

2011-01-01

Development and Evaluation of a Personalized Normative Feedback Intervention for Hispanic Youth at High Risk of Smoking

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DEVELOPMENT AND EVALUATION OF A PERSONALIZED NORMATIVE
FEEDBACK INTERVENTION FOR HISPANIC YOUTH AT HIGH RISK OF SMOKING

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Holly J. Mata

2011

DEDICATION

Dedicated to my student colleagues in public health: you make the world a better place!

DEVELOPMENT AND EVALUATION OF A PERSONALIZED NORMATIVE
FEEDBACK INTERVENTION FOR HISPANIC YOUTH AT HIGH RISK OF SMOKING

by

HOLLY J. MATA, M.S.

DISSERTATION

Presented to the Faculty of the Graduate School of

The University of Texas at El Paso

in Partial Fulfillment

of the Requirements

for the Degree of

DOCTOR OF PHILOSOPHY

Interdisciplinary Health Sciences Doctoral Program

College of Health Sciences/School of Nursing

THE UNIVERSITY OF TEXAS AT EL PASO

DECEMBER 2011

ACKNOWLEDGMENTS

I am profoundly grateful for my advisors and committee co-chairs Dr. Joe Tomaka and Dr. Sharon Davis. I have been so blessed by the many ways in which they encourage, motivate, support, and challenge me! Both of them contribute so much to so many, and those of us who are mentored by Joe and Sharon can only hope to pay it forward. How wonderful that they instill that desire in their students. Dr. Gloria McKee and Dr. Hector Balcazar, my committee members, have contributed substantially to my professional development and shared the joys and challenges of doctoral studies with me in many capacities. In the classroom, in the community, and in our scholarship, their guidance contributes much to my work.

My mentors and colleagues at the HHDRC - Elias Provencio-Vasquez, Eddie Castañeda, Bibiana Mancera, & Zuleika Ramirez – help me be a better scholar, a better person, and a better advocate for social justice, every day.

The youth in our community who work with us at the Boys and Girls Clubs are amazing. We appreciate the time and energy they spent helping us with our project, and we appreciate what they do every day at home, at school, and in the community.

My student colleagues who helped with this project and do so much for so many – Jose, Luisa, Sujehy, Kristen, Sandra, Francis – inspired me to keep going and I learn something from each of them every time we work together.

My Grandma and my grandchildren and everyone in between cheered me on, all the time. All my family in El Paso supported me, every day in every way. Most of all, my husband Sam makes every day the best day, and I thank him for sharing life and love with me!

ABSTRACT

Despite reductions in overall smoking rates, data show that adolescents continue to smoke at higher rates than adults and that adolescents living in the Texas–Mexico border area are more likely than their counterparts living elsewhere in Texas to smoke. While adult smoking in the Paso del Norte Region has decreased significantly over the past decade, area youth smoking rates exceed both state and national averages. Recent estimates report “any use” cigarette smoking among El Paso youth in the past month to be slightly more than 28% as compared with 21% among Texas youth participating in the 2009 statewide Youth Risk Behavior Survey and 19% among U.S. youth in the same survey. Sociodemographic factors such as income, low community educational attainment, ethnicity, and social context have been shown to contribute to smoking initiation and prevalence among adolescents. In addition to prioritizing groups that may be at high risk of smoking, the CDC’s *Best Practices for Tobacco Control Programs* (2007) suggests several strategies to help eliminate tobacco-related health disparities nationwide. These include identifying populations with disparities related to smoking, partnering to enhance intervention reach and resources, and developing and implementing culturally relevant approaches to smoking prevention and cessation. Accordingly, the purpose of this research project was to develop and evaluate an innovative intervention for youth who may be at high risk of smoking because of sociodemographic factors. Specifically, the research examined whether existing behavioral technology that has been used successfully to reduce alcohol consumption in youth and adults, Personalized Normative Feedback (PNF), can be adapted to similarly affect smoking behavior. PNF refers to a brief intervention process that

includes assessment of individual use patterns and direct comparisons of such behaviors to normative data. In the current project, PNF techniques were featured in a brief intervention program that prioritized smoking and non-smoking youth who may be at high risk for continued or future smoking. The primary hypotheses were that participants receiving the PNF intervention would report decreased susceptibility to smoking, lowered estimates of descriptive norms favoring smoking (social norms), and increased negative attitudes towards smoking relative to baseline and in comparison with participants exposed to a nutrition program similar in format and duration but that did not address smoking in any way. Results indicated that although intervention participants reported decreased susceptibility and lowered social norms relative to controls, these changes were not statistically reliable. Regarding changes in attitudes, participants in both groups reported increases in negative attitudes towards smoking which were statistically reliable, and were highest among youth who reported current smoking. Significant differences in smoking prevalence, norms, attitudes, and susceptibility were found by study site and by smoking status, suggesting the need for tailored prevention intervention approaches at the community level. Implications for future research and prevention intervention programs are discussed, as are limitations and strengths of the use of PNF to reduce smoking susceptibility among youth who may be at high risk of smoking because of contextual and sociodemographic factors.

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CHAPTER 1: INTRODUCTION

It is estimated that 20.6% of adults in the U.S. smoke cigarettes (CDC, 2009), and more people die from smoking each year than from murders, suicides, automobile accidents, alcohol and illegal drug use, and HIV/AIDS combined (U.S. Department of Health and Human Services [USDHHS], 2004). Extensive research has confirmed causal relationships between smoking and many forms of cancer, cardiovascular disease, respiratory disease, reproductive effects, decreased health status, and increased morbidity (USDHHS, 2004).

Despite reductions in overall smoking rates, data show that adolescents continue to smoke at higher rates than adults and that smoking rates are considerably higher among those with General Education Development (GED) certification (41.3%) and high school dropouts (35.7%), compared with those receiving traditional high school diplomas (25.5%; CDC, 2009). Other sociodemographic factors such as income, ethnicity, and social context also contribute to smoking initiation and prevalence among adolescents (O'Loughlin, Karp, Koulis, Paradis, & Di Franza, 2009). In addition to prioritizing groups that may be at high risk of smoking, the CDC's *Best Practices for Tobacco Control Programs* (2007) suggests several strategies to help eliminate tobacco-related health disparities nationwide. These include identifying populations with disparities related to smoking, partnering to enhance intervention reach and resources, and developing and implementing culturally relevant approaches to smoking prevention and cessation.

Adolescents living in the Texas–Mexico border area are more likely than their counterparts living elsewhere in Texas to smoke (TDSHS, 2007). Despite significant

decreases in adult smoking in the Paso del Norte Region, area youth smoking rates exceed both state and national averages. Recent estimates report “any use” cigarette smoking among El Paso youth in the past month to be slightly more than 28% (PDNHF, 2007a), as compared with 21% among Texas youth participating in the 2009 statewide Youth Risk Behavior Survey and 19% among U.S. youth in the same survey (CDC, 2011a).

Overview of Risk and Protective Factors Related to Youth Smoking

Sociodemographic factors. Socioeconomic factors such as poverty and low educational attainment contribute to increased risk and prevalence for a variety of health indicators regardless of ethnicity (Williams, Neighbors, & Jackson, 2003). In terms of smoking, studies have suggested that minority status, smoking by family and friends, low educational attainment, low socioeconomic status, and early experimentation are significantly associated with daily use and dependence (CDC, 2006; Hu, Davies, & Kandel, 2006; Kandel, Kiros, Schaffran, & Hu, 2004). Additionally, tobacco companies target lower income communities and neighborhoods known to have higher smoking rates through increased marketing and tailored advertising campaigns (Barbeau, Wolin, Naumova, & Balbach, 2005; CDC, 2010).

Risk factors that may contribute to increased tobacco and substance use *specifically on the US-Mexico border*—the site of the current project — include low socio-economic status, low educational attainment, illicit drug availability, and increased alcohol and tobacco marketing (Caetano, Ramisetty-Mikler, Wallisch, McGrath, & Spence, 2008; Power, 1998). As such, prioritizing youth who may be at high risk of smoking because of sociodemographic and contextual factors is a logical and cost-

effective response to the disparity in smoking rates. There is significant evidence supporting the role of comprehensive tobacco control policies in reducing adult smoking (CDC, 2007; Frieden et al., 2005) and some evidence suggesting that similar approaches can reduce youth smoking initiation (CDC, 2010). This is important, because with few exceptions, school-based prevention programs have not shown long-term success in reducing youth smoking (Müller-Reimenschneider, Bockelbrink, Reinhold, Rasch, Greiner, & Willich, 2011). However, community-based interventions that address youth smoking at a variety of contextual levels and supplement comprehensive tobacco control efforts have shown some evidence of success in reducing youth smoking rates (Carson, Brinn, Labiszewski, Esterman, Chang, & Smith, 2011; CDC, 2010; Müller-Reimenschneider et al., 2011).

Individual factors. Risk factors in addition to sociodemographic factors that have been investigated during the last 30 years include psychosocial factors such as attitudes, beliefs, and intention, social influences through family and friend networks, other substance use, academic success, individual traits such as rebelliousness, stress appraisal and response, and self-esteem and self-efficacy (Castro, Maddahian, Newcomb, & Bentler, 1987; Christakis & Fowler, 2008; Ford, Diamond, Kelder, Sterling, & McAlister, 2009; O'Loughlin et al., 2009).

Risk and protective factors related to youth smoking have been widely studied and yet have differed across several hundred longitudinal studies; smoking susceptibility, parental smoking, and peer smoking have emerged as common risk factors that have consistently predicted youth smoking (O'Loughlin et al., 2009). Effects of other individual risk factors have been less consistent when studied as single

predictor variables but are frequently part of multivariate models used to predict smoking uptake and continuance.

Researchers have also assessed the impact of individual factors such as biologic traits and genetic differences in nicotinic effect and dopaminergic response (Audrain-McGovern, Nigg, & Perkins, 2009; Montgomery, Lingford-Hughes, Egerton, Nutt, & Grasby, 2007), as well as contextual factors including movie portrayal of smoking (Charlesworth & Glanz, 2005), tobacco marketing (Hanewinkel, Isensee, Sargent, & Morganstern, 2011), anti-smoking media campaigns, and public policy efforts such as tax increases and indoor smoking bans (Carpenter & Cook, 2008; Gilpin, White, Messer, & Pierce, 2007; O'Loughlin et al., 2009).

Health Determinants, Health Disparities, and Tobacco-related Disparities

Disparities exist in terms of both smoking prevalence and access and response to program and policy efforts such that some groups may be more likely to initiate and continue smoking and less likely to quit (CDC, 2006; CDC, 2009; Christakis & Fowler, 2008, Hu et al., 2006). Accordingly, it is useful to understand tobacco prevention and control efforts from an overarching perspective of health determinants and health disparities, with additional theoretical contributions that impact specific constructs associated with smoking risk and prevalence.

Health determinants and health disparities. Health *determinants* are factors that impact individual and population health across a variety of social, environmental, and individual contexts (World Health Organization, 2011). Health *disparities* are differences in health determinants and health outcomes that can be attributed to social inequalities (CDC, 2011b). Because they encompass such a wide spectrum of factors,

determinants of health disparities in general are myriad, multifaceted, and complex. Determinants of tobacco-related health disparities in particular are similarly multifactorial and represent a significant public health challenge (Fagan et al., 2004; CDC, 2000).

Frameworks for understanding determinants of population health are useful in efforts to develop and implement strategies to address disparate health behaviors and outcomes such as those related to smoking. Two such frameworks, followed by research recommendations from a key group of tobacco researchers and stakeholders, will be addressed.

A framework based on levels of influence. Levels of influence on determinants of health have been described by Warnecke and colleagues (2008) as distal, intermediate, and proximal. Distal factors include public policy and social norms, and institutional contexts such as legal, political, and health care systems. Intermediate factors include social and physical contexts such as social capital and socioeconomic status, racial, ethnic, and cultural factors, and neighborhood characteristics including safety, access to services, and environmental health indicators. Proximal factors include individual characteristics such as age, ethnicity and health status, behaviors such as substance use, diet and fitness, and sexual behavior, and biological responses as well as genetic processes and pathways (Warnecke et al., 2008).

A framework based on pathways. Others have argued against the distal/proximal characterization of determinants of health and suggested instead that we conceptualize health determinants through multilevel pathways that are shaped by power, politics, and social contexts that then are embodied at the individual and biological levels. The consequences of this embodiment are then expressed in

population health, disease burden, and health disparities (Krieger, 2008). In this view, the pathways through which determinants affect the individual are not constrained by a hierarchy of levels but instead are manifest through multiple levels of influence simultaneously and continuously.

Regardless of whether determinants of disparities in health behaviors and outcomes are conceptualized through levels, pathways, or contexts, these determinants are especially challenging in the ongoing quest to eliminate tobacco-related health disparities. Researchers have called for empirical investigation into how best to intervene across multiple levels of influence and through various pathways of smoking initiation and continuance.

Tobacco-related Disparities

In 2002, the National Conference on Tobacco and Health Disparities (NCTHD) was convened to review the current research, outline an agenda for addressing gaps in the literature, and provide directions for future research. Collaborators representing multiple agencies and stakeholders in tobacco research defined tobacco-related health disparities as “differences in the patterns, prevention, and treatment of tobacco use; the risk, incidence, morbidity, mortality, and burden of tobacco-related illness that exist among specific population groups in the United States; and related differences in capacity and infrastructure, access to resources, and environmental tobacco smoke exposure” (Fagan et al., 2004, p. 211). In other words, some groups have higher smoking rates, are more vulnerable to tobacco-related exposure and disease, or have fewer prevention and cessation resources available. For example, smoking rates among members of the military, people who are gay, lesbian, bisexual, or transgender, people

living with mental illness and substance use disorders, and people living in rural as opposed to urban areas are significantly higher than among the general population (Tobacco Research Network on Disparities [TReND], 2011). Disparities by sociodemographic factors such as education, income, and ethnicity are well-documented, as is the vulnerability of youth to a variety of tobacco-related disparities (CDC, 2006, 2007, 2009; TReND, 2011).

Additionally, the NCTHD specifically called for the identification of the best mechanisms and venues through which research can be used to interrupt the pattern of tobacco-related health disparities among affected groups. Eleven key areas for scientific inquiry were outlined and included the domains of epidemiology, surveillance, psychosocial research, basic biology, harm reduction, marketing, policy, community and state, prevention of tobacco use, treatment of nicotine addiction, and research capacity and infrastructure (Fagan et al., 2004). As well, the NCTHD stressed the importance of innovative strategies and approaches that would examine the root causes of disparities, address needs at smaller and within-group levels, and translate findings into practice and policy. This project addresses several of the above suggested areas for inquiry, specifically psychosocial research, harm reduction, and prevention of tobacco use. This project also aimed to address needs at smaller group levels, a better understanding of which can help to impact practice and policy in the priority population.

Factors influencing youth smoking. As with determinants of health disparities, determinants of tobacco-related disparities can be conceptualized as occurring and interacting across multiple levels and pathways. Interventions among youth are crucial

to addressing tobacco-related disparities in light of research showing that virtually all adult smokers initiated smoking before the age of 18 (USDHHS, 1994).

Factors influencing youth smoking have also been characterized as belonging to distal, intermediate, and proximal realms and interacting to impact smoking behavior (Turner, Mermelstein, & Flay, 2004). In this model, the distal realm includes environmental and cultural influences such as media and marketing, public policy, and community characteristics; the intermediate realm includes contextual factors such as social norms, family and peer tobacco use and attitudes about use; and the proximal realm includes individual biological and genetic characteristics as well as ethnicity, gender, and age.

Respectively, these three realms – environmental/cultural, contextual, and individual - primarily influence attitudes, social norms, and responses to smoking experimentation (Turner et al., 2004). Research in each of these realms can contribute to increased understanding of youth smoking in general, and disparities in susceptibility to smoking across multiple levels and contexts in particular. Few smoking prevention programs have demonstrated long-term effects. In response, researchers have called for investigations into components of programs that may strengthen approaches to youth control through short-term or reinforcing effects, and for evaluation of strategies that may mediate or moderate program effectiveness (O’Laughlin et al., 2009). Researchers have also suggested that it is important to assess intervention effects both immediately and long-term (Flay, 2009), in order to capture both short-term effects as well as gain insight into how long intervention effects last.

Purpose and Rationale of the Current Project

Accordingly, the purpose of this research project was to develop and evaluate an innovative intervention for youth who may be at high risk of smoking because of sociodemographic factors including neighborhood characteristics such as low educational attainment and high poverty rates. Specifically, the research examined whether existing behavioral technology that has been used successfully to reduce alcohol consumption in youth and adults, PNF, can be adapted to similarly affect smoking behavior. PNF refers to a brief intervention process that includes assessment of individual use patterns and direct comparisons of such behaviors to normative data. Because substance users typically overestimate the proportion of peers who are users like themselves, the goal of PNF is to correct normative misperceptions by providing objective feedback regarding discrepancies between individual behavior and actual normative standards (Lewis, Neighbors, Lee, & Oster-Aaland, 2008). PNF interventions can be and typically are non-judgmental, non-evaluative, and non-labeling, making them ideal for use among young populations who may be defensive when talking about current substance use. Several reviews and meta-analyses have shown that PNF interventions have consistently reduced alcohol consumption and related risks (Carey, Scott-Sheldon, Carey, & DeMartini, 2007; Lewis & Neighbors, 2006; Walters & Neighbors, 2005).

In the current project, PNF techniques were featured in a brief intervention program that prioritized smoking and non-smoking youth who may be at high risk for continued or future smoking because of sociodemographic factors.

Primary hypotheses. The primary hypotheses were that participants receiving the PNF intervention would report decreased susceptibility to smoking, lowered estimates of descriptive norms favoring smoking (social norms), and increased negative attitudes towards smoking relative to baseline and in comparison with participants exposed to a nutrition program similar in format and duration but that did not address smoking in any way.

CHAPTER 2: BACKGROUND AND SIGNIFICANCE

Sociodemographic Risk Factors and Theoretical Influences.

In this section, sociodemographic factors such as ethnicity, educational attainment, and income that may contribute to smoking risk among youth in the priority population are explored. The theoretical foundations of the current project are outlined, and relevant studies related to the outcomes of interest are described.

Hispanic ethnicity and smoking. Hispanic adults in the U.S. are less likely to smoke than are most other ethnic groups; only Asians have lower smoking rates. In 2008, 15.8% of Hispanics aged 18+ reported current smoking compared with 21.3% of non-Hispanic Blacks, 22% of non-Hispanic Whites (NHWs) and 32.4% of non-Hispanic American Indians/Alaska Natives. Within each ethnic group, men are almost twice as likely to smoke as women except among NHWs, where the gender difference is less pronounced. Relevant to the current project, ethnic variations in smoking among adolescents differ from adult trends. For example, a study of 5870 eighth graders in California found that Hispanic students reported higher susceptibility to smoking (71%) than did their White (61%), Black (58%), or Asian (47%) peers. Additionally, self-reported past 30-day smoking was highest for Hispanics (22%) compared with their White (18%), Black (12%), and Asian (12%) classmates (Unger, Rohrbach, Cruz et al., 2001).

In another study of 68,611 youth aged 12-17 that investigated smoking prevalence and susceptibility among six major racial/ethnic groups and nine Asian and Hispanic subpopulations in the U.S., Hispanic youth had relatively low past 30-day smoking rates of 9.3% (range of all groups 2.2%-23.1%) but high smoking susceptibility

rates of 27% (range 15.4%-28.8%) (CDC, 2006). In contrast with adult data, there was no difference in smoking rate by gender among Hispanic youth. Overall, these data suggest that although Hispanic adults are less likely to smoke than their non-Hispanic counterparts, Hispanic youth are much more susceptible to smoking than their non-Hispanic peers (27% compared with 21%). Moreover, the gender differences in adult smoking rates such that Hispanic women are less likely to smoke are not likely to continue, given the similar smoking rates and elevated rates of smoking susceptibility among male and female Hispanic youth.

Poverty and smoking. Income and poverty have been consistently associated with higher smoking rates. For example, one recent study found that prevalence of current smoking (in this study defined as having smoked at least 100 cigarettes and smoking on some days or every day) among 21,525 adults aged 18+ was much higher for those reporting incomes below the federal poverty level (31.5%) than for those reporting incomes at or above this level (19.6%) (CDC, 2009). This discrepancy in smoking rates is consistent with trends reported in earlier studies; in a 2000 study of 25,831 U.S. adults current smoking rates were 34.7% among those classified as poor with (income below the 1999 federal poverty level) compared with 20.7% among those classified as higher income (income \geq 300% of the federal poverty level) (Barbeau, Krieger, & Soobader, 2004).

Educational attainment and smoking. Significant differences exist in smoking prevalence by education level, such that U.S. adults aged 25+ with less or alternative educational attainment are much more likely to smoke. For example, as Figure 1 shows, the lower the educational level, the higher the smoking rate. Of particular concern are

smoking rates among those with a high school diploma (25.5%), 9-11 years of school (35.7%), and alternative high school education (41.3%) (CDC, 2009).

