2015

Let's Talk Tobacco: African American Parent-Adolescent Communication About Tobacco Use Within the Context of Parental Smoking

Michell Pope
Virginia Commonwealth University

Follow this and additional works at: https://scholarscompass.vcu.edu/etd

© The Author

Downloaded from
https://scholarscompass.vcu.edu/etd/3783

This Dissertation is brought to you for free and open access by the Graduate School at VCU Scholars Compass. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of VCU Scholars Compass. For more information, please contact libcompass@vcu.edu.
LET’S TALK TOBACCO: AFRICAN AMERICAN PARENT-ADOLESCENT COMMUNICATION ABOUT TOBACCO USE WITHIN THE CONTEXT OF PARENTAL SMOKING

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

By: MICHELL A. POPE
B.S., Virginia Commonwealth University, 2009
M.S., Virginia Commonwealth University, 2012

Director: Rosalie Corona, Ph.D.
Associate Professor of Psychology
Department of Psychology

Virginia Commonwealth University
Richmond, Virginia
May, 2015
Acknowledgments

First and foremost, I would like to thank my dissertation chair and advisor, Dr. Rosalie Corona for her guidance and encouragement during the preparation of this dissertation and throughout my graduate career. Her patience and unwavering support over the past several years has been instrumental to my success in the program. I will be forever grateful to Dr. Corona and I look forward to continuing our work together in the years to come. My deepest gratitude also goes out to my committee member and mentor, Dr. Faye Z. Belgrave for all of her advice and her dedication. I would also like to thank my dissertation committee members, Drs. Robin Everhart, Dr. Aashir Nasim and Dr. Joann Richardson for providing their expertise, their feedback and guidance throughout this process. To my wonderful and loving husband, Alvin, my kids Ashley and Chris, as well as all of my extended family members for their unconditional love, support and understanding. I absolutely could not have done this without all of you. I would also like to recognize the Virginia Foundation for Healthy Youth for supporting my dissertation work. As a result of receiving this award, I was fortunate enough to meet and work with experts in the field of tobacco use and contribute to adolescent smoking prevention efforts. Finally, I would like to thank all of the families that participated in this study, graduate students, research assistants, and agencies/organizations who have offered their services and assistance over the last several years. I will be forever grateful!
# Table of Contents

Acknowledgements ........................................................................................................... ii

List of Tables ....................................................................................................................... v

List of Figures ....................................................................................................................... vii

Abstract ............................................................................................................................... viii

Introduction ........................................................................................................................... 1
  Parental Smoking and Adolescent Outcomes ................................................................. 3
  Models Used to Explain and Predict Adolescent Attitudes and Behaviors ............... 7
  Pathways Through Which Parental Smoking Affects Adolescent Outcomes .......... 9
  Literature Review ......................................................................................................... 20
  Theoretical Frameworks Explaining Adolescent Tobacco Use ................................... 35
  Adolescent Tobacco Use and Subsequent Health Effects ............................................ 39
  African Americans and Tobacco Use ........................................................................... 42
  Parent-Adolescent Tobacco-Related Communication .................................................. 54
  Conclusion ....................................................................................................................... 85
  Present Study Aims ....................................................................................................... 86

Method ............................................................................................................................... 88
  Research Design ........................................................................................................... 88
  Participants ..................................................................................................................... 88
  Measures ....................................................................................................................... 94
  Data Analysis Plan ....................................................................................................... 100

Results ............................................................................................................................... 104
  Descriptive Statistics ................................................................................................. 104
  Statistical Analyses ...................................................................................................... 112

Discussion .......................................................................................................................... 127
  The Association Between Caregiver Prompting and Adolescent Tobacco Outcomes ......................................................................................................................... 128
  The Association Between Caregiver Antismoking Communication and Adolescent Tobacco Outcomes ........................................................................................................ 131
  The Association Between Caregiver Variables and Adolescent Tobacco Outcomes. ................................................................................................................................. 132
  Caregiver Antismoking Messages as a Moderator of Adolescents’ Tobacco Related Attitudes and Intentions/Use ......................................................................................... 133
Study Limitations .............................................................................................................. 135
Study Strengths and Contributions .................................................................................. 137
Implications and Future Directions ............................................................................... 138
Conclusion ..................................................................................................................... 148

List of References ............................................................................................................ 150

Appendices ..................................................................................................................... 172

A  Study Consent Form .................................................................................................. 172
B  Study Flyer ................................................................................................................ 177

Vita ...................................................................................................................................... 178
List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Adolescent Characteristics</td>
<td>89</td>
</tr>
<tr>
<td>Table 2</td>
<td>Caregiver Characteristics</td>
<td>90</td>
</tr>
<tr>
<td>Table 3</td>
<td>Parent and Adolescent Tobacco Use</td>
<td>105</td>
</tr>
<tr>
<td>Table 4</td>
<td>Adolescents Intentions to Use Tobacco</td>
<td>106</td>
</tr>
<tr>
<td>Table 5</td>
<td>Descriptive Statistics for Independent and Dependent Variables</td>
<td>107</td>
</tr>
<tr>
<td>Table 6</td>
<td>Correlations Between Dependent Variables</td>
<td>108</td>
</tr>
<tr>
<td>Table 7</td>
<td>Correlations Among Moderator and Demographic Variables</td>
<td>109</td>
</tr>
<tr>
<td>Table 8</td>
<td>Correlations Between Independent and Moderator Variables</td>
<td>111</td>
</tr>
<tr>
<td>Table 9</td>
<td>Bivariate Correlations</td>
<td>111</td>
</tr>
<tr>
<td>Table 10</td>
<td>Hierarchical Regression Analyses: Caregiver Prompting Predicting Adolescents’ Attitudes Toward Tobacco</td>
<td>113</td>
</tr>
<tr>
<td>Table 11</td>
<td>Hierarchical Regression Analyses: Caregiver Prompting Predicting Adolescents’ Refusal Efficacy</td>
<td>114</td>
</tr>
<tr>
<td>Table 12</td>
<td>Hierarchical Regression Analyses: Caregiver Prompting Predicting Adolescents’ Intentions to Use at Six Months</td>
<td>114</td>
</tr>
<tr>
<td>Table 13</td>
<td>Hierarchical Regression Analyses: Caregiver Prompting Predicting Adolescents’ Intentions to Use as an Adult</td>
<td>115</td>
</tr>
<tr>
<td>Table 14</td>
<td>Hierarchical Regression Analyses: Caregiver Prompting Predicting Adolescents’ Tobacco Use</td>
<td>115</td>
</tr>
<tr>
<td>Table 15</td>
<td>Comparison of Parent and Adolescent Reports of Parental Prompting Behaviors</td>
<td>116</td>
</tr>
<tr>
<td>Table 16</td>
<td>Hierarchical Regression Analyses: Caregiver Antismoking Communication Predicting Adolescents’ Tobacco Attitudes</td>
<td>118</td>
</tr>
</tbody>
</table>
Table 17. Hierarchical Regression Analyses: Caregiver Antismoking Communication Predicting Adolescents’ Refusal Efficacy .................................................................119

Table 18. Hierarchical Regression Analyses: Caregiver Antismoking Communication Predicting Adolescents’ Intentions to Use Tobacco in the Next Six Months......119

Table 19. Hierarchical Regression Analyses: Caregiver Antismoking Communication Predicting Adolescents’ Intentions to Use as an Adult........................................120

Table 20. Hierarchical Regression Analyses: Caregiver Antismoking Communication Predicting Adolescents’ Tobacco Use .................................................................120

Table 21. Hierarchical Regression Analyses: Caregiver Variables Predicting Adolescents’ Intentions to Use Tobacco in the Next Six Months ........................................122

Table 22. Hierarchical Regression Analyses: Caregiver Variables Predicting Adolescents’ Intentions to Use Tobacco as an Adult .................................................................123

Table 23. Hierarchical Regression Analyses: Caregiver Variables Predicting Adolescents’ Tobacco Use .................................................................................................123

Table 24. Hierarchical Regression Analyses: Caregiver Variables Predicting Adolescents’ Tobacco Use .................................................................................................124
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.</td>
<td>Social Learning Theory</td>
<td>8</td>
</tr>
<tr>
<td>Figure 2.</td>
<td>Theory of Planned Behavior</td>
<td>9</td>
</tr>
<tr>
<td>Figure 3.</td>
<td>Caregiver Antismoking Communication as a Moderator</td>
<td>126</td>
</tr>
</tbody>
</table>
Abstract

LET’S TALK TOBACCO: AFRICAN AMERICAN PARENT-ADOLESCENT COMMUNICATION ABOUT TOBACCO USE WITHIN THE CONTEXT OF PARENTAL SMOKING

By: Michell A. Pope

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

Virginia Commonwealth University, 2015

Major Director: Rosalie Corona, Ph.D.
Associate Professor of Psychology
Department of Psychology

Tobacco use and the associated health risks are a major public health concern. Research suggests that parents’ own tobacco use, caregiver-adolescent antismoking communication, and parenting practices (e.g., prompting, parental monitoring) may work to influence adolescents’ tobacco-related attitudes and behavioral outcomes (e.g., refusal efficacy, intentions to use and actual use). Although historically African American adolescents have exhibited lower rates of tobacco use than their racial/ethnic counterparts, there is growing evidence to suggest that this may be changing because of increased use of tobacco products and/or underreporting of the use of alternative tobacco products or ATPs (e.g., cigars, cigarillos), among this population. The present study recruited a community-based sample of 101 urban African American caregivers that smoke ($M = 41.1/SD = 9.9$), and their adolescents between the ages of 12-17 ($M = 14.4/SD = 1.9$) to examine how
caregiver tobacco-related messages (both verbal and non-verbal) shape adolescents’ tobacco attitudes, and behaviors. Dyads completed paper-pencil surveys separately and were compensated for their time and effort. A majority of the caregivers were single and living in low-income and public housing communities. Results from the analyses revealed high rates of adolescent tobacco use (lifetime) of both cigarettes and alternative tobacco products, and prompting (e.g., caregivers’ request that adolescents retrieve, buy, or smoke tobacco products with them). The findings also showed that all of the caregiver variables including: prompting, monitoring, as well as caregiver antismoking messages together impacted adolescents’ tobacco-related outcomes including their attitudes about tobacco, refusal efficacy and their intentions to use (at six months and adulthood), and their actual use.

The findings underscore the need for more tobacco education that includes not only adolescents, but also parents, and other important caregivers (e.g., extended kin/family members) that helps increases knowledge surrounding the dangers of parental prompting, the importance of parental monitoring of youths whereabouts and peers, as well as parent-adolescent antismoking communication in reducing the prevalence of adolescent smoking/tobacco use (including the use of ATPs). This study also highlights the need for tobacco control and policies that limit adolescents’ exposure and access to tobacco products particularly among African Americans living in disadvantaged neighborhoods.
African American Parent-Adolescent Communication About Tobacco Use Within the Context of Parental Smoking

Tobacco use and the associated health risks continue to be a major public health concern. As in years past, the use of tobacco remains the leading cause of preventable disease, disability, and death in the United States (Centers for Disease Control [CDC], 2010; 2011). It is estimated that smoking is responsible for approximately 443,000 premature deaths, or 1 out of 5 deaths annually (CDC, 2009). In fact, more deaths in the U.S. are attributed to, or caused by tobacco use each year than by murders, suicides, motor vehicle accidents, human immunodeficiency virus (HIV), and alcohol and illegal drug use combined (CDC, 2008; Mokdad, Marks, Stroup, & Gerberding, 2004). The use of tobacco has also been linked to a number of negative health outcomes. For example, smoking has been known to have adverse effects on vital organs that can lead to chronic illness and disease (e.g., stroke, heart disease, asthma); cancer (e.g. oral, lung, breast); and reproductive complications (e.g., infertility, preterm delivery and low birth weight; American Cancer Society [ACS], 2010; Baker et al., 2000; CDC, 2004; 2009; Dietz et al., 2010; Dollar, Mix, & Kozlowski, 2008; Jha et al., 2013; United States Department of Health and Human Services [USDHS], 2006; 2012).

Despite these health risks, many adults, even those that are parents, continue to smoke. In fact, nearly 44 million Americans (19 percent of the U.S. adult population) have ever smoked 100 cigarettes in their lifetime (CDC, 2012). Many of these tobacco users are parents (between 17% and 30%) who report smoking either every day, or some days (Child
Trends, 2013; Wilkinson, Shete, & Prokhorov, 2008). One report found that about one fifth (21%) of all parents with adolescents ages 12 to 17 currently smoke (Child Trends, 2004). Similarly, approximately one in every five adolescents between the ages of 12-19 (18%) report living in a household with at least one parent that is a tobacco user (Campaign for Tobacco Free Kids [CTFK], 2011; CDC, 2010).

A number of factors are related to, and increase the prevalence rates of parental smoking including parents’ age, gender, marital status, race/ethnicity, socioeconomic status (e.g., parental income, parental education), families’ geographic location (e.g., urban, suburban or rural), as well psychosocial stressors (e.g., family or financial stress, community violence, neighborhood cohesion, and perceived racial inequality; Abbey, Jacques, Hayman, & Sobeck, 2006; CDC, 2011; Child Trends, 2013; Hiscock, Bauld, Amos, Fidler, & Munafo, 2012; King, Dube, & Tynan, 2012; Nebbitt, Lombe, Yu, Vaughn, & Stokes, 2012; Tjora, Hetland, Aaro, & Overland, 2011; Slopen et al., 2012; Sterntahl, Slopen, & Williams, 2011). For example, single parents have 1.75 times higher odds of smoking than two parent households, and single mothers are twice as likely as mothers in two-parent households to be current smokers (30% and 15%, respectively; Child Trends, 2013).

With respect to socioeconomic status (often measured by parental income, parental wealth, poverty level thresholds, and/or parental education), research has found that smoking is more common among parents living at or below poverty, and/or receiving government assistance, than those living at or above the poverty level (ACS, 2011; Child Trends, 2013; Dube, Asman, & Malarcher et al., 2009). Moreover, according to the CDC (2006) smoking
is considerably higher among individuals having obtained a General Education Development (GED) diploma (43.2%) than those having earned an undergraduate or graduate college degree (10.7% and 7.1%, respectively; CDC, 2006).

Still other research has linked community/environmental factors such as lowered neighborhood resources, lack of social capital (e.g., community cohesion, community relationships), neighborhood disorganization, violence/crime, increased tobacco marketing efforts, and reduced access to smoking intervention/prevention programs, as well as psychosocial factors (e.g., family or work stress or conflict, financial stress, perceived inequality) with elevated tobacco use (Evans & Kuchter, 2011; Lambert, Brown, Phillips, & Ialongo, 2004). For instance, Slopen et al (2012) found that a variety of stressors including living in unsafe, high crime neighborhoods, financial hardship, family or relationship conflict, work-related stress, and perceived inequality were strongly related to higher rates of current cigarette smoking among low-income urban African American adults (N = 592; income < $40,000). In this study 86% of those who currently smoke cigarettes (N = 163) and 91% of those who had ever smoked cigarettes regularly (not current smokers; N = 164) were parents with at least one child. Given that many adult smokers are also parents, and that parental smoking influences not only the parents’ health, but also the health of his/her children in this study, I explored the pathways through which parental smoking may affect adolescent tobacco outcomes in a sample of urban African American families.

**Parental Smoking and Adolescent Outcomes**

Parents who smoke can affect the health of their adolescents through exposure to
Second-hand smoke. Second-hand smoke, also referred to as environmental tobacco smoke (ETS), is defined as the combination of smoke from a burning tobacco product and exhaled smoke, has been deemed harmful and a contributing factor to a number of adverse health outcomes (Matt et al., 2011; USDHS, 2006). Even very brief encounters with second-hand smoke can be harmful for adolescents. This has implications for adolescent health given that an estimated that 88 million Americans (of which 39.6% are adolescents between the ages of 4-17) are exposed to ETS each year and about 8.6 million suffer annually from a smoking-related illness or disease (Campaign for Tobacco Free Kids, 2013; ChildStats, 2013). This is concerning given that parents are responsible for 90% of adolescents’ exposure to ETS (Environmental Protection Agency [EPA], 2004).

In addition to second-hand smoke, more recent studies have begun to look at the effects of parental/household smoking on adolescents’ exposure to third-hand smoke. Exposure to third-hand smoke is said to occur when nicotine that has settled and coated surfaces within a home (e.g., walls, furnishings), automobile (e.g., dashboard, seating), or other enclosed space becomes airborne and mixes with nitrous acid that is present in the air. This mixture is said to then emit toxins and/or carcinogens that can be harmful to adolescents (Sleiman et al., 2010).

Children are especially susceptible to third-hand smoke exposure because they breathe, touch, and play in and around contaminated surfaces. While the health consequences associated with third-hand smoke are not well known, by smoking in the presence of their adolescent (in the home or car), parents can unknowingly expose them to
harmful toxins that mimic some of the same health consequences as actual smoking/tobacco (e.g., increased risk of stroke, lung cancer, cardiovascular disease) (USDHS, 2010). In fact, chronic illnesses such as respiratory/lung infections, asthma, pneumonia, influenza, and ear infections are more common in adolescents who are exposed to smoking than those who are not (ChildStats, 2013; Gilmour, Jaakkola, London, Nel, & Rogers, 2006; USDHHS, 2006; Wilson, Pier, Wesgate, Cohen, & Blumkin, 2013).

Besides negatively affecting health, living with a parent who smokes may also affect adolescents’ tobacco-related outcomes (e.g., attitudes toward tobacco, intentions to use and tobacco refusal-efficacy). A number of cross-sectional and longitudinal studies have found a strong association between parental smoking and adolescent smoking onset. Adolescents living with a current, or even former smoker, have a two- to three-fold increased likelihood of smoking than adolescents living with non-smoking parents (Kodl & Mermelstein, 2004; Leonardi-Bee, Jere & Britton; 2011; Otten, Engels, van de Ven, & Bricker, 2007; Newman & Ward, 1998; Nolte, Smith, & O’Rourke; 1983; Vuolo & Staff, 2013).

These findings were recently confirmed in a longitudinal multi-generational study (over a period of 23 years, from 1988 to 2011) examining the relationship between parent and adolescent cigarette smoking. Results showed that parents’ long-term smoking trajectories were significantly associated with adolescents’ increased likelihood of smoking even when controlling for other factors (e.g., parental education, sibling smoking). Parents who smoked, regardless of their smoking classification (i.e., early/late onset, light smokers, former smokers, persistent smokers, and persistent heavy smokers), had adolescent with
significantly higher odds of smoking (23-29%) than adolescents living with stable non-smoking parents (8%; Vuolo & Staff, 2013).

Given these rates of parental smoking and the link between parent-adolescent smoking it is not surprising that approximately 4,000 adolescents try cigarettes for the first time each day, and an estimated 3.6 million adolescents currently smoke (3 million high school students and 600,000 middle school students) (Campaign for Tobacco-free Kids, 2011; USDHS, 2012). Tobacco use among adolescents is concerning, since it is during these years that lifetime smoking attitudes and habits are established and maintained well into adulthood (SAMSHA, 2001; USDHHS, 2012). In addition, smoking during the adolescent years can reduce adolescents’ lung function, stunt lung growth, increase respiratory problems, and aggravate symptoms related to asthma and bronchitis. This in turn can hinder adolescents’ ability to participate in physical activity/sports and can contribute to obesity and weight-related illnesses/diseases (e.g. hypertension, diabetes) (Baker et al. 2000; Chassin, Presson, Rose et al., 1996; Everett, Warren, Sharp, Kann, Husten, & Crossett, 1999; USDHS, 2012).

Adolescents who start smoking early have a two-fold increase in risk of developing lung cancer, and other smoking-related diseases/illness (e.g., kidney, bladder cancer, coronary heart disease compared to those who began smoking later in life (i.e., after the age of 20) (Baker et al., 2000; CDC, 2009; 1998). Even worse, about one-third of adolescents who continue smoking into adulthood will die prematurely from a tobacco related illness/disease. Finally, adolescent tobacco use has been linked to a number of risky
behaviors that could lead to poor health outcomes including increased sexual risk-taking behaviors; co-use and/or increased use of alcohol consumption, marijuana or other illegal substance use; and lowered mental health and well-being (e.g., depression, low self-esteem and aggression) (Gil & Tubman, 2004; Harrison, Desai, & McKee, 2008; Leatherdale, Hammond & Ahmed, 2008; Schuster, Hertel, & Mermelstein, 2013; USDHS, 2012; Vuolo & Staff, 2013). These negative health outcomes highlight the need for researchers to better understand the processes through which parental smoking and smoking related-behaviors affect adolescent outcomes.

**Models Used to Explain and Predict Adolescent Attitudes and Behaviors**

This study integrates two prominent research theories, Social Learning Theory and the Theory of Planned Behavior, as a framework to help explain how parents’ smoking attitudes and behaviors may affect adolescent tobacco outcomes. First, Social Learning Theory (Bandura, 1977; 1986) was used to guide our understanding of parents’ influence on adolescent behaviors (See Figure 1). This theory posits that parents serve as role models for adolescents transmitting their values, attitudes, and behaviors by modeling their own behaviors. Thus, adolescents are likely to adopt certain behaviors such as smoking, if they believe that the behavior is normative or accepted by important others, and the behavior has some value, or benefit (e.g., smoking is enjoyable or relieves stress).

Adolescents’ self-efficacy is also central to the initiation of smoking behaviors. Self-efficacy refers to an individual's belief in their ability to successfully or unsuccessfully regulate his/her behavior. In terms of tobacco use, self-efficacy is associated with
adolescents’ beliefs that they have choices (e.g., to smoke or refuse to smoke) and the ability to exercise these behavioral choices.

Figure 1. Social Learning Theory

Additionally, the Theory of Planned Behavior has been used in prior research to help explain and predict a variety of behaviors including condom use, substance use, eating/dieting, exercise and other health related behaviors (Albarracin, Johnson, Fishbein, & Muellerleile, 2001; Hagger, Chatzisarantis, & Biddle, 2002) (See Figure 2). This theory posits that an individual’s intentions to perform a behavior (e.g., smoking) are the strongest predictor of that behavior. Behavioral intentions are driven by the individual’s attitudes toward the behavior and subjective norms (e.g., beliefs, expectations, and values of significant others). Additionally, attitudes toward performing a behavior are a function of the individuals’ beliefs and evaluation of consequences associated with performing the behavior. For instance, an adolescents’ intentions to smoke, is influenced by their attitudes toward smoking (positive or negative) and whether or not significant others, specifically parents,
hold favorable attitudes toward smoking.

Figure 2. Theory of Planned Behavior

In this study, the Theory of Planned Behavior served as model to help gain a better understanding of how adolescents’ pro-smoking attitudes, expectations of smoking benefits, pro-smoking norms, and self-efficacy to smoke/use tobacco coupled with having parents who (a) smoke; (b) fail to communicate antismoking messages and/or; (c) engage in prompting behaviors can often times predict adolescent tobacco use/smoking.

Pathways Through Which Parental Smoking Affect Adolescent Outcomes

Parental attitudes about smoking. First, parental smoking can influence adolescent smoking uptake via parental smoking-related attitudes and beliefs. As a primary source of information on health and health-related behaviors, research has repeatedly shown that parents’ own tobacco-related attitudes and beliefs greatly impact their adolescents’ tobacco
outcomes (Bandura, 1977; 1986; Newman & Ward, 1998; Otten, Harakeh, Vermulst, Van den Eijnden, & Engels, 2007; Nolte, Smith & O’Rourke; 1983; Otten, Engels, & Prinstein, 2009; Porcellato, Dugdill, Springett, & Sanderson, 1999). That is, when adolescents perceive that parents hold positive attitudes toward smoking, and that there are few risks associated with tobacco use, this can in turn promote adolescents’ pro-smoking cognitions, intentions to use, and their decisions to start and/or continue smoking (Chassin et al., 2005; Henriksen and Jackson, 1998). For instance, in a longitudinal study, Bush et al. (2005) assessed the smoking-attitudes in a sample of 418 adolescents (age 10 to 12) whose parents currently smoke. The results revealed that almost 10% of adolescents perceived that there are benefits to smoking. Moreover, parental smoking significantly predicted adolescents’ favorable smoking-related attitudes.

Thus by smoking, parents can convey the message to young people that smoking is a normative and/or acceptable behavior and foster the belief that there are benefits to smoking (e.g., stress relief, weight maintenance, and/or social enhancement). Adolescents’ perceptions of the potential pros (i.e., benefits) associated with smoking may be particularly salient for adolescents who have not observed any negative consequences as a result of their parent’s smoking (Morrell, Song, & Halpern-Felsher, 2010). Thus, more research that sheds light on adolescents’ assessment of short- (e.g., bad breath, yellow teeth) and long-term (e.g., increased cancer/disease) risks, as well as positive (e.g., social acceptance, popularity) and negative (e.g., health consequences, getting caught or in trouble for using) perceptions of tobacco use is warranted. African American adolescent girls’ smoking rates tend to increase
with age throughout adulthood (USDHHS, 1998; CDC, 1998), and African American women have higher prevalence rates of smoking and lower rates of quitting than their European American counterparts (Ahijevych, Gillespie, Demirci, & Jagadeesh, 1996). Thus, obtaining the perceptions of adolescent African American females (as well as racial/ethnic minorities) may be needed to help better target prevention efforts and tailor programs to address these females’ tobacco perceptions (Abbey, Jacques, Hayman, & Sobeck, 2006).

**Parental modeling and prompting behaviors.** Secondly, parental smoking provides a direct behavioral model that instructs adolescents on “how to” smoke, that adolescents can then use to emulate these same behaviors. Prior studies have consistently confirmed that adolescents are more likely to smoke, when a parent smokes and exhibits pro-smoking attitudes/norms (e.g., permissive smoking norms and hold more positive or passive attitudes toward adolescent smoking) (Bandura, 1977; 1986; Newman & Ward, 1998; Otten, Harakeh, Vermulst, Van den Eijnden, & Engels, 2007; McCool, Cameron, & Robinson, 2011; Nolte, Smith, & O’Rourke; 1983; Otten, Engels, & Prinstein, 2009; Porcellato, et al., 1999). Thus, not only does parental smoking affect adolescents’ health directly it can also create an environment where they are more likely to initiate smoking, which may then further exacerbate their risk of poor health.

Other times, parents can unintentionally contribute to undesired tobacco/smoking outcomes in adolescence via parenting practices. For example, research shows that the risk of tobacco use among adolescents increases when parents engage in unhealthy pro-tobacco prompting behaviors such as asking their adolescent to buy or bring them their cigarettes,
light a cigarette, or clean out an ashtray (Jackson & Henrikson, 1997; Laniado-Laborin, Woodbruff, Candelaria, & Sallis, 2002; Moreno et al., 1994). While it may seem obvious that most parents would not want to deliberately involve their children in their own smoking-related habits, or contribute to adolescent smoking uptake, studies have revealed that parents’ can and do serve as inadvertent smoking role models for adolescents (Laniado-Laborin, Woodbruff, Candelaria, & Sallis, 2002; Moreno et al., 1994; Rainio & Rimpelä, 2009). For example, one study found that as many as 60 percent of adolescents (middle and high school students) have reported receiving at least one parental prompt (Laniado-Laborin, et al., 2002).

Likewise, in a study with early- to late- adolescents (ages 13-19), reported that parents played a significant role (as either initiator, accomplice, and/or inadvertent source of tobacco products) in their use of tobacco products (Rainio & Rimpelä, 2009). Remarkably, adolescents in the latter study provided compelling reasons for their parent’s behaviors. Adolescents believed that parents encouraged experimentation as a means of (a) deterring them from smoking (belief that early or one time exposure may prevent adolescents from smoking onset or using in the future); (b) preventing illegal substance use (parental belief that cigarette smoking is better than using illegal substances); and (c) and as a means of accepting the inevitable (parental beliefs that adolescent smoking was beyond the their control, or an inevitable behavior). Other adolescents in this study reported receiving less direct parental prompts, such as requests to empty an ashtray or light a parent’s cigarette.

Prior studies examining parental prompting have relied on either adolescent reports,
adult retrospective reports, and/or focused exclusively on cigarette use and have not considered the use of other tobacco products. It is plausible that adolescents/parents may have very different perceptions of prompting behaviors, retrospective reports may be affected by recall bias, and parents may use tobacco products other than just cigarettes (or ATPs). This study helps fill these gaps by obtaining both adolescent and parent reports of parental prompting behaviors and use of alternative tobacco products.

