** Results from analyses examining racial identity, racial smoking norms, and racial friend smoking norms are provided below:

*Predicting racial smoking norms from racial identity dimensions.* A hierarchical multiple linear regression analysis was used to determine whether racial centrality, racial in-group affect, and racial in-group ties predicted racial smoking norms. Mother's education (SES Proxy) was entered in step 1, followed by the racial identity dimensions in step 2. After controlling for the effect of mother's education, racial identity dimensions did not significantly improve prediction of racial smoking norms ( $R^2$  change = .01,  $F = .55$ ,  $p = .65$ ).

*Predicting racial friend smoking norms from racial identity dimensions.* A hierarchical multiple linear regression analysis was used to determine whether racial identity dimensions predict racial friend smoking norms. Age was entered in step 1, followed by racial identity

dimensions in step 2. After controlling for the effect of age, racial identity dimensions did not significantly improve prediction of racial friend smoking norms ( $R^2$  change = .01,  $F = .45$ ,  $p = .67$ ). Results from hierarchical regression analyses for racial identity dimensions predicting racial smoking norms and racial friend smoking norms are shown in Table 17. A visual representation of results from research questions 3, 4, and 5 are shown in Figures 4 and 5.

## CHAPTER IV: DISCUSSION

The primary purpose of this study was to examine gender and racial influences in smoking behavior of college-aged African American women using a SIT framework. More specifically, this study sought to (1) comprehensively measure gender and racial identification, (2) examine perceived smoking norms for gender and race, (3) determine whether gender and racial identity predict smoking behavior, (4) determine whether gender and race-related smoking norms predict smoking behavior, and (5) examine links between gender identity and gender-related smoking norms, and links between racial identity and race-related smoking norms.

### Review of Key Findings

**Smoking behavior.** The average age of smoking onset was 17.54 ( $SD = 1.33$ ). This finding is consistent with data that shows African American women tend to initiate smoking later in late adolescence/emerging adulthood, which is much later than their racial and gendered counterparts (Miech, Johnston, O'malley, Bachman, & Schulenberg, 2016; Moon-Howard, 2003).

**Gender and racial identity.** There were similar patterns of endorsement of gender and racial identity. On average, participants felt strong positive feelings about being women and African Americans (i.e., in-group affect), they felt strongly that gender and race were important to their self-concept (i.e., centrality), and also felt strongly that they were connected to other women and African Americans (i.e., in-group ties). In contrast, they felt less strongly that they were prototypical of their gender and race (i.e., felt-typicality). Collectively, these results indicate that gender and racial identity were similarly salient within this population of African American women across multiple dimensions of gender and racial identification. Additionally, these findings indicate that it is useful to examine gender and racial identity using a multi-

dimensional framework as multi-dimensional measurement allowed for capturing of differences in the degree to which dimensions of racial and gender identity were endorsed, which would have been obscured utilizing a unidimensional approach.

**Gender and racial smoking norms.** Smoking was perceived by participants as less normative for women and African Americans in their immediate social circles but was perceived to be neutral for women in general, and normative for African Americans in general. These findings indicate that normative perceptions of smoking vary by reference group and specifically suggest that, in emerging adulthood, smoking may be perceived as more normative for African Americans, but not women. Findings are consistent with previous research that suggests smoking is viewed as less normative for women (Alexander, Frohlich, Poland, Haines, and Maule, 2010), but more normative for African Americans (Webb, Francis, Hines, & Quarels, 2007).

**Predicting smoking status from gender and racial identity.** Overall, the multidimensional identity models did not predict smoking status in the study. Regarding specific gender identity dimensions, having positive feelings about being women (i.e., gender in-group affect), marginally predicted smoking behavior for African American women, in that as women feel more positive about being women, they may be less likely to smoke. These results may support a link between gender identity and smoking behavior more broadly, but with an identity dimension that has not been examined in previous studies. Gender felt-typicality, an identity dimension that was used synonymously with gender identity in previous studies, did not predict smoking behavior, and this is contradictory to findings in previous studies that have established links between gender identity and smoking (Alexander, Frohlich, Poland, Haines, & Maule, 2010; Greaves, 1996; Mermelstein, 1999). For racial identity and smoking, neither the overall model of racial identity nor specific racial identity dimensions predicted smoking behavior.

**Predicting smoking status from gender and racial smoking norms.** Perceived smoking norms for female friends predicted smoking status, in that as smoking was perceived to be more normative for female friends, the likelihood of being a smoker increased. Perceived smoking norms for African Americans in general were predictive of smoking behavior, in that as smoking was perceived to be more normative for African Americans in general, participants were more likely to be smokers. Perceived smoking norms for African American friends were also predictive of smoking status in that, as smoking was perceived to be more normative for African Americans friends, participants were more likely to be smokers. These findings are consistent with previous studies that show perceived smoking norms for gender and race may predict actual smoking behavior (Alexander, Frohlich, Poland, Haines, & Maule, 2010, Greaves, 1996, Edwards et al, 2008).

**Predicting smoking norms from gender and racial identity.** There were no statistically significant findings supporting the link between gender identity and normative perceptions of smoking for women. Similarly, there were no statistically significant findings supporting the link between racial identity and normative perceptions of smoking for African Americans. This is one of the critical links in examining the applicability of SIT, therefore more research is needed to determine whether this link exists.

**Multidimensional measurement of gender and ethnic-racial identity.** Wilson and Leaper's (2015) Multidimensional Measure of Gender and Ethnic-Racial Identity was found to be reliable within this sample of college-aged African American women, with the exception of gender and racial felt-conformity pressure, which did not demonstrate sufficient internal reliability. These results were inconsistent with findings in Wilson and Leaper's (2015) study as gender and racial felt-conformity pressure were found to be reliable within a sample of mixed-

race college aged men and women. However, despite reliability in Wilson and Leaper's (2015) study, the validity of the subscale may still be in question, primarily in that results from exploratory factor analysis indicated that items assessing gender felt-conformity pressure loaded on to two separate factors. Items that assessed pressure from parents loaded onto one factor and items that assessed pressure from peers loaded onto another, indicating that items assessed two different types of social pressure. In sum, combining items related to pressure from parents with items related to peer pressure may not have yielded a valid subscale. Lack of validity could explain high reliability in the initial study (Wilson & Leaper, 2015), but low reliability in the current study. Given the differences in the gender and racial make-up of the two samples, there could have also been differences in patterns of responding based on gender and racial differences in the importance of parent and peer relationships (Giordano, Cernkovich, & DeMaris, 1993).