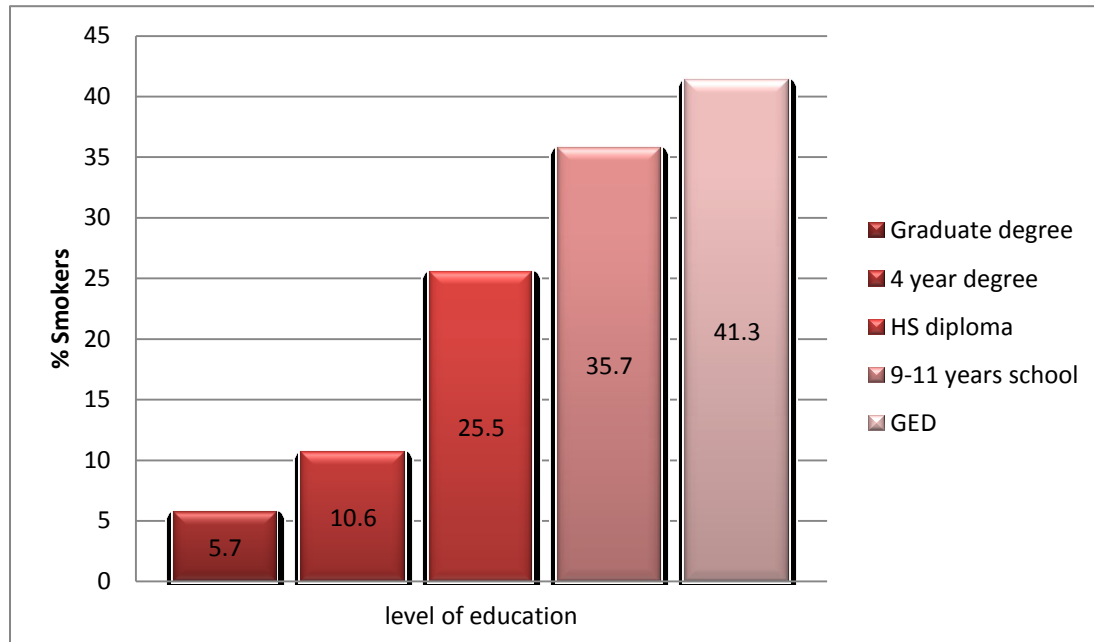


Figure 1. Smoking rates by level of education (Data source: CDC, 2009)

Other socioeconomic indicators and smoking. Other studies have supported these associations, even among young adolescents. For example, in a study of 1842 ethnically diverse 8th graders, lower socioeconomic status (in this study a composite of parental education, household rooms per person, and median zip code income) was associated with increased feelings of marginalization and higher smoking rates (Unger, Sun, & Johnson, 2007). Specifically, 23% of youth in the lowest quintile of SES reported ever smoking compared with 10% of youth in the highest quintile. Interestingly, among these 8th graders, 36% of those in the highest quintile of *weekly spending money of their own* reported ever smoking compared with 10% among those with *no spending money*. This suggests that at this age, low *family* SES contributes to increased smoking

experimentation whereas high *individual* available money contributes to increased experimentation.

There are several reasons why socioeconomic factors relate to smoking. First, smoking may be more normative in some settings than others. Second, since the association exists, people with lower or alternative levels of education and/or lower income levels may be exposed to and influenced by a higher proportion of smokers than those with higher SES simply because of neighborhood and occupational similarities. Finally, people with low SES are likely subject to a variety of life stressors and may be more likely to smoke to reduce stress or tension. Negative affect reduction is a commonly endorsed reason for smoking among youth and adult smokers (Heinz, Kassel, Berbaum, & Mermelstein, 2010).

Interestingly, although smoking rates are higher among those with lower education levels, interest in quitting is relatively similar. One study found that among young adults there is little variation by education level in number of quit attempts and interest in quitting (Solberg, Asche, Boyle, McCarty, & Thoele, 2007). However, among smokers participating in a cessation program, baseline financial hardship predicted both program drop-out and lower cessation rates among those completing the program and follow-up (Kendzor et al., 2010). This suggests that although interest in quitting may not differ by education level, lower access to resources and higher levels of stress due to sociodemographic status may contribute to the association between educational attainment and smoking. As such, smoking prevention and cessation programs that are specifically designed to meet the needs of groups with higher smoking rates may help reduce disparities in smoking related to factors such as income level and educational

attainment.

Hispanic Ethnicity and Regional Risk of Low Educational Attainment

Hispanics are the largest and fastest-growing minority group in the U.S. and the majority of Hispanics are Mexican American (U.S. Census Bureau, 2008). Hispanic students have significantly higher status dropout rates nationally than their NHW or Black peers. Indeed, as Figure 2 shows, Hispanics aged 16-24 are twice as likely as Blacks and four times as likely as NHWs to drop out of high school without pursuing alternative education (U.S. Department of Education [USDOE], 2008). Given the associations between low educational attainment and lower income levels observed in adults, it is likely that many of these youth will become adult smokers. As such, interventions to reduce smoking should prioritize youth in low-income neighborhoods and in community settings.

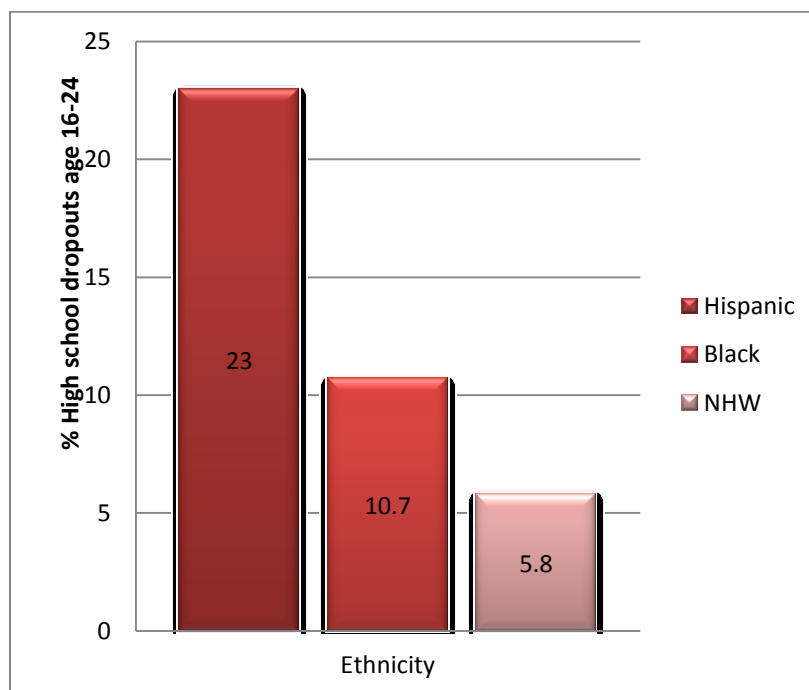


Figure 2. National status drop-out rate by ethnicity (Data source: USDOE, 2008)

In Texas, recent data indicate that 45% of Hispanic students in Texas leave school between 9th and 12th grades, compared with 20% of NHWs (Intercultural Development Association ([IDRA], 2007). Similar disparities have been observed in graduation rates by gender and ethnicity. As shown in Figure 3, Hispanic men are much less likely than their NHW peers to graduate from high school within four years (55% and 77%, respectively). Similar disparities in graduation rates exist between Hispanic and NHW women (63% and 80%, respectively) (Greene & Winters, 2006). These disparities in educational attainment may contribute to increased susceptibility to smoking among Hispanic youth.

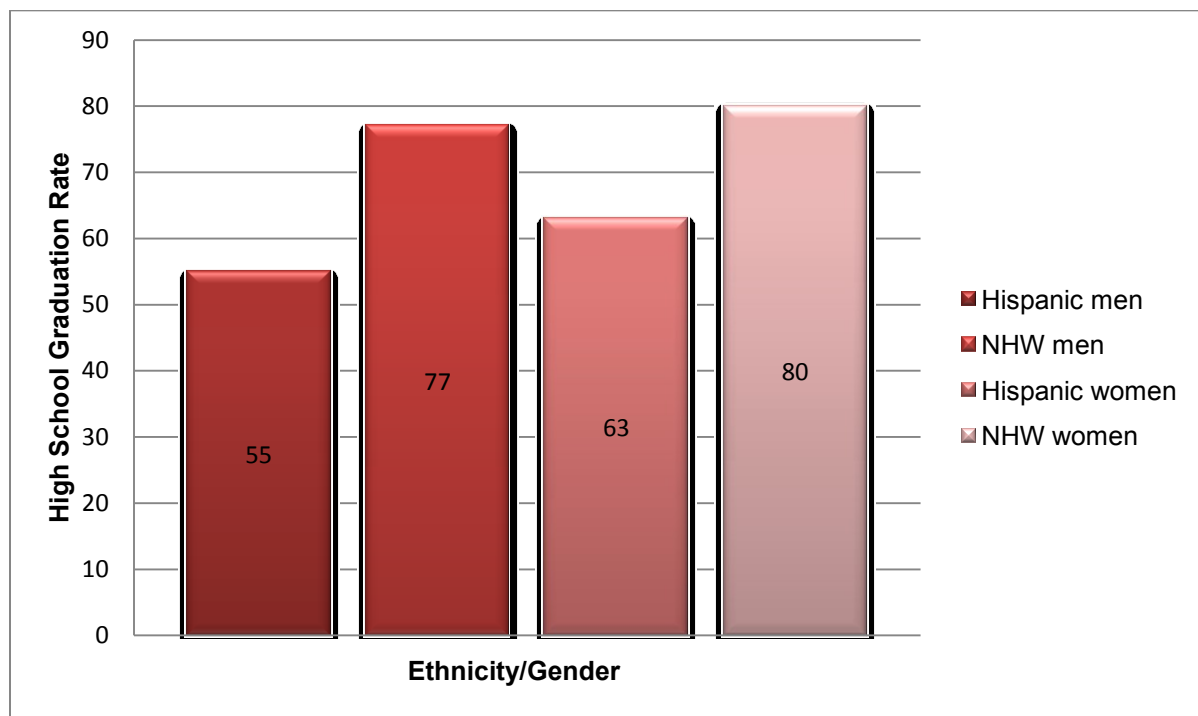


Figure 3. Texas high school graduation rate by ethnicity and gender (Data Source: Greene & Winters, 2006)

Susceptibility to Smoking

Progression from not smoking to smoking has been described most frequently as

a four-stage process that occurs over time in which individuals can be characterized as (1) not smoking and not intending to smoke, (2) not smoking and considering experimenting with smoking, (3) occasional or light smoking, and (4) regular or frequent smoking (Pierce, Choi, Gilpin, & Farkas, 1996).

Many studies in this area use Cognitive Susceptibility to Smoking both as a risk factor and outcome measure in studies related to youth and adult smoking. Cognitive susceptibility to smoking is defined as “the lack of a firm commitment not to smoke in the future or if offered a cigarette by a friend” (Spelman et al., 2009, p. 3459) and as a cognitive predisposition to smoking among youth who have never smoked (Pierce et al., 1996).

Susceptibility is often conceptualized in the same way as behavioral intention, such that having *no intention of smoking* is equivalent to being *not susceptible to smoking* (Ford et al., 2009). These constructs are developed in further detail in the Theoretical Contributions and Measures sections.

Susceptibility to smoking has been associated with early experimentation (Jackson, Henriksen, Dickinson, Messer, & Robertson, 1998; Pierce et al., 1996) both in multiethnic studies (Gritz et al., 1998; Gritz et al., 2003) and among Hispanic youth (Spelman et al., 2009). In these and other studies, high-susceptible youth were much more likely to report having ever smoked than were their less-susceptible peers with one prospective study showing it to be the strongest predictor of experimentation (Spelman et al., 2009). Specifically, youth who were susceptible at baseline were 2.6 times as likely to report having smoked at follow-up three years later than were their non-susceptible peers, which may suggest the need for prevention intervention

programs that are tailored to the susceptibility status of program participants (Spelman et al., 2009).

Tailored intervention. Although risk factors for smoking generalize across populations (CDC, 2006; Hu et al., 2006; Kandel et al., 2004; Unger et al., 2001), these studies have also suggested that future research continue to examine culturally-specific risk factors for susceptibility and examine the effectiveness of tailored prevention and intervention efforts to reduce susceptibility status. In a review of the National Cancer Institute's Research-Tested Intervention Programs, of the five that demonstrated decreases in smoking susceptibility or smoking outcomes, four were tailored to specific sociodemographic groups (Sherman & Primack, 2009). Tailoring interventions based on sociodemographic factors, smoking prevalence and susceptibility, and culturally specific attitudes and beliefs is considered a key component in reducing tobacco-related disparities (CDC, 2011b).

Because attitudes towards smoking and perceived prevalence of peer smoking (i.e., social norms) are often associated with and contribute to susceptibility (Brown, et al., 2010; Forrester, Biglan, Severson, & Smolkowski, 2007; Unger, Rohrbach, Howard-Pitney, Ritt-Olson, & Moutappa, 2001) and because susceptibility, social norms, and attitudes towards smoking are frequently among the most commonly cited correlates of youth smoking, studies that target these domains through interventions tailored to the known attitudes and normative perceptions of youth may reduce susceptibility to and initiation of smoking.

In this regard, interventions that feature innovative strategies to reduce smoking and smoking susceptibility (specifically, Personalized Normative Feedback) may

contribute to reducing tobacco use and tobacco-related disparities. This is important because the heterogeneity of ethnic groups in the U.S. dictates the need for prevention and cessation programs that are easily tailored to the susceptibility status and community-level risk factors of program participants. As discussed above, there is an urgent need to understand and address tobacco-related disparities at the within-group level. Differences between groups based on ethnicity or income or education level, while informative, do not address the complexities of other individual and contextual factors that contribute to smoking risk and prevalence. In other words, national-level data that reflects ethnic variation in substance use, specifically smoking, do not “tell the whole story” of cultural influences on smoking among youth at the community level, a level at which sociocultural and contextual influences may be most salient. Using PNF in small-group settings may inform the development of programs that are tailored at both the individual and community or neighborhood level.

Building on Current Approaches to Youth Smoking Prevention

Consistent with current research and recommendations, this project featured a social norms approach (described in detail below) to cessation and prevention rather than an informational deficit model which until the past decade had historically characterized youth smoking prevention programs. Meta-analyses of the effects of traditional school-based programs have consistently highlighted the lack of long-term effectiveness of such programs despite varying intensity and widespread availability (Bruvold, 1993; Wiehe, Garrison, Christakis, Ebel, & Rivara, 2005). These reviews also called for increased research examining the effectiveness of interventions based on social norms approaches, which are discussed in detail below.

More recent reviews have also found inconclusive support for school-based programs, with few exceptions. It should be noted that one of the difficulties in evaluating smoking prevention programs are the diversity of methodological approaches and inconsistency in measured outcomes. For example, some programs use standard educational programs as a control while others use no intervention as a control. Regarding outcomes, some programs assess “ever” or “lifetime” smoking while others assess “past 30-day” or frequency of smoking. Some programs are school-based only, others are community-based, and some are *multisectorial* (Müller-Riemenschneider et al., 2011) and include school and community components.

Regarding school-based interventions, of nine methodologically sound randomized studies included in a recent review, only two showed positive effects on smoking outcomes and several showed negative effects (Müller-Riemenschneider et al., 2011). Consistent with evidence that prevention programs which are tailored to sociodemographic characteristics of participants are more effective, effects were stronger in programs using culturally tailored curricula. Specifically, Johnson and colleagues (2005) compared a multicultural curriculum with a standard curriculum by youth ethnicity and primary school ethnicity. Hispanic students in predominantly Hispanic schools using the multicultural curriculum were significantly less likely ($OR = 0.58$, 95% CI = 0.45, 0.73) to initiate smoking two years later than were Hispanic students in the standard curriculum or control groups (Johnson et al., 2005). Interestingly, this effect was significant only among Hispanic students in predominantly Hispanic schools; it was not significant among Hispanic students in predominantly Asian and multiethnic schools. Among Asian students in the same study, students receiving

the standard curriculum were less likely to smoke at two-year follow-up ($OR = 0.41$, 95% $CI = 0.20, 0.85$) than were Asian students in the multicultural curriculum or control groups. This highlights both the difficulty of developing multicultural curricula that are cross-culturally relevant, as well the possible effect of context on the salience of tailored interventions (Johnson et al., 2005).

Supporting the notion that peer influence can be protective, one of the most rigorous recent studies found that a peer-led school-based intervention significantly reduced smoking immediately and at one- and two-year follow-ups. Campbell and colleagues (2008) in a cluster randomized controlled trial ($n=10,730$) that included 59 schools in the UK implemented the A Stop Smoking in Schools Trial (ASSIST) among 12 and 13 year olds in order to "...spread and sustain new norms of non-smoking behavior through social networks in schools" (Campbell et al., 2008). "Peer supporters" were identified through student nomination of influential peers, and were trained in communication skills and diffusion of smoke-free health promotion messages (Starkey, Audrey, Holliday, Moore, & Campbell, 2009). The intervention consisted of the peer supporters disseminating health promotion messages in informal settings and contacts in the school setting that emphasized smoke-free attitudes and behavior. The intervention lasted 10 weeks, during which time the peer supporters received ongoing support and follow-up training. Schools in the control condition received standard tobacco prevention education. Adjusting for smoking rates at baseline, students in the intervention schools were less likely to smoke immediately after the intervention ($OR = 0.75$, $p = .06$), at 1 year follow-up ($OR = 0.77$, $p = .04$), and at 2 year follow-up ($OR = 0.85$, $p = .07$). Of note, in this study youth who were considered high risk at baseline

because of prior smoking history were also less likely to smoke at all three time periods, ($OR = 0.79, p = .19$), ($OR = 0.75, p = .05$), ($OR = 0.85, p = .09$), respectively (Campbell et al., 2008).

Reviews and meta-analyses of school and community-based prevention programs have been criticized for being too restrictive (Flay, 2009), which can result in successful components of programs being overlooked when overall outcomes are not significant, or in successful programs being overlooked altogether because they were excluded from reviews because of methodology. Synthesizing the conclusions of several reviews, Flay (2009) provided a summary of what makes school-based prevention programs effective. Effective programs are interactive, use a social norms approach, include components on intention and commitment not to use, have a community component, and include peer leaders. In a similar discussion of what makes community-based programs effective, Carson and colleagues (2011) suggested that programs use multi-component (e.g., school, family, community) strategies, use social influence and social norms approaches, tailor programs to participants, involve community leaders in program planning and implementation, use mass media, and use peers as leaders.

In summary, the recommendations based on reviews of youth smoking prevention programs at the school and community levels closely align with the recent call for programs that focus on "...community, policy and social norms change, rather than individual change" (CDC, 2010, p. 19). Accordingly, the CDC has concluded that school-only programs, information deficit models, and programs that don't include youth in leadership roles are not effective in youth smoking prevention. What is supported by

the evidence are approaches that include media advocacy to counter tobacco advertising, social norms approaches, youth involvement in leadership and policy roles, and programs that integrate school and community components (CDC, 2010).

Theoretical Contributions to Intervention Development

This project followed current recommendations regarding areas for suggested research (psychosocial research, harm reduction, and prevention of tobacco use), the need for elucidation of specific components of programs that address domains shown to predict youth smoking (susceptibility, social norms, and attitudes), and the importance of addressing tobacco-related disparities. Additionally, this project was grounded in innovative applications of several established and commonly used theories and approaches in substance abuse research: Social Norms Theory and related approaches, Motivational Interviewing (MI), and Theory of Planned Behavior (TPB). This section describes the role of each of these theories and approaches in the context of the intervention development.

Social norms: Peer pressure or peer choice? There is a significant literature devoted to understanding the effects of perceived peer smoking prevalence (referred to in the current project as *social norms*), social network (friendship connections) influence on smoking, and the social contexts in which interactions occur (Simons-Morton & Farhat, 2010). Having friends who smoke is consistently related to increased smoking and susceptibility among non-smoking youth as well (Smith, Bean, Mitchell, Speizer, & Fries, 2007).

In a longitudinal study in which 16 communities were randomly assigned to receive an intervention to prevent youth smoking, secondary analyses examined

predictors of individual non-smoking youth ($n=4130$) smoking uptake two years later. Parent ($OR = 1.83, p < .001$), sibling ($OR = 1.9, p < .001$), and friend ($OR = 1.59, p = .01$) smoking at time 1 predicted adolescent smoking at time 2, as did susceptibility ($OR = 2.07, p < .001$) (Forrester et al., 2007).

Forrester and colleagues (2007) also looked at differences between the youth who completed the two year study and youth who were lost to follow-up ($n=489$). Notably, attrition analyses indicated that youth who did not complete the follow-up were more likely to be susceptible to smoking and more likely to report parent, sibling, and friend smoking, suggesting that the non-completers were a higher risk group than those who remained at follow-up.

Ellickson and colleagues (2003) examined whether school-level smoking prevalence affects subsequent smoking behavior from 7th to 8th grade among 6527 students. No effect for school-level smoking was found when baseline smoking was taken into account. However, perceived prevalence of peer smoking was a significant predictor of smoking one year later, even when controlling for baseline smoking, as was having friends who smoke (Ellickson, Bird, Orlando, Klein, & McCaffrey, 2003).

Less clear is whether these associations are due to social influence or social selection. In other words, do youth smoke because they feel direct or indirect pressure from friends, or do youth choose their friends because their smoking or non-smoking behavior is similar to their own?