**General parenting practices.** Parents can also shape adolescents’ tobacco use, attitudes, and intentions via their parenting practices (e.g., monitoring, avoidance of parental prompting), their relationships with their adolescents (e.g., establishing warm, close relationships), and their communication with adolescents about tobacco use (Banerjee & Greene, 2009; Clark et al., 2012; Dishion, Nelson, & Bullock, 2004; Ennett et al., 2001; Guilamo-Ramos et al., 2006; Kerr & Stattin, 2000; Kliewer, 2010; Pokhrel et al., 2008). For example, adolescents who report having a close relationship with their parents are less likely to smoke than adolescents who feel distant from parents (Vuolo & Staff, 2013). Likewise, compared to nonsmoking adolescents who had intentions to smoke as an adult, nonsmoking adolescents who did not intend to smoke as an adult were more likely to report that they lower incidence of parent–adolescent conflict, higher parental monitoring and rule setting (Mahabee-Gittens, Huang, Chen, Dorn, Ammerman, & Gordon, 2011). Furthermore, in this sample of adolescents, increased parental monitoring and rule setting significantly decreased the odds of adolescents’ intention to smoke (by 41% and 65% respectively).

Similarly, in their study assessing the impact of parental warmth and parental
practices (i.e., behavioral control and disciplinary strategies) on adolescent tobacco outcomes, Chassin et al (2005) found that lower levels of parental warmth and increased parental behavioral control were both positively related to adolescent smoking. Likewise, in a longitudinal study, Cohen, Richardson, and Labree (1994) found that frequent communication related to both increased parental monitoring and more positive parent-child relationships, which were then associated with less smoking. Cohen et al., (1994) followed more than 2,000 students (in grades 5-9) to examine the association between parental practices and adolescent smoking initiation. They found that greater parental monitoring in which parents set household rules, curfews, and are aware of their child’s whereabouts, were associated with a decreased risk of adolescent smoking initiation.

In a more recent study, Harakeh, Scholte, Vermulst, De Vries, and Engels (2010) found similar results showing that parenting practices (e.g., style) related to increased communication, which then related to decreased teen smoking. This is consistent with a number of other studies that found that parents’ deliberate attempts at monitoring their children were key determinants of adolescent smoking experimentation and onset (Clark et al., 2012; Cohen, Richardson, & La Bree, 1994; Dishion, Nelson, & Bullock, 2004; Duncan, Duncan, Biglan, & Ary, 1998; Kerr & Stattin, 2000). In addition to parent-adolescent relationships and parenting practices, other studies have explored the interactive effects of parent-child communication on adolescent tobacco use (Duncan, Hu, & Richardson, 1998; Fearnow, Chassin, & Presson 1998; Foshee & Bauman, 1994; Nolte, Smith, & O’Rourke; 1983; Sargent & Dalton, 2001).
Antismoking communication. Previous studies examining the impact of smoking-specific communication have shown that direct parental antismoking messages are a protective factor against adolescent tobacco use (e.g., Chassin, Presson, Todd, Rose, & Sherman, 1998; Thomson et al., 2005; Yu et al., 2012). Specifically, parents who are open and honest with adolescents; clearly communicate their expectations and values; set and enforce household rules prohibiting smoking; and discuss negative consequences of smoking and parental expectations are less likely to have adolescents who use tobacco/smoke tobacco (Guilamo-Ramos et al., 2006; Jackson, 1997; Jackson & Henriksen, 1997; Pokhrel et al., 2008). For instance, in a study with large sample of preadolescents (N = 1478; ages 9-11) and their maternal caregivers, researchers found that higher quality of communication reported by children was associated with lower pro-smoking attitudes and higher self-efficacy and higher quality of communication (as reported by adolescents) was associated with lower pro-smoking attitudes and higher self-efficacy (Hiemstra et al., 2012). Furthermore, high quality parent-adolescent communication is significantly associated with adolescents’ lowered pro-smoking cognitions (e.g., attitudes and self-efficacy) (Otten, Harakeh, Vermulst, Van den Eijnden and Engels, 2007).

Jackson and Henriksen (1997) measured the association between parental smoking, antismoking communication, and adolescent smoking uptake in a diverse sample of adolescents in the 3rd–5th grade. Results highlighted that adolescent smoking onset rates were significantly higher when they believed that (a) parents would know whether or not they had tried smoking; (b) parents would impose negative consequences/punishments if they
smoked; and (c) if they disregard their parents’ antismoking messages. Moreover, tobacco onset was higher among adolescents without household rules prohibiting smoking, and when parents communicated either very little or not all with adolescents about tobacco/smoking (Jackson & Henriksen, 1997). Finally, de Leeuw, Scholte, Harakeh, van Leeuwe, and Engels (2008) found that parental antismoking messages were related to adolescent tobacco use directly and also indirectly through selection of non-smoking peers. Together these studies show how parents can deliberately and effectively shape their adolescents’ antismoking-related attitudes, beliefs, reduce their intentions to use and risk of smoking onset.

Yet, even if parents smoke they can reduce the likelihood of their child’s smoking uptake. A number of studies have found that regardless of their smoking status, children on parents who engage in antismoking socialization practices with their children have lower rates of smoking onset and lower rates of smoking initiation (Andersen, Leroux, Bricker, Rajan, & Peterson, 2004; Dalton and Sargent, 2001; Jackson & Henriksen, 1997; Henrikson & Jackson, 1998; Kodl & Mermelstein, 2004; Mahabee-Gittens, Ding, Gordon & Huang, 2010). Moreover, by not smoking in the presence of their adolescent, maintaining a smoke-free home, and not allowing others to smoke in their home, parents not only make smoking less accessible, but also convey the message that smoking is an unacceptable/undesirable behavior (Farkas, Gilpin, White, & Pierce, 2000).

Collectively, these studies underscore the integral role that parents play in their adolescents’ tobacco-related attitudes, beliefs and ultimately adolescent smoking behaviors. However in order to fully understand and identify possible risks/protective factors of parental
smoking on adolescents’ health it is important to obtain parental reports of their smoking-related behaviors. Equally important is the need to examine and identify groups, or subgroups of adolescents that may be at heightened risk for tobacco use and the subsequent negative health outcomes (e.g., African Americans). For example, numerous studies have found racial/ethnic differences in rates and age of smoking experimentation and/or onset among adolescents, such that European Americans typically report earlier onset and higher levels of cigarette use than do African American (Substance Abuse and Mental Health Services Administration [SAMHSA], 2011).

**Cultural and racial/ethnic differences.** It has been suggested that aspects of the African American (e.g., cultural norms against smoking, parenting and racial socialization practices) have helped buffer African American adolescents from the risks of smoking initiation and uptake (Vega & Gil, 2009). Despite this, African American adolescents are more likely to initially experiment with smoking than their European American counterparts (Campaign for Tobacco Free Kids, 2011; Kong et al., 2012; Oredein & Foulds, 2011). It is estimated that 1.6 million of these African American adolescents (currently under the age 18) will eventually become regular smokers (CDC, 1998).

African American adolescents growing up in inner cities/urban areas, low-wealth, low resource neighborhoods are particularly at risk for negative health outcomes. Living in disadvantaged communities has been associated with increased exposure to ETS (ACS, 2011; 2013; Duncan & Brooks-Gunn, 1999; (Patrick, Wightman, Schoeni, & Schulenberg, 2012; Singh, Siahpush, & Kogan, 2010), lowered mental health (e.g., aggression, sexual risk-taking
behaviors), and high rates of substance use including the use of tobacco as a method of coping with distress (Repetto, Zimmerman, & Caldwell, 2004; Schwinn, Schinke, & Trent, 2010; USDHS, 2012; Fidler, West, Van Jaarsveld, Jarvis, & Wardle, 2007). The current study adds to the literature by examining this paradox by specifically looking at parents’ and adolescents’ smoking-related attitudes and behaviors in a community sample of urban African American families.

In summary, parents are particularly important in shaping adolescents’ tobacco and health outcomes and this may be especially true in families where a parent smokes. Parents can help prevent adolescent tobacco use through positive family relationships, parenting practices, and their communication with adolescents about tobacco use (Banerjee & Greene, 2009; Clark et al., 2012; Dishion, Nelson, & Bullock, 2004; Ennett et al., 2001; Guilamo-Ramos et al., 2006; Kerr & Stattin, 2000; Kliwer, 2010; Pokhrel et al., 2008). Thus, one way to address the problem of adolescent smoking uptake may be to change parents’ smoking-related attitudes and behaviors. If parents’ are made aware of how their own smoking-related attitudes/behaviors impact their child, and that these attitudes/behaviors are modifiable, this could help programmers better target prevention programs (Johnson et al., 2011).

Although we have learned quite a bit about the relation between parenting factors and adolescent tobacco and health outcomes, additional studies are needed to examine how parents who smoke may influence (directly and indirectly) their adolescents’ anti- or pro-smoking attitudes via their own attitudes and behaviors (e.g., antismoking socialization,
parental prompting). Of those studies that have examined these parental factors and adolescent tobacco outcomes, most have focused solely on parent or adolescents’ cigarette use. Furthermore, a majority of studies examining the influence of parents on adolescent smoking have used school-based samples and obtained only child reports of parental behaviors and communication about tobacco. Given the increasing popularity of alternative tobacco product (ATP) among African Americans, and the unique risks associated with living in an urban environment, this study fill the gaps in the current literature by examining use within this population. Moreover, this study addresses limitations found in other studies by including brand names of popular ATP products in survey items that may be more recognizable by participants and help reduce misreporting/underreporting of use.

The overall goal of this project was to examine how parenting factors (e.g., attitudes/beliefs about adolescent smoking, prompting behaviors) affect parent-child discussions about tobacco, and adolescents’ tobacco and health outcomes in families where a parent smokes. Survey data was collected from 100 urban African American caregivers who smoke and their adolescents (ages 12-17 years old). The specific aims were to:

1. **Determine whether tobacco parental prompting behaviors are associated with adolescent attitudes/beliefs about smoking, acceptance/norms and refusal efficacy intentions to use, and tobacco use.** I hypothesized that adolescent whose parents engage in parental prompting behaviors would hold more positive attitudes and beliefs toward tobacco use, endorse higher normative beliefs about tobacco use (parental acceptance of tobacco use) and lower refusal efficacy.
2. **Examine the relationship between parent-adolescent tobacco-related communication and adolescent beliefs about risk/benefits of smoking, perceived norms, refusal efficacy, intentions to use, and tobacco use.** *I hypothesized that parents that communicate antismoking messages to their adolescent would have adolescent that exhibit more negative attitudes and beliefs toward tobacco use, lower normative beliefs about the acceptance of tobacco use and higher refusal efficacy.*

3. **Identify which of the caregiver variables (i.e., prompting, antismoking communication or monitoring) predict adolescents’ tobacco-related outcomes.** *I hypothesized that parental prompting would have the greatest impact on adolescent outcomes when compared to the other two parenting variables.*

4. **Examine whether parental communication moderates the relationship between adolescent attitudes/beliefs, their intentions to use, and tobacco use.** *I hypothesized that the more parents communicate antismoking messages to adolescent the weaker the relationship between adolescents’ positive smoking cognitions (attitudes/beliefs about smoking, higher intentions to use and lower refusal efficacy) and tobacco use.*

**Literature Review**

**The influence of parents on adolescent tobacco use.**

*Parental smoking and adolescents.* Each year more than 400,000 Americans die prematurely from tobacco use/smoking (CDC, 2011; 2012). For every person who dies from a smoking-related disease, twenty people others will suffer from a serious smoking-related
illness (CDC, 2003). Furthermore, the use of tobacco has been linked to a host of negative health outcomes including heart disease, stroke, and respiratory diseases (e.g., asthma, bronchitis, emphysema) (ACS, 2010; Baker et al. 2000; Dietz, England, Shapiro-Mendoza, Tong, Farr, & Callaghan, 2010; Dollar, Mix, & Kozlowski, 2008; Jha et al., 2013; USDHS, 2012). In response to these statistics, and to deter people from using tobacco, over the last several years the U.S. Surgeon General has released a number of reports highlighting the health risks associated with the use of tobacco/smoking (USDHS, 2010; 2012).

Despite repeated warnings about the destructive nature of tobacco and prevention efforts aimed at changing health behaviors (e.g., quit smoking), an estimated 43.8 million adults still currently smoke (CDC, 2011). A number of these adult smokers are also parents. In fact, up to 35% of all adolescents, or upwards of 21 million adolescents (under the age of 18 years old), live in a household with a parent or family member that smokes (Schuster, Franke, Pham, 2002; Singh, Siahpush, & Kogan, 2010) many of whom are also single parents. In fact, a recent national study estimates that the rates of current smoking among single parent households (with adolescents under the age of 18) is almost double that of two-parent households (30.2% versus 17.3%, respectively) (Child Trends, 2013).

While relationship/marital status seems to play a pivotal role in parental smoking rates, a number of other parental characteristics have also been deemed important such as parents’ age, gender, race/ethnicity, SES, income, education level, geographic location, as well as psychosocial stressors (e.g., work/family conflict, financial strain, adverse neighborhood characteristics and perceived discrimination/inequality) (Abbey, Jacques,
Hayman, & Sobeck, 2006; CDC, 2011; Child Trends, 2013; Hiscock et al., 2012; King, Dube and Tynan, 2012; Tjora et al., 2011; Slope et al., 2013). For example, younger parents (under the age of 35) are more likely to smoke than older parents, and single mothers were twice as likely as mothers in two-parent households to be current smokers (30% and 15%, respectively; Child Trends, 2013). Tobacco use was also higher among parents of lower SES including those living at or below the poverty level, with fewer years of education (Child Trends, 2013; Dube, Asman, Malarcher, et al. 2009. Hiscock et al., 2012; King, Dube and Tynan, 2012), receiving government/state assistance such as Temporary Assistance for Needy Families [TANF]), and/or food stamps (Supplemental Nutritional Assistance Program [SNAP]) (Child Trends, 2013; Hiscock et al., 2012; King, Dube, & Tynan, 2012; Slopen, et al., 2012; Tyas 2012). Community/neighborhood factors can also influence a parent’s decision to smoke. Prior research shows that parents who live in disadvantaged neighborhoods, low-wealth, low resource and/or urban areas (characterized by high rates of unemployment, poverty, low availability of resources, high levels of community violence, and/or living in unsafe neighborhoods) and members of minority racial/disadvantaged groups (e.g., African Americans) have been shown to be at increased risk for exposure to tobacco’s harms than their rural/suburban European American counterparts (Child Trends, 2013; Hiscock et al., 2012; King, Dube, & Tynan, 2012; Slopen, et al., 2012; Tyas 2012). In a study conducted in 2012 by Slopen and colleagues, researchers found that stressors such as community crime/violence, family conflict, work-related stress, financial hardship, and perceived inequality were associated with higher prevalence of current cigarette smoking among low-
income urban African American adults (N=592; income < $40,000) (Slopen et al., 2012).

Importantly, smoking tobacco not only affects the health of parents, but also their adolescents. First, by smoking in the presence of their adolescent, parents can expose their adolescents to the harmful effects of ETS. It is estimated that approximately 88 million Americans (of which 47% are adolescents between the ages of 12-19) are exposed to environmental smoke, or ETS each year (CDC, 2009; 2010; Campaign for Tobacco Free Kids, 2013; ChildStats, 2013).

Alarmingly, parental smoking and ETS are so widespread that parental smoking now accounts for almost 90% of all adolescents’ exposure to ETS (EPA, 2004; Jordann et al., 1999; U.S. Department of Health and Human Services, 2006). Extended family members (e.g., grandparents and other relatives) living in the household may also contribute to adolescents’ exposure. Moreover, smoking in the home is the main source of adolescents’ ETS exposure (Priest, et al., 2008). Adolescents are particularly vulnerable to the ETS because their bodies are still growing and developing. Thus, even brief encounters with ETS can be dangerous (USDHHS, 2006). Moreover, exposure to ETS has been linked to a host of chronic illnesses such as asthma, pneumonia, lung, and ear infections. These illnesses have been found to be are more common among adolescents exposed ETS than those who are not (American Academy of Pediatrics, 2009; Child Trends, 2009; ChildStats, 2013; Gilmour, Jaakkola, London, Nel, & Rogers, 2006; USDHHS, 2006).

Secondly, when parents smoke (or allow others to smoke) in the presence of their adolescent whether inside of the home, automobile, or other enclosed space, they place their
adolescent at risk for third-hand smoke. Third hand smoke exposure occurs when the nicotine from a lit tobacco product accumulates on the clothing, walls, furnishings, dashboard, or other surface in the home or car. After it becomes airborne, it begins to mix with nitrous acid and emit dangerous carcinogens (Matt et al., 2011; Sleiman et al., 2010) that are then inhaled by adolescents. The negative health outcomes that can result are similar to those of actual adult smokers and the development of smoking-related disease/illness (e.g., pneumonia, ear infections). (Child Trends, 2009; ChildStats, 2013; Cook & Strachan, 1999; Gilmour, Jaakkola, London, Nel, & Rogers, 2006; USDHS, 2010; 2006).

Adolescents living in households with parents that smoke are also at risk for other negative health outcomes. For example, adolescents who live in households with parents that are smokers tend to miss more days of school related to their illness (Mannino et al., 1996); show lowered mental ability; decreased cognitive functioning and spatial reasoning than adolescents living in nonsmoking households (Child Trends, 2009; ChildStats, 2013; Cook & Strachan, 1999; Gilmour, Jaakkola, London, Nel, & Rogers, 2006; USDHS, 2010; 2006) all of which have the potential to hinder their academic performance. Given these risks, it is important that researchers investigate parental smoking and health-related outcomes.

While some parents are aware of the risks, and take the necessary precautions to help reduce adolescents’ exposure (e.g., quit smoking or enact rules prohibiting smoking in the home or vehicle), others may not. A recent study conducted with a predominately European American sample of both adult smokers and non-smokers, found that some parents may not perceive that there are risks associated with second- or third-hand smoke. In this study
researchers found that while a majority of adults reportedly believed that secondhand smoke was harmful to adolescents (84%), less than half (43%) of smokers perceived that third-hand smoke was harmful to adolescents. Among those parents/adults who reportedly endorsed the belief that there are risks associated with second- and third-hand smoke, only 28 percent reported having established household rules prohibiting smoking (Winickoff, Friebely, Tanski, Sherroda, Matt, et al., 2009). Parents living in inner cities were also found to lack sufficient knowledge or were unaware of the adverse effects of ETS exposure such as increased respiratory risks (Parker, 2006). The results of this study highlight the need for research that examines parental attitudes/behaviors concerning household smoking. Importantly, information from this and similar other studies surrounding parents’ perceptions of smoking and ETS, as well as their tobacco-related behaviors are needed to help inform interventions aimed at increasing awareness and changing behaviors.

In addition to negatively affecting adolescent health through second- and third-hand smoke, living with a parent who smokes may also affect adolescents’ tobacco-related outcomes. Although studies have been mixed, overall a number of cross-sectional and longitudinal studies have found a strong association between parental smoking and adolescent smoking. These studies have shown that simply living with a parent who smokes, or one who has a history of smoking, can be a risk factor for adolescent smoking (Chassin, Presson, Rose, & Sherman, 1998; Fidler, et al., 2007; Gilman et al., 2009; Herbert, & Schiaffino, 2007; Kodl & Mermelstein, 2004; Otten, Engels, & Prinstein; 2009; Otten, Engels, Van de Ven, & Bricker, 2007; Scales, Monahan, Rhodes, Roskos-Ewoldsen, &
A recent study found an increased risk of smoking initiation particularly among adolescents that were from single parent homes, adolescents whose parents had lower levels education and/or a history of prior smoking (Mahabee-Gittens, Xiao, Gordon, & Khoury, 2013).

Adolescents’ risks associated with parental smoking apply not only to smoking initiation/uptake, but also to their patterns of use (e.g., number of cigarettes smoking, frequency of smoking, and progression, maintenance, or escalation of adolescent smoking) (Otten, Engels, Van de Ven, & Bricker, 2007; Tjora et al., 2011). For example, Gilman, Rende, Boergers, et al. (2009) recruited a sample of 564 adolescents along with one of their parents to examine the influence of parental smoking on adolescents’ smoking initiation. Adolescents in this sample were parents’ biological children and between the ages of 12-17 years (mean age=14). Lifetime smoking histories were obtained from both parents and adolescents’. Adolescents also provided reports of their exposure to ETS via parental cigarette smoking. The analysis revealed that adolescents who had biological parents that regularly smoked had a significantly higher risk of initiating smoking (OR=2.81, 95% CI=1.78, 4.41) than adolescents whose parents had never smoked.

The researchers also found a dose-response effect, that is adolescents were less likely to initiate smoking when only one parent smoked (OR=1.5), compared to when two parents smoke (OR=2.75). Interestingly, Gilman et al., (2009) also found that the longer the period of time adolescents were exposed to parental smoking (i.e. number of years), the higher the adolescents’ risk of smoking initiation. This dosage-response effect is consistent with a
number of other previous studies that have looked at the impact of parents’ tobacco behaviors on adolescent smoking (Gilman et al., 2009; Jackson and Henrickson, 1997; Kodl & Mermelstein, 2004; Otten, Engels, van de Ven, & Bricker, 2007; Peterson, et al., 2006). In addition numerous studies have shown that child exposure to ETS increases their risk for smoking initiation in adolescence and young adulthood (Becklake, Ghezzo, & Ernst, 2005; Bernat, Erickson, Widome, Perry, & Forster, 2008; Leonardi-Bee, Jere, & Britton, 2011).

One limitation of the Gilman et al., (2009) study is that the researchers only examined the impact of the biological parents’ smoking and adolescent smoking. This narrow conceptualization of “parents” and “family” can be problematic particularly in cultures where extended family members play a major role in the lives of adolescents (such as in the African American culture) and may lead to an underestimation of familial influences (Bauman et al., 2001; Jones, Zalot, Foster, Sterrett, & Chester, 2007; Griesler & Kandel, 2002;).

Prior research has illuminated that African American communities place a high value on extended family networks and parents utilize these connections to support in their socializing efforts (Chatters, Taylor, Lincoln, & Schroepfer, 2002; Jones, Zalot, Foster, Sterrett, & Chester, 2007; Jones & Lindahl, 2011). In fact, one study found that African Americans are more likely to have daily contact with and provide support to their extended kin than European American families (Taylor, Chatters, Woodward, & Brown, 2013). Extended family members are particularly vital in the African American community given the high rates of adolescents who are reared by single mothers (Perry, 2009). In fact, U.S. Census data reveals that more than 60% of African American children live in a single-mother
household compared to 11% of Asian women, 43% of Latinos and 26% of European Americans (Shattuck & Kreider, 2013). Given that many adolescents reside in homes with non-biological parents, guardians, extended family members, or other primary caregivers (e.g., grandmother, step- or adoptive parents), it is equally important to assess how extended families members influence adolescents’ smoking experiences via their smoking behaviors (Fidler, et al., 2007).

Bell, Zimmerli and Dunn (2007) extend this area of research by examining the association between adolescent smoking and biological parents, as well as caregivers/extended family members (e.g., grandparents, aunts/uncles). For example, the smoking status of adolescents was examined among a sample of 585 African American adolescents (ages 10-19). The results showed that rates of smoking among adolescent participants were significantly related to their family members’ smoking behaviors (both biological and non-biological). Similar findings were noted in a systematic review and meta-analysis of 58 articles on the effects of parental smoking on adolescents’ smoking uptake (Leonardi-Bee, Jere, & Britton, 2011). This review confirmed reports that parental smoking had a strong and significant influence on adolescents’ smoking uptake. Chiefly, findings from this analysis revealed that the odds of smoking uptake were increased significantly if at least one parent smoked (OR=1.72). Moreover, a dosage-response effect was found in that if both parents smoked, then the adolescent had an almost three-fold risk of smoking (OR=2.73).
Besides parental smoking status, the length of adolescents’ exposure to parental smoking, the number of parents in the household that smoke, and the type of products parents smoke are also important to consider. For example, in a cross-sectional study of predominantly European American adolescents between the age of 12-18 years old (N=10,593), investigators found in that parents who smoked cigars or pipes exclusively, had lower prevalence of smoking than those whose parents just smoked cigarettes (Fisher, Winickoff, Camargo, Colditz, & Frazier, 2007). Given the popularity of alternative tobacco products, or ATPs, and the wide variety of tobacco products (e.g., little cigars or cigarillos) and flavors (e.g., vanilla, strawberry, grape) available, it is plausible that if replicated today this study might yield very different results. The current study continued with this same line of research by examining the relationship between parents’ use of cigarette and ATPs on adolescents’ outcomes.

**Parental attitudes and adolescents.** The primary process through which parental smoking is said to encourage adolescent smoking is via adolescents’ attitudes, and beliefs. Parental smoking may impact adolescents because it signals to the adolescent that the parent endorses the belief that smoking is a normal and acceptable behavior. Research has found that adolescents who live in non-smoking households, and who perceive lower rates of adult smoking behaviors, are more likely to believe that their parents disapprove of adolescent smoking than adolescents who live in smoking households (Dornelas et al., 2005).

On the other hand, it is possible that adolescents may perceive that their parents would be approving of them smoking because these behaviors are in line with and reflect
parents’ own smoking-related behaviors (Otten, Harakeh, Vermulst, Van den Eijnden and Engels, 2007). In a longitudinal study assessing smoking-attitudes in a sample of predominately European American (86%) adolescents (n = 418; ages of 10-12 years old) investigators evaluated the effects of parental factors on adolescents’ adoption of positive attitudes about smoking (Bush et al., 2005). In this study, measures included adolescent perceptions of smoking status, attitudes about smoking, family discussions about tobacco, as well as other familial factors (e.g., cohesiveness, parental monitoring).

The results from this study revealed that one-third of the adolescents endorsed the belief that they could smoke without becoming addicted. Furthermore, 8% to 10% of participants as young as 10 years of age, perceived that there are benefits to smoking. When investigators examined the key determinants that contributed to adolescents’ favorable attitudes, the results indicated that parental use of tobacco was the only variable that predicted adolescents’ adoption of positive attitudes toward smoking over a 20-month period (Bush et al., 2005). Results also showed that by smoking, parents can inadvertently encourage adolescents to develop positive attitudes toward tobacco use, and that these attitudes may subsequently contribute to adolescents’ experimentation with and/or use of tobacco products.

Thus, by living in a household with parents that smoke and having parents that hold pro-smoking norms/rules, adolescents may begin to mirror their parents’ behaviors and develop positive attitudes toward smoking. This may be particularly salient for adolescents who have not observed their parents or family members experiencing any adverse
consequences as a result of their tobacco use (Morrell, Song, & Halpern-Felsher, 2010). For example, in a cross sectional study analyzing secondary data, researchers Wilkinson, Shete, & Prokhorov (2008) looked at whether parental smoking status moderated the relationship between adolescent's attitudes toward smoking and their lifetime smoking in a sample of predominantly ethnic minority adolescents (90% African American or Latino; N =1,417; tenth graders).

The findings from this study showed that adolescents with parents that smoke were 1.3 times (one parent) to 2.2 times (two parents) more likely to smoke and report more favorable attitudes toward smoking than adolescents with non-smoking parents. In addition to race/ethnicity, other factors such as parent variables, neighborhood/community characteristics, and geographic location (i.e., living in inner cities or urban areas) also influence adolescents’ smoking behaviors. Yu, Nebbitt, Lombe, Pitner, and Salas-Wright (2012) found evidence for the link between SES and smoking in their examination of tobacco use among a sample of 518 urban African American adolescents (ages of 11-20 years old; mean age = 15.4 years of age) from three large U.S. cities living in a low-income public housing community.

Alarmingly, the investigators found that almost half (46%) of their sample reported ever having smoked cigarettes. While informative this study solely assessed cigarette use, and not the use of alternative forms of tobacco (e.g., cigars, cigarillos), therefore rates of smoking among these adolescents may be higher than being reported. Results of the study
also showed that adolescent’s positive attitudes toward smoking significantly predicted the use of cigarettes (with age moderating this relationship).

In a parallel study, Scales et al (2009) examined adolescents’ perspectives on actual smoking/tobacco use. The researchers conducted eight focus groups with both adolescents from rural and urban communities. The sample was comprised of African American (53%) and European American (47%) low-income adolescents (N = 78) between 14 and 16 years of age.

The findings from this study highlighted that when compared to European Americans, African American adolescents held stronger beliefs that cigarette smoking was similar or equal to marijuana use, and that the co-use of these products helped in the reduction of stress. Moreover, all adolescents (regardless of race/ethnicity) perceived that smoking is an effective tool in stress reduction, and that messages (both implicit and explicit) from others including family, friends, and the media helped shaped these attitudes and beliefs. Explanations adolescents gave for initiating tobacco use included maintaining their social image, achieving social acceptance (fitting in with their family and friends), and coping with stress (reducing stress/calming one’s nerves). This is in line with prior studies that have shown that adolescents may use tobacco as a way of coping with emotional and social stress and/or stressful situations (Griesbach et al., 2003; Repetto, Zimmerman, & Caldwell, 2004).