While centrality, in-group affect, in-group ties, and felt-typicality were all reliable measures of gender and racial identity in this sample, there were issues with multi-collinearity and redundancy when these identity dimensions were evaluated for model building to predict normative perceptions of smoking and reported smoking behavior. These psychometric issues were addressed using established methods (Belsley, Kuh, & Welsch, 1980), resulting in a smaller, three-dimensional model of gender and racial identity, that included centrality, in-group affect, and in-group ties. Research implications related to measurement of gender and racial identity are further discussed below.

## **Clinical and Research Implications**

**Implications for SIT as a model for understanding gender and racial influences in smoking.** Results from this study provide support for links between normative perceptions of smoking for gender and race and smoking behavior. However, results did not establish



significant links between identity and normative perceptions of smoking, nor did results establish links between identity and smoking behavior. As this was one of the first studies to examine smoking behavior in African American women using a SIT framework additional research is needed in order to determine whether SIT is an appropriate model for predicting smoking behavior from gender and racial identity. These results are further discussed in the clinical and research implications sections.

**Clinical implications.** Given the results of the current study, it seems that smoking may be related to perceptions of smoking norms for women and African Americans. Based on the results, it may be beneficial to focus our smoking prevention and cessation efforts towards addressing normative perceptions of smoking for women and for African Americans. More specifically, there may be a role for cognitive reframing/restructuring to modify the belief that smoking is normative for women and African Americans. Interventions aimed at reducing African American adolescent substance use behaviors have included components to modify perceptions of general population and peer substance use norms and enhance skills to refuse peer influences (Botvin & Kantor, 2000). Findings in the current study suggest that, for African American women in the emerging adulthood age range, perceptions of smoking norms among female peers, African Americans in general, and African American peers may all be targets for modification.

Intervention components that emphasize behavioral substitution may also aid in preventing smoking initiation and inducing smoking cessation among African American women. Results from the current study suggest that African American women perceive themselves and their female peers to be less gender conforming. Therefore, these women may be drawn to more

gender non-conforming behaviors, such as smoking, but this remains speculative and future research is needed to examine this possibility further.

**Research implications.** While participants reported strong positive identification with gender and racial identity dimensions, scores clustered in the higher quartiles and this lack of variability may have ultimately reduced predictive capacity of identity variables. Also, while multidimensional measurement was a strength in this study, there were issues with reliability and collinearity with some dimensions, such that felt-conformity pressure and felt-typicality needed to be excluded from predictive models. In sum, in examining how identity may predict or influence smoking behaviors, multidimensional measurement reflects the complexity of identity, however, it is not well understood which specific identity dimensions are most relevant to smoking. Overall, these results indicate that additional psychometric research is warranted to allow for improvement in building multi-dimensional models to predict smoking.

### **Study Limitations**

**Sample size.** Sample size was a significant limitation in the study, primarily among smokers. With a subset of only 13 smokers, there was not enough variation in smoking QF to determine whether gender and racial identity dimensions and gender and racial smoking norms predicted smoking QF in the sample. Additionally, inequality of sub-sample sizes negatively affected regression analyses, such that regression models were more effective at classifying non-smokers. In future research a larger proportion of smokers would be needed in the sample to test relationships more rigorously.

**Sample characteristics.** Sample characteristics were consistent in some ways with African American women, and, in particular, women in emerging adulthood. However, the college-student status of participants may still hinder generalizability of findings to the broader

population of African American women in emerging adulthood. Despite the small number of smokers, the prevalence and smoking initiation of African American women in the current sample seemed to be similar to that of African American women in the general population in that (1) the percentage of current smokers were lower than that of the general population, and (2) they initiated smoking later than their gender and racial counterparts.

While participant smoking characteristics were similar to the previous literature, educational and relationship characteristics may make the sample less comparable to other emerging adults. The sample was primarily comprised of single, college-aged freshmen. Community-based emerging adult African American women will likely vary from the current study sample in terms of less educational attainment, different relationship characteristics (e.g. perhaps earlier marriage), and different susceptibility to peer influences, perhaps due to being surrounded by fewer same-age peers.

**Relationship status measurement.** Relationship status measurement was also a study limitation. In retrospect, the relationship status categories that were used were mismatched with college student relationship patterns and restricted them to choosing either married or single as their relationship status, rather than allowing participants to endorse various degrees of dating and partnering that would more accurately reflect their relationship status. This limited approach to measuring relationship status resulted in restricted range as the majority of women in the sample reported that they were single. Future research with a similar population should assess relationship status using intimate partner/relationship categories that are more reflective of college students' relationship patterns.

**Smoking measurement.** There may have been significant measurement limitations in the current study as well. Available data suggests that African American women may have higher

rates of cigar and multiple tobacco use compared to other racial/ethnic women, which warranted inclusion of multiple forms of tobacco use, however, smoking quantity was measured in a way that did not allow participants to quantify cigarette, cigar, and cigarillos use separately. Each of these methods of tobacco consumption differ in nicotine content, therefore, nicotine absorption and dependence can vary based on differences in consumption. The HONC was included to control for the differences in nicotine exposure, but, as described earlier, it was not included in further covariate analyses due to sample size limitations.

Another limitation in this study is that it focused solely on tobacco and nicotine consumption via cigarette, cigarillo, and cigar use. Tobacco can be consumed in several other ways, including electronic cigarettes, pipes, hookah, and smokeless options (vaping, chew, dips, and dissolvable), and there is research to suggest that these have been reported as smoking methods among college students (Jarrett, Blosnich, Tworek, & Horn, 2012; Rigotti, Lee, & Wechsler, 2000). Furthermore, this study did not account for consumption of marijuana use which may be an additional substance that African American women consume, often in conjunction with tobacco consumption (Golub, Johnson, & Dunlap, 2005)

### **Future Directions**

Given the compound health risks associated with smoking for African American women, gaining understanding of ways that gender and racial identity can influence smoking behavior might help to improve current smoking interventions to reduce and prevent smoking for African American women. As this was one of the first studies to use a SIT framework to examine gender and racial identity influences in smoking behavior for African American women, further exploration of SIT and how it may be an applicable model for understanding gender and racial identity influences on smoking behavior is still needed. An important focus for future research

on SIT and smoking behavior among African American women involves establishing whether there is or is not a quantifiable link between identity and normative perceptions of smoking for gender and race. Given that normative perceptions of smoking for gender and race can influence smoking, it may also be beneficial to conduct cross-sectional and longitudinal studies to examine normative perceptions of smoking for race across the developmental continuum, as there is evidence to suggest that smoking may be perceived as more normative for African Americans over time. These may be important steps for future action to improve smoking intervention and to ultimately reduce negative smoking-related health outcomes for African American women.