Recent comprehensive reviews of studies investigating peer influences on youth smoking provide support for the homogeneity of smoking behavior among groups of friends, as well as the impact of peer influence and peer selection on smoking (Simons-

Morton & Farhat, 2010). Specifically, among 13 studies (12 of which were longitudinal), support for social selection effects only was found in five of the studies, support for peer influence effects only was found in three studies, and support for both effects was found in five studies. Based on the collective study results, reviewers specifically highlighted the need for interventions at the individual and peer group levels that are designed to change social norms regarding smoking (Simons-Morton & Farhat, 2010).

Social norms theory. Social norms theory suggests that actual and perceived norms predict behavior and that environmental approaches to influence these norms can influence behavior (Perkins, 2003). In the context of youth smoking, *actual* rates of youth smoking prevalence and *perceptions* of youth smoking prevalence are both associated with youth smoking. Social norms approaches prioritize environmental (e.g., family, community, and social contexts and norms) as well as individual concepts that influence behavior change.

At the environmental level, these concepts include using community-based and multifaceted intervention strategies, which will be discussed below. At the individual level, social norms concepts suggest that misperceptions (inaccurate perceptions) of norms can reinforce unhealthy behavior while accurate communication of healthy behavior reinforces positive behaviors (Linkenbach et al., 2002).

Regarding social norms approaches to behavior change, six key concepts define the approach (Linkenbach et al., 2002). The first is that *misperceptions of norms reinforce negative behavior*. Misperceptions of norms can lead to increases in or continued unhealthy behaviors such as smoking. Correcting these misperceptions can help reduce the prevalence of unhealthy behaviors.

The second key concept is that *accurate perceptions increase healthy behavior*. Addressing these misperceptions reinforces healthy behaviors practiced by the majority and promotes healthy behaviors among those in the using (in this case, smoking) minority. The third is that *social norms approaches use multi-faceted intervention strategies*. In the context of youth smoking, these might include a variety of strategies recommended by the CDC such as policy change (e.g. tax increases or smoking bans in public places), counter-marketing efforts to combat tobacco company influence, and school-based educational programs that complement community tobacco control efforts (CDC, 2010). Social norms strategies are appropriate at any level of intervention (universal, selected, indicated) and in many different settings (school, community, small group, individual). The fourth is that *social norms is community based*. As such, social norms interventions can capitalize on community pride, assets, and existing strengths and prevalence of healthy behaviors. The fifth is that *social norms is a science-based method*. There is substantial evidence regarding the efficacy and effectiveness of social norms approaches in diverse populations and for numerous targeted behaviors. Finally, *social norms is an environmental approach*. Social norms approaches can be applied in many levels (individual, relationship, institutional and organizational, community, and societal/public policy) of influence in a social ecological model (Stokols, 1996) and such a comprehensive approach may be much more effective than individual education that doesn't take environmental context into account.

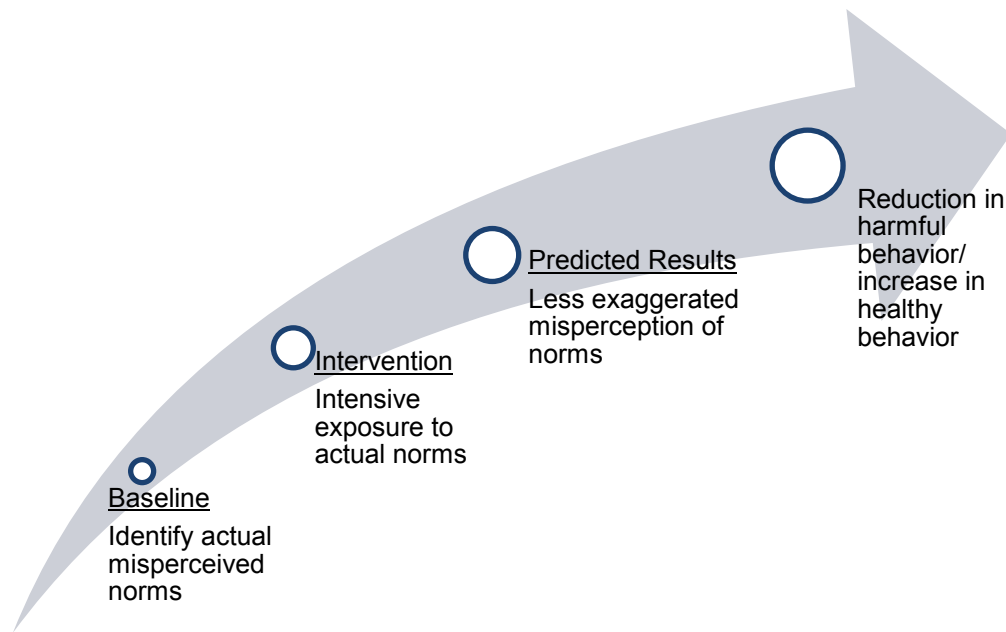


Figure 4. Social Norms Approach to Prevention (adapted from Perkins, 2003)

Misperceptions. Numerous studies have documented the existence of what social norms theorists refer to as *misperception*: “the gap between actual attitudes or behavior, and what people think is true about others’ attitudes or behaviors” (Berkowitz, 2004, p. 7). In other words, people frequently overestimate or underestimate the prevalence of a certain behavior within their peer group or social network. Several factors account for this phenomenon, according to social norms theory: (a) attributional errors, in which observation of a behavior on one occasion leads to the belief that the observed behavior is typical; (b) youth who use substances may stand out more than non-users (e.g., at parties or social events), causing others to remember the substance using behavior as more common or prevalent than is actually the case; and (c) media coverage of smoking in a positive or glamorous way and news coverage that focuses on the using minority rather than the non-using majority (Perkins, 2003). Misperceptions have been most frequently documented in terms of alcohol consumption among college students (Borsari & Carey, 2003) but have also been widely reported among other

populations including middle and high school students (Botvin, Griffin, Diaz, & Ifill-Williams, 2001; D'Amico et al., 2001) and young adults regardless of current educational status (Linkenbach & Perkins, 2003a).

Similar to adults, youth and young adults tend to overestimate the prevalence of a variety of behaviors among their peers and others. In a review of social norms approaches to other health and social justice issues, Berkowitz (2004) highlighted common misperceptions in sexual assault attitudes, homophobia, and eating habits. Larimer and Neighbors (2003) revealed misperceptions of gambling among college students. Others have focused on misperceptions on adolescent substance use in general (Hansen & Graham, 1991; Perkins & Craig, 2003).

Davis and colleagues (2010) examined racial/ethnic differences in perceived peer smoking prevalence in a cross-sectional study of 35,000 U.S. youth aged 12-17. Significant differences in degree of misperceptions existed across ethnic groups, such that Black and Hispanic youth were more likely to overestimate the percentage of their peers who smoke than were NHW youth (54.2%, 51.3%, and 44% respectively, adjusted for age, sex, and smoking status). However, these differences became much less pronounced when contextual factors were taken into account. Consistent with disproportionate rates of sociodemographic indicators such as poverty and low educational attainment among ethnic minorities, controlling for contextual factors significantly reduced the differences in perceived peer smoking prevalence. In the adjusted model, perceived prevalence among Black, Hispanic, and NHW youth was 49.4%, 48%, & 43.6 %, respectively. Contextual factors in this study included family dynamics, parental smoking, tobacco marketing, perceived low school performance,

and neighborhood educational attainment and income, among others. Results suggested both that contextual factors are associated with increased misperceptions of peer smoking, and that minority youth are more likely to experience contextual factors that contribute to these misperceptions (Davis, Nonnemaker, Asfaw, & Vallone, 2010).

Normative fallacies. Numerous studies have highlighted the normative fallacy in adolescent (Linkenbach & Perkins, 2003b) and young adult (Cunningham & Selby, 2007) smokers. This type of misperception is frequently referred to as *false consensus* and has been widely described in the literature (Pollard, Freeman, Ziegler, Hersman, & Goss, 2000; Sherman, Presson, Chassin, Corty, & Olshavsky, 1983). In general, this is the overestimation of problematic or unhealthy behavior by both those who engage in the behavior as well as by the abstainers (Linkenbach, Perkins, & DeJong, 2003). Regardless of whether an individual engages in the behavior, it is the *belief* that fosters the overall climate conducive to acceptance and overestimation of the behavior. For example, if youth in a certain grade level overestimate the prevalence of sexual intercourse among their peers, this may lead to sexually active youth believing their behavior is normative, and non-active youth believing that most of their peers are sexually active when in fact they are not.

Regarding smoking, smokers are more likely than nonsmokers to overestimate smoking prevalence, and this effect is more prevalent among young adults than in those older than 25 (Cunningham & Selby). Some studies have shown that there is a stronger relationship between perceived prevalence and youth smoking than actual prevalence (Ellickson et al., 2003). Providing accurate information about smoking prevalence (normative feedback) may facilitate reevaluation of smoking behavior among smokers

as well as reinforce nonsmoking intention among nonsmokers (Olds, Thombs, & Tomasek, 2005).

Reid and colleagues (2008) investigated factors associated with peer smoking prevalence perceptions in a cross-sectional study in which they used two large samples of high school youth to develop ($n=23,458$) and then validate ($n=25,452$) their predictive model. In the first study, 78% of students overestimated peer smoking prevalence while 72% overestimated in the second study. Overestimation was defined as being at least two 10% ranges outside of the actual prevalence. "Friend smoking" was the most significant predictor of overestimation in both studies, $OR = 4.07$, $OR = 3.02$ respectively, $p = .001$ when comparing "five friends who smoke" to the referent group of none (Reid, Manske, & Leatherdale, 2008).

Theory of Planned Behavior. The Theory of Planned Behavior is often used to explain health-related behavior and behavioral change (Ajzen & Manstead, 2007). According to TPB, there are three factors that directly influence behavioral intention, which in turn directly influences behavior: attitude (positive or negative evaluation of the behavior), subjective norm (perceived pressure from important referents to perform the behavior), and perceived behavioral control (Ajzen & Manstead, 2007). For example, in terms of smoking cessation, TPB constructs can explain attitude (How do I feel about smoking? Is it pleasurable & relaxing? Or does it make me cough and regret the money spent on cigarettes?), subjective norms (Do I feel pressured by my friends to smoke with them? Or do I feel pressure from my spouse to quit smoking?), and perceived behavioral control (Do I think it is too hard to quit? Or do I feel confident that I can quit because I really want to?)

According to Ajzen (2002), normative beliefs refer to the *perceived behavioral expectations* of important others. People form ideas about what is considered appropriate behavior; these beliefs in combination with level of motivation to live up to these behavioral expectations determine *subjective norms* which have been defined as “perceived social pressure to engage or not to engage in a behavior” (Ajzen, 2010). These relate to what social norms approach advocates term *injunctive norms*, or beliefs based on religion, morality, or other concepts of what is right and wrong, and *descriptive norms*, which are concerned with actual behavior (Berkowitz, 2004).

Several studies have applied the Theory of Planned Behavior or its predecessor, the Theory of Reasoned Action (Fishbein & Ajzen, 1975) to youth smoking and found that TPB constructs are useful for understanding and predicting adolescent smoking intentions or susceptibility. Hanson (1997) assessed the role of the TPB in predicting smoking intention among 430 female adolescents with a measure constructed according to TPB guidelines, the Fishbein/Ajzen Hansen Questionnaire (FAHQ, described in detail in Measures). Participants were recruited from family planning clinics and included 141 Black youth, 146 Puerto Rican youth, and 143 NHW youth. All had completed at least the 7th grade; 20%, 9%, and 6% of each ethnic group respectively were considered high school dropouts at the time of the study. Results suggested that among all youth in the study, attitude and perceived behavioral control had direct effects on intention, and subjective norms had direct effects on intention only among Black youth. Additionally, subjective norms indirectly influenced intentions through attitude and perceived behavioral control among Puerto Rican youth but not among NHW youth (Hanson, 1997).

Smith and colleagues (2007) found in a cross-sectional study of 785 high school youth that among non-smokers, positive attitudes about not smoking, subjective norms against smoking, and perceptions that it is difficult to quit were associated with decreased intention to smoke in the next 30 days ($OR = .53, p < .05$, $OR = .73, p < .05$, $OR = .74, p < .05$ respectively). Higher levels of peer smoking ($OR = 1.78, p < .001$) and higher perceived prevalence among community youth ($OR = 1.62, p < .05$) were associated with increased intention to smoke (Smith et al., 2007).

Motivational Interviewing. The development of the intervention was also based on principles of Motivational Interviewing. Miller and Rollnick (2002) define MI as a client-centered, directive method for enhancing intrinsic motivation to change by helping people explore and resolve ambivalence. The approach is client-centered in that each person has inherent capability and responsibility for making choices on how to change their own behavior and the person is responsible for making the choice to change or not (Miller & Rollnick, 2002).

In order to simplify the process and reach larger numbers of individuals, researchers have developed Brief Motivational Enhancement Interventions, which incorporate the spirit and philosophy of MI, but are designed to be briefer and more flexible in application. Specifically, these brief interventions were developed for use in single sessions (Rollnick, Heather, & Bell, 1992) and can be delivered individually or in small groups to reduce drug or alcohol consumption and/or the associated negative consequences.

One of the most widely used and empirically sound approaches in alcohol risk reduction is the Brief Alcohol Screening and Intervention of College Students (BASICS)

program (see Dimeff, Baer, Kivlahan, & Marlatt, 1999). BASICS has been endorsed as a Model Program by the Substance Abuse and Mental Health Services Association (SAMHSA), and has been proven effective in reducing harmful alcohol consumption and consequences in several large randomized longitudinal studies (Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001). BASICS programs are typically guided in a style consistent with MI and include many or all of the following elements (Baer et al., 2001; Murphy et al., 2001) which are frequently summarized using the FRAMES mnemonic (Miller and Rollnick, 1991):

Feedback: objective and empathic feedback about reported substance use
Responsibility: the decision to change – if, how, and when – belongs to the participant
Advise: personnel can provide helpful advice on positive behavior change
Menu of options/choices about behavior change can be presented and discussed
Empathy: communicating respect, understanding, and support in every encounter
Self-efficacy: supporting self-efficacy & perceived ability to control substance use

Additionally, and in accordance with the spirit of Motivational Interviewing, each encounter is based on and responsive to the participant's readiness to change. In the context of this project, this responsiveness is reflected in the non-judgmental and non-directive format of the intervention.

Personalized Normative Feedback. A key aspect of such interventions is the presentation of PNF. PNF is a logical extension of the social norms approaches called for in smoking prevention research, because the primary goal is to correct normative misperceptions. In order for PNF to impact misperceptions, these misperceptions should exist, and they should be a salient influence on behavior. There are generally three components to PNF: assessment of and feedback about individual use patterns, assessment of and feedback about perceptions of peer use patterns, and feedback about actual peer use patterns (Lewis & Neighbors, 2006). In other words, PNF

provides a context in which recipients can examine their own behavior in reference to important others. When successful, as has been the case in alcohol risk reduction programs, PNF is believed to work by highlighting discrepancies between an individual's actual use and normative use, which leads to the desire to reduce such discrepancy. In other words, if a substance user believes that their own use is typical, they are likely to continue; if presented with information that important referent groups use less or don't use at all, they will perceive their own use as unusual and change their behavior accordingly.

PNF is designed to create cognitive discrepancies by showing how individual use and consequences compare with the general experience of peers their own age through the presentation of normative data regarding how they rank relative to others (Lewis & Neighbors, 2006). Such comparisons provide a normative context in which they can reconsider their own use patterns and research has shown that people are motivated to reduce discrepancies between actual and normative behavior. Recently, research in alcohol use among college students has begun to disentangle the effects of MI-based components and PNF components, with evidence that the combination is more effective than either approach alone (Walters, Vader, Harris, Field, & Jouriles, 2009).

Alignment with Best and Better Practices in Tobacco Control

As will be described below, the CDC's Best Practices for Tobacco Control Programs (2007) also guided the development of the proposed program. Specifically, *Best Practices* suggests that cessation and prevention efforts (a) be aligned with and complement existing community tobacco control efforts, (b) prioritize a population known to have higher smoking uptake and continuance rates, (c) integrate existing

prevention and cessation services, (d) incorporate social norms change models, and (e) encourage inclusion of youth in community programs and activities. For example, tobacco control efforts guided by *Best Practices* might capitalize on and include information about and referral to existing local programs, tailor efforts to groups such as the priority population with higher smoking rates or lower quit ratios, and use community resources already in place such as media campaigns. Additionally, they might provide normative feedback designed to correct misperceptions, and engage youth in development of and advocacy for tobacco control programs.

The current project also followed some of these suggestions. For example, this project prioritized youth at risk of becoming smokers as well as currently smoking youth. For those who reported current smoking, the program offered a brief motivational intervention, based on best practices in alcohol risk reduction and adapted to address smoking, that provided personalized normative feedback and was based on social norms. It was also designed to enhance readiness to change and provided information about local cessation programs and resources, as shown in Figures 6 and 7.

The project was also aligned with “better” practice in youth tobacco control. Insufficient evidence exists to promote “best practice” in this area as has been done in adult tobacco control (Milton et al., 2004). However, the CDC (2010) recently published supplements to the 2007 *Best Practices* including guidance on engaging youth in state and community tobacco control. Specifically recommended based on recent evidence are programs that involve and engage youth in media advocacy, social norm change, community approaches, and local policy (CDC, 2010). This project included some of these components. Moreover, the project also addressed disparities as recommended

in previous research by including and involving youth who may have been left out of health promotion or advocacy activities (Wallerstein, 2002).

Brief Overview and Summary

As discussed, the current project was grounded in a style of MI that provides feedback (specifically, PNF) about individual substance use. This model is consistent with the BASICS approach to brief alcohol intervention (Baer et al., 2001) which has also been successful in reducing harmful drinking among local college students (see Tomaka et al., 2010). BASICS is a brief intervention designed to reduce harmful alcohol use that relies on assessment of use and related consequences, sharing of information about the effects of alcohol, and provision of PNF and discussion of typical use. These components (described in detail below) were included in the current project, and were adapted to address smoking instead of alcohol use.

Specifically, the experimental aspects of the program included one approximately 90-minute session that included in-depth assessment, obtaining youth feedback about community prevention-related educational activities, and discussion of personalized normative feedback. Trained facilitators conducted sessions in small group settings consisting of 2-9 youth of mixed smoking status. Groups of mixed smoking status allowed for concurrent participation by smokers and non-smokers, via assessment and PNF, without labeling or otherwise singling-out smokers from non-smokers.

Smoking and non-smoking participants in the experimental condition experienced a brief motivational intervention to increase smoking cessation among smokers and increase prevention-related beliefs among nonsmokers. Like BASICS for alcohol risk reduction, the session included a component that solicited at-risk youth input and

feedback, in this case regarding current regional smoking prevention efforts. Thus, youth were exposed to anti-smoking materials, existing community resources, and media campaigns. Also like BASICS, the session included an assessment of current use behavior as well as provision of PNF in the second half of the session. This component included a guided explanation and discussion of PNF forms, consistent with practice in this area.

Adolescents (smoking and non-smoking) in the control condition completed the same in-depth assessment of current behaviors and received an intervention related to nutrition and physical activity that did not include tobacco-related content nor receipt of PNF. Participants were randomly assigned at the group level to either intervention or control.

CHAPTER 3: METHODS

Recall that the primary hypotheses were that participants receiving the PNF intervention would report decreased susceptibility to smoking, lowered estimates of descriptive norms favoring smoking (social norms), and increased negative attitudes towards smoking relative to baseline and in comparison with participants exposed to a nutrition program similar in format and duration but that did not address smoking in any way. These main outcomes were selected to reflect the current literature and previous research indicating that susceptibility to smoking (which includes behavioral intention), peer smoking prevalence and perceptions of peer smoking prevalence, and attitudes towards smoking are important determinants of youth smoking.

Participants

Participants in the program included 34 area youth, aged 12-18 with participants coming from community programs sponsored by the Boys and Girls Clubs of America (BGCA). BGCA has three El Paso locations and youth participating in these neighborhood programs live in communities with some of the highest poverty rates and the lowest educational attainment levels in the county and in the country (ZIP codes 79905, 79938, 79901). Regarding educational attainment, adults over the age of 25 who have at least a high school education comprise just 40.4%, 55.5%, and 26.8% of the population in the BGCA neighborhoods, respectively. Similarly, there is high percentage of residents reporting less than a 9th grade education with 43.4%, 25%, and 59%, respectively (U.S. Census Bureau, 2000).

Recruitment. Youth were recruited in settings including organized youth activities and programs at BGCA and other neighborhood venues. The study was

described as a Health Behaviors and Media Evaluation program, in which participants would discuss and be exposed to information regarding healthy lifestyles such as exercise, nutrition, and smoking. Participants self-selected to participate.

Informed consent/assent. All activities were approved by the University of Texas at El Paso Institutional Review Board. Parental consent and participant assent were obtained from all participants. Program staff explained that participation in the program would include the following: 1) assessment pre- and post- session; and 2) follow-up one week after the initial session. Participants received a \$5 gift card for their participation.