In addition, to endorsing the belief that smoking is an effective coping mechanism for stress, adolescents in the study also held the belief that smoking cessation (i.e., quitting smoking) is an unpleasant and stressful undertaking, and when coupled with other stressors,
is justification for continuing to smoke (Scales et al., 2009). This may be particularly reaffirming for adolescents that receive parental messages suggesting that smoking reduces stress, as well as for adolescents who have witnessed their parents struggling with their smoking cessation efforts. Given the results of this study and the implications, parents that smoke may want to consider providing messages that dispel these beliefs, provide adolescents with alternative strategies for coping with stress, and/or quit using tobacco products. This particular study captured only adolescents’ perception via focus groups. Yet, given the sensitive nature of this topic, it is possible that the use of focus groups may have prevented adolescents from sharing their true attitudes or beliefs.

Furthermore, this study instructed adolescents to focus solely on cigarette smoking and not the use of alternate forms of tobacco (e.g., cigars, cigarillos), which have increased over the last several years (CDC, 2010) and could have drastically changed the results. Although this study is informative the results could have been strengthened by obtaining both parental reports of their own smoking status, family norms surrounding smoking, attempts at smoking cessation, and parent-adolescent tobacco communication. Finally, given the results, it may be important to also assess adolescents’ perceptions of the costs (e.g., health consequences) and benefits of smoking that adolescents may hold (e.g., weight maintenance, social enhancement) other than stress reduction.

Interestingly, some researcher suggests that the relationship between parental smoking and adolescent smoking is not a function of adolescents’ perceptions of risk/benefits, but rather their perceptions of household/family smoking norms. For instance,
Morrell, Song and Halpern-Felsher (2010) examined adolescents’ experiences with smoking as possible predictors of adolescents’ perceptions of smoking. Adolescents living in a smoking household (N=395) were surveyed every six months for two school years, (beginning when adolescents were in 9th grade until the end of the 10th grade). Over half of the sample (52.0%) was European American, 24.2% Asian/Pacific Islander, 18.5% Latino, 1.9% African American, and 3.4% identified as “other”. These investigators measured participants’ smoking, peer smoking, parental smoking, and gender as predictors (behavioral) of smoking-related short-term risks, long-term risks, and benefit perceptions.

Investigators also found that parental smoking did not predict adolescents’ risk and benefit perceptions, nor did it significant predict changes in adolescents’ perceptions over time. The authors acknowledge that adolescents may not have accurately recalled their parents’ smoking status and/or identify maternal/paternal caregivers who smoke. Given this omission, obtaining parents’ (including non-biological parents/caregivers) reports of smoking and triangulating the data with adolescent reports could strengthen this study’s findings. Furthermore, using a single item to measure adolescent smoking (i.e., “have you ever tried smoking a cigarette, even one puff”) may not have captured adolescents’ tobacco use or their current smoking use/patterns.

Finally, it is possible that an accurate assessment of parental smoking may not have been obtained since parents’ smoking behavior was only collected at baseline and parents may have started smoking after the this data had been collected. Thus, in order to fully understand adolescent tobacco-related attitudes and behaviors that is—why adolescents elect
to start smoking or choose to decrease smoking uptake, it is necessary to understand how adolescents form their attitudes/beliefs, and how these perceptions may lead adolescents to use tobacco.

Since a primary task during the adolescent years is identity formation and the development of self-concept, the messages adolescents receive from significant others in their social environment are particularly important. As primary socializing agents for their adolescents, parents in particular can influence the development of their adolescents’ normative attitudes and beliefs on a number of health-related topics including tobacco use (Bandura, 1986). This study focused on the role of parents in shaping adolescents’ tobacco-related outcomes including attitudes toward smoking, beliefs about risks/benefits of smoking and their decision to experiment or initiate.

**Theoretical Frameworks Explaining Parental Influence on Adolescent Tobacco-Related Outcomes**

The concept of parents as socializing agents for their adolescent is consistent with two prominent theories, Social Learning Theory (SLT) and The Theory of Planned Behavior (TBP). Both help explain how parents’ attitudes and behaviors (direct and indirect) may affect adolescent tobacco outcomes.

**Theory of Planned Behavior.** To begin with, the process that leads to adolescent smoking begins with adolescents’ cognitions, attitudes/beliefs that can form many years prior to the onset of actual behavior. The theory of planned behavior (TPB) has been routinely used to examine how attitudes predict behaviors. This theory postulates that there
is a causal chain linking one’s attitudes, subjective norms, and perceived behavioral control to their behavioral intentions (Ajzen, 1985). The TPB model has been used in prior research to explain and predict a variety of behaviors including: condom and substance use, eating/dieting, exercise and other health related behaviors (Albarracin, Johnson, Fishbein, & Muellerleile, 2001; Hagger, Chatzisarantis, & Biddle, 2002).

As it relates to smoking, this theory posits that adolescent smoking cognitions (i.e., pro-smoking attitudes, expectations of benefits, pro-smoking norms and self-efficacy) predict their intention to start smoking. In turn, intention to start smoking along with factors that facilitate smoking will predict smoking uptake. Therefore, adolescents will intend to smoke if they have a positive attitude toward tobacco use; hold the belief that smoking has benefits, is common and accepted by significant others (e.g., parents or peers); and have strong smoking self-efficacy. These intentions coupled with having parents who smoke, fail to communicate antismoking messages, and/or engage in prompting behaviors will predict adolescent smoking. Moreover, adolescent perceptions of smoking attitudes and self-efficacy are associated with future smoking uptake (Harakeh et al., 2004; Otten et al., 2007). Prior studies have highlighted that adolescents who are exposed to a high levels smoking hold more normative beliefs about usage and acceptability of smoking (Otten, Engels, & Prinstein, 2009), exhibit more positive attitudes toward smoking, as well as stronger intentions to smoke (Porcellato et al., 1999).

Additionally, adolescents’ ability to avoid tobacco and perceptions of pro-smoking social norms have been associated with smoking in adulthood. It is noteworthy to state that
Quite a few studies have applied the TPB model to preadolescent (Himestra et al., 2012) and adolescent smoking and found support for this model (Harakeh, Scholte, Vermulst, de Vries, & Engels, 2004; Otten, Harakeh, Vermulst, van den Eijnden, & Engels, 2007). For example, in a cross-sectional study of a sample of 248 Dutch students (aged 12 to 17 years old) Ter Doest, Dijkstra, Gebhardt, and Vitale (2009) examined the predictive power of the TPB in relation to adolescents’ smoking status (i.e., “smoking” and “not smoking”) and found that four variables including: adolescents’ attitude toward smoking, perceived subjective norm, and perceived behavioral control over smoking and not smoking, best explained adolescents’ smoking intentions and smoking behavior.

Likewise, Hiemstra, Otten, van Schayck, and Engels (2012) conducted a study to assess whether smoking-specific communication influences children’s (ages 9-11) smoking cognitions, and smoking onset during preadolescence. A total of 1478 pairs of mothers and children participated (mean age=10) in the study. The researchers found a positive association between pre-adolescent pro-smoking attitudes and smoking onset. Finally, in a related study with high school students (composed of 14.3% African American, 80% Caucasian and 5.7% Hispanic/Other) in 9th-12th grade (N=785), researchers assessed adolescents’ reported smoking attitudes, perceived behavioral control, and perceptions of subjective norms.

Results from this study revealed that non-smoking adolescents held more favorable attitudes toward non-smokers and believed that significant others would not be supportive of their smoking/tobacco use. Finally, this study’s findings highlighted that both unfavorable
attitudes toward smoking and perceptions of significant others’ lack of support for adolescent smoking were associated with decreased likelihood of adolescents’ intentions to smoke (Smith, Bean, Mitchell, Speizer, & Fries, 2007). Together, these studies underscore the importance of attitudes in adolescents’ future intentions and tobacco use. However, additional studies examining this relationship among African American adolescents are needed, particularly those living in urban, inner cities, or metropolitan areas.

**Social Learning Theory.** In addition to gaining a better understanding of African American adolescents’ tobacco use, this study also examined parental factors (i.e., parental smoking, parent-adolescent communication, parental prompting behaviors) that may contribute to adolescents’ attitudes and tobacco-related outcomes (i.e., attitudes, intentions, self-efficacy and use). It is also during this stage that many adolescents begin to experiment with, or initiate tobacco use.

Since a primary task during the adolescent years is identity formation and development of self-concept, the messages adolescents receive from their social environment are particularly important. According to social learning theory, adolescents’ attitudes, beliefs, and behaviors are largely shaped by significant others and those who are closest to them (Bandura, 1977; 1986).

Parents are primary socializing agents for their adolescent providing information on a number of health and health-related topics. It is through these models that adolescents learn appropriate social skills and behaviors, which in turn influence their attitudes and beliefs. Furthermore, this theory posits that adolescents learn through consequences (i.e.,
reinforcement, punishment) of their actions and by continuously observing, interacting with and imitating the models in their environment (Bandura, 1986; Festinger, 1954). Adolescents are likely to adopt certain behaviors such as smoking if they believe that the behavior has some value, or benefit (e.g., enjoyable, relieves stress). Such work reveals that parenting behaviors (e.g., parental smoking, parental monitoring and parental communication) can serve as both risk and/or protective factors for adolescent substance use. For example, through direct communication and by modeling their own health behaviors (e.g., not smoking versus smoking), parents can intentionally and unintentionally contribute to adolescents’ positive attitudes toward tobacco, or conversely help deter adolescents from smoking uptake (Gilman et al., 2009).

In addition to the direct effect of parental smoking on adolescent smoking, parental smoking might also influence their adolescent indirectly through adolescents’ smoking cognitions including their attitudes/beliefs concerning social norms, pro-smoking attitudes, intentions to use and self-efficacy in refusing tobacco products. Given the importance of parental factors on adolescent outcomes (e.g., attitudes, intentions/use, refusal efficacy), this study integrates key variables from both theories and used these models as the framework to explain how parental communication and behaviors can impact their adolescents’ tobacco outcomes. Once formed adolescent tobacco-related attitudes can be difficult to change. Therefore, it is extremely important that parents try to prevent and adolescent from experimenting with tobacco to begin with.

**Adolescent Tobacco Use and Subsequent Health Effects**
On any given day in the US, approximately 3,450 adolescents between 12 and 17 years of age smoke their first cigarette (Campaign for Tobacco-Free Kids, 2009). While school and community prevention programs have helped to lower overall rates of adolescent smoking over the last several decades, adolescents of all ages continue to smoke. For example, Monitoring The Future, a longitudinal study monitoring adolescent drug use, surveyed a nationally representative sample of public and private school students (in 8th-, 10th-, and 12th-grade) throughout the U.S. (N = 46,500). Results revealed that approximately 4 out of every 10 adolescents, or 42% reported having tried smoking cigarettes by the twelfth grade, and about 1 in 5, or 19% of 12th graders are current smokers. Among younger adolescents (i.e., 8th graders), 1 in 5 or 20% reported having tried smoking cigarettes, and 1 in 14, or 7% is a current smoker (Johnston, O’Malley, Bachman, & Schulenberg, 2011). Reports of current use are just as striking. In fact, approximately 24% of high school and 8% of middle school students currently use tobacco (defined as tobacco use on at least one day in the past 30 days).

In the state of Virginia, adolescent tobacco experimentation and use is also a major problem. It is estimated that each year over 33,000 Virginia adolescents will try cigarettes for the first time and 8,700 of these adolescents will become new daily cigarette smokers (Campaign for Tobacco-free Kids, 2011; VFHY, 2009). In fact approximately 13% of adolescents currently living in Virginia (3.6% middle school, 19.7% high school) have reportedly smoked cigarettes in the past 30 days (VFHY, 2009). These results as well as national statistics confirm that a sizeable number of US adolescents are initiating tobacco use
and smoking. These statistics are troublesome because by the time an adolescent reports their tobacco use they have already become nicotine dependent (USDHS, 1994; 2012). Furthermore, it is well documented that smoking habits in adulthood typically begin during the adolescent years. In fact, 80% of all adult tobacco users started using tobacco by the time they were 18 years old (the majority began during the ages of 11 to 15 years) (CDC, 2009; USDHS, 2000). Klein, Sterk and Elifson (2013) investigated smoking behaviors in a study of the initial smoking experiences in a sample of current adult smokers (N=485; 54.6% European American, 39% African American and 6.4% Other race/ethnicity). The researchers found that more than half of the participants (56%) recalled having smoked their first cigarette between the ages of 12 and 16 years of age (mean age=14.8) and 81% reported having tried a cigarette before the age of 18 years old.

These findings are problematic given that those who do begin smoking early are at increased risk for (a) nicotine dependence; (b) escalation/progression to daily smoking; (c) smoking for a longer number of years and; (d) increased co-use of tobacco products as adults (CDC, 2007). The long-term effects of smoking are concerning given the current prevalence rates of adolescent smoking initiation and tobacco use. Together these studies demonstrate that parental smoking not only impacts adolescents’ health directly (via second- and third-hand smoke), it also creates an environment where adolescents are more likely to experiment with, initiate and/or become daily smokers.

Likewise, when adolescents model their parent’s smoking behaviors, and begin smoking early, they increase their risk for a variety of adverse health outcomes. First,
smoking can reduce adolescents’ lung function and growth, aggravate respiratory problems, as well as symptoms related to asthma and bronchitis (Baker et al. 2000; Breslau & Peterson, 1996; Chassin, Presson, Rose et al., 1996; Everett, Warren, Sharp, et al. 1999; USDHS, 2006), all of which can hinder their ability to participate in physical activity. Second, adolescents who start smoking prior to the age of fifteen, have a two-fold increase in risk of lung cancer compared to those who began smoking later (i.e., after the age of 20) (CDC, 2009). Third, individuals who initiate smoking at younger ages have an increased risk of developing lung, kidney, and bladder cancer as well as coronary heart disease (Baker et al., 2000; CDC, 1998).

Finally, adolescent tobacco use has been associated with various risk-taking behaviors and decreased mental health (e.g., anxiety, depression, aggression, sexual risk-taking behaviors, marijuana, alcohol and substance) (Repetto, Zimmerman, & Caldwell, 2004; Schwinn, Schinke, & Trent, 2010; Leatherdale, Hammond, & Ahmed, 2008; Schuster, Hertel, & Mermelstein. 2013; USDHS, 2012) particularly among urban/inner-city African American adolescents (Repetto, Zimmerman, & Caldwell, 2004; Schwinn, Schinke, & Trent, 2010. Given these risks, it is imperative that programs help parents recognize how their own smoking habits may affect their adolescents’ health and tobacco-related outcomes. In order to do so, we must first examine parents’ perceptions concerning the messages they convey to adolescents, as well as their beliefs about adolescent smoking, particularly among urban African American adolescents.

**African Americans and Tobacco Use**
A number of key factors appear to be related to parental smoking and predictive of adolescent tobacco use including parent’s age, marital status, parental SES, families’ geographic location and race/ethnicity. All of these factors can increase/decrease, or influence the likelihood of parent’s tobacco rates of use, types of tobacco products used, patterns of use, as well as their smoking cessation efforts (CDC, 2010; Child Trends, 2013). In a cross-sectional study, with a tri-ethnic sample (i.e., African American, Latino and European American) of urban adolescents Dornelas and colleagues (2005) investigated the influence of socio-environmental factors on adolescent smoking. The participants were compared on the following variables and their relationship with smoking behaviors: family and peer influences, situational factors prompting smoking, and participants’ perceptions of support from parents, family and friends as for smoking cessation. The results revealed a significant difference in the number of adolescents living in smoking households according to race/ethnicity.

In fact, almost all (96%) of the African American adolescents lived with a family member that smoked, compared to 68% of Latinos, and 60% of European Americans. Additionally, African American adolescents were significantly more likely to smoke with family members (50%), than Hispanics (5%), or European Americans (25%). These reports are also troubling since low SES and African American adolescents are more likely to be exposed to ETS than European Americans (between 45% to 56% of African American adolescents report being exposed to ETS via parental and familial smoking), and disproportionately affected by an ETS- and smoking-related chronic illnesses such as asthma.
(CDC, 2011; 2012; Child Trends, 2009; ChildStats, 2013; Freeman, Schneider, & McGarvey, 2003; Heron, Hoyert, Murphy, Xu, Kochanek, Tejada-Vera, 2009; Sing, Siahpush, & Kogan, 2010).

Finally, this study revealed that higher rates of acceptance of smoking by family members, role modeling by household members, more prevalent beliefs that smoking increases feelings of belonging, and lack of perceived support for smoking cessation influenced cigarette smoking more for African American than for European or Latinos/as. Thus, by modeling smoking behaviors, African American parents may increase the chance that their adolescents will emulate these same behaviors and increase their risk of health problems.

Although research supports the fact African American smoking trends differ from other racial/ethnic groups in the following ways: (a) exhibit lower rates of cigarette smoking; (b) initiate and progress to daily smoking later in life and; (c) smoke fewer cigarettes, African Americans are not immune to or “buffered” from the risks associated with smoking. In fact prior research has found very few differences in rates of tobacco use between African American and European Americans.

For example, a study investigating predictors of substance use among a sample of 811 early urban (92% of which were African American) and suburban adolescents (primarily European American) found that while there were some differences in the types of sociocultural factors (e.g., parents gender, peers) that influenced adolescent smoking, both groups had comparable rates of tobacco use. Results revealed that adolescent smoking
increased for both groups from the beginning of the 6th grade (29% of urban/African American adolescents and 30.2% of suburban/European American adolescents) to follow up, by end of the school year (42.9% and 45%, respectively) (Abbey, Jacques, Hayman, & Sobeck, 2006).

In contrast, other research that has examined racial/ethnic similarities/differences have found that higher rates of experimentation among African American adolescents than European Americans adolescents. For example, researchers conducted a longitudinal study that examined 6 waves of data collected (over a period of ten years) to compare trends in smoking among adolescents (N = 6,259) from various racial/ethnic backgrounds. Participants were queried about their own substance use, parental smoking approval and cigarette offers, communication with parents, as well as adolescents’ pro-smoking attitudes, (smoking intentions, low levels of resistance, self-efficacy, global smoking beliefs). The findings showed that by the age of thirteen, African American adolescents were more likely to have tried smoking cigarettes than European American and Asian American adolescents (62% versus 52% and 36%, respectively) (Ellickson, Orlando, Tucker, & Klein, 2004). Other studies have also found higher rates of experimentation among racial/ethnic minorities including African American adolescents (Campaign for Tobacco Free Kids, 2011; Ellickson, Orlando, Tucker, & Klein, 2004; Kong et al., 2012; Oredein & Foulds, 2011).

Also troublesome are reports indicating that smoking trends may be changing, and that rates of use among African Americans is on the rise. Delva and colleagues (2005) investigated tobacco use among a sample of African Americans participating in a randomized
control study (N=1021) aimed at improving the oral health of a community-based sample. Both adults and adolescent participants were asked about their current smoking use including age of initiation, patterns and length of use. The results showed that the prevalence rates for African American adolescent smoking (ages 14-20) was 26.9% (SD=0.05) and the average number of years adolescents had smoked was 4.6 years (SD=3.6). The findings also showed that adolescents reported smoking 5 to 6 years earlier than the adult participants (31-40 years of age), or that they had initiated use during early adolescence, suggesting that African Americans may be initiating cigarette use at the same age as their ethnic/racial counterparts and at even younger ages than in past years.

Likewise, Mahabee-Gittens, Xiao, Gordon, & Khoury (2012) used data from the National Survey of Parents and Adolescent, a tri-ethnic sample (68.9% European American, 16.1% African American, and 15.0% Hispanic) between the ages of 9-18 to examine racial/ethnic differences in prevalence of smoking, and the impact of family influences, antismoking parenting practices, and pro-smoking influences on smoking behavior. Results highlighted statistically significant differences in smoking status across the groups in that smoking was significantly higher among European Americans (12%) than Latinos (5.5%) and African Americans (3.8%). Yet there were no statistically significant differences in adolescents’ reported age of first smoking experience (European American, 12.4%; African American 12%; Latinos (12.6%).

Moreover, while European American adolescents had increased pro-smoking influences (e.g., parents that smoke) than adolescents of other races/ethnicities, African
Americans and Latinos had a greater number of other parental risk factors (other than parental smoking) that associated with tobacco use including low parental SES, low parental education, and living in a single-parent household (Mahabee-Gittens, Xiao, Gordon, & Khoury, 2012). The results also showed the importance of parenting factors in adolescents’ tobacco use such that higher reported connectedness and higher monitoring lowered adolescents’ odds of being a recent smoker by 30% in European Americans; and by 50% in both Latinos and African Americans.

One limitation of this study is that it did not include measures of parental antismoking socialization messages that have shown to contribute to lower rates of adolescent smoking initiation (Jackson & Henriksen, 1997; Sargent & Dalton, 2001). It is equally important that studies capture the types of tobacco products parent’s use. If parents smoke ATPs, or products that have more addictive qualities than others (e.g., mentholated products), this may contribute to adolescents’ use of these same products (due to access or availability), as well as maintenance/progression of tobacco usage.

Research has suggests that a phenomenon known as the “cross-over effect” occurs among racial/ethnic differences in term of rates of smoking (Geronimus, Neidert, & Bound, 1993), such that by adulthood, even though they may start smoking later in life, African Americans’ “catch-up” or surpass their European American counterparts. In fact, unlike their European American counterparts, African American adolescents (girls in particular) have smoking rates that continue to increase with age. In fact, by the age of 25, the total percentage of African American smokers equals or exceeds that of their European American
counterparts (U.S. Department of Health & Human Service, 1998; Centers for Disease Control, 1998). Moreover, African American women tend to have higher prevalence rates of smoking and lower rates of quitting than their European counterparts (Ahijevych, Gillespie, Demirci, & Jagadeesh, 1996). Prior research suggests that this late onset of smoking and tobacco dependence may be the result of increased psychosocial stress, pressures, and social tensions African Americans experience (particularly low-income women) during early adulthood (Geronimus, 1992; King, 1997; Lacey, Manfredi, Balch, Warnecke, 1993) experiences.

**Use of alternative tobacco products (ATPs).** Because of their growing popularity, in recent years more research related to the use of ATPs has begun to surface. The current study examined various ATP products and adolescent use of these products. In the literature, little cigars are described as smaller cigars that have a similar appearance as a cigarette, yet they are wrapped within a tobacco leaf and weigh nor more than three pounds per thousand cigars (AFL, 2009; Blank et al., 2011). Cigarillos on the other hand, are very similar to a standard sized cigar, however, they are longer, slimmer, and weigh approximately three and ten pounds per thousand cigars (Blank et al., 2011).

In terms of tobacco make-up, cigarillos have a more variable tobacco content, while little cigars have lower tobacco content relative to cigarillos (Blank et al., 2011). However, relative to cigarettes, cigars, cigarillos, and little cigars include higher levels of carcinogens (i.e., nitrosamines), tar per gram of tobacco, and toxins (Baker et al., 2000; National Cancer Institute, 1998). Furthermore, cigars, cigarillos and little cigars contain more tobacco (1–20
grams) and require longer smoking intervals than cigarettes, resulting in increased exposure to carbon monoxide, hydrocarbons, ammonium, and cadmium (Baker et al., 2000; Blank et al., 2012; Kozlowski et al., 2008).

Even though ATPs contain nicotine and are highly addictive, they have continued to gain popularity, particularly among African Americans. For example, while the prevalence rate of cigarette smoking among African Americans has remained relatively stable over the past several years, the use of ATPs has significantly increased among this population (Rosenfeld, 2003). For example African American adults have the highest rates of use at 7.7 percent than any other racial or ethnic group (compared to 7.2% of American Indian, 5.3% European Americans, 4.9% of Latinos and 1.5% of Asian American; SAMSHA, 2011). Additionally, cigar smoking among African American women has almost doubled from 6.7% to 11.5% between the years 2007 to 2009 (CDC, 2011). The popularity of ATPs is also evident among African American adolescents. In fact, from 2011 to 2012, African American high school students’ cigar use increased significantly to 16.7 percent, more than doubling the 2009 rate of 7.1%; higher than both European American and Latino adolescents’ use (12.2% and 12.4%, respectively; CDC, 2013).

**Factors influencing tobacco/ATP use.** This increased interest in, and use of ATPs among African Americans parents and adolescents has been attributed to a number of social and cultural factors. Prior research has attributed rising ATP rates to the following: tobacco industry’s marketing efforts specifically targeting African American consumers, pro-smoking media campaigns incorporating newer forms of the media (e.g., social media/YouTube
videos/Smartphone applications or apps), media images/celebrities promotion of ATP products, attractive packaging and appealing flavoring (e.g., available in a variety of flavors such as vanilla, strawberry), lower pricing of ATP products compared to cigarettes (i.e., ATPs are less expensive and sold individually), and consumer’s perception that ATPs are less toxic and/or harmful than cigarettes contribute to increase experimentation/initiation (Baker, Dye, Denniston, & Ainsworth, 2001; BinDihm, Freeman, & Trevena, 2012; Gidwani, Sobol, DeJong, et al. 2002; Richardson & Vallone, 2012; Soldz & Dorsey, 2005; Wenger et al. 2001). All of these factors can encourage experimentation and use in both smokers and non-smokers alike (Leatherdale & Burkhalter, 2012).

Relatedly, and even more concerning are reports suggesting that ATP use among African Americans may be higher than national surveys report. In fact, a number of studies have highlighted the fact that current surveillance reports underestimate prevalence rates of ATPs because many ATP users misreport their use, or incorrectly identify themselves as non-smokers (Schuster, 2013; Tercheck, 2009). A recent study conducted by Nasim, Blank, Berry, and Eissenberg (2012) examined this very important issue and included data from 3,093 adolescents that completed the 2009 Virginia Adolescent Tobacco Survey. These researchers examined whether there were differences in the rates of misreported ATP use for adolescents with varying demographic profiles. The researchers found that more than half (57%) of ATP users (specifically, Black and Mild brand smokers), misreported cigar use (i.e., reported use of specific brands such as Black & Mild, but did not identify with or report the use of cigars, little cigars, or cigarillos).
The results also showed that misreporting was most common among older adolescents, African Americans, and adolescents diagnosed with asthma. Likewise, in their study, Terchek et al (2009) assessed local and national surveys (from 2002 and 2004). In 2002 the sample consisted of 2,035 high school students (47.2% male and 35.2% African Americans), while in 2004, the sample consisted of 537 students (50.4% male and 25.8% African American). Results revealed a 60% increase in reported rates of current cigar use between these years (in both groups).

Of particular concern was the noticeable increase among racial/ethnic subgroups. Rates of use among African Americans and female subgroups doubled during these years from (11% to 22% among African Americans and 7.6 to 14.8% among females). The authors attribute the difference in reported rates of use on changes in the survey items that included adolescent reports of ATP use. In order to reduce confusion or misreporting of use, survey items should include the brand names of current popular cigar/cigarillo/little cigar products (e.g., Black & Milds, Swisher Sweets). Including brand names when assessing adolescents’ smoking may help provide a more accurate picture of adolescents’ tobacco use (Yerger, Pearson, & Malone, 2001).

**Concurrent use of ATPs and cigarettes.** Another concern surrounding the use of ATP’s is the link between ATP use and the concurrent use of tobacco and/or other substances. This is a reasonable concern given that prior researcher has found that those who use ATP products also have an increased likelihood of using cigarettes and alcohol (Kennedy et al., 2011; Nasim et al., 2012; Saunders & Geletko, 2012; Schuster et al., 2012). For
example, as part of a larger study Schuster, Hertel, and Mermelstein (2013) examined adolescents’ (9th and 10th graders; mean age = 17.6) cigar, cigarillo and little cigar use among a sample of adolescents (n = 486) who also smoked cigarettes. In this sample, 62.4% self identified as European American, 18.1% Latino, 9.9% African American, 3.9% Asian, and 5.7% identified as “other.” The researchers used self-report measures to assess whether adolescents had ever smoked a cigar, cigarillo or little cigar, as well as the number of days adolescents used (in the past 30 days). The results showed that 53% of the sample reported that in addition to using an ATP product they also smoked cigarettes 10 or more days (in the past 30 days). Furthermore, the majority of participants had smoked cigarettes on a daily basis. Of the 486 adolescents who reported having smoked at least one cigarette in the 30 days prior to the 24-month assessment wave, 76.7% reported ever trying an ATP and 40.7% (n = 198) reported using an ATP in the past 30 days.

Finally, the researchers found that ATP used concurrently with cigarettes was associated with negative mental health (e.g., anxiety, depression) and anti-social behaviors (e.g., aggression, rule violations). The prior study examined cigar, cigarillos, and little cigars as a single item (yes no response) and did not provide examples of brand name products that are known to be important in reducing misreporting of smoking status particularly among African American adolescents. A majority of the participants in this study were European Americans, and the rates of ATP use among this sample were higher than national rates (CDC, 2012).