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## APPENDIX A: IRB APPROVAL



**EAST CAROLINA UNIVERSITY**  
**University & Medical Center Institutional Review Board**  
4N-64 Brody Medical Sciences Building· Mail Stop 682  
600 Moye Boulevard · Greenville, NC 27834  
Office 252-744-2914 · Fax 252-744-2284 ·  
[www.ecu.edu/ORIC/irb](http://www.ecu.edu/ORIC/irb)

### Notification of Continuing Review Approval: Expedited

From: Social/Behavioral IRB  
To: [Shelly Thornton](#)  
CC: [Lisa Campbell](#)  
Date: 10/30/2017  
Re: [CR00006407](#)  
[UMCIRB 16-000261](#)  
Smoking Behaviors of College-Aged African American Women

The continuing review of your expedited study was approved. Approval of the study and any consent form(s) is for the period of 10/29/2017 to 10/28/2018. This research study is eligible for review under expedited category #7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Document	Description
S. Thornton Thesis Proposal Document(0.01)	Study Protocol or Grant Application
Smoking Behaviors among African Americans(0.01)	Additional Items
Smoking Behaviors among Women(0.01)	Additional Items
Survey Items for Students Recruited Outside of SONA(0.02)	Surveys and Questionnaires
Survey Items for Students Recruited through SONA(0.04)	Surveys and Questionnaires
Updated Online Consent (0.02)	Consent Forms

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

## **APPENDIX B: CONSENT FORM**

### **Smoking Behaviors of College-Aged African American Women**

You are invited to participate in an online research study conducted by Shelly A. Thornton, a doctoral student in Clinical Health Psychology at East Carolina University. You are being invited to participate because you (1) identify as an African American woman, and (2) are between the ages of 18 and 25. You **DO NOT** have to be a smoker to participate.

#### **Purpose**

The purpose of this study is to examine associations between racial and gender identity and smoking behaviors among African American Women.

#### **Potential Benefits**

By participating in this research, you will learn more about smoking among women and African Americans. Your participation will help increase understanding of associations between racial and gender identity and smoking behavior among African American women.

#### **Procedure**

You will be asked to complete an online survey. This survey will ask questions about your smoking behaviors, how you feel about smoking in relation to your gender and race, and your experiences as a woman and African American. Additionally, you will be asked to provide your reaction and answer questions pertaining to information presented in short articles. This survey should take approximately 30 minutes to complete.

#### **Confidentiality**

Your responses will be stored in a password protected electronic format. You **WILL NOT** be asked to provide your name or other identifying information during this survey, therefore, no one will be able to link your name with your responses. Once data collection is complete, de-

identified responses will be downloaded and kept in password protected file on the researchers' password protected computer.

### **Potential Risks**

There are no foreseeable risks involved in participating in this study other than those encountered in day-to-day life.

### **Participation and Withdrawal**

Your participation in this survey is completely voluntary. You may refuse to take part in the research or exit the survey at any time without consequence.

### **Contact Information**

If you have questions, comments, or concerns about this study please do not hesitate to contact Shelly A. Thornton at [thorntonsh14@students.ecu.edu](mailto:thorntonsh14@students.ecu.edu).

### **Rights of Research Participants**

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights, or remedies because of your participation in this study. If you have any questions regarding your rights as a research participant, please contact the Office of Research Integrity & Compliance at (252) 744-2914.

You may print a copy of this form your records.

Please read the following statements and if you agree, select "I agree" below:

- (1) I have read (or had read to me) all of the above information
- (2) I have had an opportunity to ask questions about things in this research I did not understand and have received satisfactory answers.
- (3) I know that I can stop taking part in this study at any time
- (4) By signing this informed consent form, I am not giving up any of my rights.
- (5) I have been given a copy of this consent document, and it is mine to keep.

## APPENDIX C: MEASURES

### Smoking Behaviors of College-Aged African American Women

How old are you? Please respond with your numerical age (e.g., 17)

Please indicate the highest level of education that your mother earned

- Elementary School (1)
- Some High School (2)
- High School Graduate (3)
- Some College (4)
- College Degree (bachelor's) (5)
- Some Graduate School (6)
- Graduate or Professional Degree (master's, doctorate, medical, law) (7)

Please indicate your current student status

- Freshman (1)
- Sophomore (2)
- Junior (3)
- Senior (4)

Please indicate your current relationship status

- Single, never married (1)
- Domestic partnership (2)
- Married (3)
- Widowed (4)
- Divorced (5)
- Separated (6)

The following questions ask you about your smoking behaviors

Which of the following best applies to you?

- Current Smoker (i.e., I've smoked within the last 30 days) (1)
- Former Smoker (i.e., I've smoked before, however, I haven't smoked within the past 30 days). (2)
- Non-Smoker (i.e., never taken a puff of a cigarette/cigar/cigarillo). (3)

How many days did you smoke cigarettes/cigars/cigarillos in the past 30 days? (i.e., indicate 0 to 30 days) \_\_\_\_\_

On average, how many cigarettes/cigars/cigarillos did you smoke in a typical day? \_\_\_\_\_

Have you tried to quit?

- Yes (1)
- No (2)
- Not Applicable (I am a non-smoker) (3)

If you answered yes to the previous question, how many times did/have you tried to quit? If you have not tried to quit, please enter "N/A". \_\_\_\_\_

In the space provided, please enter the brand(s) that you usually smoke.

---

Please complete the following statements

The type(s) of cigarettes/cigars/cigarillos I usually smoke are \_\_\_\_\_ . If you are a former or non-smoker select "N/A"

- Filtered (1)
- Unfiltered (2)
- N/A (3)

The type(s) of cigarettes/cigars/cigarillos I usually smoke are \_\_\_\_\_ . If you are a former, or non-smoker select "N/A"

- Mentholated/Flavored (1)
- Non-Mentholated/Unflavored (2)
- N/A (3)

If you are a current, or former smoker, at what age did you start smoking regularly? Please enter your numerical age (e.g., 18) \_\_\_\_\_

Estimate the total length of time you have smoked cigarettes/cigars/cigarillos (i.e., years and months). \_\_\_\_\_

Have you ever tried to quit, but couldn't?

- Yes (1)
- No (2)

Do you smoke now because it is really hard to quit?

- Yes (1)
- No (2)

Have you ever felt like you were addicted to tobacco?

- Yes (1)
- No (2)

Do you ever have strong cravings to smoke?

- Yes (1)
- No (2)

Have you ever felt like you really needed a cigarette?

- Yes (1)
- No (2)

Is it hard to keep from smoking in places where you are not supposed to? When you haven't used tobacco in a while... OR When you tried to stop smoking?

- Yes (1)
- No (2)

Did you find it hard to concentrate because you couldn't smoke?