Power analysis and sample size. Initially, power analyses were conducted with the expectation that separate analyses would be conducted for smokers (those reporting smoking on at least one day of the past 30 days) and non-smokers. The original number of anticipated participants would have provided sufficient power to detect differences between the experimental and control conditions among smokers and non-smokers and while allowing for an attrition rate of approximately 10%. This attrition rate was based on the short (1 week) follow-up time frame and past experience with similar interventions. Anticipating 10% attrition, it was expected that there would be complete data on 342 students. Given existing smoking rates for middle and high school students in our region, it was expected that 30% of participants would report past 30 day smoking history, resulting in approximately 102 smokers in each condition (experimental and control). Using G* Power software, overall alpha at .05, power of .80, and a “medium” effect size (i.e., Cohen’s $d = .50$) for between group differences in smoking susceptibility, it was estimated that 102 participants in each 2 x 3 (51 in each

condition) would provide adequate power to detect an intervention effect at post-test immediately following intervention and at one-week follow-up.

The rationale for anticipating a medium effect size was based on meta-analyses of PNF interventions addressing alcohol use among college students in which most effect sizes ranged from small to medium ($d = .20 - .50$) (Walters & Neighbors, 2005; Lewis et al., 2008). A medium effect size was chosen given that it was a one-time intervention and the practical significance of a smaller effect might be considered negligible.

Although 8 (23%) participants did report past 30 day smoking, only 2 reported smoking more than 20 days of the past 30 (commonly referred to as frequent smoking [CDC, 2011a]). This along with the small sample size resulted in the collapsing of the separate designs for smokers and non-smokers into one. As such, power for the analyses was low.

Factors leading to modifications. Several factors, most beyond experimenter control, negatively affected recruitment of participants into the study. First, ongoing, drug-related, border violence has affected family and neighborhood stability, particularly in the research setting. This instability led to substantially less consistency in youth participation in community youth program activities, as evidenced by dramatic decreases in participation in program activities by youth ages 12 and older. Program staff attributed this decline both to program funding cuts and to increased mobility of neighborhood youth, many of whom were spending significant time with other family members in Juarez. As such there were fewer participants to recruit, and among those who did participate, many did not return for follow-up. Second, economic issues in

general and program funding cuts in particular resulted in fewer youth participating in program activities. Third, several separate incidents occurred on days we were scheduled to work with the youth, including a teen suicide in the parking lot of a program facility on one occasion and several other emergency situations on other occasions. In these cases, we were able to reschedule some of our participants, but others did not return to Club activities. Fourth, because the research assistants and trained facilitators were UTEP students, intervention days/times were planned according to facilitator schedules and BGCA programming; program availability was not always convenient for potential participants. Although the facilitators were frequently able to arrange alternate times as requested, “no-shows” were frequent and repeated rescheduling was common. At times, other Club activities or unanticipated Club closures pre-empted our program. Finally, reluctance of parents to provide parental consent given the confidential (as opposed to anonymous) nature of the program was often cited by youth as the reason they did not obtain parental consent and participate in the research project.

Active recruitment, intervention, and follow-up occurred over seven months, during which time researchers spent two afternoons/evenings each week at the study sites. It was believed that among the priority population, those who were interested in participating had already done so, and that expanding the study sites/priority population would change the focus of the project. Accordingly, in response to researcher request for project modification, the decision was made to collapse the separate designs (one for smokers; one for nonsmokers) into one, and to focus on the practical significance and effect sizes for the intervention in equal proportion to the statistical significance

(which was substantially reduced) and to use the data to suggest improvements and refinements of the intervention in future studies.

Measures

In addition to demographic information, all participants answered questions related to smoking status, susceptibility to smoking, descriptive estimates of social norms, attitudes about tobacco use, nicotine dependence, and readiness to change smoking behavior. Participants also answered additional items derived from the theory of planned behavior (Ajzen, 2002) that included additional attitudes, subjective norms, perceived behavioral control/self-efficacy, and behavioral intention. Although not included in primary analyses, these items were included to aid in development of future assessments and interventions and to assess the reliability of additional measures in the priority population. These items were part of a health behavior survey that also included several parallel questions about nutrition and physical activity (results not reported), in keeping with the “health behaviors” theme and to lessen perception among participants that the program was specifically about smoking.

Demographic Information. Participants were asked to provide their age, grade level, gender, and self-described ethnic background, as well as language use at home, with friends, and in thought. Participants also responded to one question asking level of “feeling like I am a part of” Mexican culture, and one asking level of “feeling like I am a part of” Anglo or American culture. Ethnic identity or belonging as a personal perception should be differentiated from ethnicity as a label imposed or defined by others (Nichter, 2003) and can contribute to increased understanding of the role of culture and the heterogeneity of cultural influences on substance use norms and behavior.

Language use. Participants responded to questions regarding language spoken at home, language spoken with friends, and language in which they think. Responses were *Spanish only, more Spanish than English, both equally, more English than Spanish, or English only.*

Cultural affiliation. Participants also answered two questions that were headed *Thinking about the culture or cultures that you feel like you are a part of, would you say:* 1) *I feel like I am a part of Mexican culture;* 2) *I feel like I am a part of Anglo culture.* Responses to each statement ranged from 1-7 with 1 being extremely false and 7 being extremely true. Relationships between language and cultural affiliation and smoking outcomes and study locations are explored in the Additional Analyses section and the Discussion.

Smoking status. Participants responded to 5 questions about smoking status: 1) *Have you ever smoked a cigarette?* 2) *Have you ever tried a cigarette, even a few puffs?* 3) *Think about the last 30 days. On how many days did you smoke?* 4) *If you're not sure, was it more or less than 20 days?* 5) *Think about the last week. On how many days did you smoke?* Youth who responded “no” to questions 1 and 2 were considered never smokers; youth who responded anything other than “0” to questions 3 and/or 5 were considered current smokers; and youth who answered either “>20” to question 3 or “more” to question 4 were considered frequent smokers in accordance with standard practice (CDC, 2011a).

Primary Outcome Measures assessed at pre-test, post-test, and follow-up

Susceptibility to Smoking/Uptake Continuum. This instrument assesses smoking behavior including susceptibility to smoking, ever smoking, established

smoking, and current smoking. Three items most commonly used to assess susceptibility (lack of commitment not to smoke) were adapted from this measure and were scored as a Likert-type scale with responses ranging from “definitely not” (1) to “definitely yes” (7): *Do you think that you will smoke a cigarette in the next year? Do you that in the future you might experiment with cigarettes? If one of your friends were to offer you a cigarette would you smoke it?* Answering anything other than “definitely not” to all three questions indicates susceptibility to smoking. It can be scored dichotomously (susceptible/not susceptible) or linearly (level of susceptibility). In this study, both dichotomous and linear measures are reported. When scored dichotomously, any score higher than 3 (in other words, any answer to any of the 3 items other than “definitely not”) is scored as susceptible; when scored as a scale, higher scores indicate higher susceptibility). It has been evaluated and validated in adolescent populations age 12-18 and has demonstrated high reliability, $\alpha=.84$ (Choi, Gilpin, Farkas, & Pierce, 2001).

Social norms. One question assessing perceived smoking prevalence among peers in the same grade was used to determine perceived social norms and to provide normative feedback. Respondents were asked to circle a number from 0 to 10 in response to *“Thinking of 10 people in your grade, how many do you think smoke cigarettes?”* The question is based on prior social norms research (Primack, Switzer, & Dalton, 2007) and is a direct measure of perceived prevalence.

Attitudes towards smoking. Using TPB instrument construction guidelines, (Ajzen, 2002) one five-item measure of attitudes was developed and used to assess general attitudes towards smoking. Each item was scored on a 7-point semantic differential scale and combined to form the attitudes towards smoking scale. Under the

main heading “*Smoking is...*” the semantic differential pairings included *harmful – beneficial*, *bad – good*, *unpleasant – pleasant*, *worthless – valuable*, *unenjoyable – enjoyable*.

Additional Outcome Measures Assessed At Pre-Test And Follow-Up

All youth regardless of smoking status.

Smoking among best friends. One question assessed smoking among friends: “*Thinking of your 3 best friends, how many of them smoke*”? with choices of 0, 1, 2, or 3. This type of question is the most common in research investigating similarities in smoking behavior among close friends (Kobus, 2003).

Adolescent Smoking Consequences Questionnaire (ASCQ). Selected items from the Adolescent Smoking Consequences Questionnaire (Lewis-Esquerre, Rodrigue, & Kahler, 2005) assessed perceived consequences of (frequently referred to as outcome expectancies) and attitudes about smoking. This instrument had good psychometric properties in a study of 437 predominately NHW adolescents and the developers suggested further testing among ethnically diverse youth. It is one of the few smoking expectancy measures tested in and applicable to both smoking and non-smoking youth. Each item asks respondents to identify the likelihood of consequences associated with smoking on a Likert-type scale with responses ranging from “never” to “always”. Twelve items were chosen for inclusion based on local youth input regarding relevance and response terms were modified to “strongly disagree” to “strongly agree”. Several of the items were combined with others addressing similar constructs into scales (Negative Affect Reduction and Social Facilitation) based on the factor structure of the published instrument (Lewis-Esquerre et al., 2005).

Negative Affect Reduction scale. This scale consisted of three items from the ASCQ: *Cigarettes help a person forget about problems at home; When someone is sad, smoking helps him or her feel better; and When someone is mad or upset, a cigarette helps him or her deal with it* with responses ranging from strongly disagree to strongly agree. Higher scores indicate higher endorsement of negative affect reduction.

Social Facilitation scale. This scale consisted of three items from the ASCQ: *Parties are more enjoyable when a person is smoking; Smoking makes a person feel older or more mature; and People look up to those who smoke* with responses ranging from strongly disagree to strongly agree. Higher scores indicate higher endorsement of social facilitation.

Fishbein-Ajzen-Hanson Questionnaire (FAHQ). Twelve items from this TPB-based measure were included for comparison with other TPB-based items and to aid in instrument development for future studies with the priority population. Items were scored on a 7-point semantic differential scale. In one study, the 3-item perceived behavioral control scale had good reliability, with $\alpha=.70$, $.72$, and $.86$ for Black, Puerto Rican, and NHW youth, respectively; the 5-item subjective norm scale also had acceptable reliability with $\alpha=.68$, $.76$, and $.77$ among the same ethnic groups (Hanson, 1997). Items reported in this study include a single item assessing exposure to people who smoke, a single item assessing family subjective norms, and three scales created from FAHQ items. These include a 2-item perceived behavioral control scale, a 2-item friend subjective norm scale, and a 2 item motivation to comply with friends scale.

Perceived behavioral control scale. This scale consisted of two items from the FAHQ: *How much control do you think you have over whether you smoke cigarettes?*

with responses ranging from no control to complete control, and *Do you think it would be easy or difficult for you to not smoke cigarettes during the next month?* with responses ranging from easy to difficult. Higher scores indicate higher perceived behavioral control.

Friend subjective norms scale. This scale consisted of two items from the FAHQ: *“if I smoke cigarettes, my friends would...”* and *“if I smoke cigarettes, my best friend would...”* with responses ranging from approve to disapprove. Prior to analysis responses were coded such that higher scores indicate higher levels of perceived approval of smoking by friends.

Motivation to comply with friends scale. This scale consisted of two items from the FAHQ: *Most of the time when my friends think I should do something, I go along with it* and *Most of the time when my best friend thinks I should do something, I go along with it*. Lower scores indicate higher motivation to comply with friends.

Additional items assessing Attitudes, Subjective Norms, Perceived Behavioral Control and Behavioral Intention. Additional items were developed using TPB instrument construction guidelines (Ajzen, 2002). These items included a measure of behavioral intention to smoke, as well as primary determinants of intentions including attitudes, subjective norms, and perceived behavioral control/self-efficacy. These items are redundant with those assessed in other measures but were included for future instrument refinement purposes.

Youth who reported current smoking

Contemplation Ladder. The contemplation ladder is a simple instrument designed to assess readiness to stop smoking (Biener & Abrams, 1991). It is an 11-

point scale with higher scores signifying higher motivation to change behavior. Concurrent validity has been demonstrated through correlation with intent to quit and predictive validity through prediction of future participation in smoking cessation interventions and programs (Biener & Abrams, 1991). It was used in this study to assess readiness to change among youth who reported smoking. Because so few youth reported current smoking, analyses were not conducted to compare the intervention vs. control groups.

Nicotine Dependence Scale for Adolescents (NDSA). This short (6-item) instrument was developed as a measure of nicotine dependence in adolescents (Nonnemaker et al., 2004). Responses to questions addressing tolerance, craving, and withdrawal are linearly summed, with any positive responses indicative of possible dependence. Although clinical cut-offs for dependence have not been established, it is useful for research purposes. It has been validated with middle and high school students and was found to have high reliability, $\alpha = .82$ (Nonnemaker et al., 2004). One question from this scale, *“Do you think you could quit smoking if you wanted to?”* was used as an indicator of nicotine dependence among smokers. Because so few youth reported current smoking, analyses were not conducted to compare the intervention vs. control groups among smoking youth.

Table 1 shows the list of measures and time points at which they were assessed.

Table 1. Measures

Measure	Time1 (Assessment)	Time 2 (Immediate post-test)	Time 3 (Follow-up)	Primary Outcome?
Demographic items	✓	---	---	---
Smoking status	✓		✓	---
Smoking susceptibility	✓	✓	✓	yes
Perceived peer smoking (Social norms)	✓	✓	✓	yes
Negative attitudes towards smoking (5 question scale)	✓	✓	✓	yes
Best friends who smoke	✓	---	✓	---
NDSA item (quit if want to)	✓	---	✓	---
Control over smoking scale	✓	---	✓	---
Friend subjective norm scale	✓	---	✓	---
Motivation to comply with friends scale	✓	---	✓	---
Negative affect reduction scale	✓	---	✓	---
Social facilitation scale	✓	---	✓	---

Procedures

Facilitator characteristics and training. Program facilitators were undergraduate and graduate students from the University of Texas at El Paso. Special care was taken to recruit and employ students with strong oral presentation skills, ability to communicate in Spanish, classroom command and experience, and experience working with area youth. In accordance with BGCA policy, facilitators underwent the background check process required of BGCA personnel and volunteers, and received

UTEP IRB certification and training in IRB procedures. Facilitators also received training in MI style and technique, so as to be consistent in intervention delivery.

Trained facilitators conducted the intervention activities at the BGCA locations. Because the program integrated prevention and cessation components, while tailoring program materials to individuals (i.e., PNF given to smokers and non-smokers), users and non-users participated concurrently and nonsmoking status or history of smoking was not a prerequisite for participation. In addition, the approach was modified for appropriate use with different age groups based on group characteristics.

Smoking-related outcomes were assessed at baseline (assessment), at the end of the end of the session (immediate post test), and approximately one week later (follow-up), although the length of the follow-up time varied significantly due to difficulty with participant retention. The short version immediate post-test assessed smoking susceptibility, perceived social norms, negative attitudes towards smoking, and increased contemplation of cessation. The full version post-test at one-week follow-up replicated the assessment at pre-test measure, without the demographic information. Although the intent was to conduct the one-week follow-up as close to that time frame as possible, time range for the follow-up ranged from one week to eight weeks.

Random assignment. Participants were randomly assigned at the group level via flip of a coin to either the experimental or control condition, such that only one group was conducted on a given day. Although the intent was to run both groups simultaneously after randomly assigning individuals to experimental or control conditions, the small numbers of participants and site space limitations precluded conducting both conditions. Because of the differences in outcome measures by site

and the random assignment by group level as opposed to individual, the design is thus more quasi-experimental than experimental. Nine groups were conducted that ranged in size from two to nine participants. Final data included 21 participants in the intervention condition and 13 in the control. This difference in participants in each condition was due to chance and the variation in group size.

Table 2. Overview of condition protocol

	Experimental Condition	Control Condition
0:00-0:10 minutes	Introductions/ice-breakers	Introductions/ice-breakers
0:10-0:30 minutes	Assessment	Assessment
0:30-0:60 minutes	Evaluation of local smoking prevention media and input from participants regarding relevance of materials	Evaluation of Boys and Girls Club <i>Healthy Habits</i> Nutrition module and input from participants regarding nutrition and exercise habits among youth in their community
0:60-0:85 minutes	Explanation and review of PNF forms and discussion of local cessation resources	Food pyramid design in accordance with curriculum
0:85-0:90 minutes	Short version post-test and thank you/reminder to complete follow-up assessment in one week	Short version post-test and thank you/reminder to complete follow-up assessment in one week

Common procedures. Regardless of condition, all sessions began with completion of a pre-test. In addition to demographic information, the pre-test included measures related to smoking status, smoking susceptibility, smoking intention, change contemplation among smokers, and estimates of perceived norms. The questionnaire also included several parallel questions regarding nutrition and physical activity (see appendix). This information was used as baseline data for all participants and to prepare PNF forms for participants in the experimental condition. While trained facilitators conducted the session in small group settings consisting of 2-9 youth, the

project leader created the forms necessary for the second half of the session. All participants also completed a brief post-test assessing key smoking outcomes (and several exercise-related questions so the focus was not entirely on smoking) immediately following the session. The follow-up post-test approximately one week (or more, as was frequently the case) later consisted of the same items as the pre-test.

Experimental group. The program included one, approximately 90 minute, session and included prevention-related activities. Because the program involved individual tailoring, in particular the personalized normative feedback aspect of the approach, there was no need to separate smokers from non-smokers. Indeed, the procedures allowed past and present users to choose to remain anonymous.

Sessions took place in one of several informal classroom-style locations at the BGCA. Facilitators first participated in an ice-breaking exercise that included introductions, and explained that the purpose of the session was to seek input from youth regarding youth smoking and smoking prevention materials. Facilitators set a non-authoritarian, non-evaluative, and non-judgmental tone for the remainder of the session. To do this, the lead facilitators explained to the youth that they were not there to lecture them on what they should or shouldn't do, point fingers at them, or show them gross pictures of wrinkled faces, blackened lungs, or cancerous gums. Instead, they were there to get their honest feedback and opinions regarding why students their age use tobacco products and what they think about current community approaches to preventing smoking use and encouraging quitting. Consistent with the MI philosophy, the lead facilitator also told them that although they would provide all of them (users and non-users) with information on avoiding or quitting smoking, they are the experts on

themselves, and what they do with the information is completely up to them.

After answering any questions, the lead facilitator went on to say that the next part of the session would involve them completing some questionnaires that would be used to provide personalized information later in the session. The facilitator encouraged truthful responding by stating that feedback provided would only be relevant to them if they are honest and that only the facilitator and co-facilitator would see their individual answers. Facilitators collected the paper questionnaire responses when complete, which was typically in the 10-15 minute timeframe. Facilitators told students that they would receive their personalized “results” later in the session.

The next part of the session (approximately 20-30 minutes) was devoted to what facilitators described as a “focus-group exercise” designed to get their expert feedback on and solicit their input regarding current community efforts to prevent youth tobacco use (e.g., Live Outside the Pack website and materials). As part of the exercise, participants were shown prevention materials and were asked to provide suggestions to improve or adapt the material for their peers, and offer suggestions on how to design better materials.

The purpose of this exercise was two-fold. First, as suggested by the description, this exercise solicited feedback from youth regarding the design and implementation of existing prevention and cessation programs. Second, it was designed to increase student awareness of and familiarity with ongoing prevention messages and cessation resources. The exercise was conducted much like a traditional focus group with laptops or laminated screen shots (depending on the group size and classroom setup) used to present the websites and materials and the facilitators leading the

discussion and taking notes on flipcharts. Questions also reflected traditional focus group practice and included topics such as, What do you like about X (i.e., the website, the advertisement)?; What did you not like about it?; What would make it more relevant to kids like you?; How could we increase its intended impact?; and similar questions. The overall goal was to make the students partners in prevention or key informants regarding how to best prevent tobacco use among kids like them (i.e., at high risk of smoking because of neighborhood sociodemographic factors). In addition, this voluntary participatory behavior may change attitudes towards smoking through cognitive dissonance (Festinger, 1957); specifically, youth are actively engaged in prevention efforts which may impact their own susceptibility to smoking and motivation to abstain or quit.

The final part of the session (20-30 minutes) focused primarily on a structured discussion of how to read and interpret their individual personalized normative feedback (PNF). Individually tailored PNF forms were constructed during the focus-group portion of the session, examples of which are shown in Figures 5, 6, and 7. These forms were handed back to participants in sealed envelopes. Participants were instructed to open the envelopes and follow along on their individual PNF forms as the facilitator discussed each section. Accordingly, facilitators explained each section of the form, described how to interpret the information provided, and answered questions about it. For example, Part 1 of the form provided information on peer smoking levels and provided a comparison relative to social norms for other kids their age along with percentile ranks. Comparison information came from the Texas Youth Risk Behavior Survey (CDC, 2011a). The data for Hispanic high school students who are frequent smokers (defined

as responding yes to having smoked on 20 of the past 30 days) was used as the normative data (Figure 5).