Given that African Americans are disproportionately affected by health problems
(e.g., asthma, high blood pressure, stroke, cancer, obesity and heart disease) associated with or exacerbated by tobacco use (Baker et al., 2000; CDC, 2007; 2009; Iribarren et al., 1999), obtaining African Americans adolescent rates of tobacco use (including the use of ATPs), patterns of use, and perceptions of tobacco products is critical. Moreover, since adolescents may subscribe to the notion that ATPs are less toxic and/or harmful than cigarettes, that ATPs are not “true” tobacco products, or that concurrent use does not come increased risk, future studies may want to assess multiple forms of tobacco use patterns.

Combined these studies highlight the importance of developing prevention programs geared specifically for those at heightened risk for smoking and most affected by health disparities associated with tobacco use (e.g., African Americans, urban adolescents). Yet to date, much of the research on smoking has focused largely on European Americans and cigarette smoking. Less is known about urban African American families and the role that ATPs play within this community. The current study expands on this research by including measures of African American parents’ and adolescents’ ATP use.

Additionally, since many adults smokers are parents and parental smoking influences not only the parents’ health but also the health of his/her children, in this study, the pathways through which parental smoking affect adolescent tobacco outcomes are explored in a sample of African American families. Yet, we know that even if parents smoke, adolescents may not necessarily mirror their parents’ tobacco behaviors. In fact, one study found that although they lived in a household with at least one household member that currently smokes, one-third (38.4%) of adolescents reported that they were non-smokers (Bell, Zimmerli and Dunn,
This suggests that although parental smoking is a key determinant and important in shaping adolescent outcomes (e.g., parental communication, prompting), other parenting factors also moderate/mediate this relationship (e.g., parental communication, parental prompting behaviors). With this study we hope to help illuminate some of the factors that discourage adolescents from experimenting and initiating with tobacco use.

**Parent-Adolescent Tobacco-Related Communication**

A vast amount of the research in the area of adolescent smoking has highlighted that parent-child communication and parenting practices are protective against adolescents’ tobacco use and can help foster adolescents’ intention and decision to refrain from smoking (Fearnow, Chassin, Presson, Sherman, 1998; Jackson & Henriksen, 1997; Henriksen & Jackson, 1998; Kodl & Mermelstein). As discussed previously, parents can shape their adolescents’ tobacco attitudes and intentions to use by openly communicating their beliefs and expectations (Etten et al., 2001; Guilamo-Ramos et al., 2006; Harakeh et al., 2010). In their attempts to influence their adolescents’ decision as to whether or not to smoke, parents engage in different socializing efforts that may (or may not) affect adolescents’ opinions about smoking and their ability to resist smoking.

Regardless of their smoking status, the way in which parents convey their antismoking messages and expectations can differ quite a bit (McCoul, Cameron, & Robinson, 2011). Findings from a number of studies suggest that parent-adolescent communication about tobacco use as well as other risky behaviors (e.g., alcohol, substance use, and sexual risk-taking) is a multidimensional construct, and that the quality, frequency,
timing and general family environment are important factors to consider when examining adolescent tobacco behaviors (Etten et al., 2001; Hiemstra, Otten, van Schayck, & Engels, 2012; Jaccard, Dittus Gordon, 1998; Otten et al., 2007). In the present study, I examined whether parent communication about smoking moderates the relationship between parental smoking and adolescent tobacco outcomes.

**Antismoking communication.** Antismoking socialization is defined in the literature as “parent-adolescent interactions and transmission of knowledge that influence the development of adolescents’ attitudes, beliefs and behavioral norms against smoking” (Henriksen & Jackson, p. 87, 1998). Antismoking socialization involves a range of practices or strategies that parents can use to shape their adolescents’ attitudes, behaviors and decision to smoke. Parents convey antismoking messages directly (e.g., verbal antismoking messages), or indirectly (e.g., establishing and enforcing household smoking rules).

In addition to modeling concrete health behaviors (such as not smoking), antismoking socialization can include conveying clear messages and establishing expectations about risks/consequences of smoking, reducing adolescents’ availability/access to tobacco products, setting and enforcing household smoking rules, as well as monitoring adolescents’ activities/whereabouts. In past studies, antismoking socialization has shown to be very effective in keeping adolescents from using tobacco/smoking (Clark et al., 1999; Farnow, Chassin, Presson, Sherman, 1998; Kodl & Mermelstein, 2004; Henriksen & Jackson, 1998). Various aspects of parent-adolescent tobacco-related communication have been examined to determine their impact on adolescent smoking including parent-adolescent communication
variables such as the frequency, quality and the content of these conversations.

**Frequency of tobacco-related messages.** Most studies examining parent-adolescent discussions about smoking-related issues have measured the frequency with which such communication occurs. For example, Jackson and Henriksen (1997) measured the frequency with which adolescents perceived that their parents delivered antismoking socialization messages and the subsequent effects of these messages on adolescents’ initiation, or experimentation with smoking/tobacco use (N=1352). The researchers found that adolescents who reported receiving frequent antismoking socialization messages (e.g., household antismoking rules, parental non-smoking expectations or consequences of smoking) were at significantly lower risk of cigarette smoking. Other studies have confirmed these results showing that adolescents who report receiving more frequent antismoking socialization messages, (e.g., parental expectations or consequences related to smoking) were at significantly lower risk of the smoking onset (Andersen et al., 2004; Chassin, Presson, Todd, Rose, & Sherman, 1998; Henricksen & Jackson, 1998).

Conversely, other studies have found a weak to no association between frequency of parent antismoking/tobacco communication and adolescent tobacco use (e.g., den Exter Blokland, et al., 2006; Engels, et al., 2005; Ennett, et al., 2001; Huver, et al., 2007; Kodl & Mermelstein, 2004; Thompson & Gunther, 2007). For example, Kodl and Mermelstein (2004) explored parental beliefs and behaviors designed to convey an antismoking message across levels of self-reported parent and adolescent smoking behavior.
Parental perceptions of self-efficacy in communicating with their adolescents about tobacco, beliefs about smoking, parent antismoking messages and reactions to smoking, as well as household smoking rules were explored. Participants were (N = 345) predominately European American (96%) 6th, 8th, and 10th graders and their parents. Surprisingly, the frequency and type of messages that parents reported conveying to their adolescent did not differ by parental smoking behavior. The results found no association between parental antismoking statements and adolescent smoking behavior. One limitation of the study was that this study examined only parental reports of antismoking communication rather than adolescents’ perceptions or both.

Alternatively, studies have also found positive relationship between tobacco-related discussions with adolescent use and smoking norms. For instance, Otten, Harakeh, Vermulst, Van den Eijnden and Engels (2007) used data from the Family and Health Project (N=428) to examine parent and adolescents (13-16 years of age) smoking-related communication among families living in the Netherlands. Specifically, the researchers investigated whether parental communication (e.g., quality and frequency about smoking) impacts adolescent smoking cognitions (e.g., perceived norms, attitudes toward tobacco, self-efficacy and intentions to use). Results showed that adolescents who perceived a higher quality of parent-adolescent communication had lower pro-smoking attitudes and a higher self-efficacy to refuse tobacco.

Significant pathways were also found between parental smoking and adolescents’ perceptions of parental smoking. Such that adolescents who had parents that smoked
believed that these parents would approve of them smoking. Interestingly, contrary to expectations, the findings also revealed a positive relationship between adolescents self-reports of the frequency of parental tobacco communication and adolescents’ pro-smoking attitudes. Additionally, higher frequency of communication was also inversely related to adolescents’ self-efficacy to resist or refuse smoking/tobacco use and perceived parental approval. The results are similar to other studies that have found that the more parents communicate with adolescents about smoking, the higher their risk of negative tobacco outcomes (i.e., higher rates or increased risk of tobacco use) (Harakeh, Scholte, de Vries, & Engels, 2005; Hiemstra, Otten, van Schayck & Engels, 2012; Huver et al., 2006; Clark et al., 1999).

Mixed findings with respect to the frequency of parent-adolescent communication and adolescent outcomes could be attributed to factors such as differing methodologies used in each of the studies (including measures of antismoking messages), and variance in adolescent and parent perspectives (if obtained). For example, it is possible that parents may over-report the frequency with which they deliver tobacco message because of social desirability and/or recall bias. Similarly the same could be said for adolescents who may not recall conversations and/or may not have been receptive to parental antismoking messages. It is also plausible that the bi-directional relationship between the frequency of parent–adolescent communication and adolescent smoking could have resulted in mixed findings. It has been suggested, for example, that adolescents who have already begun to smoke may have parents that respond by communicating more with their adolescents about tobacco in an
effort to discourage continued use or regular smoking patterns (Ennett et al., 2001).

Nevertheless, these findings are concerning and warrant further investigation. In particular, special attention should be paid toward identifying the specific content, frequency, and style/form of parental antismoking messages (Mahabee et al., 2010; 2012). Gaining adolescents’ reports is equally important since adolescents’ perceptions/receptiveness of parent’s antismoking socialization may differ from that of their parents (Harakeh et al., 2005; Henriksen & Jackson, 1998; Kodl & Mermelstein, 2004; Mahabee-Gittens et al., 2010).

**Quality of tobacco-related conversations.** Combined, these results confirm earlier studies emphasizing the importance of developing a more complex conceptualization of parent-adolescent tobacco communication and examination of *how* dyads communicate rather than on just the *frequency* of communication (Harakeh et al., 2010; Otten et al., 2007; Small et al., 2012). *How* parents and adolescents communicate refers to the quality of the conversations. According to Small, Kushner, Neufled (2012) good quality communication is characterized by traits including honesty, attentiveness, responsive, acceptant, open (back-and-forth), meaningful, honest, nonjudgmental, nonpunitive, and relaxed. (Harakey, Vermulst, de Vries, & Engels, 2010)

Harakeh et al. (2010) suggests that quality parent-adolescent communication consists of messages that are constructive, and delivered in a respectful manner, interactive or reciprocal in nature, and is extremely dependent upon whether or not the adolescent appreciates or is receptive of parental messages. This style of communication corresponds with recommendations made by public health officials and tobacco control researchers.
(USDHS, 2009; 2012) and supported by prior studies that have found that parents can influence their adolescents’ tobacco use by openly and clearly communicating with adolescents their expectations concerning smoking (Guilamo-Ramos et al., 2006; Kafka, & London, 1991; Small et al., 2012; Otten et al., 2007).

In a recent study conducted by McCool, Cameron, & Robinson (2011), investigators examined the relationship between parent-adolescent communication about smoking/tobacco use, adolescents’ perceptions of smokers in the media, and adolescents’ intentions to use tobacco/smoke among a sample of Auckland adolescents, (N=515) between the ages of 11–13. The investigation found that when parental messages were clear and concise adolescents held less favorable attitudes toward smokers (in the media), and lower intentions to use compared to those whose parents delivered ambiguous messages. The results also showed that adolescents who lived in households where parents delivered weak (rather than strong) antismoking message (e.g. little to no expectations and rules), adolescents were more likely to hold positive appraisals of smokers and report higher intentions to smoke. Moreover, the researchers stated that these relationships were independent of adolescents’ exposure to the media (McCool, Cameron, & Robinson, 2011).

Delivering mixed, inconsistent, or even neutral smoking-related messages can be confusing to adolescents and could be problematic. Thus, future studies should consider examining parental tobacco-related behaviors and communication with (Herbert & Schiaffino, 2007; Klein, Sterk, & Elifson, 2013). One weakness of the above mentioned study was the measures used to assess adolescent smoking. In this study a one-item survey
question (“Have you ever smoked a cigarette?”) was used to determine adolescents’ smoking status. It is possible that adolescents may have smoked other tobacco products besides cigarettes. Moreover, adolescents could interpret this question as having smoked an entire cigarette versus just taking a single or a few puffs of a cigarette. In the current study a number of items were used to assess adolescents’ smoking behaviors including the use of other tobacco products. Moreover, my study examined parental messages and the topics parents covered when talking to adolescents about tobacco use (e.g., negative health consequences, parents’ experiences).

In a parallel study, Harakeh et al (2010) examined the associations between general parenting practices (i.e., support, behavioral and psychological control) and whether parental smoking and adolescent smoking are mediated by parental smoking communication (i.e., frequency and quality) in a sample of 428 Dutch families. The study also explored within-family differences among early and middle adolescent siblings. The researchers measured family members perceptions of (a) support (e.g., “I/My mother supports my child/me in the things he or she/I do.”); (b) adolescents perceptions of behavioral and psychological control (e.g., “Before you go out on a Saturday evening, does your mother want to know with whom and/or where?”); (c) quality of communication (e.g., “My mother and I/My child and I are interested in each other’s opinion on smoking’’); (d) frequency of communication (i.e., how often in the past 12 months parents talked to their adolescent about smoking-related issues); (e) and finally adolescent and parental smoking behaviors.

The results revealed that the quality of communication between parents and their
adolescents was negatively associated with adolescents’ smoking behaviors (regardless of adolescents’ age). The more open, respectful and constructive the conversations, the less likely adolescents were to smoke. Additionally, the association between perceived parental support and adolescent smoking was mediated by quality and frequency of parental communication.

These findings suggest that parents who have open, positive, respectful and supportive relationships with their adolescents have higher quality, and more frequent communication about tobacco issues that results in lower rates of adolescent smoking. The findings confirm other research showing the important role of quality of communication (Kafka & London, 1991; Small et al., 2012; Otten et al., 2007). Given that this study was conducted with Dutch families, more research on families in other countries including the U.S. are needed. Moreover, examining ethnic minority families may also shed light on potential cultural factors that may influence adolescent smoking and targets of intervention efforts (Beauvais & Oetting, 2002). Finally, it is possible that factors other than parenting practices and parental smoking may have played a role in adolescents’ smoking behaviors. The current study examined the impact of the content of the parental messages and how parental prompting beliefs/behaviors may act as a potential instigator of adolescent smoking.

**Content of tobacco-related conversations.** In addition to the frequency and quality of parent-adolescent conversations surrounding smoking, *what* parents say to adolescents during discussions, or the content of conversations is equally important. For instance, in their longitudinal study Ennett, Bauman, Foshee, Pemberton and Hicks (2001) investigated
tobacco communication in a sample of 537 parents and their adolescents ages 12-14 years old (European American (80%) African American (10%), Hispanic (7%), and 3% identified as “Other”). Telephone surveys were used to assess parent-adolescent communication surrounding alcohol and tobacco including frequency and content at baseline then again one year later.

The findings showed that across tobacco/alcohol-related communication items, the topics parents discussed were the negative consequences of use (81.9%); encouragement not to use (73.2%); and strategies to resist peer pressure (70.6%). Fewer parents discussed household rules concerning use (64.8%) and/or disciplinary consequences in case of use (45.8%). Results also revealed that the frequency of conversations did not influence adolescents smoking or drinking initiation. Additionally, parental modeling (e.g., smoking and drinking behaviors) predicted initiation (with race moderating this relationship).

Examining whether parents deliver such messages is important and could inform prevention efforts. Studies have found that adolescents with nonsmoking parents were less likely to report household rules surrounding and more likely to believe that parents would negatively react to their smoking than their parents (Mahabee-Gittens, Dina, Gordon, & Huang, 2010). By not setting household rules and/or negative consequences and assuming that their adolescent understands and abide by their implicit antismoking rules, nonsmoking may inadvertently send messages to adolescents that parents are not firm in their beliefs about not smoking (Andersen et al., 2002).

Andersen et al (2004) investigated the influence of parental antismoking practices on
adolescent smoking among a sample of adolescents in the 12th grade and their parents (N=3,555) participating in the Hutchinson Smoking Prevention Project. Student participants were predominately were European American (90.8% and 51% were male). Parents reported on their antismoking practices, adolescent cigarette smoking, and their own cigarette smoking status via a mail-in survey. Adolescent self-reports of cigarette smoking were collected when students were in the 12th grade. The researchers found that parenting practices were significantly associated with lower rates of daily smoking. Parents who report having non-smoking household rules, requested to be seated in nonsmoking sections of public establishments, or who asked others not to smoke in their presence, were significantly less likely to smoke than adolescents of parents who did not engage in these antismoking methods. Moreover, the association between antismoking practices and decreased smoking among adolescents was found for both smoking and nonsmoking parents (Andersen, Leroux, Bricker, Rajan, & Peterson, 2004).

Obtaining adolescent reports of parental antismoking practices may have helped strengthen this study’s findings. It is plausible that adolescent may have different perceptions of parents’ behaviors, and that parents may have over-reported their actions because of recall bias or social desirability. Compared to European American families, African American families tend to live in areas that expose adolescents to greater risks of tobacco use (e.g., violence, crime, low resources) (Furstenberg, 1993; Massey & Denton, 1993). Given that this study was conducted with mainly European American families, future research should examine parental antismoking actions among families of other
races/ethnicities. The current study proposes to examine these associations in African American families, and to obtain both parent and adolescent reports of messages.

In their qualitative study of parent-adolescent communication about smoking Butler, Susan, Crozier-Kegler, Escoffery (2009) examined the content of tobacco conversations between rural African American parents, adult family members and adolescents. Adult participants were asked to identify the types of messages they delivered to adolescents in their smoking-related discussions, how adolescent reacted to the discussions, expected and actual consequences for adolescents trying a cigarette, and parental perspectives on strategies to keep adolescents from becoming cigarette smokers. The sample consisted of a 112 participants from 72 households with adolescents (ages 10- to 14-years). Participants were from non-smoking households, at least 1 adult smoked, and households in which all adults smoked.

The analysis revealed that more than half (51.8%) of adult participants were current smokers. Additionally, most of the parents or caregivers interviewed were women (71.4%) including mothers, grandmothers, and aunts. Findings also showed that 57% of adults said they frequently talked to their child about not smoking. Discussions focused on the negative health and economic consequences of smoking (including parent’s personal experiences) and peer influence on tobacco use. Additionally, parents reported that there were consequences of adolescents experimenting with cigarettes, included loss of privileges and lecturing adolescents about the dangers of smoking. Parents also reported that the strategies that they utilized to reduce adolescent smoking risk included: refraining from smoking around their
adolescent, ensuring that cigarettes were not accessible to adolescents, ongoing discussions about cigarette smoking, modeling healthy behaviors and monitoring adolescents’ whereabouts and peer relationships.

This study is one of the few studies that shed light on the types of messages that ethnic minority families convey to their adolescents about tobacco. In order to gain a more accurate picture of parent-adolescent communication, adolescent perceptions of these messages should be obtained and compared with those of caregivers. Furthermore, given their environmental differences (urban vs. rural), examining the content of discussions urban African American families may also prove useful.

In a qualitative study, Guilamo-Ramos, Bouris, Dittus and Jaccard (2008) assessed mother-daughter communication about smoking/tobacco among a sample of Latino mother-daughter dyads. The sample consisted of Latino mothers and their adolescent daughters between the ages of 11-14 years (N=40). Focus groups were held separately for dyads to gain participants’ perceptions of tobacco-related communication with their adolescent. The findings revealed that maternal messages mostly centered around tobacco use, the negative health consequences of smoking, peer influences, and the negative impact of smoking on the adolescents’ future. Missing from these conversations were parental expectations or smoking household rules. While parents’ discussion of the negative health consequences of smoking, may provide adolescents with parental expectations about not smoking, it may be more helpful to provide more direct messages. Future studies should examine whether or not parents explicitly and directly provide these messages.
The topic of setting expectations and household non-smoking rules about tobacco use are an important part of parent-adolescent tobacco communication. Various studies have found a positive relationship between households with non-smoking rules and adolescent tobacco outcomes (e.g., lower smoking experimentation, initiation and use) (Clark et al., 1999; Henriksen & Jackson, 1998; Huver, et al., 2006; Jackson & Henriksen, 1997; Kodl & Mermelstein, 2004). Contrary to this study’s findings, other research has found no relationship between household smoking expectations/rules/restrictions and adolescent tobacco use (den Exter Blokland, et al., 2006; Engels, et al., 2005).

Conflicting findings such as these warrant further study to help illuminate the impact of parent’s household rules on adolescents’ subsequent smoking. It seems plausible that in order to reduce the likelihood that adolescents smoke, that parents should avoid smoking or using tobacco in the presence of their adolescent whether inside/outside the home or automobile, otherwise adolescents may believe that their own tobacco use/smoking is socially acceptable and consistent with parents’ smoking/tobacco use behavior.

Finally, in an in-depth qualitative study of parent-adolescent tobacco communication, Small, Eastlink-Kushner and Neufeld (2012) recruited a sample of 38 Canadian parents (of which nine were current smokers, 17 former smokers and 12 non/never smokers) and their adolescents between the ages of 5-12 years old. The researchers used semi-structured interviews to measure parental views surrounding tobacco discussion including adolescents’ smoking status, factors influencing adolescents’ tobacco use, timing of parent-adolescent conversations and facilitators/barriers to communication.
Results showed that parents had raised the topic of tobacco use with their adolescent (either planned or spontaneously), yet they did so infrequently. Moreover when they did discuss the topic of tobacco, parents’ conversations focused around the health-related consequences of smoking, the negative influence of peers, parental expectations of not smoking, and finally parental warnings not to smoke. Notably, parents (especially former smokers) reported that they had doubts about their ability to deliver effective smoking-related messages to their adolescent. Furthermore, this lack of efficacy served as a barrier to communication.

**Parental self-efficacy in delivering antismoking messages to adolescents.** Bandura (1986) defines self-efficacy as an individual’s belief that he/she is competent and powerful enough to perform a particular behavior and/or that feeling he/she can exert control over any situation that may arise (Bandura, 1996). If parents are to deliver clear, concise tobacco-related messages they need to feel confident and knowledgeable.

In the study conducted by Guilamo-Ramos, Bouris, Dittus and Jaccard (2008) mentioned earlier, parents most often reported lack of self-efficacy when providing antismoking messages, lack of knowledge or access to information about cigarette smoking, difficulty understanding adolescent perceptions (e.g., generational differences) and time constraints, as barriers to their ability to effectively communicate with their adolescent. Moreover, although some mothers identified their smoking status (as a current smoker) as a barrier to communication others did not. Parents that reported that smoking was not a barrier to communication reported feeling confident enough to serve as an example for their
adolescent to avoid tobacco use. Moreover, parents also felt that their tobacco use did not indicate approval of their adolescents’ smoking. Despite the importance of parental efficacy when delivering message few studies have examined parents’ perception of their ability to convey effective messages.

Likewise, Kodl & Mermelstein (2004) conducted a school-based study surveying students (in grades 6-10) and their caregivers (N=345). The parents completed surveys including measures of parent/adolescent smoking status, parental self-efficacy in delivering antismoking socialization messages, and parental attitudes/beliefs about adolescent smoking. The results showed that parents with lower parenting self-efficacy and lower antismoking beliefs were more likely to have adolescents who smoked. Despite the fact that the study relied on self-reported beliefs and not actual behaviors, this study underscores the importance of parental self-efficacy on the content of parent-adolescent tobacco-related communication.

Similarly, in exploration of parental self-efficacy, parent-adolescent connectedness and adolescents’ smoking intentions to smoke, Mahabee-Gittens et al (2011) administered surveys to a sample of low-income African American (47.6%) and European adolescents (52.4%) (mean age = 12.9 years old) that were never smokers and their parent (N=272 dyads). Results revealed that higher parental self-efficacy in providing messages that discouraged adolescents (and increased parent–adolescent connectedness) were protective factors for adolescents’ intentions to smoke. Furthermore, these factors did not differ by parental smoking status or by race/ethnicity. The findings highlight the importance of high parental self-efficacy (regardless of parental smoking status) in decreasing adolescent
smoking intentions (Jackson & Dickinson, 2003, 2006; Sargent & Dalton, 2001). Thus, even
if parents smoke, if they feel confident about their ability to delivery antismoking messages
they could shape their adolescents’ intentions and future use of tobacco (Jackson &

The fact that parents regardless of their smoking status, can help reduce the likelihood
of adolescent smoking initiation and uptake is promising. As discussed previously, when
parents who smoke routinely deliver antismoking socialization messages (e.g., set
expectations, restrictions enforce non-smoking household rules and with their adolescent) to
their adolescent, they not only reduce the likelihood that their adolescent will initiate
smoking, but also reduce adolescents’ intentions to use tobacco products (Clark et al., 1999;
Jackson & Henriksen, 1997; Kodl & Mermelstein, 2004; Mahabee-Gittens, Ding, Gordon, &
Huang, 2010).

How parents feel when delivering antismoking messages is equally important. Prior
research has confirmed that when parents feel more knowledgeable and efficacious when
communicating with their adolescent, then they are more likely to be successful in their
socialization efforts and increase adolescents’ chances of success in a number of domains
(physically and mentally, socially and academically (Ardelt & Eccles, 2001; Bandura, 1997).
Moreover, parents who demonstrate high self-efficacy when communicating nonsmoking
messages can serve as role models for their adolescent, encouraging them to adopt attitudes
and beliefs independent of their parent’s behaviors (Ardelt & Eccles, 2001). Improving
parents’ and adolescents’ tobacco-related self-efficacy is important particularly for those
living in high poverty, high risk, low resource and economically disadvantaged areas all of which are factors that may contribute to adolescent smoking risk.

**Adolescents’ perceptions of parental trustworthiness.** Yet even if parents feel efficacious when delivering messages, in order to be effective, adolescents have to be receptive to parental antismoking messages and believe that their parents are credible and/or trustworthy. Guilamo-Ramos, Jaccard, Dittus and Bouris (2006) analyzed this relationship in a sample of 668 Latino and African American mother-daughter dyads. The investigators examined adolescent perceptions of parental characteristics including trustworthiness (e.g., “I can trust my mother when we talk”), expertise (e.g., “my mother is honest with me”), and accessibility (e.g., “It is difficult for my mother to find time to talk”) on adolescent risk-taking behaviors (smoking and sexual risk-taking), as well as parent-adolescent communication frequency. The results showed that adolescents’ perceptions of parental trustworthiness and expertise were predictive of adolescents’ cigarette smoking independent of parent-adolescent communication frequency.

Mahabee-Gittens and colleagues (2010) investigated these same interactions in their study assessing parent-child agreement of tobacco communication among a racially diverse sample of parents and their adolescents between the ages of 9-16 years old (n=299). Surveys were used to assess dyads agreement on measures of antismoking socialization communication (e.g., perceived tobacco attitudes, the presence of established rules regarding tobacco, and the frequency of specific topics related), as well as to determine whether concordance is associated with parental smoking status and/or parental race/ethnicity.
Authors in this study assessed five measures (types and frequencies of antismoking messages, household smoking rules/disciplinary consequences of use and parental reaction to adolescent use). Results revealed statistically significant adolescent-parent agreement for household rules (62%), likelihood of punishment for smoking (81%), and perceived parental reaction to smoking (76%).

The data also showed that adolescents whose parents smoked were more likely to underestimate parental reactions to their smoking. Moreover, adolescents whose parents were non-smokers were more likely to underestimate household smoking rules and overestimate their parental reactions to smoking. Last, the results suggest that adolescents and parents may have very different views of their tobacco-related communication. Adolescents whose parents smoke, may be more vulnerable to tobacco initiation because of parental pro-smoking behaviors (e.g., smoking), and “read” parents’ messages very different than parents expected or intended.

Finally, Herbert and Schiaffino (2007) conducted a study with 140 mothers and their adolescent daughters (in grades 10 to 12) examining the impact of maternal smoking communication, behaviors and attitudes on adolescents’ smoking attitudes and behaviors. Adolescents reported on their smoking attitudes/behaviors, maternal smoking antismoking messages (e.g., “My mother has made it clear that she disapproves of cigarette.”), pro-smoking messages (e.g., “My mother has told me that smoking cigarettes can make people feel more relaxed.”), smoking consequences (e.g., “My mother has told me that she better not catch me smoking.”), as well as maternal consistency and credibility (e.g., “When it comes to
smoking cigarettes, my mother says one thing but does another.”).

The results showed that adolescent perceptions of mothers’ consistent and credible antismoking messages, and mothers’ antismoking attitudes were positively related to adolescents’ antismoking smoking attitudes. Moreover, adolescents who had mothers that smoked were more likely to perceive their mothers as delivering less antismoking messages and were deemed as less credible than adolescents with parents that were “never” or “ex-smokers”. Together these studies highlight the need for prevention programs that specifically target parents that smoke. Likewise, the studies mentioned above emphasize the importance of not only teaching parents effective ways to deliver credible antismoking messages, but also address the gap between parental messages and parental smoking behaviors.