- Yes (1)
- No (2)

Did you feel more irritable because you couldn't smoke?

- Yes (1)
- No (2)

I lived on the moon for one year.

- Yes (1)
- No (2)

Did you feel a strong need or urge to smoke?

- Yes (1)
- No (2)



Did you feel nervous, restless or anxious because you couldn't smoke?

- Yes (1)
- No (2)

Please read each statement carefully and provide your honest and true reaction to each statement.

I often think about the fact that I am a woman.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Overall, being a woman has very little to do with how I feel about myself.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

In general, being a woman is an important part of my self-image.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

The fact that I am a woman rarely enters my mind.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

In general, I'm glad to be a woman.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I often regret that I am a woman.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't feel good about being a woman.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Generally, I feel good when I think about myself as a woman.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't feel I fit in with other women.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I feel strong ties to other women.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I find it difficult to form a bond with other women.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't feel a sense of being "connected" with other women.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I feel like I'm just like all the other women.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I have a lot in common with other women.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I think that I am a good example of what it means to be a woman.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I feel that the things I like to do in my spare time are similar to what most women are good at.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I feel that the kinds of things I'm good at are similar to what most women are good at.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't feel that my personality is similar to most women's personalities.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

The women I know would be upset if I wanted to do things men usually do.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I think my parents would be upset if I wanted to learn an activity that men usually do.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't think my parents would be upset if I told them I was interested in things that men usually like.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I get really mad if someone says I'm acting like a man.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't think other women would be upset if I wanted to learn an activity that men usually do.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I think other women would be upset if I told them I was interested in things that men usually like.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't think my parents would mind if I showed interests in hobbies that are mostly for men.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I think the women I know would mind if I showed interests in hobbies that are mostly for men.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Please respond "Neither Agree nor Disagree" to this question

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Please read each statement carefully and provide your honest and true reaction to each statement.

I often think about the fact that I am a member of my ethnic group.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Overall, being a member of my ethnic group has little to do with how I feel about myself.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

In general, being a member of my ethnic group is an important part of my self-image.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

The fact that I am a member of my ethnic group rarely enters my mind.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

In general, I'm glad to be a member of my ethnic group.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I often regret that I am a member of my ethnic group.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't feel good about being a member of my ethnic group.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Generally, I feel good when I think about myself as a member of my ethnic group.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't feel I fit in with other people within my ethnic group.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I feel strong ties to other people within my ethnic group.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I find it difficult to form a bond with other people within my ethnic group.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't feel a sense of being "connected" with other people within my ethnic group.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I feel like I'm just like all other people within my ethnic group.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I have a lot in common with other people within my ethnic group.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I think that I am a good example of what it means to be a member of my ethnic group.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I feel that the things I like to do in my spare time are similar to what most people within my ethnic group are good at.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)



I feel that the kinds of things I'm good at are similar to what most people within my ethnic group are good at.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't feel that my personality is similar to most people within my ethnic groups' personalities.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

The people within my ethnic group I know would be upset if I wanted to do things that people outside my ethnic group usually do.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I think my parents would be upset if I wanted to learn an activity that other ethnicities usually do.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't think my parents would be upset if I told them I was interested in things that other ethnicities usually like.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I get really mad if someone says I'm acting like people outside my ethnic group.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't think other people within my ethnic group would be upset if I wanted to learn an activity that other ethnicities usually do.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I think other people within my ethnic group would be upset if I told them I was interested in things that other ethnicities usually like.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I don't think my parents would mind if I showed interests in hobbies that are mostly for other ethnicities.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

I think the other people within my ethnic group I know would mind if I showed interests in hobbies that are mostly for other ethnicities.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor disagree (3)
- Agree (4)
- Strongly Agree (5)

Please respond " Strongly Agree" to this statement

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Please read each statement and select the option that best fits your reaction to each statement.

Smoking is common among women.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Smoking is normal for women.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

It is normal to see women smoking in social situations.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor disagree (3)
- Agree (4)
- Strongly Agree (5)

Please read each statement and select the option that best fits your reaction to each statement.

Smoking is common among my female friends.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Smoking is normal for my female friends.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

It is normal to see my female friends smoking in social situations.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Please respond " Agree" to this statement.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Please read each statement carefully and select the option that best fits your reaction to each statement.

Smoking is common among African-Americans.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor disagree (3)
- Agree (4)
- Strongly Agree (5)

Smoking is normal for African-Americans.

- Strongly disagree (1)
- Disagree (2)
- Neither Agree nor disagree (3)
- Agree (4)
- Strongly Agree (5)

It is normal to see African-American individuals smoking in social situations.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor disagree (3)
- Agree (4)
- Strongly Agree (5)

Please read each statement carefully and select the option that best fits your reaction to each statement.

Smoking is common among my African-American friends

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Smoking is normal for my African-American friends

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

It is normal to see my African-American friends smoking in social situations

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

At this very moment, I am completing a survey

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

## **APPENDIX D: TABLES & FIGURES**

Table 1

*Demographic Characteristics of Participants (N = 157)*

Variable	<i>n</i>	%
<b>Mothers' Education (SES)</b>		
Elementary School	0	0.00
Some High School	6	3.80
High School Graduate	21	13.4
Some College	64	40.80
Bachelors' Degree	34	21.7
Some Graduate School	4	2.50
Graduate or Professional Degree	28	17.80
<b>Current Student Status</b>		
Freshman	118	75.20
Sophomore	26	16.60
Junior	9	5.70
Senior	4	2.50
<b>Current Relationship Status</b>		
Single, Never Married	153	97.50
Domestic Partnership	3	1.90
Married	1	0.60
<b>Smoking Status</b>		
Current Smoker	13	8.30
Former Smoker	13	8.30
Non-Smoker	131	83.40



Table 2

*Smoking Behavior of Current Smokers*

	<i>M</i>	<i>SD</i>
Smoking Characteristics		
Age of Smoking Onset (n=12)	17.54	1.33
Smoking Duration (in months) (n=13)	15.77	12.26
Nicotine Dependence (n = 12)	1.67	1.61
	<i>n</i>	%
Preferences		
Unfiltered Cigarettes	6	50.00
Mentholated Cigarettes	7	63.64

Table 3

*Internal Consistency Reliability Coefficients for Gender and Racial Identity Dimensions in the Current Sample*

	<u>Gender</u>	<u>Racial</u>
Dimensions	Cronbach's $\alpha$	
Centrality	0.76	0.70
In-Group Affect	0.92	0.80
In-Group Ties	0.87	0.76
Felt-Typicality	0.77	0.73
Felt-Conformity Pressure	0.64	0.55