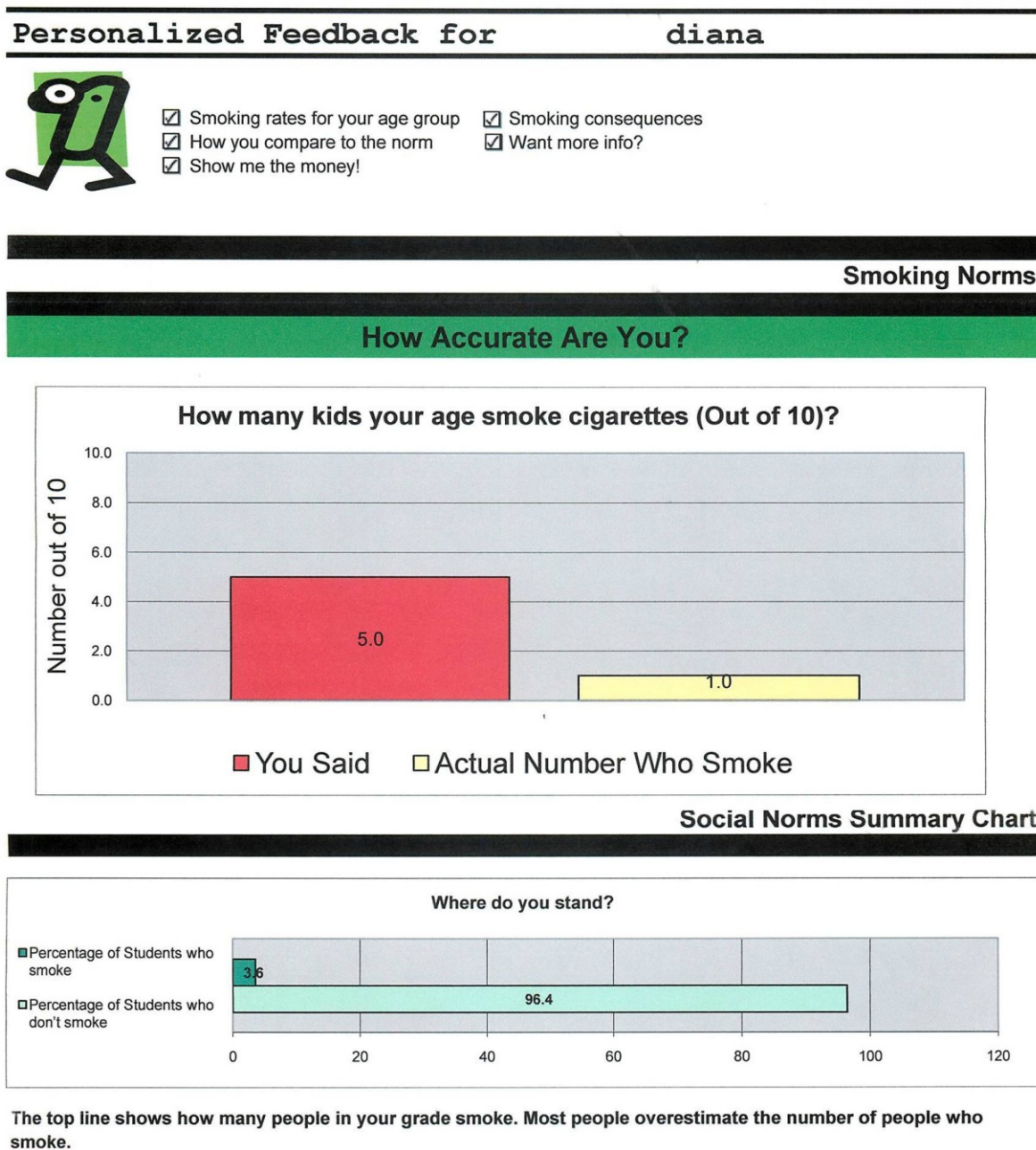


Figure 5: PNF Form Example – Page 1

Facilitators helped ensure that youth understood the concepts and comparisons made on the forms. Specifically, they explained that where the form says that 95% of their peers don't smoke, this means that as a non-smoker they are like most youth, and that if they smoke they are in the minority because 95% of youth their age don't smoke regularly.

The facilitators also discussed and explained other sections of the form including some "smoking related consequences" that they may have experienced (Figure 6), as well as led a discussion of how youth can avoid these consequences in the future. The facilitators similarly discussed the endorsed reasons for quitting or avoiding tobacco. Finally, the last section of the form contained a list of resources and referral agencies for quitting, or getting a friend or family member to quit if the individual is not a user. Facilitators recommended that they take advantage of these resources if they smoke, or share them with friends or family members that smoke. No personally identifying information or information about reported use was placed on page 2, making it possible for youth to share the resource information without sharing information about their own reported use. The forms for non-users provided congratulations and positive feedback for not being a user, and encouragement to continue doing so (Figure 7).

Following the feedback provision, participants completed the short post-test of key smoking outcomes. Throughout the session, the facilitator conveyed the confidential nature of the feedback forms. Specifically, participants were reminded that the feedback was theirs to do with as they wish. They could share it with friends and family or keep it to themselves. In addition, participants were discouraged from looking at the feedback forms of others during the session.



Financial Cost

Did you know that smokers spend about \$7 on a pack of cigarettes?

\$210.00/month

\$2520.00/year

Based upon the total cost of cigarettes per year this is equal to:

315 movie tickets



360 Chicos for two



100 pairs of jeans



new phone & 4 yrs of cell phone service



Smoking-Related Consequences

These are some common consequences from smoking that you: **May have experienced**

Specific Consequences

- ☐ Bad breath
- ☐ Got into trouble at school
- ☐ Friends said you smelled bad
- ☐ Noticed a change in your personality

You can minimize the negative effects of smoking by choosing to smoke less or not at all.

Here are some places to check out if you or someone you know want to quit smoking!

- Visit the website: <http://liveoutsidethepack.com/pack.html>
- Try QuitNet: <http://www.smokefree.quitnet.com/>
- Centro San Vicente 8061 Alameda Ave., 915-859-7545
- Call the quitline 915-534-QUIT (7848)
- Contact the ACS <http://www.cancer.org/docroot/home/index.asp>
- Learn the truth <http://www.thetruth.com>



Figure 6: PNF Form Page 2 for self-reported smokers



Financial Cost

Did you know that smokers spend about \$7 on a pack of cigarettes?

\$210.00/month

\$2520.00/year

Based upon the total cost of cigarettes per year this is equal to:

315 movie tickets



360 Chicos for two



100 pairs of jeans



new phone & 4 yrs of cell phone service



Smoking-Related Consequences

These are some common consequences from smoking that you: **Avoided-good job!!!**

Specific Consequences

- Ⓢ Bad breath
- Ⓢ Got into trouble at school
- Ⓢ Friends said you smelled bad
- Ⓢ Noticed a change in your personality

You can minimize the negative effects of smoking by choosing to smoke less or not at all.

Here are some places to check out if you or someone you know want to quit smoking!

- Visit the website: <http://liveoutsidethepack.com/pack.html>
- Try QuitNet <http://www.smokefree.quitnet.com/>
- Centro San Vicente 8061 Alameda Ave., 915-859-7545
- Call the quitline 915-534-QUIT (7848)
- Contact the ACS <http://www.cancer.org/docroot/home/index.asp>
- Learn the truth <http://www.thetruth.com>



Figure 7: PNF Form Page 2 for self-reported non-smokers

Youth were also provided time to talk with the facilitator privately if they wanted to, both following the session and at follow-up.

Although they participated concurrently, the primary difference in the experience for the current smokers and the current non-smokers was in the structure of the PNF form. Youth who identified themselves as currently smoking on the assessment instruments received PNF based on and adapted from best practices regarding the use of PNF in alcohol risk reduction. Specifically, they received a personalized form that provided feedback regarding their use compared with norms, discussed some common consequences of smoking, and shared information about local cessation programs. Youth who identified themselves as nonsmokers during assessment received a PNF experience that was also structured on best practices regarding the use of PNF in alcohol risk reduction, and similar to the PNF form used for smokers above, but which was modified to provide positive social and financial comparisons and reinforcement for ongoing non-smoking behavior.

Control condition. Adolescents (smoking and non-smoking) in the control condition received an intervention related to nutrition and physical activity that did not include tobacco-related content nor receipt of PNF. The structure of the control condition was similar to the experimental condition in that youth were asked to evaluate and provide input about an existing nutrition curriculum currently used by BGCA which included evaluating and providing input related to the USDA Food Pyramid design and its relevance for youth their age. Participants in the control condition completed the same measures as those in the experimental group.

Overall, youth (smoking and non-smoking) participating in the experimental condition were compared with control students (smoking and non-smoking) who received an intervention similar in form and duration that included baseline assessment

and exposed students to information on nutrition and physical activity, but which did not include exposure to tobacco control efforts nor receipt of PNF.

Experimental Design and Approach to Analyses

This study was a 2 x 3, Intervention Type by Time design that examined the effectiveness of a PNF-based intervention for youth who may be at high risk of smoking because of sociodemographic factors. The design included one between-subjects factor with two levels (tobacco intervention vs. nutrition/physical activity control) and one within-subjects factor with three levels, time (assessment, immediate post-test, and follow-up). Because of the high attrition rate between the immediate post-test and the follow-up discussed above, the design for the primary analyses was modified to a 2 x 2, Intervention Type by Time design with two levels of the between-subjects factor (intervention vs. control) and two levels of the within-subjects factor, time (assessment and immediate post-test).

The first set of analyses examined changes from assessment (pre-test) to immediate post-test. The second sets of analyses are reported separately, and examine changes across all three time periods: assessment, immediate post-test, and follow-up. MIXED linear methods in SPSS were used to perform Restricted Maximum Likelihood Estimation in order to conduct equivalent analyses across all three time periods, accounting for the missing data at follow-up. Thus, this set of analyses allowed for a 2 x 3, Intervention Type by Time analysis with two levels of the between-subjects factor (intervention vs. control) and three levels of the within-subjects factor (assessment, immediate post-test, and follow-up).

CHAPTER 4: RESULTS

Overview

Recall that the primary hypotheses were that participants receiving the PNF intervention would report decreased susceptibility to smoking, lowered estimates of descriptive norms favoring smoking (social norms), and increased negative attitudes towards smoking relative to baseline and in comparison with participants exposed to a nutrition program similar in format and duration but that did not address smoking in any way.

Main variables of interest

Independent Variables. Primary independent variables in the analyses included group type (intervention or control) and time period (assessment, immediate post-test, and follow-up).

Dependent variables. Primary dependent variables in the analyses included smoking susceptibility, social norms, and negative attitudes towards smoking.

Other variables. Descriptive statistics are also reported for each of the additional measures described above.

Sample characteristics

The sample consisted of 34 youth who participated in the project. The age range of participants was 12-18 years ($M = 15.5$ years). All participants self-identified as Hispanic, Mexican, or Mexican-American. Eighteen (53%) were female. Table 3 shows demographic data, smoking susceptibility (susceptible or not), “ever smoked” status, past 30-day smoking, and study location (Study site “A” or “other”) for the entire sample. Of these variables, study location was the only one in which there was a significant

difference between the intervention and control group at assessment such that participants from Site A were more likely to have participated in the control group. This difference is explained by several large groups participating in the experimental condition by chance at the other site.

Table 3: Demographic characteristics and smoking status by group assignment

	Total (n=34) Mean (SD) or %	Intervention Group (n=21) Mean (SD) or %	Control Group (n=13) Mean (SD) or %	<i>F</i> <i>*p if</i> <i>sig.</i>
Age (range = 12-18)	15.47(1.69)	15.48 (1.50)	15.46 (2.03)	.00
Hispanic	100%	100%	100%	
Gender				
% Female	53%	52%	54%	.01
Ever smoked	41%	43%	38%	.06
Smoke past 30 days				
% yes	24%	19%	31%	.68
% no	76%	81%	69%	
Susceptible to smoking				
% yes	62%	62%	62%	.00
% no	38%	38%	38%	
Susceptibility scale	8.06 (5.5)	8.33 (5.94)	7.62 (4.75)	.14
Social norms	6.76 (3.33)	6.1 (3.35)	7.85 (3.13)	2.30
Attitudes scale	30.1 (5.1)	30.9 (4.68)	28.75 (5.74)	1.37
Friends smoke	1.13 (1.21)	1.2 (1.2)	1.0 (1.3)	.20
Study location				
% Site A	38%	24%	62%	5.31*
% Other	62%	76%	38%	*p = .03

Data Screening

Prior to analysis, all demographic and main study variables were examined for data entry accuracy, distributional assumptions, univariate and multivariate outliers, and missing values. Although skewness and kurtosis were detected in many of the variables, none were determined to be severe enough to warrant transformations. To detect univariate outliers, z-scores were calculated and examined. One participant had a z-score on the attitude scale of -4.92; his responses to these items were not included in any of the analyses. Following visual examination of z-scores for outliers, all main outcome variables were examined for univariate and multivariate outliers using SPSS regression analysis and the criterion for Mahalanobis distance as suggested by Tabachnik & Fidell (2007); none were beyond the critical χ^2 of 10.83 for 1 *df* (univariate) or 16.27 for 3 *df* at $\alpha = .001$ (multivariate).

Participant Attrition

Although all participants completed the immediate post-test, significant attrition occurred between immediate post test and follow-up with only 16 of 34 (47%) participants completing the follow-up post-test. The first set of primary analyses focus only on the main variables and changes from pre-test to immediate post-test and are not affected by attrition. A one-way ANOVA was conducted to determine if participants who completed the follow-up post-test differed from those who did not; there were no significant differences in age, gender, study location, or primary outcome variables. Thus, the missing data meet the criteria for missing completely at random (MCAR) as commonly defined (Enders, 2008).

Missing Data Analysis

The second set of primary analyses compared the intervention and control groups on primary outcome measures across all three time periods. Using the MIXED procedure in SPSS, repeated measures analyses were conducted with restricted maximum likelihood estimation to determine the main and interactive effects of group type and time on susceptibility, social norms, and negative attitudes towards smoking.

Descriptive analysis of smoking-related variables at assessment and immediate post-test by past 30 day smoking status

Smoking status. Participants provided information about ever smoking and past 30-day smoking. Forty-one percent reported ever having smoked a cigarette (47% when the question was worded *even just a puff*) while 23% reported past-30 day smoking. Only 2 participants (5.9%) said they had smoked more than 20 of the past 30 days, which is commonly considered frequent smoking. These responses are similar to those reported by Hispanic high school students through the Texas Youth Risk Behavior Survey (CDC, 2011a) in which 47% reported ever smoking, 22.5% reported past-30 day smoking, and 4.5% reported smoking on more than 20 of the past 30 days. All of the questions related to smoking status differed by study location, as discussed below under Additional Analyses.

Smoking susceptibility. Susceptibility is reported dichotomously and as a scale that combined the three items assessing cognitive susceptibility to smoking. Each item was scored from 1-7 with 1 being “definitely not” and 7 being “definitely yes”. Reliability for the susceptibility scales was high at assessment and immediate post-tests, $\alpha = .89$ at both time periods.

Social norms. Perceived prevalence of peer smoking was assessed by the single question *thinking of 10 people in your grade, how many do you think smoke cigarettes?* Most youth overestimated the percent of their peers who smoke. Only 4.5% of Hispanic high school youth in Texas report frequent smoking while 22.5% report current smoking (CDC, 2011a). Among non-smoking youth in the study, 22 (84%) had misperceptions with more than half believing that at least 50% of their peers smoke. Among youth in the study reporting current (past 30-day) smoking, all had misperceptions, and 6 (75%) believed that 10 out of 10 peers smoke. “*Everyone does it*” is the common misperception among youth who smoke. Participants also reported how many of their 3 best friends smoke. As shown in Table 4, youth who smoke were more likely to have best friends who smoke than were their non-smoking counterparts ($M = 2.5$ and $.67$, respectively).

Attitudes towards smoking. This was a TPB-based scale from a composite score of 5 semantic differential items that assessed positive or negative attitudes towards smoking through semantic differential (e.g., *smoking is bad/good*, *smoking is unenjoyable/enjoyable*) with each item scored 1 – 7. High scores indicate negative attitudes towards smoking. Reliability was low for this scale, $\alpha = .64$ at assessment and $\alpha = .53$ at immediate post-test. The low reliability is likely due to the difference in type of attitude assessed within the same scale. Specifically, three of the items in this scale are associated with the merits in general of smoking, whereas two of them are associated with the pleasure associated with smoking. Some respondents endorsed high negative attitudes in general, but low negative attitudes on the items differentiating *enjoyable/unenjoyable* and *pleasant/unpleasant*. This makes sense, given that many

people who smoke may not think smoking is a good thing, but because they consider it pleasant or enjoyable they continue to smoke. Among non-smokers, it may be that people who are around others who smoke may recognize the pleasure and enjoyment associated with smoking at the same time they endorse it as “bad” or “harmful”. Another possibility is that for some youth for whom English is not their first language, “valuable” may be interpreted as “expensive”. Deleting this item from the scale at immediate follow-up would have increased the reliability from $\alpha = .53$ to $\alpha = .61$. These are of course just possibilities which require further study with larger samples.

Other measures. Composite scales to assess perceived behavioral control, friend subjective norms, motivation to comply with expectations of family and friends, negative affect reduction, and social facilitation were also constructed from items as discussed in the Measures section. Reliability for these measures and implications for future research and interventions are discussed in Additional Analyses.

Table 4 shows values at assessment and immediate post-test for key dependent variables by current (past 30 day) smoking, and values at assessment for other smoking related outcomes by current smoking status. Table 5 shows correlations between key variables at assessment.

Table 4. Smoking-related outcomes at assessment and immediate post-test by current (past 30 day) smoking status

Measure	Assessment Mean (SD) or %		Immediate post-test Mean (SD)	
	Smoke	Non	Smoke	Non
Ever tried	100%	31%	---	---
Susceptible	88%	54%	100%	46%
Susceptibility scale	13.25 (5.29)	6.46 (4.48)	14.38 (3.42)	5.46 (3.42)
Social norms	8.75(2.32)	6.15 (3.39)	9.38 (1.77)	5.38 (31.4)
	<i>Md =10</i>	<i>Md = 6</i>	<i>Md = 10</i>	<i>Md = 5</i>
Best friends who smoke	2.5 (.93)	.67 (.92)	---	---
	<i>Md = 3</i>	<i>Md = 0</i>		
Attitudes ¹ scale	24.29 (1.80)	31.69 (4.63)	30.14 (3.85)	33.12 (3.68)
Control scale ²	10.00 (4.0)	12.32 (3.67)		---
Friend subjective norms scale ³	7.25 (5.82)	4.27 (3.05)		---
Motivation to Comply scale ⁴	8.13 (4.67)	10.46 (3.66)		---
Negative affect scale ⁵	15.13 (7.83)	7.96 (5.48)		---
Social facilitation scale ⁶	10.38 (6.21)	7.12 (4.57)		---

¹ High score = high negative attitudes

² High score = high control

³ Low score = friends disapprove of smoking

⁴ High score = low motivation to comply w/friends

⁵ High score = high endorsement of negative affect reduction

⁶ High score = high endorsement of social facilitation

Table 5: Correlations between demographic & key outcome variables at assessment

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.Age	—	-.05	.16	-.12	-.26	-.27	-.28	-.13	.02	-.07	-.22
2.Gender		—	-.09	-.06	-.01	-.07	.03	-.05	-.08	.06	.06
3.Mex culture			—	.81**	.36*	.34	.44**	.40**	.34*	-.37*	.49*
4.Anglo culture				—	.30	.13	.18	.14	.21	-.17	.34
5.Study site					—	.45**	.71**	.36*	.39*	-.59**	.48**
6.Ever smoke						—	.66**	.60**	.37*	-.62**	.59**
7.Past 30 day							—	.54**	.34	-.60**	.67**
8.Susc scale								—	.20	-.67**	.41*
9.Social Norms									—	-.50**	-.67**
10.Negative attitudes										—	-.45*
11.Friends smoke											—

* $p < .05$; ** $p < .01$

None of the relationships reached criteria for multicollinearity (Warner, 2008; Tabachnik & Fidell, 2007) (correlations of .9 or above) or singularity (redundancy). As shown, neither age nor gender was associated with study site, feeling like a part of Mexican or Anglo culture, or any of the smoking-related variables. As expected, ever smoking was significantly correlated with susceptibility, social norms, low negative attitudes towards smoking, and best friends who smoke. Similarly, past 30-day smoking was significantly correlated with each of these outcome variables with the exception of social norms ($r = .34$), which was likely not significant because of the small sample size.

Because of the exploratory nature of this study and the small sample size, no corrections were applied to control for the increased risk of Type I error due to multiple significance tests. Therefore, it should be noted that this risk does exist, and that

applying a correction (e.g., Bonferroni) would reduce the number of correlations that were statistically significant.

Inclusion of covariates in primary analyses. Feeling like a part of Mexican culture was associated with past 30-day smoking and susceptibility, social norms, low negative attitudes towards smoking, and best friends who smoke, while feeling like a part of Anglo culture was only related to feeling like a part of Mexican culture. These relationships are discussed in detail in the additional analyses section, below. *Study site* was also associated with *ever smoking* and *past 30-day smoking* as well as with *susceptibility*, *social norms*, *low negative attitudes towards smoking*, and *best friends who smoke*. Because of the strong relationships between *feeling like a part of Mexican culture* and *study site*, these were included as covariates in primary analyses as reported below. In addition, each of the primary analyses was also repeated with *ever smoking* as a covariate; these results are not described below as they were redundant with those including the other covariates.

Primary Analyses

Intervention Effects. As mentioned above, 2 x 2, Intervention Type (smoking vs. nutrition) by assessment period (pre-test and immediate post-test), mixed factorial Analyses of Variance (ANOVAs) were used to assess whether the program produced changes in key outcomes. Additionally, in order to maximize power, expected interactions were evaluated at an alpha of .15 even in the absence of significant main effects so as to avoid type II errors and determine areas for future studies. Results are presented below for each of the three key outcomes. Because both *feeling like a part of*

Mexican culture and *study location* were significantly correlated with key outcomes, they were included as covariates in subsequent analyses.