**Avoidance and/or pro-smoking communication.** Although it is widely known that antismoking messages can help reduce adolescents’ tobacco smoking risks, few parents actively engage in antismoking socialization. In fact, avoidance of the topic of smoking, or parental pro-smoking socialization is not uncommon (Henriksen & Jackson, 1998; Fearnow, Chassin, Presson, Sherman, 1998). For example, Waa et al (2011) explored whether parental behaviors related to smoking socialization and parenting were associated with smoking susceptibility and current smoking in adolescents ages 14–15 years old. Investigators used data from the New Zealand 2006 Survey, a 10-year longitudinal, school-based study of 3,189 students to measure adolescents’ susceptibility to smoking and current smoking status. Independent variables assessed were second-hand smoke exposure in the home, parental
smoking, parental antismoking expectations, antismoking rules, adolescents’ extra/pocket money, monitoring of monetary expenditures, general rule setting and monitoring, and concern about education.

The results revealed that adolescents’ exposure to second-hand smoke, and lack of parental antismoking expectations were independently associated with adolescents’ vulnerability to smoking and current smoking status (no dosage-response effect was found). Additionally, the lack of parental rules setting was associated with smoking susceptibility. By establishing household rules about not smoking and communicating non-smoking expectations, monitoring adolescents’ allowance/extra money, and general rule setting reduced adolescents’ risk of smoking vulnerability and/or uptake. It is plausible that parents that smoke may engage less often in conversations about not smoking or are reluctant to make fewer attempts to discourage their adolescents from smoking for a number of reasons. First, parents may view themselves as poor sources of antismoking messages because they feel that they lack the knowledge to initiate such conversations. Likewise, parents may feel hypocritical about delivering antismoking messages when they themselves smoke/use tobacco (Henriksen & Jackson, 1998; Newman & Ward, 1998). Third, parents may be uncertain as to when (e.g., age or developmentally appropriate time) and what (e.g., negative consequences, past experiences) to discuss with their children about tobacco.

In a qualitative study examining parent-child discussions about tobacco with preadolescents, Small, Kushner & Nuefeld, (2012) found that parents varied in the strategies they used to discuss the topic of tobacco with their adolescent. While some parents chose to
be very open with their children and deliver explicit messages about the health consequences of smoking, others were more cautious and concerned about their adolescents’ developmental readiness to receive such messages. In fact, some parents felt that their adolescents were not old enough to handle such strong messages related to the health consequences of smoking. Many of the parents in this study also chose to share with adolescents their past experiences with addiction; yet, others were more skeptical about when or if they would share such experiences.

While it is recommended that parents discuss smoking/tobacco use with their adolescent when it is developmentally appropriate (USDHHS, 2012), there are no specific guidelines about what to discuss at specific ages. Furthermore, there are no recommendations that could be found regarding whether or not parents should discuss past experiences with tobacco use or addictions with adolescents. This study included only preadolescent adolescents (ages 5-12) from mid- to high- income, two parent households. Thus, future studies should examine tobacco conversations and parental perceptions with adolescents. Although parental concerns surrounding appropriate timing and topics are legitimate they can serve as barriers to parent-child communication about the important topic of tobacco. This may pose a problem if others in the child’s environment (e.g., peers) begin to discuss their perceptions (positive and negative) or inaccurate smoking/tobacco related advice. This study looked at parental perceptions of barriers to communication among older adolescents (ages 12-17 years old).

Moreover, given that public opinion toward smoking has changed over the years, and
schools are increasingly providing tobacco education about the dangers of tobacco use, parents may feel less of a need to communicate with their adolescent about smoking (Newman & Ward, 1998). By underestimating their influence, parents that smoke not only miss the opportunity to talk to their child about not smoking, but also increase the risk of negative tobacco-related outcomes for their adolescent (Henriksen & Jackson, 1998). Furthermore, parents who smoke should not rule out the impact that smoking cessation (quitting smoking) can have on their adolescents (den Exter Blokland, Engels, Hale, Meeus, & Willemsen, 2004; Harak et al., 2010). It is equally important that adolescents’ perception and receptiveness of tobacco conversations are examined to help reduce their smoking risks (Harakeh et al., 2010; Herbert & Schiaffino, 2007). In this study I examined the types of strategies parents employ (e.g., using resources such as the media or extended family members) to initiate and convey messages about smoking/tobacco to their adolescents.

**Adolescents’ self-efficacy and tobacco-related attitudes and behaviors.** Studies have found that links between adolescents’ tobacco refusal efficacy and higher quality smoking-related communication (Hiemstra, Otten, van Schayck, & Engels, 2012; Otten et al., 2007). Research has also revealed that adolescents’ lowered tobacco refusal efficacy was related to adolescents’ smoking-related cognitions (i.e., higher positive smoking attitudes, higher intention to smoke and smoking onset (e.g., Flay et al., 1994; Harakeh et al., 2004; Otten et al., 2007).

Together, these studies support the claim that parents play an integral role in their adolescents’ tobacco-related attitudes and behaviors. By modeling their own tobacco
behaviors, monitoring their adolescents’ whereabouts, and through the messages they communicate, parents can influence adolescents’ attitudes, beliefs and behaviors toward smoking/tobacco use. Thus, if modifiable, these factors may help provide important intervention targets for early tobacco prevention programs not only in the school context, but also in other contexts (e.g., home/family life, community) (Johnson et al., 2011). Despite this, few studies have considered the effects of parents’ behaviors or the lack of parent-child tobacco-related communication on adolescents’ attitudes or intentions to smoke. Even fewer studies have examined this phenomenon among African American adolescents or their use of tobacco products other than cigarettes (e.g., cigars, cigarillos). This is an important limitation given the popularity of ATPs in the African American community and because African Americans may misreport or underreport their tobacco use if ATPs are not included (with brand names) in survey measures.

**Parental prompting behaviors and adolescent tobacco use.** While parents that smoke may attempt to convey messages that smoking/tobacco use is bad or harmful, their behaviors may suggest to adolescents otherwise. During the socialization process, parents can unintentionally contribute to adolescents’ undesired tobacco outcomes by sending pro-tobacco messages both verbally and non-verbally (Herbert & Schiaffino, 2007). In fact, prior studies have found that parents may encourage or instigate adolescent tobacco use by asking their adolescent to participate in, or assist with, their own tobacco habits.

Parental behaviors that encourage adolescents to practice or model tobacco-related behaviors are known as parental prompts (Laniado-Laborin, Woodruff, Candelaria, & Sallis,
2002). Parental prompts can include parents asking their adolescent to purchase tobacco products, bring parents cigarettes, light a cigarette, smoke with them, clean out an ashtray and/or providing an adolescent with tobacco promotional items (Jackson & Henrikson, 1997; Laniado-Laborin, Woodruff, Candelaria, & Sallis, 2002; Moreno et al., 1994). Parental prompting puts adolescents in direct contact/exposure with cigarettes, shows them how to light and buy cigarettes and provides opportunity for experimentation. Moreover, parents who engage in tobacco-prompting behaviors may inadvertently send messages to their adolescent that indicates their approval of smoking (Jackson & Henrikson, 1997; Small, Kushner & Neufeld, 2012). Studies have found that as many as 50% of middle and high school students reported that their parent has engaged in tobacco prompting behaviors at least once during their lifetime (Laniado-Laborin et al., 2002). Understanding whether or not parents recognize that the risk associated with such behaviors and/or why they might choose to involve adolescents in their tobacco behaviors is important. However, only a handful of studies have sought to examine these parent-child interactions and even fewer have examined this from both dyads’ perspective.

Most of what we know about parental prompting behaviors has come from qualitative studies with either adults (in retrospective reports) or adolescents. For example, Beech and Scarinci (2003) examined this topic when conducting a qualitative study to examine factors that influenced tobacco initiation among low-income African American adults (N= 118; ages 18-35 years-old). Responses to open-ended questions about tobacco use revealed that contextual and familial factors contributed to smoking initiation and maintenance. Although
most participants did not begin their tobacco use until late adolescents/early adulthood they reported having experimented with smoking several years prior to regular use during adolescence. Many of the participants indicated that a key factor in the onset of cigarette smoking was parental prompting. Lighting cigarettes for family members reportedly led to experimentation (e.g., “taking a few puffs”) and subsequent regular use. Additionally, exposure to familial smoking and the accessibility of cigarettes prompted tobacco use. Participants also identified reasons for delaying regular tobacco use and/or the use of other substances in lieu of cigarettes (e.g., marijuana, alcohol), fear of being caught by family and not wanting to disrespect parents as strongest reasons for not smoking.

In a second qualitative study, Alexander, Allen, Crawford and McCormick (1999) examined the cigarette smoking experiences of an ethnically diverse sample of adolescents between the ages of 13-19 years old from both rural and urban areas. Focus groups were conducted (N=227) as well as individual interviews (N=87). Open-ended questions were utilized to gain participants perspectives about their first smoking experiences including: those who were present at the time, strategies used to obtain cigarettes products, the context/setting, and participants’ feelings surrounding these experiences. The main themes that emerged were (a) friends and social approval versus social coercion; (b) family members as instigators, and (c) prompters and sources through which participants obtained cigarettes and (d) their feelings and sensory experiences during these situations. Interestingly, results revealed that participants identified family members as primary prompters of tobacco use, and participant’s responses represented a major theme that cut across both racial/ethnic and
gender groups. Reportedly, family members played a major role in terms of assisting adolescents with and initiating use (e.g., having adolescent try cigarettes), as prompters (e.g., asking adolescents to buy or light cigarettes), accomplices, as well as inadvertent sources of tobacco cigarettes (by providing access).

According to adolescents, parents in particular conveyed messages about the inevitability of smoking (e.g., “he figured I’d start anyway”) and perceptions of cigarette smoking as less harmful than drug use (e.g., “They [parents] would rather I smoke than do drugs”). Adolescents also identified extended family members (e.g., aunts, uncles) as initiators or accomplices in their tobacco use (e.g., provided tobacco products or encourage use). The results from this study are useful in that they provide insight into adolescents’ perceptions of parents’ normative beliefs regarding tobacco use. However, including parental reports of tobacco beliefs and behaviors would have strengthened the results of this study. Parents’, guardians’, and/or extended family members’ belief that adolescents’ early exposure to tobacco may help preclude future use, or that adolescent smoking is to be expected could have serious consequences for adolescents. Therefore, additional research is needed to identify parental beliefs about tobacco use, and parents’ strategies to avoid adolescent smoking uptake (particularly African Americans), is extremely important.

To date, there have been only a handful of studies that have used quantitative methods and obtained both parents’ and adolescents’ perceptions of parental prompting among racial/ethnic minority adolescents (e.g., Latino adolescents). For instance, a cross-sectional study of 7th and 8th graders from 10 schools in San Diego (N=3.599) Laniado-
Laborin, Woodruff, Candelaria, & Sallis (2002) examined Latino and non-Latino adolescents’ reports of parental prompting. This study consisted of mostly (63%) Latino participants. The remaining were non-Latino, European American (16%), Asian/Pacific Islander (11%), African Americans (4%) or other races/ethnicities (5%). Surveys measured: adolescent smoking, parental smoking, how often parents had engaged in seven prompting behaviors (i.e., empty/clean ashtray, bring cigarettes to parent, accept tobacco promotional item, light parent’s cigarette, start the cigarette and smoke with the parent), acculturation, and familial ties. The results showed that 30.6% of all adolescents in this sample, and 31% of all students reported living with at least one parent who smoked. The researchers found that parental prompting was associated with adolescent smoking, and that prompting occurred exclusively within families with a parent that smokes.

Results of the study also revealed that there were racial/ethnic differences in terms of prompting behaviors. For instance, Latino adolescents were more likely than non-Latino adolescents to report that a parent had asked them to buy and/or light cigarettes. Non-Latinos were more likely to report parental requests to empty an ashtray than Latinos. For students with at least one smoking parent, the smoking rate was 11.7% for students having report any parental prompts compared to 4.5% for those not prompted. Among Latino students the smoking prevalence was almost double for adolescents who were prompted compared to those who were not (13.2% vs. 6.0%). For Non-Latino adolescent rates of smoking were five times greater when prompted compared to those not exposed to parental prompts (9.3% vs. 1.6%, respectively). Moreover, an association was found between the number of parental
prompts and adolescent smoking, with smokers having reported 2.1 prompts (compared to 1.3 prompts for non-smokers).

One limitation of this study is the measure used to assess parental smoking (adolescents were asked to report how many times their parent either mother, father, stepmother or stepfather had smoked in the past 30 days). This study failed to include adoptive, non-biological/biological caregivers (e.g., grandmothers, aunts) who may also serve as smoking role models in the home. Including these caregivers could have strengthened the results of the study and more accurately predicted the influence of caregiver prompting on adolescents’ smoking behaviors. Finally, given the racial/ethnic differences were found in this study, additional work examining African American, or non-Latino adolescents may to help illuminate differences/similarities and inform prevention efforts.

A follow-up study conducted by these same researchers examined concordance between parent and adolescent reports of parental prompting (Laniado-Laborin, Candelaria, Villasenor, Wodruff and Sallis, 2004). A total of 270 parent-adolescent dyads participated in the study. Adolescents (mean age 13.4; SD=1.35) completed surveys assessing parental prompts, parent/adolescent smoking, acculturation and familialism. These same measures were collected from parents by telephone. Results showed that 39% of adolescents had tried smoking and 6.7% had smoked in the past 30 days. Among parents, 66% reported daily smoking and 32% reported engaging in at least 1 prompting behavior.

The most prevalent prompts (reported by parents and adolescents) included asking adolescents to retrieve or bring cigarettes, followed by asking adolescents to empty/clean
ashtrays. Notably, these same prompts accounted for the biggest differences in parent-adolescent agreement. Adolescents also reported that mothers prompted more than fathers on 4 of the 7 prompts. The use of different methods to collect data from parents (telephone survey) and adolescents (paper-pencil survey) was one of the major limitations in this study. It would also be helpful if more research on the use of alternative tobacco products was included. Moreover, the majority of participants in this study (60%) were of Latino/Hispanic origin. Thus, additional work investigating whether or not other ethnic minority parents endorse or participate in these same prompting behaviors is needed.

In contrast to the studies that showed the association between parental prompting and adolescent tobacco use, Woodruff, Laniado-Laborin, Candelaria, Villasenor and Sallis (2004) found very different results. In this prospective study of 478 non-smoking adolescents (at baseline) in 7th and 8th (majority Latino; n=301) and follow with telephone follow-up survey (1 year later) adolescents were surveyed to assess gender, ethnicity, cigarette use (having tried cigarettes, even just a few puffs), parental cigarette smoking, parental prompting behaviors (7-items). Findings indicated that one-third of all adolescents report having at least one parent that smoked. However, parental smoking status was not related to experimental smoking. Moreover, prevalence of parental prompting behaviors was highest for requests to bring cigarettes at 23.4% and lowest at requests to smoke with parent. Experimentation with cigarettes smoking one-year follow up was 10.3% for those with non-smoking parents compared to 10.9% among those with a smoking parent.
The researchers also found that parental prompts were not significantly related to adolescent smoking at follow-up. Thus parental prompting behaviors were not deemed a risk factor for adolescents’ smoking behaviors. This study has a number of limitations. The investigators used different survey methods at baseline (paper-pencil survey) and at follow-up (telephone survey). It is possible that adolescents may have been in the presence of parents when answering questions during the follow-up telephone interviews. Thus, they may have been reluctant to answer questions truthfully (due to the lack of privacy/confidentiality). Moreover, in this study researcher did not obtain parents’ perspectives of their own tobacco behaviors. In prior studies, dyads’ agreement related to reports of parental prompts has shown large discrepancies (Laniado-Laborin et al., 2004), thus, it may be important to gain parent reports of tobacco prompting. Thus, it may be important for future research to expand the assessment of adolescent and parents’ tobacco use to include products other than just cigarettes.

Overall, these studies show that parental prompting can adversely affect adolescents’ tobacco outcomes. It is possible that parents of varying ethnic/racial background may have very different approaches/strategies in reducing adolescent tobacco use (Small et al., 2012). Although parents may have good intentions they may be unknowingly placing their adolescents at risk. Whether parents view prompting behaviors as a strategy to deter future use (e.g., by asking adolescents to try smoking or smoke with them), or for convenience (e.g., asking adolescents to retrieve or light tobacco products) purposes, when parents decide to involve their adolescents in their tobacco use can have long-term devastating effects on their
adolescents’ health. Prompting behaviors, coupled with little to no parent-adolescent communication about tobacco use could prove to be problematic. If parents are asking adolescents to participate in their tobacco use (via prompting) or offer adolescents tobacco products, it may be important to teach adolescents how to refuse such offers/requests without feeling that they are disrespectful or disobedient to their parent. This may be particularly relevant for ethnic minority adolescents who place a high value on familial ties and respecting parents or other family members.

**Conclusion**

Research indicates that adolescent tobacco use, particularly the use of alternate tobacco products are on the rise. This increase is concerning given that adverse health consequences are associated with tobacco use. While historically, African American adolescents have experienced lower rates of smoking compared to their racial/ethnic counterparts, recent research suggests that this may be changing. Specifically, the gap between racial-ethnic groups may be narrowing as alternative products become increasingly popular among African American adolescents. Several factors have been implicated in this recent increase including: parental communication (direct and indirect) about tobacco-related topics and parental behaviors (e.g., parental smoking, parental prompting). Thus, understanding the degree to which each of these factors influence adolescent smoking/tobacco use is important.

In sum, there is quite a bit of literature about adolescent tobacco use and factors that influences adolescents’ attitudes and behaviors. However, there remain significant gaps in
the literature. First, more research on the experiences of African American adolescents is warranted. Specifically, it is essential that researchers explore the importance of ATPs in the African American community. Second, few studies have obtained both adolescent and parental reports of adolescents and their caregivers perceptions of tobacco use and how parents may shape adolescents’ tobacco outcomes. This study hopes to gain a more accurate assessment of these influences and perceptions by obtaining caregiver-adolescent reports rather than just adolescent reports. Understanding parental attitudes and the messages they convey could have important prevention implications.

Finally, since urban adolescents may be at an increased risk for tobacco use, more studies should examine this population. Few studies to date have examined whether urban African American parental communication mediates the relationship between parental behaviors smoking/tobacco use and/or prompting and adolescent tobacco-related cognitions and outcomes (attitudes, self-efficacy to avoid tobacco use, intentions to use and actual use) or how receptive adolescents (in terms of credibility/trustworthiness) are to parental antismoking/tobacco messages.

**Present Study Aims**

The current study addresses some of these methodological limitations and contributes to the literature by exploring how these influences relate to urban African American adolescents’ tobacco use/smoking. The specific aims are as follows:

1. **Determine whether tobacco parental prompting behaviors are associated with adolescent attitudes/beliefs about tobacco use, acceptance/norms and tobacco**
refusal efficacy. I hypothesized that adolescent whose parents engage in parental prompting behaviors would hold more positive attitudes and beliefs toward tobacco use, endorse higher normative beliefs about tobacco use (parental acceptance of tobacco use) and lower tobacco refusal efficacy.

2. Examine the relationship between parent-adolescent tobacco-related communication and adolescent beliefs about risk/benefits of tobacco use, perceived norms and tobacco refusal efficacy. I hypothesized that parents that communicate antismoking messages to their adolescent would have adolescent that exhibit more negative attitudes and beliefs toward tobacco use/smoking, lower normative beliefs about the acceptance of tobacco use and higher tobacco refusal efficacy.

3. Identify which of the three caregiver variables (i.e., prompting, antismoking communication or monitoring) predict adolescents’ tobacco-related outcomes. I hypothesized that parental prompting would have the greatest impact on adolescent outcomes than the other two parenting variables.

4. Examine whether parental communication moderates the relationship between adolescent attitudes/beliefs, their intentions to use, and tobacco use. I hypothesized that the more parents communicate antismoking messages to adolescent the weaker the relationship between adolescents’ positive smoking cognitions (attitudes/beliefs about smoking, higher intentions to use and lowered tobacco refusal efficacy) and tobacco use.
Method

Research Design

In this study, a cross-sectional questionnaire was administered to caregivers and their adolescents concerning their smoking attitudes/behaviors. The data collection process took four months to complete (February 2014 to June 2014). Funding from the Foundation for Healthy Youth was awarded to conduct this research. This study’s procedures were approved by the Virginia Commonwealth University Institutional Review Board.

Participants

A total of 101 dyads composed of African American caregivers and their adolescent children (ages 12-17) participated in this study (N = 202). Dyads were screened to ensure that they met the following eligibility criteria: (a) the adolescent was between the ages of 12 and 17 years of age (there was no age requirement for the caregiver); (b) both the caregiver and adolescent self-identified as African American; (c) caregiver was the legal guardian and resided in the same home with the adolescent; (d) the caregiver was a current smoker defined as having smoked a tobacco product within the last three months.

Adolescents’ mean age was 14.4 years (SD = 1.9). Fifty-two percent of adolescent were female and 48.0% male. Forty-two percent were in middle school (6th-8th grade), and 53.0 % were in high school. The remaining 5.0% of adolescents reported not being currently enrolled in school, did not answer, or their response was missing (Table 1). Caregivers’ mean age was 41.1 years (SD = 9.9), with an age range of 23 to 59 years of old. Seventy-eight percent were females and 22.0% were males (see Table 1). Slightly over three-fourths...
of caregivers were the biological parents of the adolescent. As for employment status, most caregivers (58.4%) reported that they were unemployed or unable to work, 30.7% held full- or part-time jobs, 5.9% were homemakers, 3.0% were retired, and the remaining 2.0% were full- or part-time students. Nearly three-fourths of caregivers’ highest level of education was high school graduate or less and 41% lived in public housing (see Table 2).

Table 1.

_Adolescent Characteristics (N = 101)_

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adolescent Age</strong></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1.0 (1.0)</td>
</tr>
<tr>
<td>12</td>
<td>25.0 (24.8)</td>
</tr>
<tr>
<td>13</td>
<td>11.0 (10.9)</td>
</tr>
<tr>
<td>14</td>
<td>15.0 (14.9)</td>
</tr>
<tr>
<td>15</td>
<td>13.0 (12.9)</td>
</tr>
<tr>
<td>16</td>
<td>18.0 (17.8)</td>
</tr>
<tr>
<td>17</td>
<td>18.0 (17.8)</td>
</tr>
<tr>
<td><strong>Adolescent Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>52.0 (51.5)</td>
</tr>
<tr>
<td>Male</td>
<td>48.0 (48.5)</td>
</tr>
<tr>
<td><strong>Adolescent Year in School</strong></td>
<td></td>
</tr>
<tr>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>21.0 (20.8)</td>
</tr>
<tr>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td>12.0 (11.9)</td>
</tr>
<tr>
<td>8&lt;sup&gt;th&lt;/sup&gt;</td>
<td>9.0 (8.9)</td>
</tr>
<tr>
<td>9&lt;sup&gt;th&lt;/sup&gt;</td>
<td>16.0 (15.8)</td>
</tr>
<tr>
<td>10&lt;sup&gt;th&lt;/sup&gt;</td>
<td>17.0 (17.8)</td>
</tr>
<tr>
<td>11&lt;sup&gt;th&lt;/sup&gt;</td>
<td>14.0 (13.9)</td>
</tr>
<tr>
<td>12&lt;sup&gt;th&lt;/sup&gt;</td>
<td>6.0 (5.9)</td>
</tr>
<tr>
<td>Not Enrolled in School</td>
<td>2.0 (2.0)</td>
</tr>
<tr>
<td>Missing</td>
<td>3.0 (3.0)</td>
</tr>
</tbody>
</table>
Table 2.

*Caregiver Characteristics (N = 101)*

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caregiver Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>79.0 (78.2)</td>
</tr>
<tr>
<td>Male</td>
<td>21.8 (22.0)</td>
</tr>
<tr>
<td>Caregiver Marital Status</td>
<td></td>
</tr>
<tr>
<td>Single, never married</td>
<td>6.0 (68.3)</td>
</tr>
<tr>
<td>Married</td>
<td>12.0 (11.9)</td>
</tr>
<tr>
<td>Living as married</td>
<td>1.0 (1.0)</td>
</tr>
<tr>
<td>Separated/Divorced/Widowed</td>
<td>17.0 (16.8)</td>
</tr>
<tr>
<td>Missing</td>
<td>2.0 (2.0)</td>
</tr>
<tr>
<td>Caregiver/Adolescent Relationship</td>
<td></td>
</tr>
<tr>
<td>Biological Father</td>
<td>16.0 (15.8)</td>
</tr>
<tr>
<td>Biological Mother</td>
<td>63.0 (62.4)</td>
</tr>
<tr>
<td>Adopted Father/Mother</td>
<td>4.0 (4.0)</td>
</tr>
<tr>
<td>Grandfather/Grandmother</td>
<td>11.0 (10.9)</td>
</tr>
<tr>
<td>Stepfather/Stepmother</td>
<td>1.0 (1.0)</td>
</tr>
<tr>
<td>Aunt/Uncle</td>
<td>6.0 (6.0)</td>
</tr>
<tr>
<td>Caregiver Education</td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>34.0 (33.7)</td>
</tr>
<tr>
<td>High school graduate</td>
<td>41.0 (40.6)</td>
</tr>
<tr>
<td>Some college/trade school</td>
<td>15.0 (14.9)</td>
</tr>
<tr>
<td>Earned Bachelor degree or higher</td>
<td>7.0 (6.9)</td>
</tr>
<tr>
<td>Missing</td>
<td>5.0 (5.0)</td>
</tr>
<tr>
<td></td>
<td>3.0 (3.0)</td>
</tr>
<tr>
<td>Current Living Status</td>
<td></td>
</tr>
<tr>
<td>Own a home</td>
<td>6.0 (5.9)</td>
</tr>
<tr>
<td>Rent single family home/apartment</td>
<td>47.0 (46.5)</td>
</tr>
<tr>
<td>Live in public housing</td>
<td>41.0 (40.6)</td>
</tr>
<tr>
<td>Other</td>
<td>7.0 (6.9)</td>
</tr>
<tr>
<td>Caregiver Income (Before taxes)</td>
<td></td>
</tr>
<tr>
<td>Less than $25,000</td>
<td>85.0 (84.2)</td>
</tr>
<tr>
<td>$25,000 - $50,000</td>
<td>14.0 (13.9)</td>
</tr>
<tr>
<td>$50,000 - $75,000</td>
<td>2.0 (2.0)</td>
</tr>
</tbody>
</table>
**Recruitment.** A sample of caregivers and adolescent were recruited to participate and snowballing techniques were utilized to help facilitate the recruitment process. Dyads were recruited through multiple mechanisms including flyers posted at community sites that primarily serve African Americans (e.g., low income apartments/public housing complexes, community resource centers, and health clinics) and from referrals from community partners that serve area adolescent (e.g., Parks & Recreation Centers, The Boys & Girls Club). Flyers provided information about the study, inclusion criteria, and contact information (e.g., research office contact, telephone number and email address). Flyers instructed participants to contact the project coordinator to learn more about the study, or schedule an appointment to complete the survey.

In addition to flyers, several undergraduate and graduate assistants attended a variety of community events (e.g., health and job fairs, summer camp registration events etc.) to help promote the study and build rapport and trust with both caregivers and youth. A description of the project was presented and the study goals were explained to potential caregivers and their adolescents. Consent/assent forms and surveys were readily available for dyads that expressed an interest in participating; therefore, they had the option of completing the survey during these events, or at a later date. If dyads were interested in participating, yet choose not to complete the survey (due to time constraints or for logistical reasons) at that time, potential participants were given the option of scheduling an appointment for a later date/more convenient time or location. If the caregiver was not present during these events,
information about the study was sent home with the adolescents. Adolescents returned home with information about the study (e.g., flyer explaining the overall purpose of the study, study criteria, and study coordinator’s contact information). Smoking caregivers subsequently contacted the study coordinator to obtain more information about the project and/or to schedule an appointment. Thus, in this study, gaining the trust and interest of the adolescents was an instrumental part of securing caregiver consent.

**Procedures.** During the initial call the caregiver was provided an overview of the study and screened to ensure that they and their adolescent met the eligibility criteria (e.g., age, caregiver smoking status). If adolescent lived in a two-parent household and both parents smoked, the maternal caregiver was interviewed since females are typically the primary caretakers of adolescent (Bohannon & Blanton, 1999; Cheal 1987), maternal smoking exerts more influence and are stronger predictors of adolescent smoking behaviors than paternal smoking (Avenevoli & Merikangas, 2003; Kandel, & Wu, 1995; Selya, Dierker, Rose, Hedeker, & Mermelstein, 2012). Similarly, in cases where more than one adolescent resided in the household, met the inclusion criteria, and wanted to participate, the oldest of the adolescents was selected as the participant (given the nature of the topics in the survey).