Table 4

*Key Study Variable Descriptive Statistics*

	<i>M</i>	<i>SD</i>
<b>Gender Identity</b>		
Gender Centrality	3.60	0.73
Gender In-Group Affect	4.32	0.63
Gender In-Group Ties	3.48	0.76
Gender Felt-Typicality	3.20	0.58
<b>Racial Identity</b>		
Racial Centrality	3.96	0.76
Racial In-Group Affect	4.28	0.83
Racial In-Group Ties	3.58	0.88
Racial Felt Typicality	3.23	0.61
<b>Smoking Norms</b>		
Gender Smoking Norms	2.99	0.76
Gender Friend Smoking Norms	2.17	1.06
Racial Smoking Norms	3.37	0.80
Racial Friend Smoking Norms	2.43	1.21
Smoking QF	22.85	28.08

Table 5

*Summary of Multicollinearity Analysis*

Variable	Condition Index	Variance Proportions				
		Constant	Centrality	Affect	In-Group Ties	Felt-Typicality
<b>Gender Identity</b>						
Constant	1.00	0.00	0.00	0.00	0.00	0.00
Gender Centrality	11.06 <sup>a</sup>	0.01	0.50	0.00	0.27	0.06
Gender In-Group Affect	14.91 <sup>a</sup>	0.09	0.43	0.31	0.29	0.00
Gender In-Group Ties	<b>16.86<sup>a</sup></b>	0.01	0.00	0.06	0.44	0.92
Gender Felt-Typicality	<b>22.44</b>	0.89	0.07	0.63	0.00	0.01
<b>Racial Identity</b>						
Constant	1.00	0.00	0.00	0.00	0.00	0.00
Racial Centrality	12.30 <sup>a</sup>	0.04	0.42	0.00	0.30	0.07
Racial In-Group Affect	14.89 <sup>a</sup>	0.16	0.35	0.07	0.41	0.12
Racial In-Group Ties	<b>15.94<sup>a</sup></b>	0.05	0.02	0.87	0.00	0.22
Racial Felt-Typicality	<b>21.54</b>	0.74	0.20	0.06	0.29	0.60

*Note.* Bolded items indicative of problematic collinearity.

<sup>a</sup> Indicates that the variable was entered into the regression model

Table 6

*Correlations Between Age, Gender and Racial Smoking Norms, Nicotine Exposure Risk, and Smoking QF*

	1	2	3	4	5	6
1. Age <sup>a</sup>						
2. Gender Smoking Norm	-.01					
3. Gender Friend Smoking Norm	.22**	.20*				
4. Racial Smoking Norm	.14	.50***	.34***			
5. Racial Friend Smoking Norm	.19*	.21**	.77***	.51**		
6. Smoking QF <sup>a</sup>	-.17	-.26	-.30	.25	.10	
7. Nicotine Exposure Risk <sup>b</sup>	-	-	-	-	-	.05

*Note.* <sup>a</sup> spearman's  $\rho$  was used to examine associations for these variables as they were non-normally distributed

<sup>b</sup> only assessed association with Smoking QF

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . †  $p = > .05-.09$ .

Table 7

*Differences in Age by Smoking Status, Results from Independent Samples t-Test*

	Smoking Status						95% CI for Mean Difference	<i>t</i>	<i>df</i>
	Non-Smoker			Smoker					
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>			
Age	18.54	0.87	144	18.69	0.95	13	-0.35, 0.65	.60	155

*Note:* CI = Confidence Interval

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . †  $p = > .05-.09$ .

Table 8

*Mother's Education Level, Student Status, and Relationship Status by Probability of Smoking**Status (N = 157)*

Variable	<u>Smoking Status</u>			p-value <sup>a</sup>
	Smoker % (n)	Non-Smoker % (n)	Total % (n)	
<b>Mother's Education (SES)</b>				
Some High School	0.00% (0)	4.20% (6)	3.80% (6)	<i>p</i> = .29
High School Graduate	0.00% (0)	14.60% (21)	13.40% (21)	
Some College	69.20% (9)	38.20% (55)	13.40% (64)	
College Degree	7.70% (1)	22.90% (33)	21.70% (34)	
Some Graduate School	0.00% (0)	2.80% (4)	2.50% (4)	
Graduate or Professional Degree	10.70% (3)	89.30% (25)	17.80% (28)	
Total	8.30% (13)	91.7-% (144)	100% (157)	
<b>Student Status</b>				
Freshman	61.50% (8)	76.40% (110)	75.2% (118)	<i>p</i> = .24
Sophomore	23.10% (3)	16.00% (23)	16.60% (26)	
Junior	7.70% (1)	5.60% (8)	5.70% (9)	
Senior	7.70% (1)	2.10% (3)	2.50% (4)	
Total	8.30% (13)	91.7% (144)	100.00% (157)	
<b>Relationship Status</b>				
Single, Never Married	92.30% (12)	89.80% (141)	97.50% (153)	<i>p</i> = .30
Domestic Partnership	7.70% (1)	1.40% (2)	1.90% (3)	
Married	0.00% (0)	0.70% (1)	0.60% (1)	
Total	8.30% (13)	91.70% (144)	100.00% (157)	

*Note.* <sup>a</sup>Fisher's Exact Test\* *p* < .05. \*\* *p* < .01. \*\*\* *p* < .001. † *p* = >.05-.09.

Table 9

*Differences in Gender Smoking Norm and Gender Friend Smoking Norm Means Across Mother's Education Level, Student Status, and Relationship Status*

Variable	<u>GSN</u>					<u>GFSN</u>				
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Mother's Education (SES)										
Between Groups	5	11.35	2.27	4.309	.001*	5	4.70	.94	.84	.52
Within Groups	151	79.53	.53			151	169.00	1.12		
Total	156					156				
Student Status										
Between Groups	3	.48	.16	.27	.85	3	5.61	1.87	1.70	.17
Within Groups	153	90.40	.59			153	168.08	1.10		
Total	156					156				

*Note.* GSN = Gender Smoking Norms, GFSN = Gender Friend Smoking Norms

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . †  $p = >.05-.09$ .

Table 10

*Differences in Racial Smoking Norm and Racial Friend Smoking Norm Means Across Mother's Education Level, Student Status, and Relationship Status*

Variable	<u>RSN</u>					<u>RFSN</u>				
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Mother's Education (SES)										
Between Groups	5	7.31	1.46	2.378	.04*	5	5.30	1.06	.72	.61
Within Groups	151	92.86	.62			148	218.28	1.48		
Total	156					153				
Student Status										
Between Groups	3	4.86	1.62	2.602	.054†	3	7.55	2.52	1.747	.16
Within Groups	153	95.31	.62			150	216.04	1.44		
Total	156					153				

*Note.* RSN = Gender Smoking Norms, RFSN = Racial Friend Smoking Norms

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . †  $p = .05-.09$ .