Smoking susceptibility. The first ANOVA assessed differences in smoking susceptibility between the intervention and control group from pre-test to immediate post-test. A 2 x 2 mixed design ANOVA with smoking susceptibility as the dependent variable and group type (intervention or control) and time period (assessment and immediate post-test) as the independent variables was conducted. Results indicated no significant main effect for group, $F(1, 32) = .001$, $p = .97$, $\eta^2 = .00$, no significant effect for time, $F(1, 32) = .31$, $p = .582$, $\eta^2 = .01$, and no significant effect for the group by time period interaction, $F(1, 32) = 1.87$, $p = .181$, $\eta^2 = .01$. Means for smoking susceptibility by group and time period are shown in Figure 7. Susceptibility scale scores decreased by 1.09 points in the intervention group, while scores in the control group increased by 0.46 points. These changes were not statistically reliable, as shown through simple effects test for the intervention group, $t(20) = 1.34$, $p = .18$, and for the control group, $t(12) = -.66$, $p = .52$.

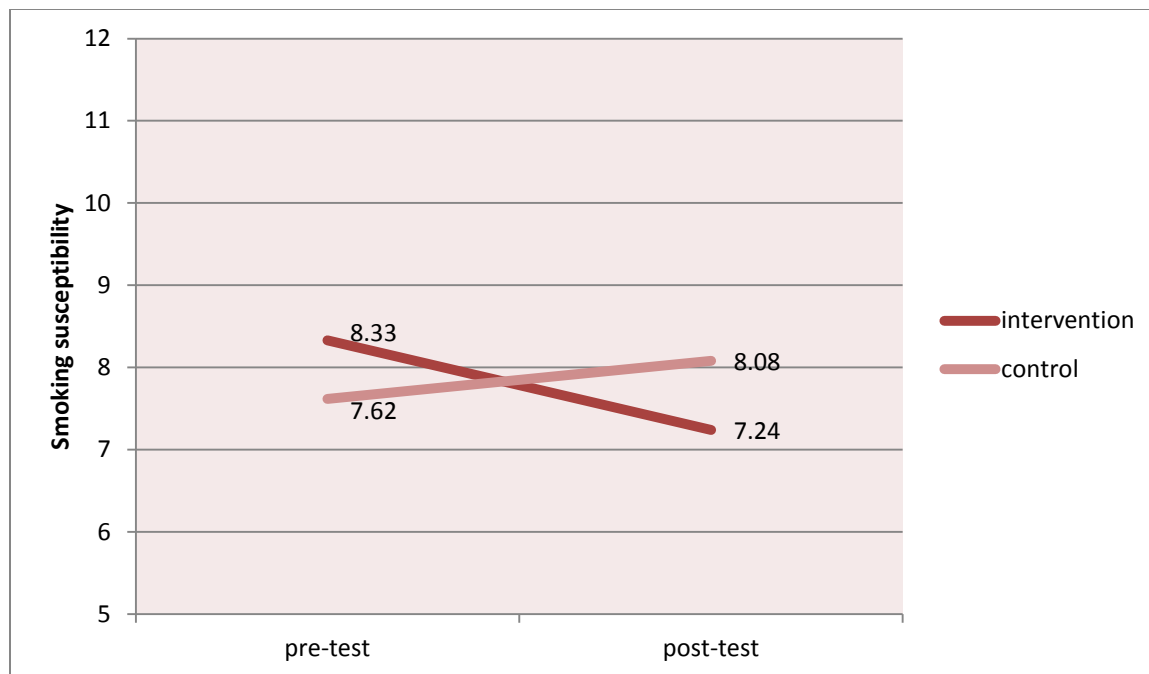


Figure 8: Pre-test to immediate post-test changes in smoking susceptibility by group

Inclusion of covariates. Statistically controlling for *study site* and *feeling like a part of Mexican culture* by including the two variables as covariates in the model resulted in very slight changes in effect size, although the changes were not statistically significant. Results indicated no significant main effect for group, $F(1, 30) = .455$, $p = .505$, $\eta^2 = .02$, no significant effect for time, $F(1, 30) = .004$, $p = .952$, $\eta^2 = .00$, and no significant effect for the group by time period interaction, $F(1, 30) = .542$, $p = .467$, $\eta^2 = .02$. An effect size of $\eta^2 = .02$ is considered a small effect (Murphy & Myers, 2004).

Social norms. The second ANOVA assessed differences in perceived peer smoking prevalence (social norms) between the intervention and control group from pre-test to immediate post-test. A 2 x 2 mixed design ANOVA with social norms as the dependent variable and group type and time period as the independent variables was conducted. Results indicated a near significant main effect for group, $F(1, 32) = 3.99$, $p = .054$, $\eta^2 = .11$, no significant effect for time, $F(1, 32) = .77$, $p = .39$, $\eta^2 = .02$, and no

significant effect for the group by time period interaction, $F(1, 32) = 1.87, p = .181, \eta^2 = .02$. Means for social norms by group and time period are shown in Figure 7. As shown, while the control group did not change at all from assessment to immediate post-test, the intervention group reported a decrease of .7 in the number of peers they think smoke. This change was not statistically reliable, as shown through a simple effects test, $t(20) = 1.12, p = .28$.

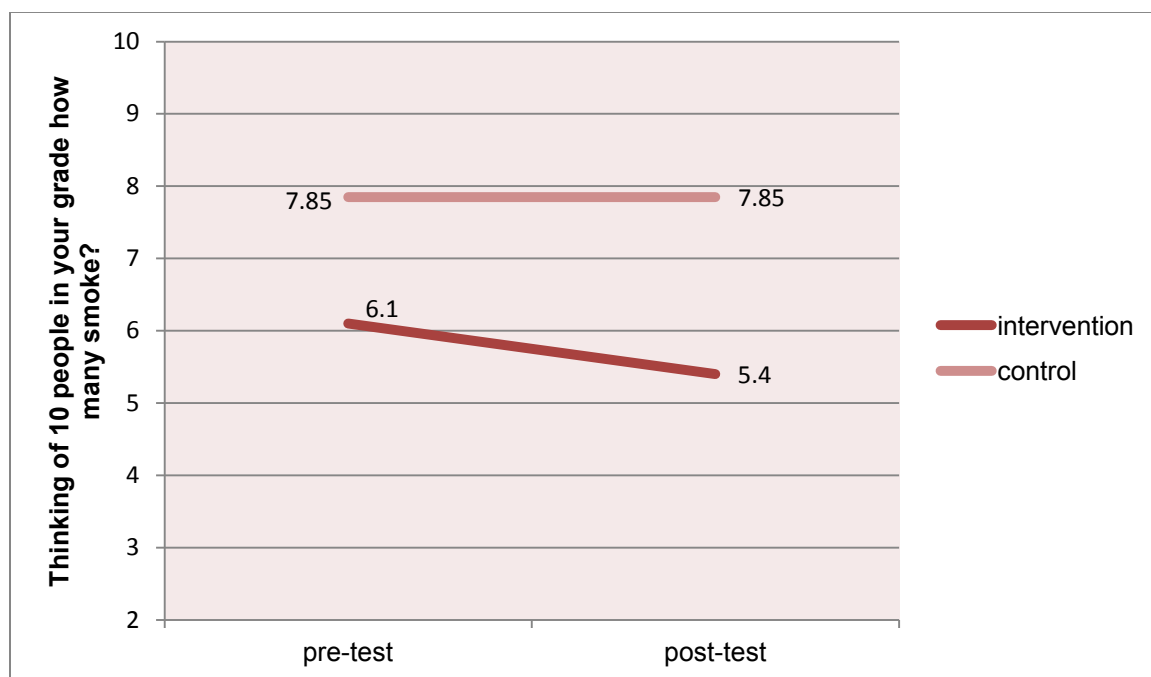


Figure 9: Pre-test to immediate post-test changes in social norms by group

Inclusion of covariates. Statistically controlling for *study site* and *feeling like a part of Mexican culture* by including the two variables as covariates in the model did not significantly affect the results of the analysis. Results indicated no significant main effect for group, $F(1, 30) = 2.71, p = .110, \eta^2 = .10$, no significant effect for time, $F(1, 30) = .016, p = .900, \eta^2 = .00$, and no significant effect for the group by time period interaction, $F(1, 30) = .331, p = .569, \eta^2 = .02$.

Attitudes towards smoking. The third ANOVA assessed differences in negative attitudes towards smoking between the intervention and control group from pre-test to immediate post-test. A 2 x 2 mixed design ANOVA with attitudes as the dependent variable and group type and time period as the independent variables was conducted. Results indicated no significant main effect for group, $F(1, 31) = 2.04, p = .16, \eta^2 = .07$. There was a significant effect for time, $F(1, 31) = 9.84, p = .04, \eta^2 = .24$, but no significant effect for the group by time period interaction, $F(1, 31) = .02, p = .89, \eta^2 = .00$. The effect for time suggests that both the intervention and control groups showed an increase in negative attitudes from pre-test to immediate post-test. Means for smoking attitudes are shown in Figure 7. Both groups showed increases in negative attitudes towards smoking with the intervention group increasing 2.29 points and the control group increasing 2.5 points. Simple effects tests showed that these changes were significant in the intervention group, $t(20) = 2.25, p = .02$, and near significant in the control group, $t(11) = -1.97, p = .08$. There are several factors that could account for this change. First, it is possible that youth “figured out” that the intervention was targeting smoking behavior, rather than just health behaviors in general as described in the recruitment flyers or informed consent and assents. They may have heard from a friend or from a staff member, or they may have guessed. Second, there may have been a screening effect, such that just answering questions about smoking and thinking about smoking results in changes in attitudes. Third, there may have been a “ceiling effect” such that those with scores close to the top of the scale (35 points) already had high negative attitudes and couldn’t change as much as could those with lower negative attitudes. This possibility is supported by the change in results when the covariates are

included, as shown in Figures 11 and 12 which show changes in attitude scores by group type separately by study location.

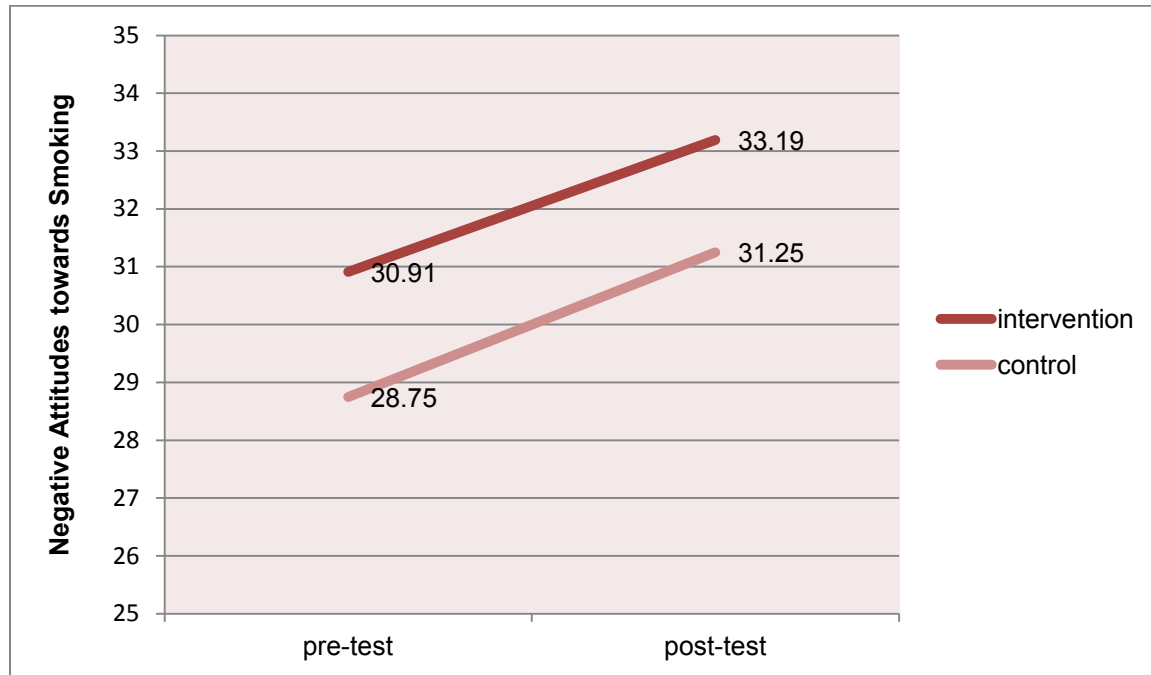


Figure 10: Pre-test to immediate post-test changes in attitudes towards smoking by group

Inclusion of covariates. Regarding attitudes towards smoking, statistically controlling for *study site* and *feeling like a part of Mexican culture* by including the two variables as covariates in the model significantly affected the results of the analysis. Without the covariates, there was no significant effect for group or group by time interaction, but there was a significant effect for time. With the covariates, results indicated no significant main effect for group, $F(1, 29) = .977, p = .331, \eta^2 = .03$, no significant effect for time, $F(1, 29) = .174, p = .680, \eta^2 = .001$, and no significant effect for the group by time period interaction, $F(1, 29) = .526, p = .474, \eta^2 = .02$. With the inclusion of the covariates, the main effect for group η^2 decreased from .07 to .03.

However, there was a significant effect for the time by study site interaction, $F(1,29) = 5.45, p = .027, \eta^2 = .19$, such that participants from Site A accounted for most of the time effect across both conditions. Although both groups increased in negative attitudes, study site explained 19% ($\eta^2 = .19$) of the between-group (intervention vs. control) variance in attitude change. This is a very large effect, and is likely explained by the high correlation between study site and past 30-day smoking ($r = .71, p < .001$). There were significant correlations between study site and the attitudes scales at assessment and immediate post-test, $r = -.59, p < .001$ and $r = -.345, p = .049$ respectively, such that youth from Site A were more likely to have lower negative attitudes scores. Controlling for past 30-day smoking, these differences become less significant, $r = -.31, p = .08, r = -.18$. As shown below, participants with lower negative attitudes towards smoking had significant increases in negative attitudes regardless of group type (intervention or control). Means for both study sites across time periods are shown in Figure 11 and Figure 12. These figures along with the relationship between study site and current smoking support the ceiling effect possibility mentioned above, and suggest that the intervention may be more effective in changing attitudes among youth who smoke, who are also likely to have lower negative attitudes towards smoking.

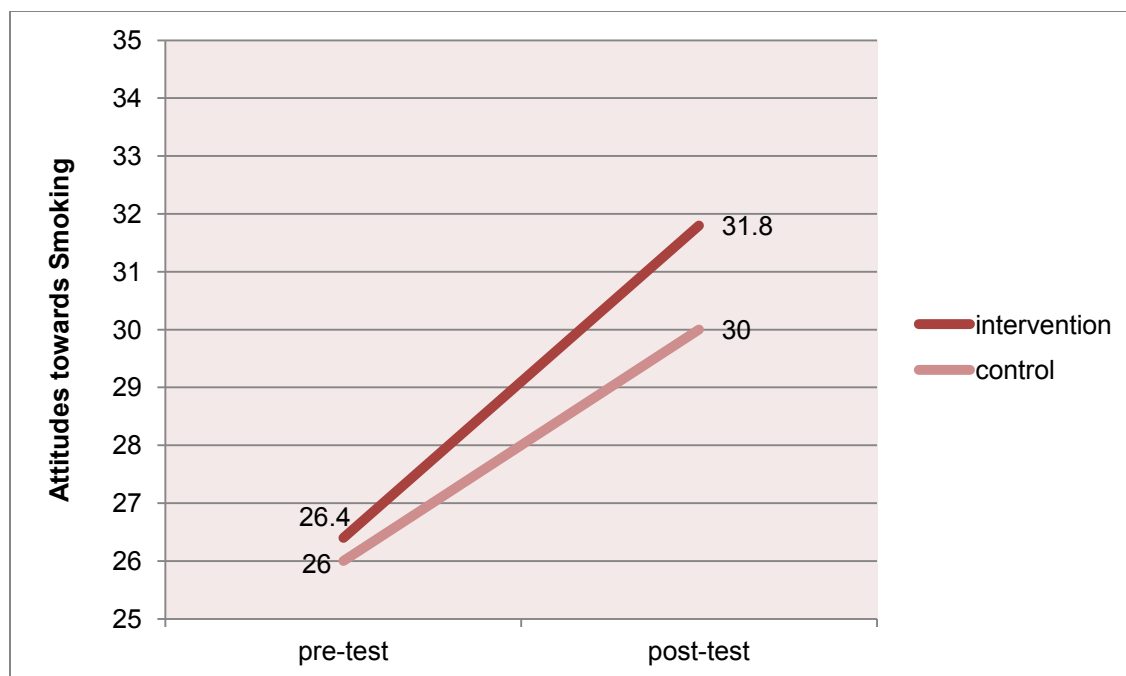


Figure 11: Pre-test to immediate post-test changes in negative attitudes towards smoking by group (study site A only)

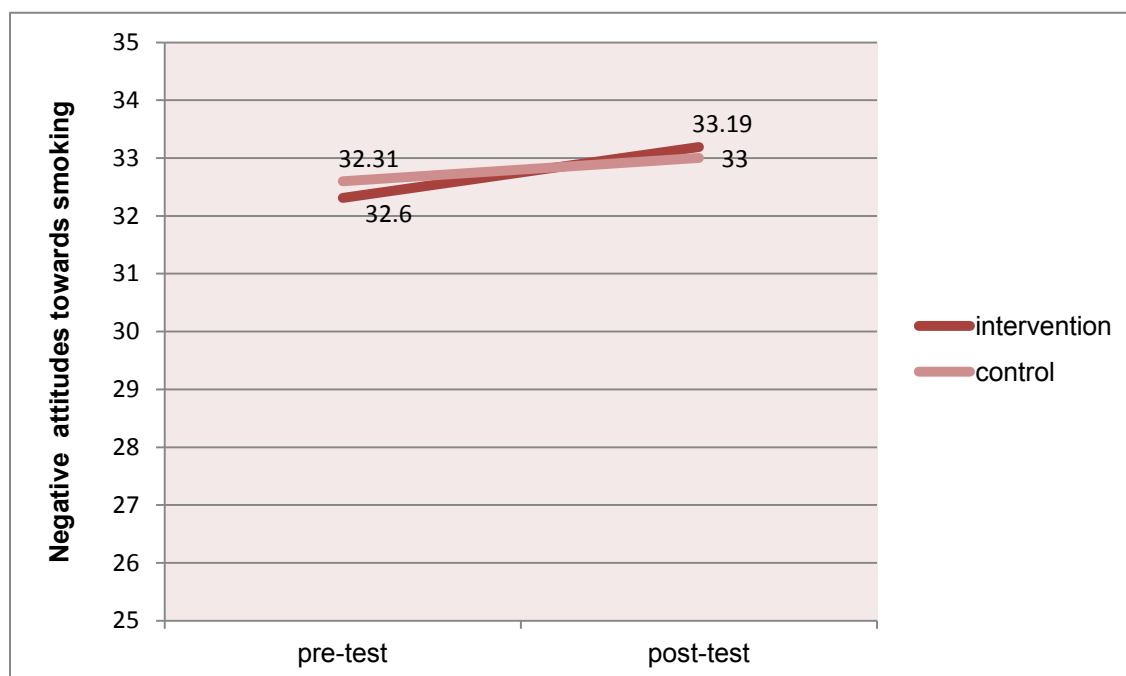


Figure 12: Pre-test to immediate post-test changes in negative attitudes towards smoking by group (study site "other" only)

Additional Analyses

The second set of primary analyses compared the intervention and control groups on primary outcome measures across all three time periods. Using the MIXED procedure in SPSS, repeated measures analyses were conducted with restricted maximum likelihood estimation to determine the main and interactive effects of group type and time on susceptibility, social norms, and negative attitudes towards smoking. This procedure allows for an analysis much like the mixed ANOVAs reported above, in which the missing data for time 3 (follow-up) is estimated and included in the analysis. In the results that follow in this section, the means at pre-test and post-test are the same as reported above, with the inclusion of results for follow-up and effect sizes in cases where there were changes of statistical or practical significance. To calculate an effect size, the mean difference between pretest and follow-up was divided by the square root of the covariance parameters at time 1, which is the average baseline standard deviation. Thus, this denominator functions similarly to the denominator in a standardized mean difference effect size. Common interpretation for this type of effect size is 0.20 is a small effect, 0.50 is a medium effect, and 0.80 is a large effect (Murphy & Myors, 2004). The modified effect size calculated here can be interpreted similarly, and is notated here as *ef*. Pairwise comparisons were evaluated even in the absence of significant main effects to reduce the possibility of Type II error.

Smoking susceptibility. To assess changes in susceptibility across all three time periods, a 2 x 3 mixed design ANOVA with smoking susceptibility as the dependent variable and group type (intervention or control) and time period (assessment, immediate post-test, and follow-up) as the independent variables was conducted.

Results indicated no significant main effect for group, $F(1, 31.01) = .00$, $p = .99$, no significant effect for time, $F(2, 19.44) = .31$, $p = .25$, and no significant effect for the group by time period interaction, $F(2, 19.44) = .94$, $p = .41$. Means for smoking susceptibility by group and time period are shown in Figure 13.