If dyads met the eligibility criteria and agreed to participate, an appointment was scheduled for a convenient time and location. Location options included the participant’s home, research offices, community center offices, or another public location. In order to ensure that participants felt comfortable and were forthcoming with their answers during the
consent process, the importance of the study for African American health, adolescent smoking and future health implications was explained. Moreover, dyads were separated during the process to ensure privacy and told that their responses would be kept confidential, and not shared with their caregiver. Additionally, it was stressed that participation in all aspects of the study was completely voluntary and dyads were informed that they could limit (e.g., skip or not answer a question) or discontinue participation at any time without any negative consequences. As an added measure of confidentiality, after completion the surveys were de-identified. Other times, the adolescent would return to the event with his/her caregiver ready and willing to participate. At this time, the study was explained in detail and any questions or concerns the caregiver may have had were addressed. Caregivers were also allowed to view the adolescent questionnaire prior to granting consent.

After providing consent/assent, caregivers and adolescents completed the self-administered questionnaires in separate rooms (at the same time), to ensure confidentiality. On average, the survey took dyads between 45 to 60 minutes to complete (with the caregiver survey taking approximately 10-15 more minutes than the adolescent interview). During this time, the researchers were available to read and/or clarify survey questions and answer any questions that the participants had (caregivers and adolescent separately).

Upon completion, research assistants checked to ensure that participants’ had not unintentionally missed any questions and had completed the surveys in their entirety. After screening the surveys, caregivers and adolescents each received $20 cash for their time and effort. Participants were also provided with an information package that contained a brochure
specifically designed for African Americans (published by the CDC, 2013) that promotes smoking cessation and provides specific guidelines for smoking cessation, as well as tips on how to talk to their adolescent about not smoking. Caregivers also received local resources for the prevention of adolescent tobacco use and smoking cessation programs (e.g., Smoke-Free Virginia, Quit Now).

Measures

Both caregivers and adolescents completed surveys. Adolescent surveys included measures about their attitudes toward tobacco, intentions to use tobacco, refusal tobacco efficacy, and tobacco use (past 30 day and lifetime). Caregivers completed measures of their own tobacco use, adolescent tobacco use, as well as demographic information. Lastly, dyads completed measures related to caregiver prompting and monitoring behaviors, as well as caregiver-adolescent communication about tobacco.

Adolescent tobacco use intentions. A modified version of the Adolescent Intention to Smoke Scale (Mahabee-Gittens et al., 2011) was used to measure adolescents’ thoughts about whether they will smoke in the future. This scale consists of two items that ask adolescent whether or not they intend to use different types of tobacco products (i.e., cigarettes, cigars and cigarillos) separately in the next 6 months and as an adult (e.g., “Do you think you will use cigarettes in the next 6 months”). The modified version for this study included an added item that assesses the use of ATPs over the next six months and once the adolescent reaches adulthood. The responses fall on a 5-point scale with 1 representing “Definitely not” and 5 representing “Definitely will”. This measure has been shown to have
predictive validity in previous studies with racial/ethnic minority adolescents (Jackson, 1998; Guilamo-Ramos, Dittus, Holloway, Bouris, & Crossett, 2011). Item scores were summed to obtain a total intentions score so that a higher score indicate higher intentions to smoke in 6-months and as an adult. The internal reliability for this scale was .81 for intentions to use within the next six months and .86 for intentions to use as an adult.

**Adolescent attitudes, beliefs and expectancies.** Adolescents also completed a modified version of the Fishbein-Azjen-Hanson Questionnaire (FAHQ; Hanson, M.S. 1999). This measure was adapted to include measures of adolescent ATP use. The FAHQ is based on the theory of planned behavior (Ajzen, 1985) and consists of four subscales. The present study used three subscales to assess adolescents’ attitudes and beliefs toward smoking, outcome evaluations, and perceptions of subjective norms or normative beliefs, and perceived behavioral control (adolescents intentions to use were excluded). A 7-point scale with 32-items were used to determine adolescents’ tobacco-related attitudes, belief and subjective norms. Responses for tobacco attitudes (e.g., “If I smoke cigarettes, I will get cancer.”) were recorded separately based upon the type of tobacco product (i.e., cigarettes, cigars, cigarillos), with responses ranging from 'extremely unlikely' to 'extremely likely'; outcome evaluations (e.g., “If I use tobacco products that help me relax, that is…”), with responses ranging from 'extremely good' to 'extremely bad'); and finally normative beliefs (e.g., “If I smoke cigarettes, cigars or cigarillos, my mother would…”), with responses ranging from 'extremely approve' to 'extremely disapprove'. The mean scores (from the three subscales) were summed so that a higher scores represents more positive attitudes, beliefs
about tobacco use and outcomes, and lower perceptions of tobacco as normative or acceptable by significant others including caregivers. In prior studies this scale had acceptable reliabilities with a Cronbach's alphas between .72-.82 for African-Americans (Hanson, 1999). In this study, the internal reliability for this scale was .74.

**Tobacco Refusal Self-Efficacy.** Adolescents also completed the *Tobacco Refusal Efficacy Scale* - an adaptation of the *Specific Events Drug and Alcohol Refusal Efficacy* (SEDARE) scale (Belgrave, Reed, Plybon, & Corneille, 2004; Conners, Plybon, & Pegg, 2003) that measures adolescent’s (ages 8 and older) ability to resist tobacco use. The SEDARE was adapted in this study such that adolescents were asked about tobacco use only rather than also asking about alcohol and other drug use. This adaptation was done so that the drug refusal efficacy measure would relate to the study’s dependent variable (e.g., adolescents’ tobacco refusal efficacy). Adolescents responded to eight items that inquire about whether they would be tempted to smoke under certain potentially stressful or pressured conditions. A sample item is, “I would be tempted to smoke, if I was worried about a problem I had.” Items were scored scale with higher scores implying a stronger confidence not to smoke (i.e., high refusal efficacy). Conners et al. (2003) reported good internal reliability with an alpha of 0.89. Convergent validity was found as this scale was significantly correlated with a measure of drug use. The utility of this scale has also been previously examined and shown to have excellent reliability ($\alpha = .93$) in studies with urban African American adolescents (Belgrave, Reed, Plybon, & Corneille, 2004; Nasim et al.,
Adolescent tobacco use. Adolescents and caregivers reported on the use and frequency of tobacco use using a modified version of the self-report Adolescent Risk Behavior Survey (YRBS; CDC, 2011). Tobacco-specific questions on the YRBS include 9-items asking about adolescent’s initiation of tobacco use/lifetime use and current use (number of tobacco products per day). The modified version assessed the use of the following tobacco products separately: cigarettes; cigars, cigarillos, or little cigars (e.g. Black and M ilds), and e-cigarettes. Two items include “Have you ever smoked a cigarette even one or two puffs? Have you ever smoked a cigar, little cigar, or cigarillo even one or two puffs?” and “During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day? How many cigars, cigarillos did you smoke per day?” Adolescent smoking was assessed utilizing a multi-part question that first asks adolescent “have you ever smoked (even one puff)?” to which adolescents could respond yes or no. Adolescents subsequently answered questions that asked separately "how many cigarettes/cigars/cigarillos have you smoked per day in the past 30 days?" with response options "I have not smoked in the past 30 days" to "20 or more days". These items were collapsed to form one continuous variable (i.e., represent “yes” or “no” for adolescent smoking status). The internal reliability for this scale was .70.

Caregiver prompting behaviors. Dyads completed a 8-item index to assess tobacco prompting behaviors (Moreno et al, 1994; Woodfuff et al., 2004). Dyads reported on whether
they “have” or “have not” ever asked their adolescent to: (1) empty or clean their ashtray; (2) retrieve cigarettes, cigars or cigarillos; (3) provide promotional items from the tobacco industry as a gift; (4) purchase cigarettes, cigars or cigarillos; (5) light their cigarette, cigar or cigarillo; (6) start a cigarette, cigars or cigarillos; and (7) smoke cigarettes, cigars and/or cigarillos with the caregiver. Items were scored (have = 1, have not = 0) with higher scores indicating higher rates of caregiver prompting behavior. The items were totaled to compute a final prompting score. This measure has been used reliably with caregivers/adolescents across ethnicities (Liandano-Laborin, Woodbruff, Candelaria, & Sallis, 2002; Moreno et al., 1994). The internal reliability for this scale was .72 and .76 for caregivers and adolescents (respectively).

**Caregiver-adolescent communication.** Adolescents and caregivers were asked to complete a modified version (including the use of ATPs) of the *Antismoking Socialization Questionnaire* (Jackson & Henriksen, 1997) that include 5 items that tap in to adolescents’ perceptions of different aspects of tobacco-specific messages given to them by caregivers assessing: (1) Whether caregivers had discussed the topic of tobacco with adolescent (2) Whether caregivers allow/disallow smoking inside the home; (3) whether the adolescent believes that their caregiver would know if he/she were smoking cigarettes, cigars, and/or cigarillos; (4) Whether there would be consequences if the adolescent were to smoke cigarettes, cigars and/or cigarillos, and (5) whether the adolescent says he/she would disregard a caregiver’s explicit request not to smoke cigarettes, cigars and/or cigarillos. Adolescents responded by answering 1 for “yes” or 0 for “no.” The scores were then
summed so that a high score implies higher levels of caregiver antismoking socialization communication. This scale has been shown to be reliable (.79-.89) in prior studies with adolescents (e.g., Henrikson & Jackson, 1998; Otten, Engels, & van den Eijnden, 2007; Otten, Engels & van den Eijnden, 2008). The internal reliability for this scale was .86.

**Caregiver monitoring.** Adolescents and their caregivers were also asked to complete the Parental Practices Scale (PPS), to assess the behaviors of both caregivers and children that relate to caregivers’ awareness of their children’s activities. The measure consists of 24 items that fall into two broad subscales: Knowledge (Monitoring) and Sources of Parental Knowledge. The Parental Knowledge subscale (9 items) was developed to measure what caregivers know (e.g., “Does your caregiver know where you go when you are out with friends at night?”). The Sources of Knowledge subscale is further subdivided into Child Disclosure, Solicitation, and Control. The Child Disclosure subscale (5 items) was developed to measure an important source of parents’ knowledge of adolescents’ whereabouts that is willingly disclosed by the child (Kerr & Statin, 2000; e.g., “Do you hide a lot from your caregiver about what you do during nights and weekends?”). The Solicitation subscale (5 items) was developed to measure a second source of caregiver knowledge, that which is requested of the child by the caregiver (e.g., “How often has your parent started a conversation with you about your free time?”). The Parent Control subscale (5 items) was developed to measure behavioral control and rule enforcement (e.g., “Do you need to have your caregiver’s permission to stay out late on a weekday evening?”). Items are assessed on a 5-point scale, ranging from higher knowledge/control to lower knowledge/control. Kerr and
Statton (2000) found that internal consistency for the various subscales ranged from .69 to .85 for adolescent’s report. More recent data found reliabilities as follows: Knowledge = .77, Child Disclosure = .64, Solicitation = .75, and Control = .83 (Sullivan et al., 2009). Alpha reliabilities of the caregiver-report version for the Child Disclosure subscale were .80, .69 for caregiver-reported Solicitation, and .75 for the Control subscales.

**Data Analysis Plan**

**Power analysis.** Prior to data collection, a power analysis utilizing the software, G*Power (Faul, Erdfelder, Lang, and Buchner, 2009) was conducted to determine the optimal sample size to ensure adequate power to detect statistical significance assuming medium effect sizes (i.e., .80). It was determined that at least 89 caregiver-adolescent dyads, or 178 participants, was adequate in order to have sufficient power. The sample size was eventually rounded to 100 dyads, for a total target sample of 200 participants.

**Data entry.** Prior to completion of data collection, a codebook and four separate database files (two adolescent and two caregiver databases) were created using IBM Statistics SPSS – Version 22 (IBM Corp., 2013). The codebook served as a manual for four undergraduate/graduate psychology research assistants that were responsible for inputting the data. A tracking document was also created to help monitor data entry progress and/or resolve problems or questions with responses/measures found during the data entry process. Research assistants were provided with instructions on how to utilize the codebook and the tracking document. Each research assistant entered the surveys (either the caregiver or adolescent) into the SPSS database. Double data entry was performed and then verified for
completeness and accuracy (Tabachnick & Fidell, 2001). If any discrepancies were found, the original surveys were retrieved and the file(s) corrected. After confirming the accuracy of the data, the caregiver/adolescent databases were merged into one file.

**Data preparation and cleaning.** Careful steps were taken to prepare the data for analyses. Data were checked for any potential violation of the statistical assumptions for missing data, normality, univariate outliers, and multicollinearity.

**Missing data.** It has been suggested that the pattern of missing data is more important than the amount of missing data (Tabachnick & Fidell, 2007). Determining whether data are missing, missing completely at random (MCAR), missing at random (MAR), or missing not at random (MNAR), will dictate the appropriate treatment of missing data. The data were carefully screened for missing data (Schafer & Graham, 2002). The missing values for demographic data (e.g., race/ethnicity, grade level) ranged from .2% to 4.4%. For example, one adolescent participant did not provide his/her grade level, however this participant did provide their age/date of birth). Additionally two participants did not provide their race/ethnicity. These participants did however self-identify as African American during the screening and consenting process. In general, if a variable has less than 5% missing data, it is not problematic during analysis (Little & Rubin, 1987).

**Univariate outliers.** The dataset was examined for univariate outliers by calculating z-scores. Tabachnick and Fidell (2007, p.73) suggest that cases with z-scores in excess of 3.29 are potential outliers. Analyses revealed that consistent with the literature, z-scores were found to be greater than the cut-off of 3.29 in the measure of parental monitoring (e.g.,
z scores = 3.99, 4.16, 4.27, 4.29, and 4.33), adolescent tobacco use (e.g., 3.48, 3.54) and adolescent’s attitudes toward tobacco (e.g., 3.76, 4.05, 4.17). Tabachnick and Fidell (1996) provide guidelines on winsorizing: outliers where the Z-score is greater than three standard deviations above or below the mean (i.e., $Z > 3.29$). These were recoded so that $Z = 3.29$. These skewed variables were subsequently winsorized to bring them into within three standard deviations from the mean and recoded. All of the remaining variables were found to have acceptable variability with no outliers (i.e., skew < |2|).

**Multicollinearity.** Collinearity statistics were conducted. Tolerance values for the predictor variables were greater than .10 and variance inflation factors (VIF) values were less than 10, indicating a lack of multicollinearity (Field, 2005). Intercorrelations among predictor variables were also performed to gather additional evidence of lack of multicollinearity. Among the variables of interest, no correlation coefficient was above .80, therefore, no variables were deemed “multicollinear”.

**Normality.** To determine whether the variables were normally distributed, descriptive statistics, including skewness and kurtosis, were calculated for all variables. All variable were found to be within normal range, with skewness and kurtosis scores below or slightly above the absolute value of 1. Next, scatterplots were run to confirm the assumption of linearity, as well as residuals scatterplots to confirm the assumption of homoscedasticity. After assumptions were checked through several diagnostic methods, it was established that the data were in line with the normal distribution assumptions for hierarchical regression.
analysis. Finally, covariate gender was dummy coded to facilitate interpretation (with female
gender as the reference group).

**Hypothesis testing.** After checking for any violations of the statistical assumptions
multiple regression analyses was performed to examine each of the specific study aims as
follows. The overall purpose of the present study was to ascertain impact of caregiving
variables on adolescent tobacco-related outcomes. Therefore, it was appropriate to use
multiple regressions in this study because its primary purpose is to develop an equation that
can be used for predicting values of a dependent variable (Mertler & Vannatta, 2005).
Regression analysis determined the amount of variance explained by the caregiving variables
in adolescent tobacco outcomes and assessed the relative contribution of each predictor
variable.

As mentioned earlier, the study was guided by the four specific aims. In order to test
each hypothesis, a series of multiple regressions was conducted for each outcome variable
separately. Regression equations were constructed to account for the variance of key
demographic variables. Hierarchical linear regressions were performed, one for each
outcome (i.e., attitudes, efficacy, intentions, and tobacco use). Age and gender were
controlled for in the regression equation. A dummy variable was created for gender during
data entry (coded to facilitate interpretation), and gender and age were always entered in the
first step of the regression equation. The variables were also mean-centered to help reduce
and/or eliminate multicollinearity and improve the interpretability of the findings (Aiken &
West, 1991). In the final moderation analysis, age and gender were loaded into the first
block. Adolescent attitudes toward smoking/tobacco use were loaded into the second block. Caregiver antismoking communication was then loaded into the third block. Finally, the interaction term (adolescent smoking attitudes x caregiver antismoking communication) was loaded into the fourth block. The analyses for each aim are covered in the following section.

**Results**

**Descriptive Statistics**

After ensuring that all statistical assumptions were met, descriptive statistics were performed. Analysis of the means, standard deviations, and reliabilities for each continuous independent, covariate, and dependent variable were conducted. Pearson product correlations were computed to examine the significance and direction of relationships among the independent and dependent variables including demographic variables. A criterion level of $p < .05$ was used for all analyses and effect sizes were calculated. Furthermore, bivariate correlations were conducted between the continuous study variables in the study (Tables 5-8) to determine if there were any relations between them and the demographic variables. These correlations were conducted separately to examine the associations among the (1) dependent variables; (2) demographic variables; (3) independent and moderator variables.

Bivariate correlation analyses are summarized in tables 6 through 8. Significant associations were found with refusal efficacy, adolescents’ intentions to use tobacco at six months and as an adult, and tobacco use (Tables 6-8). Inter-relations were also found between adolescent gender and caregiver communication, such that caregivers were more likely to convey antismoking messages to male adolescent than female adolescents.
Correlations were conducted between the continuous variables in the study to determine if there were any interrelations among them and the demographic variables.

**Adolescent tobacco use.** Almost one-third of the adolescents (30.7%) reported lifetime smoking (35.6% an ATP; see Table 3). Current smoking (past 30 day) was also reported, with 8.8% of adolescents indicating that they had smoked a cigarette; and 26% reported ATP use, and none had used electronic cigarettes (Table 3). For adolescents’ intentions to use, a higher percentage of adolescents reported “no intentions to use” in the next six months than as an adult. Additionally, 9.9% of adolescents indicated that as an adult they “probably” or “definitely will” use cigarettes/cigars, and 19.8% cigarillos (Table 4).

Table 3.

**Parent and Adolescent Tobacco Use (Lifetime Use)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes</th>
<th>No</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parents’ Use of Tobacco Products</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cigarettes</td>
<td>92.1%</td>
<td>5.9%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Cigars</td>
<td>20.8%</td>
<td>74.3%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Cigarillos</td>
<td>46.5%</td>
<td>50.5%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Chewing Tobacco</td>
<td>4.0%</td>
<td>91.0%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Snuff</td>
<td>6.0%</td>
<td>92.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>E-Cigarettes</td>
<td>19.8%</td>
<td>74.3%</td>
<td>5.9%</td>
</tr>
<tr>
<td><strong>Adolescents’ Use of Tobacco Products</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cigarettes</td>
<td>30.7%</td>
<td>65.3%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Cigars, Cigarillos</td>
<td>35.6%</td>
<td>62.4%</td>
<td>2.0%</td>
</tr>
<tr>
<td>E-Cigarettes</td>
<td>1.0%</td>
<td>98.0%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>
Table 4.

Adolescent’s Intentions to Use Tobacco

<table>
<thead>
<tr>
<th>Measure</th>
<th>Definitely Not</th>
<th>Probably Not</th>
<th>Not Sure</th>
<th>Probably Will</th>
<th>Definitely Will</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intentions to Use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>in 6 Months</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cigarettes</td>
<td>72.3%</td>
<td>7.9%</td>
<td>14.9%</td>
<td>3.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Cigars</td>
<td>66.3%</td>
<td>14.9%</td>
<td>13.9%</td>
<td>4.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Cigarillos</td>
<td>56.4%</td>
<td>12.9%</td>
<td>21.8%</td>
<td>8.9%</td>
<td>3.0%</td>
</tr>
<tr>
<td><strong>Intentions to Use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>as an Adult</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cigarettes</td>
<td>54.5%</td>
<td>12.9%</td>
<td>21.8%</td>
<td>8.9%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Cigars</td>
<td>58.4%</td>
<td>11.9%</td>
<td>18.8%</td>
<td>8.9%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Cigarillos</td>
<td>47.5%</td>
<td>10.9%</td>
<td>20.8%</td>
<td>13.9%</td>
<td>5.9%</td>
</tr>
</tbody>
</table>

Caregiver tobacco use. When asked about the type of tobacco products they have used (lifetime), 92.1% of caregivers reported smoking cigarettes, 20.8% cigars, 46.5% cigarillos, and 2.0% were snuff/chewing tobacco users. Finally, slightly over three-fourths of (77.2%) of caregivers indicated that they had tried smoking marijuana. Caregivers were also asked about their adolescents’ tobacco use. Responses were coded for concordance as either “0” for no or “1” for yes. Twenty-five percent of caregivers responded “yes” to this question. When corresponding dyads’ responses were compared for agreement, discrepancies were found (8.91% caregivers responded “yes”, while their adolescent reported “no”, they did not smoke; moreover, when responding to this question, 7.92% of adolescents indicated “yes”, yet their caregiver indicated “no”).
Table 5.

*Descriptive Statistics for Independent and Dependent Variables*

<table>
<thead>
<tr>
<th>Measure</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caregiver Prompting</td>
<td>2.16</td>
<td>1.93</td>
<td>.00-8.00</td>
</tr>
<tr>
<td>Caregiver Communication</td>
<td>3.97</td>
<td>1.07</td>
<td>.00-5.00</td>
</tr>
<tr>
<td>Caregiver Monitoring</td>
<td>80.56</td>
<td>15.48</td>
<td>37.00-106.00</td>
</tr>
<tr>
<td>Adolescent Tobacco Attitudes</td>
<td>77.43</td>
<td>22.01</td>
<td>24.00-136.00</td>
</tr>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adolescent Tobacco Refusal Efficacy</td>
<td>12.54</td>
<td>3.88</td>
<td>.00-16.00</td>
</tr>
<tr>
<td>Adolescent Intentions to Use (within the next 6 Months)</td>
<td>4.98</td>
<td>2.58</td>
<td>3.00-12.00</td>
</tr>
<tr>
<td>Adolescent Intentions to Use (as an adult)</td>
<td>5.87</td>
<td>3.07</td>
<td>3.00-15.00</td>
</tr>
<tr>
<td>Adolescent Tobacco Use (Lifetime Use)</td>
<td>3.23</td>
<td>2.26</td>
<td>2.00-10.00</td>
</tr>
</tbody>
</table>

* p< .05  ** p<.01
Table 6.

Correlations between Dependent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Adolescents’ Refusal Efficacy</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Adolescents’ Intentions to Use (Within the next 6 Months)</td>
<td>.466**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Adolescent’s Intentions to Use (As an Adult)</td>
<td>-.399**</td>
<td>.770**</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Adolescents’ Tobacco Use</td>
<td>-.357**</td>
<td>.548**</td>
<td>-.518**</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>5. Adolescent Attitudes</td>
<td>-.373**</td>
<td>.601**</td>
<td>-.534**</td>
<td>.506*</td>
<td>---</td>
</tr>
</tbody>
</table>

* p<.05 ** p<.01
Table 7.

*Correlations among Moderator/Demographic Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td></td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Gender</td>
<td>.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Caregiver Communication</td>
<td>-.148</td>
<td></td>
<td>-.104*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Caregiver Monitoring</td>
<td>.412*</td>
<td>.010*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Adolescent Tobacco Attitudes</td>
<td>-.200*</td>
<td>-.165</td>
<td>.037</td>
<td>.288*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. <strong>Table 7 continues</strong></td>
<td>.007</td>
<td>.118</td>
<td>.017</td>
<td>.087</td>
<td>.071</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 7 continued

7. Adolescent Refusal Efficacy

|       | .113 | -.065 | .217* | .046 | .243* | -.042 | --- |

8. Adolescent Intentions to Use (Within the next 6 Months)

|       | .378** | .069 | -.203* | -.051 | .375** | .204* | .446* | --- |

9. Adolescent Intentions to use (As an Adult)

|       | .337** | .021 | .323* | .012 | .270** | .210* | .339* | .770* | --- |

10. Adolescent Tobacco Use

|       | .283** | -.004 | .286* | .227* | -.103 | .085 | .113 | .945* | .727* |

* $p<.05$  ** $p<.01$
Table 8.

Correlations between Independent and Moderator Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Caregiver Prompting</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Caregiver Communication</td>
<td>-.151</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Caregiver Monitoring</td>
<td>-.037</td>
<td>.323**</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>4. Adolescents’ Tobacco Attitudes</td>
<td>-.017</td>
<td>-.123</td>
<td>-.071</td>
<td>---</td>
</tr>
</tbody>
</table>

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

Table 9.

Bivariate Correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Adolescent Gender</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Adolescent Age</td>
<td>.433*</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Caregiver Education</td>
<td>.217</td>
<td>-.144</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>4. Caregiver Income</td>
<td>-.134</td>
<td>-.073</td>
<td>.207</td>
<td>---</td>
</tr>
</tbody>
</table>

* * p<.05  ** p<.01
Statistical Analyses

Do caregivers’ prompting behaviors predict adolescent outcomes? The first aim of the study was to examine the relationship between caregivers’ prompting behaviors and adolescent tobacco outcomes. Caregiver and adolescent reports of each of the caregiver prompts were examined and compared. The results showed that requests to empty caregiver’s ashtray and to retrieve a tobacco product for a caregiver were the most common prompts reported by both caregivers and adolescents (Table 14).

Hierarchical regression analyses were then used to evaluate the hypotheses that adolescents who report receiving tobacco prompts from caregivers would report more favorable attitudes toward smoking, lower tobacco refusal efficacy, higher intentions to use tobacco products/smoke (in the next six months and as an adult), and increased tobacco use (i.e., Hypotheses 1, 2, 3 4). In all the analyses, adolescent age and gender were included in the first step (as covariates) and the prompting score was added in the second step with higher scores indicating more caregiver prompting behaviors. Hierarchical regressions were conducted for each separate tobacco adolescent outcome. Results showed that caregiver prompting significantly predicted adolescent’s intentions to use as an adult, $t(94) = 2.043, p \leq .05$; and use of tobacco (Table 11); $t(89) = 5.153$ (Table 12), $p < .001$, however caregiver prompting did not significantly predict adolescents’ attitudes toward tobacco, $t(92) = -.158, p = .88$, refusal efficacy $t(92) = -1.65, p = .09$, or adolescents’ intentions to use any tobacco product within the next six months $t(94) = .410, p = .68$ (Tables 9-13).
The association between individual caregiver prompts and adolescent outcomes were also analyzed. The results revealed a positive association between all prompting behaviors and adolescents’ intentions to use cigarettes ($\beta = .35, p < .01$). While prompting behaviors were related to adolescents’ intentions to use cigarettes, caregiver’s requests that adolescents empty their ashtray was negatively associated with intentions to use both cigarettes ($\beta = -.35, p < .01$) and ATPs ($\beta = -.34, p < .01$). Thus, adolescents who report emptying their caregiver’s ashtrays were less likely to want to use cigarettes and ATPs, however, adolescent who reported carrying out all other caregiver prompting requests were more likely to intend on using cigarettes. Additionally, the specific prompting behaviors positively associated with ATP use were when caregivers allowed adolescents to smoke ($\beta = .25, p < .05$), asked adolescent to light ($\beta = .21, p < .05$), or bring them their tobacco products ($\beta = .22, p < .05$).

Table 10.

Hierarchical Regression Caregiver Prompting Predicting Adolescents’ Attitudes Toward Smoking

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\Delta R^2$</th>
<th>$B$</th>
<th>$SE B$</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>0.013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.131</td>
<td>1.214</td>
<td>-0.011</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>5.061</td>
<td>4.518</td>
<td>0.115</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.044</td>
<td>1.338</td>
<td>-0.004*</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>5.074</td>
<td>4.543</td>
<td>0.116</td>
<td></td>
</tr>
<tr>
<td>Caregiver Prompting</td>
<td>-0.204</td>
<td>1.288</td>
<td>-0.018</td>
<td></td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>0.014</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*N = 96

* $p<.05$ ** $p<.01$
Table 11.

*Hierarchical Regression Predicting Caregiver Prompting and Adolescent’s Refusal Efficacy*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\Delta R^2$</th>
<th>$B$</th>
<th>SE $B$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.025</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.279</td>
<td>.199</td>
<td>-.143</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-.507</td>
<td>.747</td>
<td>-.070</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.029</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.123</td>
<td>.218</td>
<td>-.063</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-.458</td>
<td>.740</td>
<td>-.063</td>
<td></td>
</tr>
<tr>
<td>Caregiver Prompting</td>
<td>-.360</td>
<td>.215</td>
<td>-.188</td>
<td></td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>.054</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$N = 96$

*p<.05  ** p<.01

Table 12.