Table 11

*Intercorrelations Between Gender and Racial Identity Subscales*

	1	2	3	4	5	6	7
1. Gender Centrality							
2. Gender In-Group Affect	.17*						
3. Gender In-Group Ties	.11	.33***					
4. Gender Felt-Typicality	.17*	.29**	.52***				
5. Racial Centrality	.40***	.11	.05	-.04			
6. Racial In-Group Affect	.21***	.48***	.20*	.22**	.35***		
7. Racial In-Group Ties	.24**	.34***	.41***	.22**	.32***	.57***	
8. Racial Felt-Typicality	.05	.28***	.28***	.33***	.16†	.39***	.65***

Note. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ , † $p = .05-.09$ .

Table 12

*Logistic Regression Analysis Predicting Smoking Status from Gender Identity Dimensions*

Variable	B	SE B	Wald $\chi^2$	Exp (B)
Gender Centrality	.26	.42	.38	1.29
Gender In-Group Affect	.85	.49	3.08†	2.35
Gender In-Group Ties	-.69	.46	2.27	.50
Constant	.38	2.31	.26	1.46
$\chi^2$	4.70			
n	156			

Note. Smokers were coded as 0, Non-smokers were coded as 1.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . † $p = .05-.09$ .



Table 13

*Logistic Regression Analysis Predicting Smoking Status from Racial Identity Dimensions*

Variable	<i>B</i>	<i>SE B</i>	<i>Wald <math>\chi^2</math></i>	Exp (B)
Racial Centrality	-.53	.47	1.29	.59
Racial In-Group Affect	.44	.38	1.36	1.54
Racial In-Group Ties	-.21	.41	.26	.81
Racial Felt-Typicality	N/A	N/A	N/A	N/A
Constant	3.56	2.17	2.69	35.06
$\chi^2$	2.63			
<i>N</i>	3			

*Note.* Smokers were coded as 0, Non-smokers were coded as 1.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 14

*Logistic Regression Analyses Predicting Smoking Status from Gender Smoking Norms and Gender Friend Smoking Norms*

Variable	<i>B</i>	<i>SE B</i>	<i>Wald <math>\chi^2</math></i>	Exp (B)	<i>p</i>
Gender Smoking Norms	-.09	.30	.09	.92	.77
Constant	2.41	.29	68.74***	11.11	.00
$\chi^2$	.09				
<i>n</i>	157				
Gender Friend Smoking Norms	-1.65	.41	16.06***	.19	.00
Constant	3.47	.57	25.66***	32.19	.00
$\chi^2$	25.62				
<i>N</i>	157				

*Note.* Smokers were coded as 0, Non-smokers were coded as 1.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 15

*Logistic Regression Analyses Predicting Smoking Status from Racial Smoking Norms and Racial Friend Smoking Norms*

Variable	<i>B</i>	<i>SE B</i>	<i>Wald</i> $\chi^2$	Exp (B)
Racial Smoking Norms	-1.34	.47	8.22**	.26
Constant	2.97	.45	43.75***	19.42
$\chi^2$	11.61			
<i>N</i>	157			
Racial Friend Smoking Norms	-1.43	.40	12.51***	.24
Constant	3.17	.51	39.34***	23.69
$\chi^2$	18.30			
<i>n</i>	154			

*Note.* Smokers coded as 0, Non-smokers coded as 1.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 16

*Hierarchical Regression Analyses for Gender Identity Dimensions Predicting Gender Smoking Norms and Gender Friend Smoking Norms*

Variable	Gender Smoking Norms						Gender Friend Smoking Norms					
	Step 1			Step 2			Step 1			Step 2		
	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE(B)</i>	$\beta$
Control <sup>a</sup>	-.16	.04	-.28***	-.16	.04	-.28***	.22	.09	-.19*	.23	.09	.20*
Centrality				.13	.08	.12				.01	.08	.01
In-Group Affect				.02	.10	.01				-.03	.09	-.03
In-Group Ties				-.09	.08	-.08				.10	.08	.01
<i>R</i> <sup>2</sup>		.08			.10			.04			.04	
<i>F</i> for change in <i>R</i> <sup>2</sup>		13.42***			1.12			5.67*			.44	
<i>n</i>		156									156	

*Note.* <sup>a</sup>Control variable for Gender Smoking Norms was Mother's Education (SES), and control variable for Gender Friend Smoking Norms was age.

\* $p < .05$ . \*\* $p < .01$ . \*\*\*  $p < .001$

Table 17

*Hierarchical Regression Analyses for Racial Identity Dimensions Predicting Racial Smoking Norms and Racial Friend Smoking Norms*

Variable	Racial Smoking Norms						Racial Friend Smoking Norms					
	Step 1			Step 2			Step 1			Step 2		
	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE B</i>	$\beta$	<i>B</i>	<i>SE(B)</i>	$\beta$
Control <sup>a</sup>	-.07	.06	-.10	-.07	.06	-.10	.22	.11	-.16*	.22	.12	.16†
Centrality				.08	.09	.08				.11	.14	.07
In-Group Affect				.07	.10	.07				.00	.14	-.00
In-Group Ties				-.07	.10	-.07				.10	.08	.01
<i>R</i> <sup>2</sup>		.01			.02			.03			.04	
<i>F</i> for change in <i>R</i> <sup>2</sup>		1.59			.55			4.13*			.45	
<i>N</i>		157									153	

*Note.* <sup>a</sup> Control variable for Racial Smoking Norms was Mother's Education (SES), and control variable for Racial Friend Smoking Norms was age.

\* $p < .05$ . \*\* $p < .01$ . \*\*\*  $p < .001$ . †  $p = >.05-.09$ .