Pairwise comparisons revealed that in the intervention group, scores on the susceptibility scale from pre-test to immediate post-test decreased by 1.09 points ($p = .13$), and scores from pre-test to follow-up decreased by 0.74 points, $p = .42$, $ef = 0.14$. In the control group, susceptibility scores rose by 0.46 points ($p = .61$) between pre-test and immediate post-test, and decreased by 0.13 points from pre-test to follow-up, $p = .91$, $ef = 0.03$.

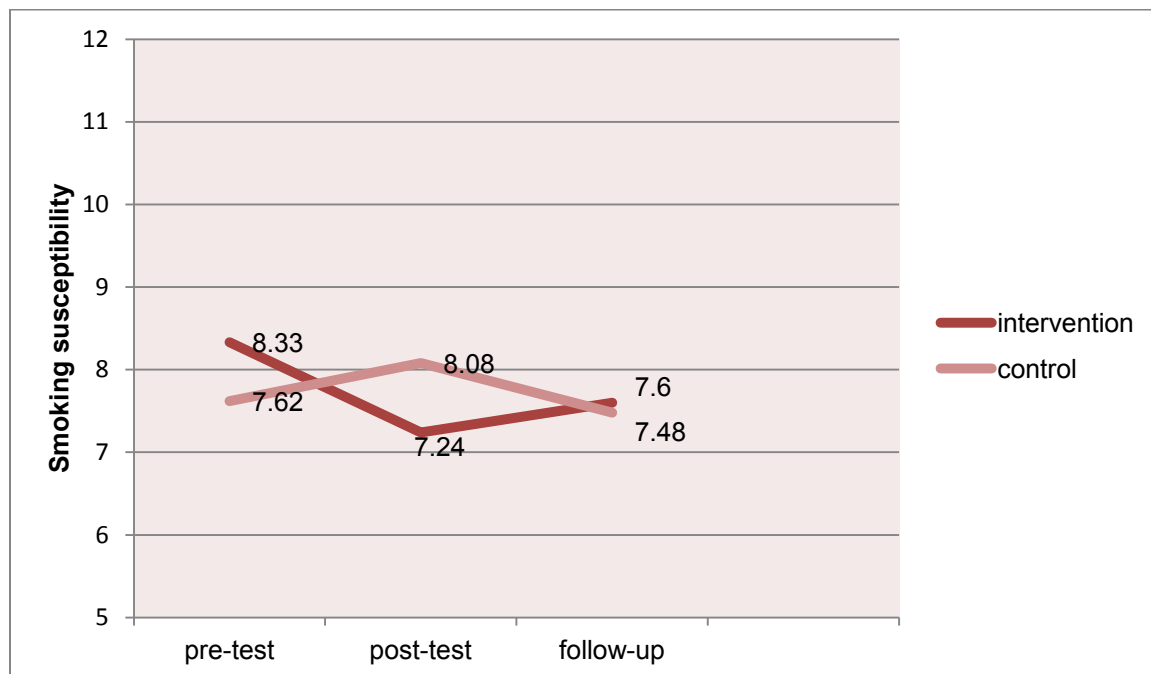


Figure 13. Smoking susceptibility by group type across all three time periods

Social norms. To assess changes in social norms across all three time periods, a 2 x 3 mixed design ANOVA using the MIXED procedure with social norms as the

dependent variable and group type (intervention or control) and time period (assessment, immediate post-test, and follow-up) as the independent variables was conducted. Results indicated no significant main effect for group, $F(1, 27.3) = 2.45, p = .13$, no significant effect for time, $F(2, 20.29) = 1.18, p = .33$, and no significant effect for the group by time period interaction, $F(2, 20.29) = .94, p = .26$. Means for social norms by group and time period are shown in Figure 13.

Pairwise comparisons revealed that in the intervention group, social norms from pre-test to immediate post-test decreased by .71 ($p = .17$), and social norms from pre-test to follow-up decreased by .46 points, $p = .58, ef = 0.14$. In the control group, social norms did not change at all between pre-test and immediate post-test, but decreased by 1.6 from pre-test to follow-up, $p = .15, ef = 0.49$. This may have been due to group differences at pre-test such that the control group had higher perceptions of peer smoking prevalence to begin with, and thinking about peer smoking prevalence even in the absence of any intervention was enough for them to reflect on it and perhaps notice that not as many of their peers actually smoke between the immediate post-test and the follow-up. This of course is just speculation, and requires further empirical investigation.

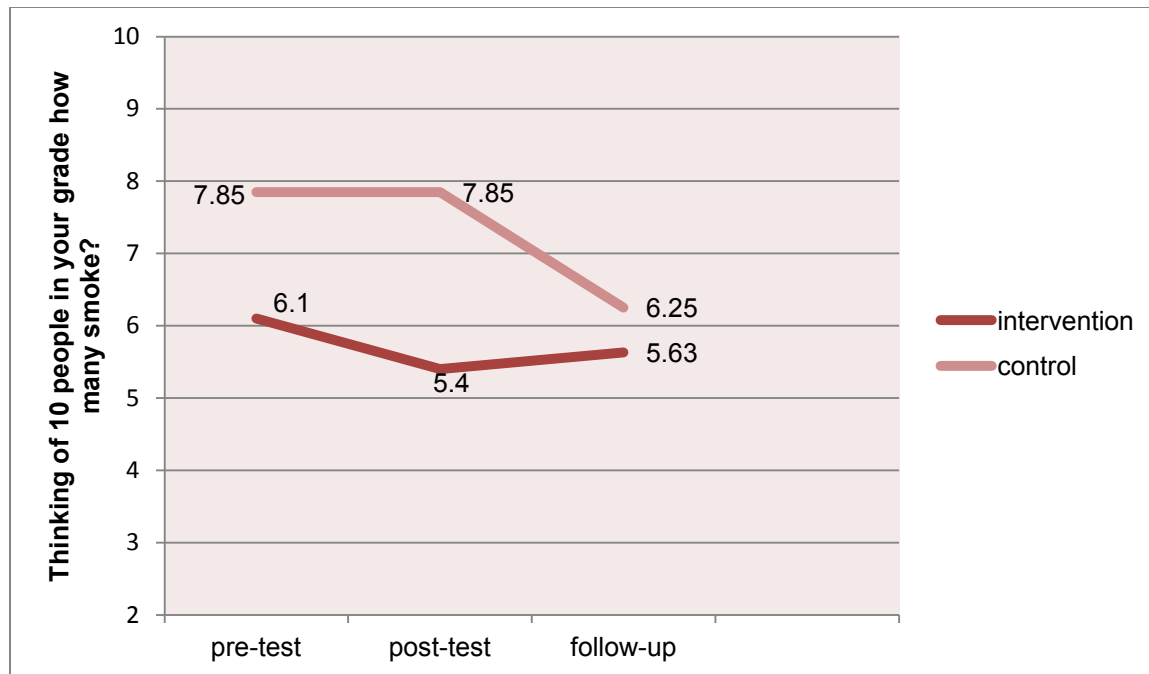


Figure 14. Social norms by group type across all three time periods

Attitudes. To assess changes in negative attitudes towards smoking across all three time periods, a 2 x 3 mixed design ANOVA using the MIXED procedure with negative attitudes as the dependent variable and group type (intervention or control) and time period (assessment, immediate post-test, and follow-up) as the independent variables was conducted. Results indicated no significant main effect for group, $F(1, 28.89) = .32, p = .58$, a significant effect for time, $F(2, 20.38) = 5.04, p = .02$, and no significant effect for the group by time period interaction, $F(2, 20.38) = 1.36, p = .28$. Means for negative attitudes by group and time period are shown in Figure 15.

Pairwise comparisons revealed that in the intervention group, negative attitudes from pre-test to immediate post-test increased by 2.29 ($p = .02$), and negative attitudes from pre-test to follow-up increased by 1.38 points, $p = .40, ef = 0.27$. In the control group, negative attitudes from pre-test to immediate post-test increased by 2.52 ($p = .05$), and negative attitudes from pre-test to follow-up increased by 4.92 points, $p = .03$,

$ef = 0.969$. As discussed above in the primary analyses section, several factors may account for the increases in negative attitudes in both the intervention and control groups, including a ceiling effect, a screening effect, or a desire to please the investigators if youth figured out the purpose of the project.

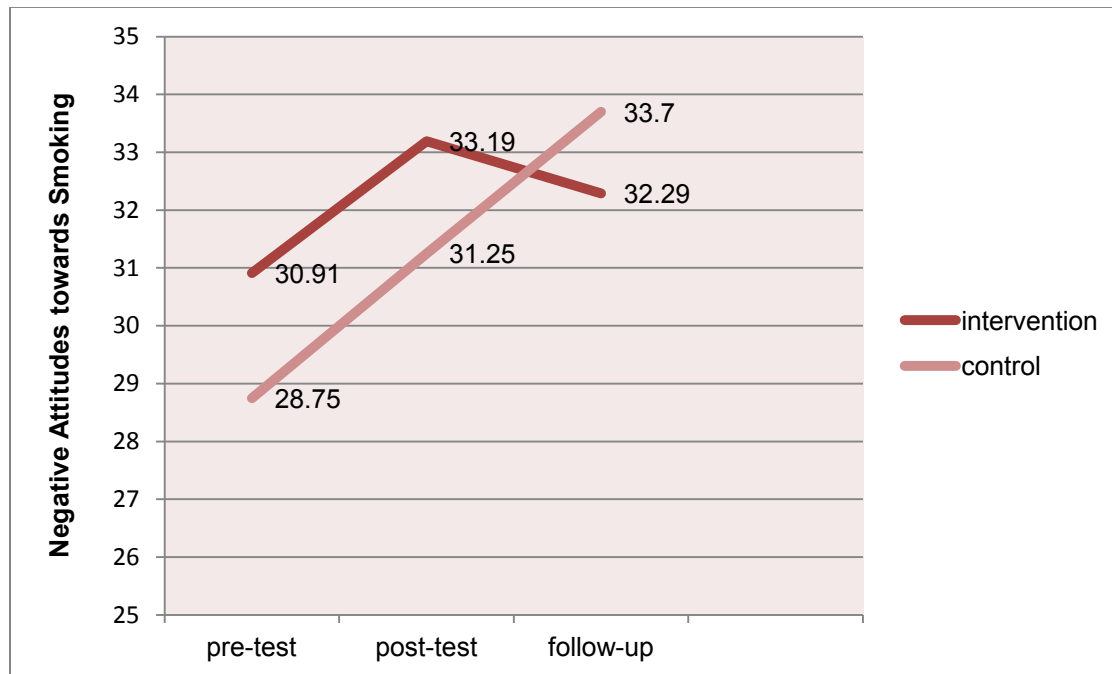


Figure 15. Negative attitudes towards smoking by group type across all three time periods

Supplemental Analyses.

Means for the perceived behavioral control, friend subjective norms, motivation to comply, negative affect reduction, and social facilitation scales are shown by smoking status in Figure 16. Correlations between these scales, frequency of being around others who smoke, and primary outcomes are shown in Table 6.

As shown in Figure 16, youth who reported current smoking reported less perceived behavioral control over smoking, higher levels of approval of smoking by friends, higher

motivation to comply with friends (low scores on this scale = high motivation), and higher endorsement of negative affect reduction and social facilitation as smoking consequences or expectancies.

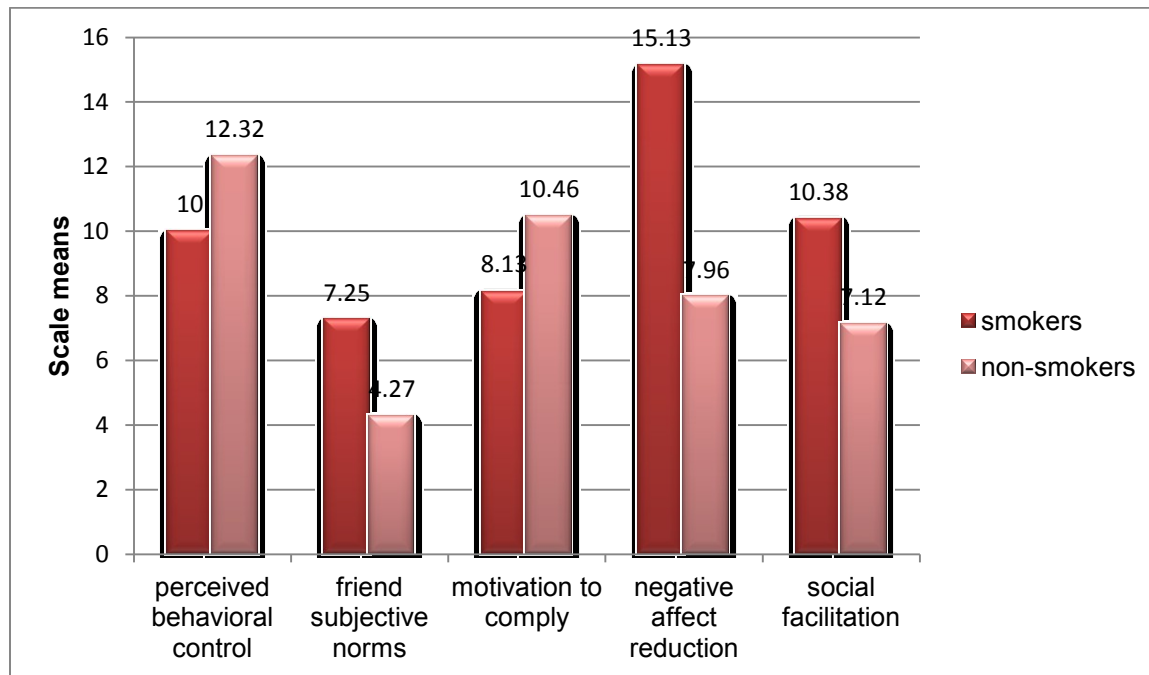


Figure 16. Scale means by smoking status at assessment

As shown in Table 6, higher frequency of *being around others who smoke* was significantly associated with *smoking susceptibility*, as well as with endorsement of *negative affect reduction* and *social facilitation*. *Ever smoking* was also associated with high *motivation to comply with friends*, *negative affect reduction*, and *social facilitation*.

Table 6. Correlations between scales and primary outcomes at assessment

	Reliability	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.Control scale ¹	$\alpha=.84$	—	-.27	-.16	-.21	-.18	-.27	-.33	.04	-.25	.01	-.03
2.Friend norms scale ²	$\alpha=.97$		—	-.04	.21	.46**	.60**	.11	-.32	.39*	.25	.31
3.Motivation to comply scale ³	$\alpha=.82$			—	-.53**	-.36*	-.16	-.44**	-.39*	-.23	-.17	-.41*
4.Negative affect reduction scale ⁴	$\alpha=.93$				—	.62**	.42*	.27	-.40*	.20	.46**	.46**
5.Social Facilitation Scale ⁵	$\alpha=.75$					—	.52**	.36*	-.48**	.26	.41*	.40*
6. Susceptibility	$\alpha=.89$						—	.20	-.67**	.41*	.37*	.60**
7. Social Norms								—	-.50*	.40*	.18	.37*
8.Negative attitudes ⁶	$\alpha=.64$								—	-.45*	-.30	-.63**
9. Best friends smoke										—	.20	.60**
10.Around others who smoke											—	.28
11.Ever smoked												—

¹High score = high control²Low score = friends disapprove of smoking³High score = low motivation to comply w/friends⁴High score = high endorsement of negative affect reduction⁵High score = high endorsement of social facilitation⁶High score = high negative attitudes towards smoking* $p < .05$; ** $p < .01$

Single items

Around others who smoke. Youth who reported past 30-day smoking were more likely to be around others who smoke compared with their non-smoking peers, means (SD) of 5.86 (1.95) and 4.04 (2.1), respectively. This difference was significant, $t(31) = -2.07$, $p = .05$.

Family subjective norms. Among all youth, in response to the item “if I smoked

my family would...” with responses ranging from 1 for disapprove and 7 for approve, the mean (*SD*) was 1.35 (.88), indicating high levels of perceived family disapproval. Little difference existed between smoking and non-smoking youth.

Youth who reported current smoking

Change contemplation for smoking youth. There were 8 participants who reported past 30-day smoking. Of these, 6 responded to the contemplation ladder question, which assesses readiness to consider smoking cessation (Biener & Abrams, 1991). Figure 17 shows the distribution of responses ($M = 6.67$, $SD = 3.72$). Most respondents circled a 6 or above on this graphic measure in which 0 is anchored by “no thought of quitting”, 2 by “think I need to consider quitting someday”, 5 by “think I should quit but not quite ready”, 8 by “starting to think about how to change my smoking patterns”, and 10 by “taking action to quit (e.g., cutting down, enrolling in a program)”. Only 1 respondent indicated 0. This suggests that even among young smokers, youth may be thinking about changing their smoking behavior.

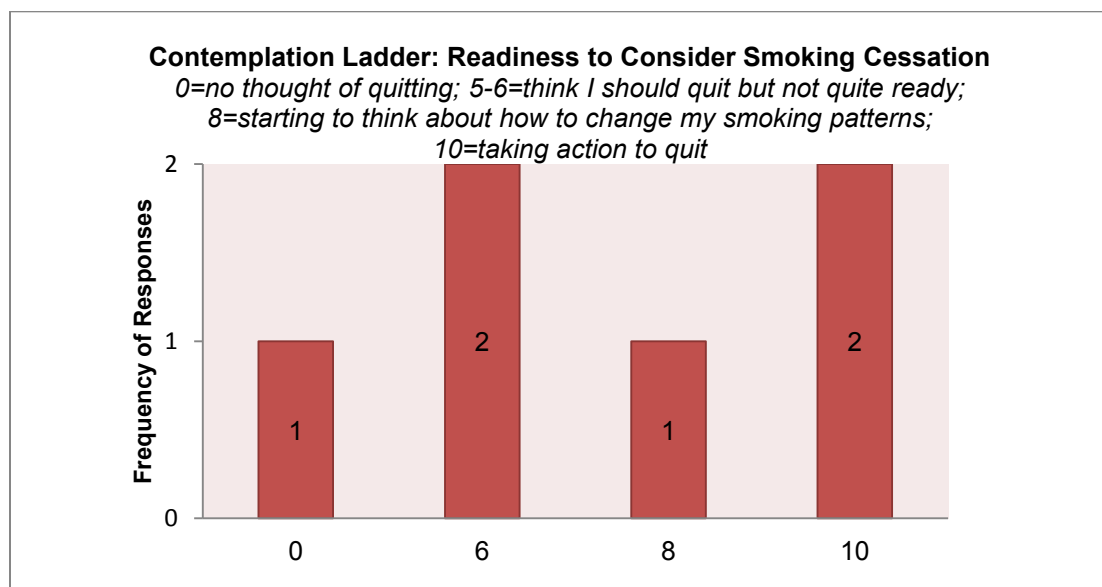


Figure 17. Frequency of responses to change contemplation ladder among smokers

NDSA item. Among youth who reported current smoking, five (63%) responded *definitely yes* to the question *do you think you could quit smoking if you wanted to?*, while the other three responded 4, 5, and 6 to the item where 1 is *definitely not* and 7 is *definitely yes* ($M = 6.25$, $SD = 1.17$). This level of confidence in being able to quit may suggest that youth do not perceive themselves as dependent on smoking.

Although not the primary aim of the study, exploring differences in smoking prevalence, susceptibility, social norms, and attitudes, and by study site may provide direction for tailored smoking prevention intervention efforts. Early on in the project, researchers noticed that there were significant differences in smoking-related outcomes as assessed at pre-test and as discussed in the intervention and control group sessions. Accordingly, additional exploratory analyses were conducted to determine differences in these characteristics as a way to inform future research and health promotion programs. Of the 34 participants, 13 were from study site A, while the remainder came from study sites B (16), C (2), and unknown neighborhood affiliation (3). To compare outcomes across groups, study site was dichotomized into two categories, “Site A” and “Site other” and assessment (pre-test) values were compared on key outcomes. As shown in table 7, there were significant differences in smoking status and key outcomes. These data may provide useful information for future programs, and suggest the importance of accurate assessment of smoking behavior and attitudes at the community level.

Table 7: Smoking characteristics by study site

	Overall n=34	Other n=21	Site A n=13	F
	Mean (SD) or %	Mean (SD) or %	Mean (SD) or %	
Smoke past 30 days				
% yes	24%	0%	38%	31.62**
% no	76%	100%	62%	
Susceptibility Scale	8.06 (5.50)	6.52 (4.91)	10.54 (5.5)	4.87*
Social Norms	6.76 (3.30)	5.76 (3.30)	8.38 (2.73)	5.69*
Negative Attitudes Scale	30.12 (5.10)	32.30 (3.96)	26.17(4.55)	16.91*
Best friends smoke	1.13 (1.21)	.71 (.96)	1.91 (1.3)	8.78*

** $p < .001$; * $p < .01$

Preferred language and “feeling like a part of” Mexican and Anglo cultures

Cultural affiliation. Most (76%) rated themselves in the high range (5 or above out of 7) of *feeling like a part of Mexican culture* while 45% rated themselves in the high range of *feeling like a part of Anglo culture*. As shown in Table 5 above, *feeling like a part of Mexican culture* was significantly associated with *feeling like a part of Anglo culture* as well; however no significant associations existed between feeling like a part of Anglo culture and smoking-related outcomes. The relationships between *feeling like a part of Mexican culture* and current smoking, susceptibility, social norms, attitudes held even when controlling for *feeling like a part of Anglo culture*.