*Hierarchical Regression Caregiver Prompting Predicting Adolescent’s Intentions to Use Tobacco at Six Months*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\Delta R^2$</th>
<th>$B$</th>
<th>SE $B$</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.172**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.535</td>
<td>.123</td>
<td>.405**</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.489</td>
<td>.462</td>
<td>.099</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.512</td>
<td>.046</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.485</td>
<td>.464</td>
<td>.388**</td>
<td></td>
</tr>
<tr>
<td>Caregiver Prompting</td>
<td>.055</td>
<td>.133</td>
<td>.042</td>
<td></td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>.173</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$N = 98$

*p<.05  ** p<.01
Table 13.

*Hierarchical Regression Caregiver Prompting Predicting Adolescent’s Intentions to Use Tobacco as an Adult*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\Delta R^2$</th>
<th>B</th>
<th>SE B</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td>.129**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.574</td>
<td>.154</td>
<td>.357**</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.303</td>
<td>.576</td>
<td>.050</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.037*</td>
<td>.434</td>
<td>.166</td>
<td>.270</td>
</tr>
<tr>
<td>Age</td>
<td>.434</td>
<td>.166</td>
<td>.270</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.277</td>
<td>.567</td>
<td>.046</td>
<td></td>
</tr>
<tr>
<td>Caregiver Prompting</td>
<td>.332</td>
<td>.162</td>
<td>.211**</td>
<td></td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>.166</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>98</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p, .05  ** p<.01

Table 14.

*Hierarchical Regression Caregiver Prompting Predicting Adolescent’s Tobacco Use*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\Delta R^2$</th>
<th>B</th>
<th>SE B</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td>.100**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.377</td>
<td>.123</td>
<td>.307**</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.348</td>
<td>.453</td>
<td>.077</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.207**</td>
<td>.121</td>
<td>.120</td>
<td>.098</td>
</tr>
<tr>
<td>Age</td>
<td>.121</td>
<td>.120</td>
<td>.098</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.235</td>
<td>.401</td>
<td>.052</td>
<td></td>
</tr>
<tr>
<td>Caregiver Prompting</td>
<td>.589</td>
<td>.114</td>
<td>.501**</td>
<td></td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>.307</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>93</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05  ** p<.01
Table 15.

Comparison of Parent-Adolescent Reports of Parental Prompting

<table>
<thead>
<tr>
<th>Variable</th>
<th>Adolescents Reports of Parental Tobacco Prompts (%)</th>
<th>Parent Reports of Tobacco Prompts (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caregiver requests to perform the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empty or clean parent’s ashtray</td>
<td>48.5%</td>
<td>41.6%</td>
</tr>
<tr>
<td>Bring or retrieve parent’s tobacco product</td>
<td>54.5%</td>
<td>56.4%</td>
</tr>
<tr>
<td>Light or hold a parent’s tobacco product</td>
<td>37.6%</td>
<td>29.7%</td>
</tr>
<tr>
<td>Start a parent’s tobacco product</td>
<td>18.8%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Purchase a parent’s tobacco product</td>
<td>15.8%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Allows smoking/tobacco use</td>
<td>8.9%</td>
<td>9.9%</td>
</tr>
<tr>
<td>Offers a tobacco product</td>
<td>12.9%</td>
<td>11.9%</td>
</tr>
<tr>
<td>To smoke along with parent</td>
<td>10.9%</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

Does caregiver antismoking communication predict adolescents’ tobacco-related outcomes? The second aim of the study was to examine the predictive value of caregivers’ antismoking communication on adolescent tobacco-related outcomes. In order to test each of the hypotheses (i.e., Hypotheses 5-8), a series of hierarchical regressions were used to examine whether adolescents who report caregiver antismoking communication/messages
would have more positive attitudes toward smoking, higher refusal efficacy, lower intentions to use (within six months and as an adult), and actual tobacco use. An overall communication score was examined to determine whether or not caregiver antismoking messages predicted all of the adolescent tobacco-related outcome variables. Results from the regressions revealed that adolescent-reported caregiver antismoking communication significantly predicted adolescent refusal efficacy, $t(94) = -2.023, p < .05$, adolescent’s intentions to use in within the next six months, $t(96) = -2.327, p < .05$, intentions to use as an adult, $t(96) = -2.674, p < .05$, and finally adolescents’ use of both cigarettes and ATPs, $t(91) = -2.744, p < .05$. Despite this, caregiver antismoking communication did not predict adolescents’ attitudes toward smoking for both all types of products $p = .30$ (see Table 15).

Additionally, when examining how caregiver’s antismoking communication (both caregiver and adolescent reports) worked to influence adolescents’ use of cigarettes versus ATPs, the results showed that adolescent reported positive antismoking communication from caregivers was negatively associated with both adolescents’ cigarette use, ($β = -.20, p < .05$), as well as ATP use ($β = -.21, p < .05$). Results also showed that higher levels of adolescent-reported ($β = -.20, p < .05$) and caregiver-reported ($β = -.23, p < .05$) antismoking communication were associated with fewer adolescent intentions to use cigarettes at both time points.
Table 16.

*Hierarchical Regression Caregiver Antismoking Communication Predicting Adolescents’ Attitudes*

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Δ $R^2$</th>
<th>$B$</th>
<th>$SE B$</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td>.015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.096</td>
<td>1.206</td>
<td>-.008</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>5.403</td>
<td>4.488</td>
<td>.123</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>.011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.053</td>
<td>1.214</td>
<td>-.005</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>4.763</td>
<td>4.527</td>
<td>.108</td>
<td></td>
</tr>
<tr>
<td>Caregiver Communication</td>
<td>-2.264</td>
<td>2.156</td>
<td>-.109</td>
<td></td>
</tr>
<tr>
<td><strong>Total $R^2$</strong></td>
<td>.027</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>101</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* * $p<.05$  ** $p<.01$
Table 17.

Hierarchical Regression Caregiver Antismoking Communication Predicting Adolescent’s Refusal Efficacy

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\Delta R^2$</th>
<th>$B$</th>
<th>SE $B$</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.020</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.041</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caregiver Communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>.061</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$N$</td>
<td>98</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05  **p<.01

Table 18.

Hierarchical Regression Caregiver Antismoking Communication Predicting Adolescent’s Intentions to Use at Six Months

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\Delta R^2$</th>
<th>$B$</th>
<th>SE $B$</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.149**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.084**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caregiver Communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>.233</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$N$</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05  **p<.01
Table 19.

**Hierarchical Regression Caregiver Antismoking Communication Predicting Adolescent’s Intentions to Use as an Adult**

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\Delta R^2$</th>
<th>$B$</th>
<th>$SE$</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.117**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.560</td>
<td>.157</td>
<td>.341**</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.168</td>
<td>.586</td>
<td>.027</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.060**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.499</td>
<td>.154</td>
<td>.304**</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.006</td>
<td>.572</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>Caregiver Communication</td>
<td>-.717</td>
<td>.271</td>
<td>-.249**</td>
<td></td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>.177</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$N$</td>
<td>98</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p< .05  **p<.01

Table 20.

**Hierarchical Regression Caregiver Antismoking Communication Predicting Adolescent’s Tobacco Use**

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\Delta R^2$</th>
<th>$B$</th>
<th>$SE$</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.075**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.327</td>
<td>.121</td>
<td>.271**</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.167</td>
<td>.444</td>
<td>.038</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.071**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.282</td>
<td>.118</td>
<td>.234**</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.039</td>
<td>.432</td>
<td>.009</td>
<td></td>
</tr>
<tr>
<td>Caregiver Communication</td>
<td>-.560</td>
<td>.204</td>
<td>-.270**</td>
<td></td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>.146</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$N$</td>
<td>95</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p< .05  **p< .01
Which of the three caregiver variables is the strongest predictor of adolescents’ tobacco outcomes? A hierarchical regression analysis was used to examine the third aim identifying which of the caregiver variables predict adolescents’ tobacco-related outcomes. Adolescent age and gender were included in the first step and caregiver communication, monitoring and prompting score was added in the second step. When both age and gender were entered, they significantly predicted adolescent’s tobacco use/smoking, \( F(2, 86) = 3.89, p < .05, R^2 = .08 \). However, as indicated by \( R^2 \), only 8.3% of the variance in adolescent tobacco use could be predicted by knowing the adolescent’s age and gender (Table 21). Additionally, when the three caregiver’s variables were added to the model, they significantly improved the prediction, \( \Delta R^2 = .233, \Delta F(3, 83) = 9.40, p < .001 \). All variables together significantly predicted adolescent smoking, \( F(5,88) = 7.65, p < .001, R^2 = .316 \) (Table 22). Beta coefficients for the three predictors were caregiver monitoring, \( \beta = -.214, t(89) = -2.133, p < .05 \); prompting, \( \beta = .485, t(89) = 4.75, p < .001 \); and antismoking communication, \( \beta = .002, t(89) = .017, p=.99, \text{n.s.} \).

Similarly, when examining the association between the predictor variables and adolescent intentions to use, age and gender significantly predicted adolescents intentions to use at six months, \( F(2, 90) = 10.19, p < .001, R^2 = .18 \), and as an adult \( F(2, 90) = 3.56, p < .001, R^2 = .14 \). When added to the model, the three variables significantly improved the prediction for intentions to use in the next six months (Table 20), \( \Delta R^2 = .283, \Delta F(3,87) = 4.01, p < .001 \), and as an adult (Table 21) \( \Delta R^2 = .236, \Delta F(3, 87) = 3.55, p < .001 \). All variables together significantly predict intentions to use as an adult, \( F(5,92) = 5.38, p < .001, R^2 = .316 \).
\( R^2 = .236 \) and in the next six months \( F(5,92) = 6.86, p < .001, R^2 = .283 \). Individually, for intentions to use in the next six months and as an adult, antismoking communication did not significantly predict intentions to use at either time points, \( \beta = .001, t(93) = -.011, p = .98, \) n.s.; \( \beta = -.034, t(93) = -.034, p = .74, \) n.s. respectively. However, the association between monitoring was significant for short-term intentions (six months), \( \beta = -.325, t(93) = -3.208 p < .01; \) and trending toward significance at adulthood, \( \beta = -.200, t(93) = -1.912, .214, p = .06, \) n.s. Finally, prompting was predictive of adolescents’ intentions to use as an adult, \( \beta = .262, t(93) = 2.490, p < .05, \) but not at six months \( \beta = .068, t(93) = .673, p = .50, \) n.s. Finally, when evaluating adolescent refusal efficacy, in adjusted analysis, the caregiver variables significantly predicted adolescent tobacco outcomes, \( \Delta R^2 = .086, \Delta F(3,85) = 2.72, p < .05, R^2 = .11 \) (see Tables 16-19 for results).

Table 21.

Hierarchical Regression Caregiver Variables Predicting Adolescent’s Intentions to Use in the Next Six Months

<table>
<thead>
<tr>
<th>Predictor</th>
<th>( \Delta R^2 )</th>
<th>( B )</th>
<th>( SE B )</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.183**</td>
<td>.564</td>
<td>.128</td>
<td>-.420**</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td>.427</td>
<td>.473</td>
<td>.086</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.099**</td>
<td>.427</td>
<td>.136</td>
<td>.318**</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td>.116</td>
<td>.461</td>
<td>.023</td>
</tr>
<tr>
<td>Caregiver Communication</td>
<td>-.002</td>
<td>.200</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>Caregiver Monitoring</td>
<td>-.052</td>
<td>.016</td>
<td>-.325**</td>
<td></td>
</tr>
<tr>
<td>Caregiver Prompting</td>
<td>.090</td>
<td>.134</td>
<td>.068</td>
<td></td>
</tr>
<tr>
<td><strong>Total ( R^2 )</strong></td>
<td>.283</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>93</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p< .05  **p<.01
Table 22.

Hierarchical Regression Caregiver Variables Predicting Adolescent’s Intentions to Use as an Adult

<table>
<thead>
<tr>
<th>Predictor</th>
<th>(\Delta R^2)</th>
<th>(B)</th>
<th>(SE)</th>
<th>(\beta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.142**</td>
<td>.605</td>
<td>.157</td>
<td>.376**</td>
</tr>
<tr>
<td>Gender</td>
<td>.224</td>
<td>.582</td>
<td>.038</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.094*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.366</td>
<td>.169</td>
<td>.227*</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.002</td>
<td>.571</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Caregiver Communication</td>
<td>-.081</td>
<td>.247</td>
<td>-.034</td>
<td></td>
</tr>
<tr>
<td>Caregiver Monitoring</td>
<td>-.038</td>
<td>.020</td>
<td>-.200</td>
<td></td>
</tr>
<tr>
<td>Caregiver Prompting</td>
<td>.413</td>
<td>.166</td>
<td>.262*</td>
<td></td>
</tr>
<tr>
<td>Total (R^2)</td>
<td>.236</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N)</td>
<td>93</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05  ** p<.01

Table 23.

Hierarchical Regression Caregiver Variables Predicting Adolescent’s Tobacco Use

<table>
<thead>
<tr>
<th>Predictor</th>
<th>(\Delta R^2)</th>
<th>(B)</th>
<th>(SE)</th>
<th>(\beta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.083*</td>
<td>.349</td>
<td>.128</td>
<td>.282**</td>
</tr>
<tr>
<td>Gender</td>
<td>.267</td>
<td>.465</td>
<td>.059</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.233**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.063</td>
<td>.125</td>
<td>.051</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.032</td>
<td>.419</td>
<td>.007</td>
<td></td>
</tr>
<tr>
<td>Caregiver Communication</td>
<td>.003</td>
<td>.180</td>
<td>.002</td>
<td></td>
</tr>
<tr>
<td>Caregiver Monitoring</td>
<td>-.031</td>
<td>.015</td>
<td>-.214*</td>
<td></td>
</tr>
<tr>
<td>Caregiver Prompting</td>
<td>.578</td>
<td>.122</td>
<td>.485**</td>
<td></td>
</tr>
<tr>
<td>Total (R^2)</td>
<td>.316</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N)</td>
<td>89</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05  ** p<.01
Table 24.

Hierarchical Regression Caregiver Variables Predicting Adolescent’s Refusal Efficacy

<table>
<thead>
<tr>
<th>Predictor</th>
<th>( \Delta R^2 )</th>
<th>( B )</th>
<th>( SE ) ( B )</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.023</td>
<td>-.233</td>
<td>.210</td>
<td>-.117</td>
</tr>
<tr>
<td>Gender</td>
<td>-.691</td>
<td>.777</td>
<td></td>
<td>-.094</td>
</tr>
<tr>
<td>Step 2</td>
<td>.086*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td>.058</td>
<td>.229</td>
<td>.029</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td>-.396</td>
<td>.776</td>
<td>-.054</td>
</tr>
<tr>
<td>Caregiver Communication</td>
<td>-.081</td>
<td>.358</td>
<td>-.026</td>
<td></td>
</tr>
<tr>
<td>Caregiver Monitoring</td>
<td></td>
<td>.051</td>
<td>.027</td>
<td>.216</td>
</tr>
<tr>
<td>Caregiver Prompting</td>
<td>-.462</td>
<td>.234</td>
<td>-.235*</td>
<td></td>
</tr>
<tr>
<td>Total ( R^2 )</td>
<td>.108</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( N )</td>
<td></td>
<td>91</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\* \( p < .05 \)  ** \( p < .01 \)

Does caregiver antismoking communication moderate the association between 
adolescents’ attitudes, their intentions to use, and tobacco use? A moderator variable is a 
variable that impacts, or predicts the size, strength and/or direction of the relationship 
between a predictor variable and an outcome variable (Hayes, 2013). That is, “the 
relationship between two variables (i.e., predictor and outcome variables) will change as a 
function of the moderator variable” (p. 1174, Baron & Kenny, 1986). Specifically, when the 
moderator variable changes, the relationship between the independent and dependent 
variables increases or decreases. For the fourth study aim a moderation analysis was 
conducted following the steps provided by Baron and Kenny (1986). The analyses assessed 
whether caregivers who communicate antismoking communication messages would have
adolescents who hold less positive attitudes toward smoking, or lowered intentions to and tobacco use (See Figure 3).

In the first step, age and gender were controlled for, followed by the centered variables adolescent tobacco-related attitudes and caregiver antismoking communication in the second step. The interaction term was then computed as a cross product of the predictors (adolescent tobacco-related attitudes X caregivers’ antismoking communication), and entered into the regression equation in the final step. The results of the analysis revealed an estimation of the strength and direction of changes in adolescent tobacco intentions associated with changes in attitudes, and caregiver antismoking communication. Additionally, descriptive statistics were examined for each of the independent, control, and dependent variables.
Results showed that adolescents who hold more positive attitudes toward smoking are more likely to smoke/use tobacco products ($\beta = .231, p < .05$). Moreover, antismoking communication was associated with increased adolescent smoking/tobacco use. Despite this, antismoking communication did not serve as a moderating factor in the relation between adolescent attitudes and adolescent tobacco use ($\beta = -.060, p = .55$, ns).

When examining adolescent intentions to smoke as an adult, a significant association was found between adolescent’s attitudes toward tobacco and intentions to use as an adult ($\beta = .196, p < .05$). Similarly, the association between adolescents’ attitudes and intentions to smoke (within the next six months) was trending toward significance ($\beta = .174, p = .06$). Receiving antismoking messages from caregivers was also associated with lowered intentions to use tobacco as an adult and within the next six months ($\beta = -.231, p < .05$; $\beta = -$
.280, \( p < .05 \), respectively). However, caregiver antismoking communication did not moderate the association between adolescents’ attitudes and intentions to use at either six months or as an adult (\( \beta = .045, p = .64, \text{ns} \); \( \beta = .070, p = .47, \text{ns} \)).

**Discussion**

Preventing adolescent tobacco use continues to be a serious public health concern. Although research has given some attention to the role of caregivers’ modeling and practices (e.g., prompting, communication and monitoring) as risk/protective factors for adolescents tobacco use, much of the literature has been conducted with primarily European American families (Chassin et al., 2005). Furthermore, most studies have been limited to cigarette smoking with few examining ATPs, African Americans use of ATPs. Moreover, even though there is evidence to suggest a connection between factors such as living in urban, disadvantaged neighborhoods, declines in parental practices/relationships, and increased tobacco use (Conger, Patterson & Ge, 1995), few studies have examined these relationships.

Given their increased risk for tobacco use, more attention that focuses on vulnerable populations (e.g., low SES, African Americans) and allows for extrapolation of research findings to the general population are needed (Dell, Whitman, Shah, Silva & Ansell, 2005; Fagan et al., 2004; Gandhi et al., 2009; Moolchan et al., 2007; Okuyemi, Faseru, Cox, Bronars, & Ahluwalia, 2007; Slopen et al., 2013). To address these gaps in the literature, the goal of this study was to examine parental behaviors/practices in a community-based sample of African American caregivers that smoke, to identify factors that may influence their adolescents’ (ages 12-17) tobacco-related outcomes including their attitudes toward tobacco,
their refusal efficacy, intentions to use, and use of tobacco products including ATPs. To our knowledge, this study is the first to investigate parental prompting behaviors together with other parenting practices in a community sample of urban African American adolescents. As predicted, higher parental prompting, lower antismoking communication and increased monitoring contributed to adolescents’ tobacco-related outcomes.

In this next section (a) the results from this study; (b) compare this study to similar/contrasting others; (c) explain how this study contributes to the literature, as well as suggestion for future research are reviewed; (d) and the strengths/limitations and implications are examined.

The Association Between Caregiver Prompting and Adolescent Outcomes

The first aim of this study examined the association between prompting behaviors in which caregivers involved their adolescent in their own tobacco use, or encouraged use, and subsequent adolescent-tobacco related outcomes. I hypothesized that caregiver prompting behaviors would predict adolescents’ (a) positive attitudes toward tobacco; (b) lowered tobacco refusal efficacy; (c) higher intentions to use (within six months and as an adult); (d) and smoking/tobacco use.

First, according to dyads’ reports, tobacco prompts were a very common occurrence among families in this study. Of these, the most common adolescent- and caregiver-reported prompts were requests to empty or clean an ashtray (48.6%; 41.6% respectively), and/or to retrieve a tobacco product, (54.5%; 56.4%, respectively). Other prompting behaviors included: offers of tobacco (12.9%/11.9%); requests to start a product (18.8%/5.9%);
invitations to smoke (10.9%/4.0%); and purchasing a tobacco product (15.8%/6.9%). In a sample of predominately Latinos (63.0%), 7th and 8th grader students (N=3.59), Laniado-Laborin, Woodruff, Candelaria, and Sallis (2002) found similar types of common prompting behaviors, but lower rates of prompting.

In addition to the high rates of reported prompting, results from the current study also revealed that caregiver prompting significantly predicted adolescents’ intentions to smoke in the future (i.e., as an adult). Prior research has demonstrated the predictive value of measures of intentions to use on future smoking (Wakefield, Kloska, O’Malley, et al., 2004). Consistent with past research (Laniado-Laborin, Woodruff, Candelaria, & Sallis, 2002; Moreno et al., 1994; Rainio & Rimpelä, 2009) and as expected, prompting behaviors were also predictive of adolescents’ tobacco use. Prompting behaviors were not however, significantly related to the other adolescent outcomes including their intentions to use in the short-term (within the next six months), tobacco refusal efficacy, or adolescents’ positive attitudes toward tobacco. One explanation for the lack of association between prompting and adolescent attitudes, intentions to use in the short-term (the next six months), or refusal efficacy could be the fact that adolescent are knowledgeable about smoking laws, and/or perhaps they do not see the benefits of smoking at this time. Yet, we know that adolescent’s attitudes and intentions may change over time as they get older and face an increasing number of stressors. As a result of developmental changes, school transitions, and peer pressure, adolescents may change their perceptions of tobacco and/or begin to yield to and accept tobacco offers.
When asked about their intentions to use cigarettes or ATPs in the next 6 months or as an adult, a number of adolescents in this study indicated that they would “probably not” (22.8%-28.8%, respectively), or were “not sure” (30.7%-34.7%, respectively) about their future use. Although adolescents’ transition from intention to smoke/use tobacco to actual use cannot be determined without follow-up, it is assumed that intentions to smoke can lead to smoking experimentation or uptake in the future (Sargent & Dalton, 2001; Wakefield, Kloska, O’Malley, et al., 2004). The uncertainty with which adolescents responded to these items is concerning because it may indicate that these adolescent are more vulnerable or susceptible to tobacco experimentation/uptake.

This study is unique in that it is one of the few studies that examined the impact of caregiver prompting on a variety of urban African American adolescents’ tobacco outcomes. To date no studies could be found that have looked at the association between prompting and all of these outcomes together including adolescents’ refusal efficacy or their intentions to use. Moreover, few studies have looked at adolescents’ access to ATPs. By engaging in prompting behaviors, caregivers may signal to their adolescent that smoking is an acceptable, and perhaps even enjoyable behavior, with few consequences. Similarly, the results suggest that by offering tobacco to adolescents or asking them to smoke along with them, caregivers may perceive that tobacco experimentation (with caregiver supervision) is harmless, a right of passage, or a perhaps a deterrent for adolescents future use. Likewise, by requesting that adolescents empty an ashtray, retrieve, buy tobacco products, caregivers are providing adolescents with direct access to tobacco products that may not only lead to experimentation,
but also promote smoking uptake.

The Association between Caregiver Antismoking Communication and Adolescent Tobacco Outcomes

The second set of hypotheses examined whether or not caregiver antismoking communication predicted adolescents’ tobacco refusal efficacy skills; intentions to use tobacco (within six months and as an adult), and tobacco use. These hypotheses were partially supported in that caregiver antismoking messages were associated with adolescent’s ability to refuse tobacco products, their intentions to use (both within the next six months and in adulthood), and tobacco use. Additionally, when examining how caregivers’ antismoking communication shapes adolescents’ use of cigarettes versus ATPs, the results showed that adolescent-reported positive antismoking communication was negatively associated with both cigarette, \( p < .05 \) and cigar/cigarillo use \( p < .05 \). These findings are similar to a number of other studies having found a relationship between caregiver communication about tobacco and lowered risk of adolescents’ smoking uptake (Clark et al., 2012; Ennett et al., 2001; Guilamo-Ramos et al., 2006; Gutman et al., 2011).

Even though caregiver tobacco communication was found to be predictive of adolescent tobacco-related outcomes, the cross-sectional nature of this study makes it difficult to determine whether or not caregiver antismoking communication was the result of adolescent tobacco use. It is possible that caregivers’ knowledge about adolescent’s experimentation or tobacco use may have prompted the delivery of caregiver antismoking messages. Likewise, the results may have been influenced by adolescent response or recall.
bias, such that adolescents over-reported their communication about tobacco with their caregiver. On the other hand, adolescents may have had tobacco discussions with caregivers, yet did not recollect having received caregiver messages.

Contrary to the hypothesis however, antismoking communication did not predict adolescents’ attitudes toward tobacco use. This may be in part due to the fact that adolescent may have already begun using tobacco and solidified their attitudes/beliefs toward smoking/tobacco use. Equally important, adolescents may have been influenced by sources other than caregivers (e.g., siblings, peers). Another possible explanation for these unique findings could be that adolescents had already started using tobacco products prior to their participation in this study, their attitudes were already solidified, and adolescents were less affected by caregiver messages. Furthermore, it is possible that these adolescents may not be aware of the health risks and/or may perceive that the benefits of tobacco use (stress relief/cop ing mechanism) outweigh the risks.

The Association Between Caregiver Variables (Prompting, Communication and Monitoring) and Adolescent Tobacco Outcomes

Next, this study sought to determine the relative contribution of each of the three caregiver variables: caregiver prompting, monitoring, and communication on adolescent tobacco outcomes. All three variables when examined together in the model were found to be significant predictors of adolescent tobacco outcomes. Within the context of the other variables caregiver prompting was associated with negative adolescent tobacco-related outcomes. In fact, caregiver/parental prompting was significantly and inversely related to
adolescents’ intentions to use tobacco in the next six months, as well as adolescents’ overall tobacco use. In addition to caregiver prompting, the findings also showed that in this model caregiver/parental monitoring defined in the literature as “a set of correlated parenting behaviors involving attention to and tracking of the child’s whereabouts, activities, and adaptations” (Dishion & McMahon, 1998, p. 61), in this model was predictive of adolescent tobacco outcomes. These results are consistent with a number of previous studies that have found an association between caregiver practices, prompting, monitoring and adolescents’ attitudes toward smoking and smoking uptake (e.g., Branstetter & Furman, 2013; Clark et al., 2012; Harakeh et al., 2004; Kerr & Stattin, 2000 Mahabee-Gittens, Huang, Chen, Dorn, Ammerman, & Gordon, 2011). By engaging adolescents in their tobacco use, prompting, and not monitoring their adolescents’ whereabouts and peer relationships, caregivers increase their adolescents’ risk taking behaviors, including their tobacco use.

**Caregiver Antismoking Messages as a Moderator of Adolescents’ Tobacco-Related Attitudes and Intentions/Use**

In the final analyses, I examined whether or not caregiver antismoking messages moderated the relationship between adolescents’ attitudes toward tobacco and adolescent’s tobacco use. The findings revealed that adolescent’s attitudes toward smoking did predict adolescent’s intentions to use and use. Specifically, adolescents who held more positive attitudes toward smoking were more likely to intend to use tobacco (in the next six months and as an adult), than those who held more negative perceptions. Likewise, receiving antismoking messages from caregivers was associated with lowered use. Contrary to the
hypothesis however, caregiver antismoking communication did not moderate the relationship between adolescents’ attitudes and intentions to use at either time-points.

Although a moderating effect for caregiver-adolescent antismoking communication on the relationship between adolescent attitudes and adolescent tobacco outcomes was not supported, the impact of caregiver-adolescent communication on adolescent attitudes should not be discounted. In fact, prior studies have shown that antismoking communication (e.g., encouraging adolescents not to use; share their negative views about adolescent smoking, set expectations and household rules) reduces adolescents’ risk of tobacco use (Guilamo-Ramos et al., 2006; Pokhrel et al., 2008).

There are a number of possible explanations for these findings. First, it is likely that a combination of variables other than caregiver-adolescent communication plays a role in buffering and/or exacerbating adolescent’s tobacco-related outcomes. For example, prior studies have shown that family members (including extending kin) shape adolescents’ substance use, health behaviors, and their health related outcomes (McMahon, Felix, & Nagarajan, 2011; Rodgers & Jones, 1999). Family members contribute to adolescents’ smoking behaviors via some of the same mechanisms as caregivers (e.g., modeling; communication; Kegler, McCormick, Crawford, Allen, Spigner, & Ureda, 2002). Siblings in particular are important socializing agents and sources of advice for adolescents (Dunn, 2000; Tucker, Barber, & Eccles, 1997) and have been shown to exert more influence than caregivers (Ary, Tildesley, Hops, & Andrews, 1993; Fagan & Najman, 2005). In fact, a number of studies have found that older siblings influence younger siblings’ substance use
via a number of mechanism including initial experimentation, positive attitudes toward tobacco, increased knowledge or exposure, coercion/conspiracy, and sibling or family conflict (Feinberg, Solmeyer & McHale, 2012; Low, Shortt, & Snyder, 2012).