Figure 2: Gender and Racial Identification

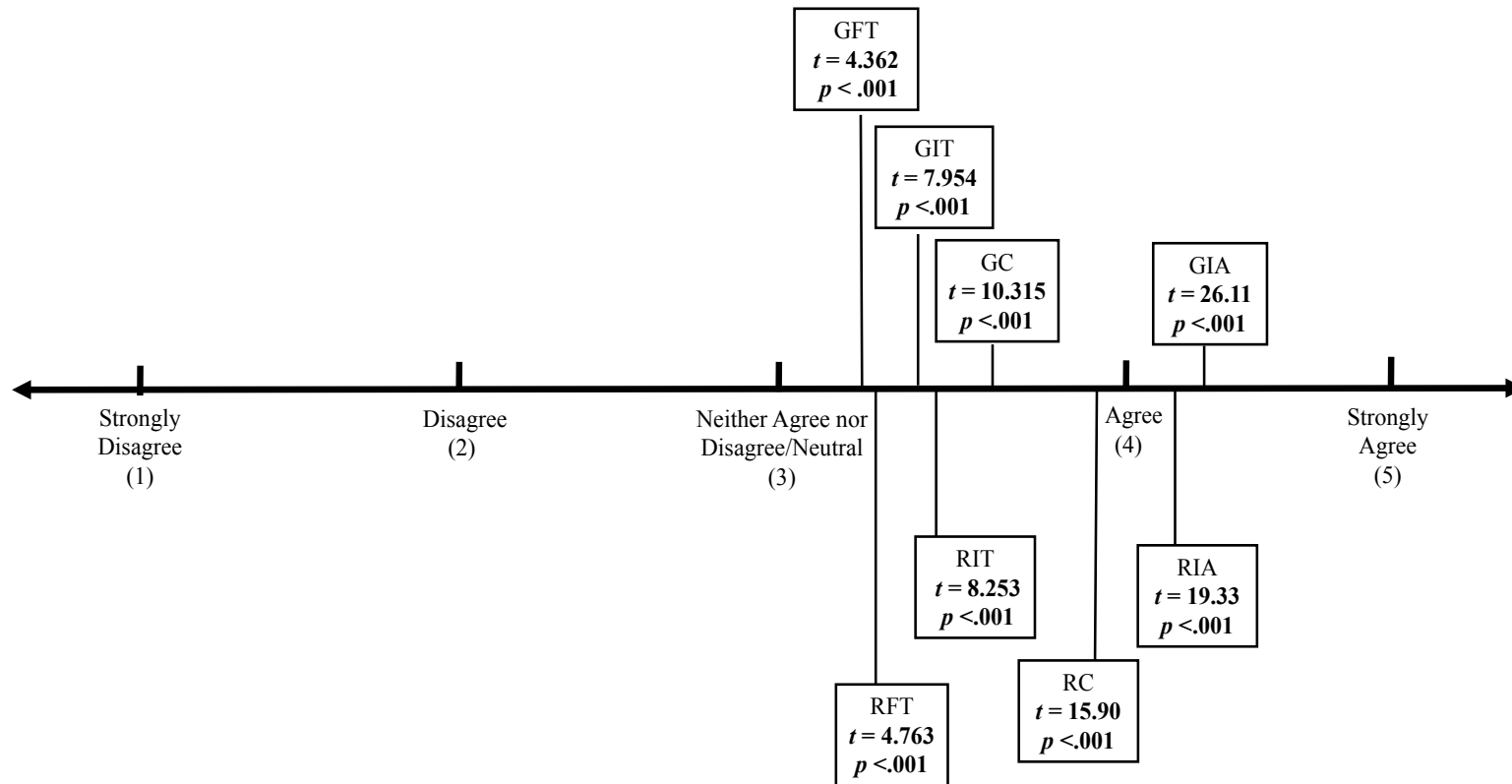


Figure 2. GC = Gender Centrality, GIA = Gender In-Group Affect, GIT = Gender In-Group Ties, GFT = Gender Felt Typicality; RC = Racial Centrality, RIA = Racial In-Group Affect, RIT = Racial In-Group Ties, RFT = Racial Felt-Typicality

Figure 3: Percieved Smoking Norms by Gender and Race

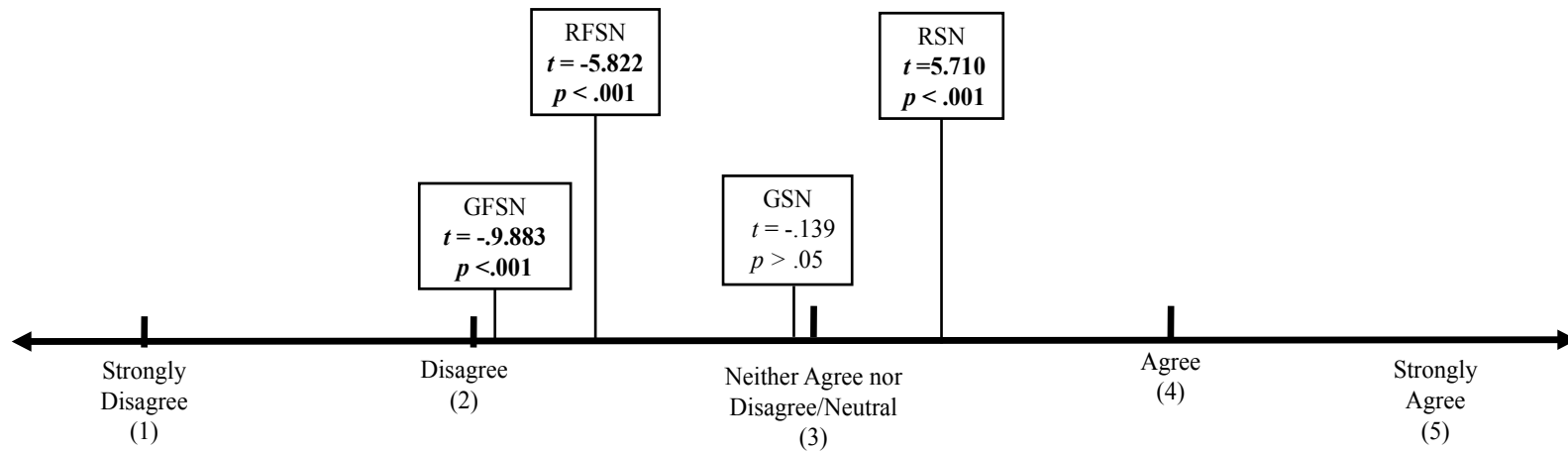


Figure 2. GSN = Gender Smoking Norms; GFSN = Gender Friend Smoking Norms; RSN = Racial Smoking Norms; RFSN = Racial Friend Smoking Norms