Second, the influence of caregiver antismoking communication on adolescent outcomes may also have been impacted by “when” caregivers began having discussion about tobacco with their adolescents. Longitudinal research suggests that in order to be effective, caregivers should begin delivering antismoking conversations before their adolescent has begun experimenting with smoking/tobacco use (Ennett et al., 2001). This study did not specifically ask caregivers to report on when they first initiated tobacco conversations with their adolescents. Yet, 24.8% of caregivers reported being aware that their adolescent uses tobacco. It is plausible caregivers had recently begun having tobacco discussions with adolescent, or started communicating after they discovered their adolescent’s tobacco use. It is equally possible that adolescents had already started using tobacco prior to their participation in this study, and as a result not as affected by, or receptive to caregiver messages.

**Study Limitations**

While this study contributes to the existing literature, it has limitations that are typically found in survey research (e.g., response biases, social desirability). First, this study relied on dyads’ self-reports of smoking/tobacco use attitudes and behaviors. Although self-reported survey questions of tobacco-related behaviors have advantages (e.g. less expensive), and demonstrated good test-retest reliability (Brener, Kann, McManus, et al., 2002), they are
subject to participant response and recall bias. Due to the sensitive nature of some of the variables assessed, it is possible that participants may have under- or over-reported engagement in some of these activities. In an attempt to circumvent issues related to response bias/social desirability, every effort was made to ensure participants understood that all information would be handled with the confidentiality. For instance, caregivers and adolescents were separated during interviews to make sure they could comfortably respond to questions. Dyads were then assured that their names would not be linked to the survey, and that family identification numbers would be assigned instead. Additionally, adolescents were told that their information would not be accessible or shared with their caregiver/adolescent. Finally, when reviewing the consent/assent forms, staff members explained the nature of the study, implications and stressed the importance of honesty when responding to questionnaires.

A second potential limitation lies in the restricted generalizability of the findings. Although the sample represents urban, African American adolescents between the ages of 12-17, residing in the Southeastern region of the U.S., the extent to which the findings accurately represent adolescents of other ages, racial/ethnic backgrounds, in other geographic areas remains unclear. It is likely that dyads that elected to participate in this study differ from those who did not participate. Families that chose not to participate, or who live in other geographic areas, may differ in their perceptions, attitudes, experiences and caregiver practices. Furthermore, given the low median income of these families and high unemployment, it is possible that this sample may be very different from other urban African
Americans. Future research could benefit by obtaining larger sample of families from other geographic areas and include suburban and rural areas.

A third potential limitation of this study is its cross-sectional nature and design. Obtaining data at one point in time does not allow for long-term examination of the study variables or allow for inferences to be made about causality. Furthermore, this study did not measure how long adolescents had been exposed to their caregivers’ prompts, nor did it assess adolescents’ attitudes and/or responses toward these behaviors. It is possible that caregivers had recently begun prompting their adolescent, that adolescent reluctantly (or even refused) to carry out caregiver requests that in turn could have affected adolescent’s tobacco refusal efficacy, and/or their attitudes toward tobacco may not have (yet) been impacted. Thus, longitudinal research is necessary to examine temporal relationships among caregiver/parental behaviors and adolescent smoking outcomes

**Study Strengths and Contributions**

Despite these limitations, the findings from this contribute to the growing literature regarding how African American caregivers that smoke influence their adolescents’ smoking attitudes/behaviors and have the potential to help reduce or even prevent adolescent smoking. First, many of the findings from this study highlight the vital role that caregivers play in adolescents’ tobacco-related outcomes and helps to identify specific factors that shape urban African American adolescents’ views towards tobacco. Second, this study included both caregiver and adolescent reports of tobacco attitudes/behaviors, which helped triangulate and substantiate the data. Third, the community-based sample (versus school-based) used in this
study provided a normative basis for examining tobacco use and helped capture data from adolescents (and their caregivers) who may not otherwise have participated (e.g., out-of-school adolescents, those enrolled in alternative/vocational programs) yet that are at susceptible to smoking uptake. Lastly, a measure of dyads’ use of alternative and novel tobacco products that are becoming increasingly popular in the African American community, yet rarely measured separately from cigarettes. Moreover, given that African Americans identify tobacco products by their brand names (and subsequently mis- or under-report their use), specific brand names of popular ATPs in both caregiver and adolescent surveys were used in lieu of more generic terms like “cigar” or “cigarillo” (Corey, Dube, Ambrose, King, Apelberg, Husten, 2014). By utilizing these strategies, a more accurate picture of urban African Americans tobacco attitudes and behaviors was obtained that can used to inform future research.

Implications and Future Directions

Tobacco programming. The results from this study have direct implications for efforts aimed at preventing tobacco use among African American adolescents. First, the fact that caregiver smoking-related behaviors predicted adolescents’ tobacco outcomes, and that caregivers seem to be unaware that their tobacco behaviors had an effect on their adolescent (only 13.9% of caregivers believed that their smoking influenced their adolescent’s decision to use) speaks to the need for tobacco interventions that include parents/caregivers.

The effectiveness of tobacco interventions involving parents/caregivers has been demonstrated in prior research. For example, Bauman and colleagues (2001) evaluated the
effectiveness of *Family Matters* a family directed program (utilizing educational booklets with caregiver/adolescent activities and telephone support) designed to prevent adolescent tobacco and alcohol use (1198 dyads; adolescent ages 12–14 years). The researchers found a significant reduction in adolescent smoking/tobacco use (i.e., cigarettes, and chewing tobacco) when parents were involved and were provided with substance use training. Similarly, in a systematic review of 20 controlled studies of parenting programs designed to prevent adolescent substance use (i.e., tobacco, alcohol, or drug abuse), the results revealed that the most effective programs in reducing or preventing substance use among adolescents were those that included parents and a parental training component (Petrie, Bunn & Byrne, 2007).

Interestingly, programs tend to focus their efforts on and target primarily maternal caregivers and exclude fathers (Coplin & Houts, 1991; Lamb, 1997; Lundahl, Tollefson, Risser, & Lovejoy, 2007). This may be due in part to research having demonstrated that maternal caregivers’ (mothers and/or grandmothers) tobacco-related behaviors are stronger predictors of adolescent smoking than other family member including fathers (Avenevoli & Merikangas, 2003; Chassin, Presson, Rose, Sherman & Todd, 1998; Kandel, & Wu, 1995; Oygard, Klepp, Tell & Vellar, 1995; Selya, Dierker, Rose, Hedeker, & Mermelstein, 2012). Although maternal caregivers are important, the influence of paternal caregivers’ tobacco attitudes/behaviors on adolescent smoking outcomes should not be discounted. In fact, one study found that paternal smoking played a role in adolescent smoking (moderated by age and gender; Hops, Duncan, Ducan & Stoolmiller, 1996). Two separate meta-analyses found
similar results such that when fathers were involved in parental training the likelihood of the programs success (reducing adolescent smoking initiation/uptake) increased (Lundahl, Risser, & Lovejoy 2006; Lundahl, Tollefson, Risser & Lovejoy, 2007). In the current study, caregiver gender differences in tobacco behaviors we examined, however no significant differences were found. Nevertheless, since gender of the parent/adolescent could potentially influence adolescent outcomes (Griffin, Botvin, Scheier, Diaz, & Miller, 2000; Oygard et al., 1995; Stanton, Papandonatos, Lloyd-Richardson, Kazura, Shiu, & Niaura, 2009), future studies with larger samples should look at the effects of same-sex caregiver tobacco behaviors on same-sex adolescent outcomes, crossover effects, and the effect of one caregivers attitudes/behaviors on the other (in a two-parent household).

Many adolescents today live in non-traditional homes with extended family members/relatives (Powell, Bolzendahl, Geist, & Steelman, 2010). This may be especially true for African Americans (and other racial/ethnic minorities) who often times parents that rely heavily on extended-kin to assist with caregiving responsibilities (Chatters, et al., 2002; Jones, Zalot, Foster, Sterrett, & Chester, 2007; Jones & Lindahl, 2011). Despite their influence, few studies have examined the role of extended kin on adolescent smoking uptake particularly among African Americans (Schieier & Hansen, 2014). Thus, in addition to gender, future studies may consider obtaining adolescents’ tobacco-related experiences with family members besides parents and primary caregivers (e.g., sibling prompting, sibling communication about tobacco).

In addition to highlighting the need for caregiver (maternal and paternal) and family
education, the findings from this study also identify the types of topics that should be covered during parent workshops/training sessions and future research directions. For instance, the high rates of caregiver/adolescent reported prompting in this study show that raising caregivers’ awareness of how their prompting behaviors impact adolescents’ outcomes (and offer strategies to avoid these behaviors) is necessary. Future studies could build upon this study’s findings by obtaining caregivers’ perceptions of prompting (e.g., harmful versus harmless), caregivers’ explanations for engaging in these behaviors, initiation/timing of prompting behaviors (e.g., age at which adolescent began receiving prompts), as well as adolescents’ feelings about and reactions to tobacco prompts (e.g., does the adolescent obey or refuse caregiver’s request). Researchers could also utilize qualitative methods such as semi-structured interviews to help shed more light on and inform this area of research.

Equally important is caregiver-adolescent communication surrounding tobacco. In the current study, approximately 15% of caregivers reported that they had not talked to their adolescent about tobacco use/smoking. Moreover, 22% of caregivers rated their ability to deliver antismoking communication as “fair” or “poor”. Also concerning were the high rates of dyads’ experimentation/use of marijuana (77.2% and 31.1%, respectively), and the lack of caregiver knowledge about adolescents’ marijuana use (only 1.0% of caregivers reported that their adolescent had used marijuana) among this sample. This is alarming given the link between tobacco use and increased marijuana use and/or co-use (Brook et al., 2001; Ramo, Liu, & Prochaska, 2012). These results highlight the need for increased caregiver discussions surrounding not only tobacco, but also other substances. Thus, a second training
topic/objective could be to increase caregivers’ knowledge about and comfort with delivering antismoking messages and/or focus interventions on caregivers who report not talking at all to their adolescents about tobacco.

In order to gain a better understanding of why caregivers do not communicate with adolescent about tobacco (or other substances), how they deliver tobacco messages, and/or identify potential barriers to caregiver-adolescent communication about these topics, future studies should consider utilizing qualitative methods (e.g., semi-structured interviews, observational studies). This approach could help capture the actual content of (e.g., caregiver’s experiences, negative consequences), and manner (e.g., open/didactic versus closed/monolithic) in which caregivers deliver messages to adolescent (and adolescents’ receptivity to such messages) to identify strategies that help caregivers deliver more effective/appropriate messages.

Additionally, since most adolescents who start smoking obtain their first cigarettes/tobacco products from smoking family members (without caregiver consent or knowledge; DiFranza & Coleman, 2001; DiFranza, Eddy, Brown, Ryan, & Bogojavlensky, 1994), a third potential topic that could be covered during trainings for caregivers that smoke (and are not ready to quit smoking) is tobacco control. Tobacco control refers to the ability of caregivers to maintain strict controls over their tobacco products in order to reduce or prevent adolescents’ access (Robinson et al., 2015). Robinson and colleagues (2015) examined this approach recently when they evaluated the impact of a physician-delivered intervention (to reduce household tobacco control) on adolescent tobacco outcomes (between
the ages of 9-15 years).

The results from the impact evaluation showed that after receiving the intervention, parents (N = 62; from predominately low-income families) that monitored their tobacco products (e.g., inventoried/counted their cigarettes, secured/hid cigarettes, and/or stored products at work and on their person), were more likely to report restricting adult household smoking and significantly less likely to expose their adolescent to second-hand smoke one month later (Robinson et al., 2015). Additionally, at post-test, parents reported that they felt more positive about talking with physicians about their own tobacco use.

Given the effectiveness of this brief intervention, it may behoove researchers to consider addressing the topic of not only tobacco control strategies with caregivers, but also other important topics (e.g., prompts and antismoking communication) to modify caregivers’ behavior and as an alternative to smoking cessation that can be more difficult for caregivers to implement. Equally important is the role of caregivers as “willing” suppliers of tobacco products for adolescents. Caregivers in this study admittedly provided their adolescents with access to tobacco by asking youth to purchase tobacco for them or to smoke along with them. Caregivers’ decision to undermine the tobacco laws is problematic and might best be addressed through fines/penalties, and through interventions and/or media campaigns that educate smoking parents, extended family members, and other adults about the fact that it is unlawful and inappropriate to provide tobacco products to minors.

Finally, programmers should consider including curriculum that also addresses with caregivers the importance of monitoring (of adolescent’s tobacco using peers, as well as
extracurricular activities), and equips them with strategies to increase their monitoring efforts. Guilamo-Ramos and colleagues (2010) examined the impact of a parental monitoring and communication intervention on adolescent tobacco initiation among a sample of African American and Latino 6th and 7th graders. All adolescents in the study participated in a tobacco education program, yet caregivers (74% of which were Latino maternal caregivers) were randomly assigned to either a parent-based tobacco prevention program or a control group. The researchers found that when maternal caregivers had received training focused on communication and parental monitoring strategies adolescent tobacco outcomes (i.e., tobacco initiation) improved.

Although monitoring adolescents is important, at the same time caregivers must be careful about being perceived by adolescent as overly restrictive. When adolescents feel that caregivers are exerting too much behavioral control, and when they are not allowed the freedom to make personal decisions, this could lead to conflicts in the caregiver-adolescent relationship, lowered caregiver-adolescent communication, and declines in adolescents’ disclosure or sharing of information (more secrecy or dishonest), and increased risk-taking behaviors (Kerr & Stattin, 2000; Scheier & Hansen, 2014; Smetana, Villalobos, Tasopoulos-Chan, Gettman, & Campione-Barr; 2009). Yet finding the appropriate, or “optimal” level of monitoring however, may be more challenging for some caregivers than others. For instance, Mason, Cauce, Gonzles and Hiraga (1996) coined the term “precision parenting” to describe the dilemma that African American caregivers (especially those living in in urban areas with high rates of crime, violence, and substance use) face when determining the appropriate
amount of control/monitoring to exert over their adolescent. Parents may exhibit stricter parenting practices, more control and harsher punishments as a way of protecting their adolescent against community dangers and broader level societal concerns over discrimination/racism (Julian, McKenry & McKelvey, 1994; Scheier & Hansen, 2014).

Given these added stressors, interventions that help caregivers who live in high crime/violence or disadvantaged communities develop healthy coping strategies to manage stress, and decrease/cease their use of tobacco are necessary. Future studies should also identify factors that play a role in caregivers’ monitoring practices by obtaining the strategies caregivers utilize to not only obtain information about adolescents’ whereabouts (via self-disclosure or caregiver solicitation), but also whether parents/caregivers involve others (e.g., siblings, extended family members, peers, teachers, or community members) in their monitoring efforts. Forty-one percent of adolescents lived in public housing, 84% of caregivers earned less than $25,000 per year. Furthermore, parental monitoring practices were shown to be a protective against adolescent tobacco outcomes.

Despite the importance of neighborhood/cultural factors on caregiver practices, behaviors and attitudes/beliefs, few programs incorporate culture specific beliefs, or cultural values in tobacco interventions. In their review of 13 programs geared toward preventing adolescent smoking, Kong, Singh and Krishan (2012) found that while culturally tailored tobacco prevention interventions yielded lower tobacco initiation rates among adolescents, few were specifically designed for African American adolescents. The researchers also found that only one program was community-based, with the others having been conducted
primarily within a school setting. Taken together, this research suggests that there is a need to develop interventions designed to reduce tobacco use among those most susceptible to smoking uptake (racial/ethnic minorities and those living in low income or disadvantaged neighborhoods/public housing), as well as gain a better understanding of how cultural/community factors contribute to (or delineate) tobacco use among. Educating families about such topics as the dangers of smoking, the affects of tobacco use on the African American community, and that emphasize strong racial pride and ethnic identity may be helpful.

In this study, the results showed that antismoking communication did not moderate the relationship between adolescents’ tobacco attitudes and their behaviors. Thus, targeting adolescents who exhibit more positive attitudes toward tobacco (or higher intentions to use), should be prime targets for prevention/ intervention efforts. For these adolescents, more intense interventions that provide opportunities to see “first hand” the effects that cigarette smoking can have on one’s health may be beneficial. This approach has been utilized in interventions and found that associating tobacco use/smoking with disgust (unpleasant images/messages) is an effective tool in deterring use and motivating people to avoid tobacco (Harvey, Troop, Treasure, & Murphy, 2002; Marzillier & Davey, 2004; Rozin & Singh, 1999). Results revealed that eliciting disgust toward cigarettes (by showing victims suffering from the health impacts of smoking) helped to lower adolescents’ intentions to smoke (Harvey, et al., 2002; Bagozzi & Moore, 1994). Finally, given the high rates of ATP and marijuana experimentation and use among adolescents (and caregivers) in this study, tobacco
prevention/intervention efforts should include alternative and novel tobacco products.

Since adolescents’ attitudes/behaviors toward tobacco were obtained at only one point in time, it is possible that adolescents’ attitudes toward smoking and caregiver communication about tobacco could change in the future based up the caregiver-adolescent relationship, adolescent developmental changes, as well as important school transitions (transitioning from middle to high school or high school to college). Thus, future studies should follow adolescents longitudinally to determine outcomes and/or caregiver messages change over time.

**Tobacco policies.** Findings from this study also have implications for tobacco policies. The fact that almost 16.0% of adolescents (and 6.9% of corresponding caregivers) reported that they had purchased a tobacco product from a retailer, speaks to the need for policies that work to eliminate adolescents’ ability to access and buy tobacco. In order to accomplish this stricter tobacco policies are needed to control the access and illegal sale of tobacco to minors. The control of tobacco sales to minors may be particularly relevant for adolescents living in lower income neighborhoods, public housing communities, and those with a higher proportion of African Americans compared to other races/ethnicities, since these communities tend to have higher concentrations of tobacco outlets, easier access to, and lower pricing for popular ATPs, as well as a higher prevalence of tobacco signage (exterior and interior; Cantrell, Kreslake, Ganz, et al., 2013; Pollay, Seidenberg, Caughey, Rees, Connolly, 2010). Therefore, policies that penalize tobacco merchants for selling to minors, limit tobacco marketing, and reducing the number of tobacco outlets within these
communities are necessary.

**Conclusion**

In summary, results from this study demonstrate that caregivers’ smoking-specific attitudes, behaviors, and caregiver practices have a profound and direct effect on their adolescents’ tobacco-related outcomes. Yet, caregivers may not always make the connection between their own pro-smoking behaviors and the effect they have on their adolescents’ outcomes. Notably, findings from this study highlight the protective effects of caregivers’ antismoking communication, monitoring, and modeling healthy behaviors (e.g., not smoking) in lowering adolescents’ tobacco use (Clark et al., 2012; Kerr & Stattin, 2000). This may occur as a result of caregivers’ verbal disapproval of adolescent smoking and expectations for adolescents, and by decreasing adolescents’ affiliation with and exposure to risky peer behaviors. While caregivers in this study may have unknowingly engaged in behaviors that increase their adolescents’ risk for smoking experimentation/uptake (via seemingly harmless prompting or delivering antismoking messages), others intentionally involved their adolescent in their tobacco use by offering adolescents tobacco, or asking adolescents to use along with them.

One-third of the adolescents in this sample reported having smoked a cigarette, or an ATP. Furthermore, 10% of adolescents indicated that they would “most likely” smoke cigarettes, cigars, and 20% intended to smoke cigarillos as an adult. These findings underscore the need for programs designed to target those at increased risk of smoking including low-income, those living in public housing complexes, urban African American
families/communities, and African American females with the goal of educating adolescents about the dangers of smoking and motivating caregivers to modify smoking-related behaviors that may negatively impact their adolescent.
List of References
List of References


and smoking: a review. *Annals of the New York Academy of Sciences, 1248*(1), 107-123.


acceptability of smoking. *Preventive Medicine, 41*, 349-356.


Appendix A
Study Consent Form

Research Subject Information and Consent Form

Title: African American Parent-Adolescent Communication about Tobacco Use

VCU IRB No.: HM15456

Investigator: Rosalie Corona, Ph. D.

Sponsor: Virginia Youth Tobacco Prevention Program

If any information contained in this consent form is not clear, please ask the study staff to explain any information that you do not clearly understand. You may take home an unsigned copy of this consent form to think about or discuss with family or friends before making your decision.

Purpose of the Study

The purpose of this study is to understand what parents say to their adolescents about tobacco use and their parenting strategies as they relate to substance use. We are interested in how often you as a parent talk to your adolescent about tobacco/substance use and in general. We also would also like to ask you and your adolescent questions about your general health behaviors, body image, racial identity and spirituality/religion.

You are being asked to participate in this study because you (a) have an adolescent between the ages of 12-17, (b) both you and your adolescent self-identify as African American, and (c) you have self identified as someone who smokes or has used a tobacco product within the past 3 months.

Description of the Study: You and Your Adolescent’s Involvement

If you decide to be in this research study and allow your adolescent to participate, you will be asked to sign this consent form after you have had all your questions answered and understand what will happen to you/your adolescent. If you choose not to allow your adolescent to participate in this study, we will not interview you as a requirement to participate in this study is to have both you and your adolescent answer separate surveys.

If you agree to participate in this study, both you and your adolescent will be asked to complete a survey. Both of you will take the survey in separate locations. Locations can be, but not limited to the participants home, researchers offices, or public library. The survey will take approximately 45 to 60 minutes to complete.

After you complete the survey we will provide you and your adolescent an information package with brochures about preventing tobacco use and how to quit smoking.

Version: 9.17.13

Approved

M. 02/4/2013
Finally, after completing the survey and receiving the information package, a research staff member will contact you and your adolescent via email, telephone or mail (whichever method you prefer). We will ask you whether or not the information we provided about tobacco prevention was helpful and/or utilized. Finally, we will ask about you and your adolescents’ smoking status and current tobacco use.

Please complete the following to ensure we have the most up-to-date contact information and preferred method of contact:

Street or PO BOX: ________________Apt #: ____________

Zip Code: ________________________

Home Phone#: ___________ Email Address: _______________________

Mobile Phone #: ___________ Work #: ___________ Other#____________

Preferred Method of Contact (please circle all that apply):
Mail  Email  Home  Work  Mobile/Cell

BEST TIME TO REACH YOU (please circle all that apply):
AM  PM  Evening  Weekday  Weekend

RISKS AND DISCOMFORTS

There is minimal anticipated risk associated with your participation in this study. Several questions will ask about you and your adolescents’ personal tobacco use, which may cause people to feel uncomfortable disclosing such information. Though you are encouraged to answer all of the questions on the survey, participation in this study is completely voluntary. Should you feel uncomfortable, you or your adolescent may decline to answer any question during your participation in this study or discontinue participating in the study without any negative consequences. If you or your adolescents becomes upset, the study staff will give you (and your adolescent) names of counselors to contact so you can get help in dealing with these issues.

BENEFITS TO YOU AND OTHERS

You may not get any direct benefit from this study. However, findings from this study may provide more information about how parental smoking behaviors influence youth attitudes, intention to use tobacco products, and tobacco use behaviors.

COSTS
There are no costs for participating in this study other than the time (approximately 45 to 60 minutes) you will spend filling out the survey.

PAYMENT FOR PARTICIPATION

You and your adolescent will each receive $20.00 cash for participating in this study. The $20.00 cash will be given to you and your adolescent once both of you have completed the survey.

You will be asked to provide your social security number in order to receive payment for your participation. Your social security number is required by federal law. It will not be included in any information collected about you for this research. Your social security number will be kept confidential and will only be used in order to process payment.

CONFIDENTIALITY

Potentially identifiable information about you will consist of demographic information you provide at the start of the survey; however, data is being collected only for research purposes. Since we are concerned with your confidentiality, please do not indicate your full name within the survey. In order to secure confidentiality, each of the surveys will be labeled and stored with an ID number assigned to each family; the surveys will be stored in secured locked file cabinets.

No names will be linked to the survey data on the survey or data files. All data will be collected and maintained in accordance with these standards. All data will be entered into a computer database. The computer files will be kept on a password protected computer. Only project staff will have access to the computer, file cabinets, and other study material. Project data will be kept for five years after the completion of the study or after the last published report from the project is in print, whichever comes later. At that time, all data will be destroyed.

We will not tell anyone about the answers you provide us with. However, if you tell us that you are hurting someone else or that you might hurt yourself, we are required by law to let people in authority know so they can protect you/your adolescent. Similarly, we will not tell anyone the answers your adolescent gives us. But, if your adolescent tells us that someone is hurting her or him, or that he/she might hurt him/herself or someone else, the law says that we have to let people in authority know so they can protect your adolescent. Additionally, information from the study and the consent form signed by you may be looked at or copied for research or legal purposes by the sponsor of the research, or by Virginia Commonwealth University.

IF AN INJURY HAPPENS

Virginia Commonwealth University and the VCU Health System (formerly known as the Medical College of Virginia Hospitals) have no plan for providing long-term care or

Version 1: 9.17.13  
Page 3 of 5

APPROVED

10.21.13 /ARS/JS
compensation in the unlikely event you suffer injury because of your participation in this research study.

VOLUNTARY PARTICIPATION AND WITHDRAWAL

You and your adolescent do not have to participate in this study. If you choose to participate, you or your adolescent may stop at any time without any penalty. You both may also choose not to answer particular questions that are asked in the study.

QUESTIONS

If you have any questions, complaints, or concerns about your participation in this research, please contact:

Dr. Rosalie Corona  
Virginia Commonwealth University  
Department of Psychology  
810 W. Franklin St.  
PO Box 842018  
Richmond, VA, 23284  
Phone: (804) 828-8059  
Fax: (804) 828-2237  
Email address: mcorona@vcu.edu

If you have any general questions about your rights as a participant in this study, you may contact:

Office of Research  
Virginia Commonwealth University  
800 E. Leigh Street, Suite 3000  
P.O. Box 980568  
Richmond, VA 23298  
Telephone: (804) 827-2157

Contact this number for general questions, concerns or complaints about research. You may also call this number if you cannot reach the research team or if you wish to talk with someone else. General information about participate in research studies can also be found at http://www.research.vcu.edu/irb/volunteers.htm.

WHY IS THE INVESTIGATOR DOING THIS STUDY?

Conducting research studies is an expected part of the Investigator’s role as a VCU faculty member. Her salary may be supported, in part, by a grant or contract to VCU for the conduct of this study.

CONSENT
I have been given the chance to read this consent form. I understand the information about this study. Questions that I wanted to ask about the study have been answered. My signature says that I am willing to participate and also allow for my adolescent to participate in this study.

Name of Adolescent

Participant Name
(Printed)

Participant Signature                        Date

Printed Name of Person Conducting Informed Consent Discussion/Witness

Signature of Person Conducting Informed Consent Discussion/Witness                        Date

Principal Investigator Signature (if different from above)                        Date

Version 1: 9.17.13

Page 5 of 5

APPROVED

10.21.13/Non/Inc
Appendix B

Study Flyer

LET'S TALK TOBACCO

We are interested in what parents who smoke tell their kids about tobacco.

Who can participate in the study?
African American parents who use tobacco or smoke and their children between the ages of 12-17 years of age.

What will I receive if I am in the study?
You will receive $20 cash for participating.
Your child will receive $20 cash for participating.

What will I be asked to do in this study?
You and your child each will be asked to complete a survey which will take about 45-60 minutes. We will provide you with a smoking prevention and cessation information package. We will follow-up with you and your participant to determine if these resources were helpful and/or utilized and you and your child's current smoking status.

Who do I contact if I have a question or want to participate?
Call:
Michelle Pope
(804) 337-9093
or email
popemar@vcu.edu

Where will the study take place?
Our offices at VCU or another private location.
Vita

Michell Ann Pope was born on April 14, 1970, in Springfield, Massachusetts and is an American citizen. She graduated from The High School of Commerce, in Springfield, Massachusetts in 1988. She subsequently moved to Washington, DC and started her own consulting business. In 2007, she returned to school to further pursue her education. She received her Bachelor of Science in Psychology from Virginia Commonwealth University, Richmond, Virginia in 2009. In 2013 she received a grant from the Virginia Foundation for Health Youth. In 2012, Mrs. Pope obtained a Masters in Science degree in Health Psychology. Last year, Ms. Pope founded a research marketing and recruitment firm, and is currently working to further develop her business idea. She will receive her Doctor in Philosophy in Health Psychology from Virginia Commonwealth University in May 2015.