Figure 4: Smoking in the Context of Social Identity Theory-Gender Identity

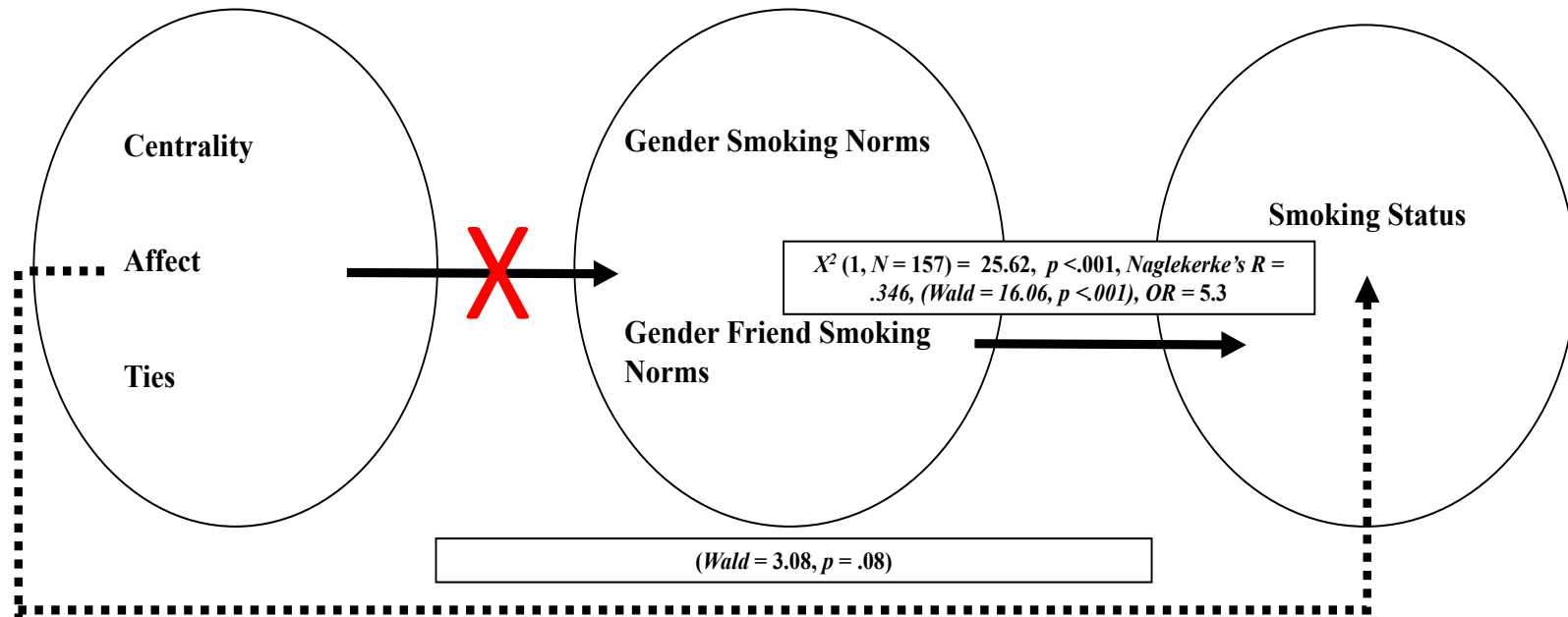


Figure 4. This image is a visual representation of SIT for gender identity. The full SIT model was not supported as gender identity did not predict normative perceptions of smoking for gender, and a marginal relationship was found between gender in-group affect and smoking status. Only normative perceptions of smoking for female friends predicted smoking status within the sample.

Figure 5: Smoking Behavior in the Context of Social Identity Theory: Racial Identity

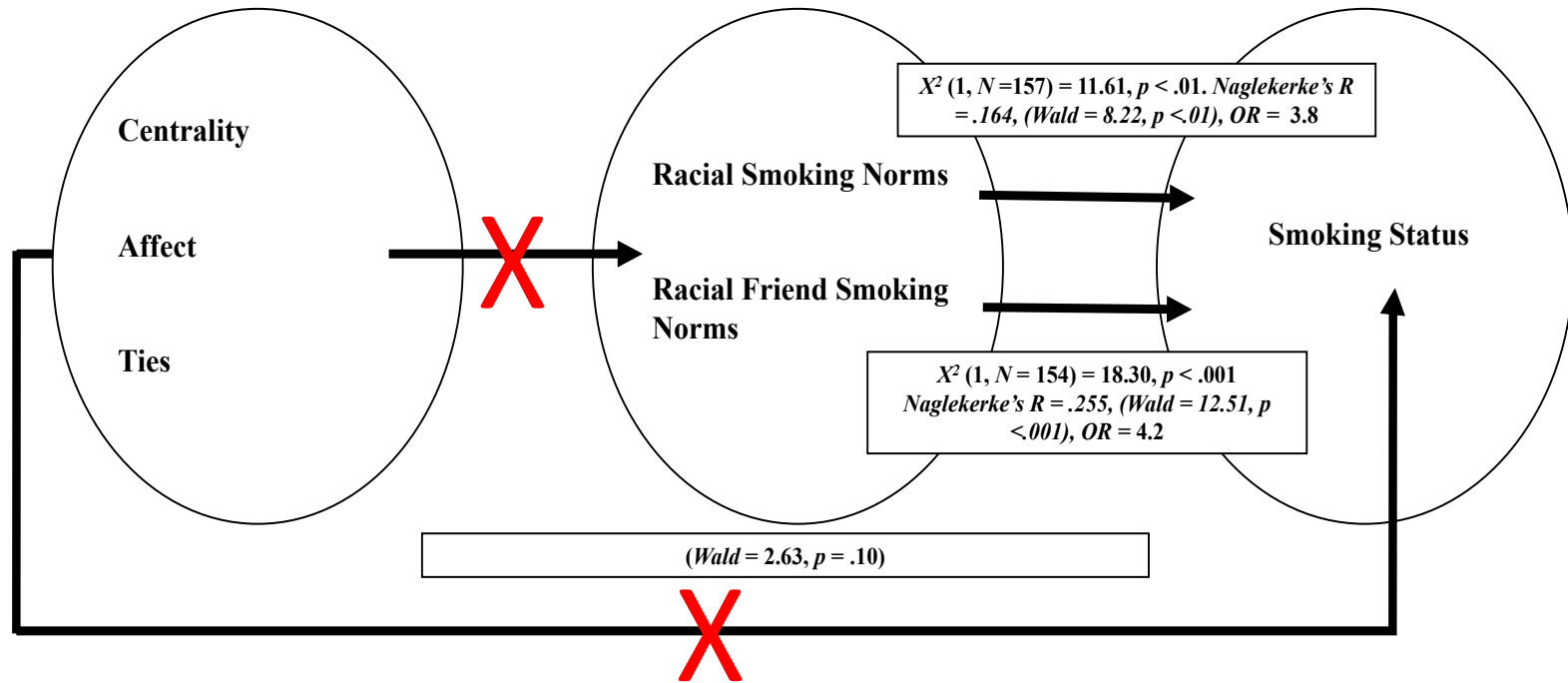


Figure 4. This image is a visual representation of SIT for race identity. The full SIT model was not supported as racial identity did not predict normative perceptions of smoking for gender, nor did racial identity predict smoking status. Only normative perceptions of smoking for African American friends, and African Americans in a broader reference group predicted smoking status.