Language. Most (58%) reported speaking *Spanish only* or *more Spanish* at home. Among friends, 26% spoke *only Spanish* or *more Spanish*, 38% spoke both *English and Spanish equally*, and 37% spoke *more English* or *English only*. Regarding the language in which they think, 32% said *Spanish only* or *more Spanish*, 26% said *English and Spanish equally*, and 42% replied *more English* or *English only*. Although all participants spoke English, and facilitators were bilingual and spoke Spanish when youth did, future studies should include instruments in English and in Spanish given the subtleties of word meanings, especially regarding attitudes.

To assess the relationship between feeling like a part of Mexican culture and language use, cultural affiliation was dichotomized into high (5 or above) and low (4 or below) and a one-way ANOVA was conducted with affiliation as the independent variable and language spoken at home, language spoken with friends, and language in which you think as dependent variables. No significant differences were found. This may suggest that among the youth in this study, language use does not significantly influence level of feeling like a part of Mexican or Anglo culture.

CHAPTER 5: DISCUSSION

Overview

The purpose of this study was to develop and evaluate an innovative intervention for youth who may be at high risk of smoking because of sociodemographic factors. Specifically, the research examined whether existing behavioral technology that has been used successfully to reduce alcohol consumption in youth and adults, PNF, can be adapted to similarly affect smoking behavior. Thirty four youth participated in the study, with 21 in the experimental condition and 13 in the control condition. Participants were randomly assigned at the group level to either intervention or control. All participants regardless of condition completed assessments at pre-test ($n=34$), immediate post-test ($n=34$), and follow-up ($n=16$).

In the experimental condition, participants experienced a brief motivational intervention to increase smoking cessation among smokers and increase prevention-related beliefs among nonsmokers. The session included a component that solicited youth input and feedback regarding current regional smoking prevention efforts, followed by guided explanation and discussion of PNF forms. In the control condition, participants participated in an intervention related to nutrition and physical activity that did not include tobacco-related content or receipt of PNF.

The primary hypotheses were that participants receiving the PNF intervention would report decreased susceptibility to smoking, lowered estimates of descriptive norms favoring smoking (social norms), and increased negative attitudes towards smoking relative to baseline and in comparison with participants exposed to a nutrition program similar in format and duration but that did not address smoking in any way.

Summary of results

Primary Outcomes. In the first set of analyses, 2 x 2, Intervention Type (smoking vs. nutrition) by assessment period (pre-test and immediate post-test), mixed factorial Analyses of Variance (ANOVA's) were used to assess whether the program produced changes in key outcomes from pre-test to immediate post-test. To examine changes across all three time periods (assessment, immediate post-test, and follow-up), in the second set of analyses MIXED linear methods in SPSS were used to perform Restricted Maximum Likelihood Estimation to conduct equivalent analyses. Thus, this set of analyses allowed for a 2 x 3, Intervention Type by Time analysis with two levels of the between-subjects factor (intervention vs. control) and three levels of the within-subjects factor (assessment, immediate post-test, and follow-up).

Overall, no support was found for the primary hypotheses. Thus, the intervention was not effective in this study. Results indicated that although intervention participants reported decreased susceptibility and lowered social norms, these changes were not statistically reliable. Regarding changes in attitudes, participants in both groups reported increases in negative attitudes towards smoking which were statistically reliable, and were highest among youth who reported current smoking and who had low negative attitudes at baseline. Since this was an effect for time rather than type of intervention received, the intervention did not have an effect on any of the primary outcomes.

Smoking susceptibility. The data indicated that youth in this study have high rates of susceptibility, reinforcing the need for tailored prevention programs among the priority population. Consistent with other research in this area (Forrester et al., 2007; Reid et al., 2008; Unger et al., 2001), both smoking history and susceptibility to smoking

in this study were strongly associated with perceived prevalence of peer smoking (social norms) and best friend smoking. Susceptibility was also strongly associated with friend subjective norms, i.e., higher perceptions that friends approve of smoking.

Social norms. Consistent with previous research in this area (Smith et al., 2006; Forrester et al., 2007), misperceptions of peer smoking prevalence were significantly associated with smoking susceptibility and smoking status. All of the youth reporting current (past 30-day smoking) had significant misperceptions of peer smoking, and most non-smoking youth also significantly overestimated peer smoking prevalence. These high levels of misperceptions reinforce the need for social norms approaches with youth in the study, and provide rich data for future interventions.

Data indicated that while the intervention group reported only slight changes in social norms, the control group showed no change from pre-test to immediate post-test but then decreased at follow-up. Because youth in the control group had higher misperceptions to begin with, this may be indicative of a regression effect such that those with high values would have declined anyway, or it may reflect a delayed screening effect such that simply responding to questions about peer smoking prevalence affected social norms, perhaps through youth being more aware of actual smoking prevalence between the intervention and follow-up.

Attitudes. Low negative attitudes towards smoking were significantly associated with smoking susceptibility, current and ever smoking, high misperceptions of peer smoking prevalence, and best friend smoking. Both the intervention and control groups reported increased negative attitudes from assessment to immediate post-test. From immediate post-test to follow-up, the intervention group declined slightly but remained

above pre-test levels. Interestingly, the control group showed additional increases in negative attitudes towards smoking from post-test to follow-up, an effect that was significant statistically as well as practically. As speculated in the results section, this may have been due to several factors, including ceiling effects, screening effects, and confounding of smoking-related characteristics with study site. It should also be noted that reliability for the attitudes measure was low, such that results should be interpreted cautiously without replication of the study in a larger sample.

The remainder of this chapter includes discussion of possible reasons for the lack of intervention effects, lessons learned, innovation and recommendations for future research, and conclusions.

Possible Reasons for the Lack of Intervention Effects

This study suffered from low sample size and statistical power. Additionally, other factors may have contributed to the study failing to find support for the use of this approach with this population. These include what Shadish, Cook, & Campbell (2002) refer to as *unreliability of treatment implementation*, in which program fidelity is not supported as may have been the case given the relatively unstructured community youth program setting, and *unreliability of measures*, which in the case of this study may have been an issue particularly with the negative attitudes scale as evidenced by the lower reliability.

It may also be the case that threats to construct validity might result in failing to find support for the intervention. Applicable threats in the case of this study include what Shadish et al. (2002) refer to as *reactivity to the experimental situation*, in which participants try to please the experimenter, and *treatment diffusion*, in which participants

in the control group may have talked with or been exposed to participants in the intervention group, which may have influenced their follow-up results or influenced their desire to provide the “right” answers.

Other factors related to internal validity may have impacted changes over time regardless of group condition. These include what Shadish et al. (2002) would call the *selection effects* already discussed (e.g., friends participating together), *history*, in which other events such as tobacco prevention campaigns or programs could influence results, *regression*, (e.g., attitude scores changing among those with the lowest scores), and *testing*, which in this case may have manifested as a screening effect such that the testing itself has an effect independent of the treatment effect.

Finally, in terms of the effectiveness of PNF in changing smoking-related outcomes, it may be that norms and attitudes related to smoking behavior are more resistant to change than those related to drinking behavior (the latter being an area in which PNF has been effective) due to individual and contextual factors such as dependence, exposure, and norms. It may also be the case that among younger adolescents such as those in this study, existing perceptions are not easily swayed by a brief intervention.

Lessons learned

Other influences. Another factor that may have influenced outcomes in both the intervention and control groups is related to peer selection and peer influence. Because random assignment was at the group level rather than the individual level, and because groups of friends tended to participate together, it is possible that these social networks and contexts mediate intervention effects such that who your friends are or who you are

in a group with and talk about smoking with (during or after the intervention) influences your response to the intervention. Future studies should be conducted with larger samples, and feature random assignment at the individual or group level in such a way that youth do not self-select with each other.

Parental involvement. As mentioned earlier, parental and family influence plays an important role in youth smoking. There is strong support for the inclusion of parents in youth tobacco prevention programs (Guillermo-Ramos et al., 2010; Carson et al., 2011; Müller-Riemenschneider et al., 2011). Research has shown support for indirect effects of positive parenting on smoking initiation, such that parenting styles can be protective against the formation of friendships with youth who smoke (Simons-Morton, 2004; Simons-Morton, Hyanie, Crump, Eitel, & Saylor, 2001). Given the strong endorsement of parental disapproval of smoking by youth in this study, it makes sense to include parents in community youth smoking prevention programs. In view of the perception among most youth in this study that their parents disapprove of smoking, it is likely that parents would welcome opportunities to be involved in community tobacco control programs. Moreover, in spite of local decreasing regional adult smoking rates, the same sociodemographic factors that put youth at risk for smoking likely hold true for their parents as well, further indicating the need for family involvement. If some parents smoke (as would be reasonable to assume), but virtually all parents disapprove of smoking according to the youth, then youth-focused programs may be an effective way to reach parents who smoke but who would not seek out adult-focused programs.

Highlights from supplemental analyses. Significant differences in smoking prevalence, norms, attitudes, and susceptibility were found by study site and by

smoking status, possibly suggesting the need for tailored prevention intervention approaches at the community level. Consistent with previous research (Lewis-Esquerre et al., 2005), smoking susceptibility and smoking status were associated with perceptions that smoking reduces negative affect (e.g., helps people forget about problems or helps deal with anger or sadness) and helps with social situations (e.g., makes parties more enjoyable; makes people feel more mature).

Although results from this study are not generalizable beyond the study population, these results can be used to inform the development of programs at the community level that are responsive to community level data. This type of responsiveness can play a key role in addressing health disparities (Mata & Balcazar, 2010).

Innovation and Recommendations for Future Research

One of the innovative design features and an advantage of the PNF technique in this situation is that smokers and non-smokers could participate concurrently, without disclosing their smoking status as a prerequisite for participation. As such, the approach allowed for the examination of characteristics and intervention effects among smoking and non-smoking youth as well as the provision of PNF based on confidential assessment. Although the approach was not effective in this study setting, addressing some of the various threats to validity through better design in future studies may yield different results.

Another innovative feature of using PNF for smoking prevention and intervention is that unlike most substance use prevention, reduction, or cessation approaches, PNF allows for increased involvement of youth across the spectrum of risk level categories

outlined by the National Institute for Drug Abuse (NIDA). These include *universal* programs, which are designed for everyone regardless of risk level, such as prevention programs offered in schools; *selective* programs, which are tailored to groups who may be at risk for substance use because of individual or contextual factors; and *indicated* programs which are tailored to people who are already experimenting or using substances (NIDA, 2011). Integrating PNF into larger, community-based programs would provide opportunities to further assess the role of PNF in smoking prevention and cessation, while using a more comprehensive approach to tobacco control.

Data from this project can be used to inform programs tailored to the smoking status, susceptibility, social norms, and attitudes of youth who may be at high risk for smoking because of sociodemographic factors. Incorporating such tailored programs into school and community programs *in which youth have leadership roles* may help address tobacco-related disparities. Youth who belong to the BGCA have committed to building on the results of the project by using data from the current project to inform the development of youth-led social norms approaches that can be implemented in the community as part of youth smoking prevention programs.

As part of these future projects, the role of cultural affiliation should be investigated to elucidate what contributes to the relationship between “feeling like a part of Mexican culture” and smoking among youth in our region. Is it having and spending time with family in Cd. Juarez (where smoking is more prevalent)? strong identity with certain aspects of Mexican culture? higher levels of exposure to tobacco advertising through Spanish media? This is fertile ground for future research, and is another way to

involve youth in efforts to understand and address regional determinants of youth smoking.

Conclusion

Many health educators and social scientists recognize the benefits of collaboration for community members, students, and academicians alike.

“Communitizing” health education helps develop and strengthen partnerships, increases perceived competency among health education students, and can result in increased awareness, knowledge, and positive behavioral intentions among diverse priority populations (Mata & Thompson, 2010; Thompson, Dempsey, Hanson, Huereque, & Smith, 2009; Thompson & Mata, 2010). The current project has strengthened the collaborative relationship between researchers and community members, and can inform future research projects and health promotion programs.

Adolescents who smoke are more likely to have unprotected sex and are more likely to be involved in fights. Additionally, teenage smokers are 22 times more likely to try cocaine, 8 times more likely to smoke marijuana, and 3 times more likely to drink alcohol (Milton et al., 2004). In this regard, reducing smoking among border youth may also reduce use of other substances and improve immediate and long-term health outcomes.

The adaptation and translation of best practices in alcohol risk reduction to smoking cessation and prevention research among adolescents in our border community through the innovative use of PNF is one response to the call for *hybrid prevention programs* (Castro, Barrera, & Martinez, 2004) that capitalize on program fidelity while incorporating salient cultural and community pride, priorities, and assets.

As has been noted in previous work, Hispanic heterogeneity in general and the unique cultural convergence characteristic of the border region in particular mandate innovative responses to chronic and unrelenting disparities in access to tailored substance use prevention and intervention programs (Dempsey, 2009).

El Paso has a strong coalition of tobacco control researchers and practitioners; the decline in regional adult smoking rates after a decade of collaborative and intensive effort suggests that environmental and policy conditions have been effective. The local foundation-funded “A Smoke-Free Paso del Norte” initiative includes prevention, cessation, and media, environmental, and policy advocacy approaches, and has recently shifted strategy to emphasize comprehensive approaches specifically among youth (Kelly & Law, 2010).

Prioritizing youth who may be at high risk of smoking because of sociodemographic and contextual factors is critical in comprehensive efforts that aim to address disparities in smoking rates. Interventions such as the current project that address factors known to be associated with youth smoking can play a key role in community-based interventions that address youth smoking at a variety of contextual levels and supplement comprehensive tobacco control efforts. Moreover, researchers *in collaboration with community members and people most affected by tobacco-related disparities* should continue to implement and evaluate programs across the spectrum of health determinants. Doing so will enhance the scope, reach, and impact of prevention programs. It is imperative that youth tobacco control includes components in the social, political, and policy realms, the social contextual and physical environmental realms,

and the individual and biological realms. Addressing tobacco-related disparities will likely require this type of comprehensive approach.

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APPENDIX

Would you like to take part in research that will help us understand how youth in your community feel about health behaviors like smoking or nutrition?



what do YOU think?

We want to know!

If you are 12-18 years old, you can be part of this research project.

If you decide to participate:

- ✚ You will be part of a group discussion about smoking or nutrition
- ✚ You will be asked about your own attitudes and behaviors
- ✚ You will be asked to give your opinion about programs related to smoking or nutrition that are for kids your age

FOR MORE INFORMATION:

- ✚ Talk with the staff at your Boys and Girls Club
- ✚ Call Holly Mata 575-551-1458 or Jose Guevara at 915-227-8513



¿Te gustaría participar en la investigación que nos ayudará a entender cómo los jóvenes en su comunidad se sienten acerca de los comportamientos de salud como el fumar o la nutrición?



¿Que Piensas?

¡Queremos saber!

Si tu tienes 12-18 años de edad, tu puedes ser parte de este proyecto de investigación.

Si tu decides participar:

- ✚ Tu puedes ser parte del grupo de discusion sobre fumar o nutrición
- ✚ Te podemos preguntar acerca de tus propias actitudes y comportamiento
- ✚ Vamos a pedir lo que tu piensas acerca de los programas relacionados con el fumar o la nutrición que son para los jóvenes de tu edad

Para obtener más información:

- ✚ Habla con el personal de Boys and Girls Club
- ✚ Llame a Holly Mata 575-551-1458 o Jose Guevara 915-227-8513



University of Texas at El Paso (UTEP) Institutional Review Board
Assent Form for Research Involving Human Subjects

Protocol Title: What do YOU think?

Principal Investigator: Holly Mata and Jose Guevara
UTEP Department of Public Health Sciences

I am being asked to decide if I want to be in this research study because I am between the ages of 12-18 and attend the Boys and Girls Clubs of El Paso

I know that to be in this study I will:

- *Be part of a group that talks about how youth my age feel about smoking and /or nutrition and exercise. This group activity will be about 90 minutes long*
- *Take a survey about my own behavior and attitudes related to smoking and/or nutrition and exercise*
- *Share my thoughts about information on some websites and books that is related to smoking and/or nutrition and exercise*
- *Take another survey about a week later. This will take about 15 minutes.*
- *Receive a \$5 gift card*

I asked and got answers to my questions. I know that I can ask questions about this study at any time.

I know that I can stop being in the study at any time without anyone being mad at me. I will not get in trouble if I stop being in the study.

I know that only the people who work on this research study will know my name.

I want to be in the study at this time. I can ask about what happened in the study.

Youth Printed Name: _____

Youth Signature: _____ Date: _____

Witness or Mediator: _____ Date: _____

I have explained the research at a level that is understandable by the youth and believe that the youth understands what is expected during this study.

Signature of Person Obtaining Assent:

_____ Date _____

University of Texas at El Paso (UTEP) Institutional Review Board
Informed Consent Form for Research Involving Human Subjects

Protocol Title: What do YOU think?

Principal Investigator: Holly Mata & Jose Guevara

In this consent form, “you” always means the study participant. If you are a legally authorized representative (such as a parent or guardian), please remember that “you” refers to the study participant.

1. Introduction

You are being asked to take part voluntarily in the research project described below. Please take your time making a decision and feel free to discuss it with your friends and family. Before agreeing to take part in this research study, it is important that you read the consent form that describes the study. Please ask the study researcher or the study staff to explain any words or information that you do not clearly understand.

2. Why is this study being done?

You have been asked to take part in a research study that will evaluate what youth in your community think about current media campaigns. These campaigns may include information about topics such smoking, nutrition, and exercise.

Approximately 380 participants will be enrolling in this study at The Boys and Girls Club of El Paso

You are being asked to be in the study because you are 12-18 years old and live in one of the neighborhoods near the Boys and Girls Clubs.

If you decide to enroll in this study, your involvement will last about 90 minutes.

3. What is involved in the study?

If you agree to take part in this study, the research team will ask you to answer questions about how you feel about smoking, nutrition, and exercise. These questions are about your behavior and attitudes as regards these behaviors. Then, as part of a small group activity, you will be asked to evaluate some educational information about smoking or about nutrition and exercise. Which educational information you evaluate (smoking or nutrition and exercise) will be determined randomly (e.g., by flip of a coin). In either case, the researchers will ask you for feedback regarding different media campaigns and booklets that are designed for youth your age. As part of the experience, you may also receive a feedback form that describes some of your attitudes, beliefs, and behaviors. About one week later, researchers will ask you to answer another short questionnaire about the same topics. You can do this questionnaire either in person or on the phone.

4. What are the risks and discomforts of the study?

There are no known risks associated with this research.

5. What will happen if I am injured in this study?

The University of Texas at El Paso and its affiliates do not offer to pay for or cover the cost of medical treatment for research related illness or injury. No funds have been set aside to pay or reimburse you in the event of such injury or illness. You will not give up any of your legal rights by signing this consent form. You should report any such injury to Holly Mata at 575-551-1458 or Jose Guevara at 915-227-8513 and to the UTEP Institutional Review Board (IRB) at (915-747-8841) or irb.orsp@utep.edu

6. Are there benefits to taking part in this study?

The only direct benefit you may receive is that you may learn more about how your ongoing behaviors might be affecting your health, for good and bad. This research may help us to understand how youth interpret media information about smoking, nutrition, and exercise. It may also help us to know more about health behaviors among youth in our community.

7. What other options are there?

You have the option not to take part in this study. There will be no penalties involved if you choose not to take part in this study.

8. Who is paying for this study?

External funding: Funding from Hispanic Health Disparities Research Center is supporting this research.

9. What are my costs?

There are no direct costs. You will be responsible for travel to and from the research site and any other incidental expenses.

10. Will I be paid to participate in this study?

Your child will be paid for their participation in the form of a \$5.00 gift card

11. What if I want to withdraw, or am asked to withdraw from this study?

Taking part in this study is voluntary. You have the right to choose not to take part in this study.

If you do not take part in the study, there will be no penalty.

If you choose to take part, you have the right to stop at any time. However, we encourage you to talk to a member of the research group so that they know why you are leaving the study. If there are any new findings during the study that may affect whether you want to continue to take part, you will be told about them.

The researcher may decide to stop your participation without your permission, if he or she thinks that being in the study may cause you harm.

12. Who do I call if I have questions or problems?

You may ask any questions you have now. If you have questions later, you may contact Holly Mata at 575-551-1458 or Jose Guevara at 915-227-8513

If you have questions or concerns about your participation as a research participant, please contact the UTEP Institutional Review Board (IRB) at (915-747-8841) or irb.orsp@utep.edu

13. What about confidentiality?

Your part in this study is confidential. None of the information will identify you by name. All records will be maintained under lock and key.

Every effort will be made to keep your information confidential. Your personal information may be disclosed if required by law. Organizations that may inspect and/or copy your research records for quality assurance and data analysis include, but are not necessarily limited to:

- The sponsor or an agent for the sponsor
- Department of Health and Human Services
- UTEP Institutional Review Board

Because of the need to release information to these parties, absolute confidentiality cannot be guaranteed. The results of this research study may be presented at meetings or in publications; however, your identity will not be disclosed in those presentations.

14. Mandatory reporting

If information is revealed about child abuse or neglect, or potentially dangerous future behavior to others, the law requires that this information be reported to the proper authorities.

15. Authorization Statement

I have read each page of this paper about the study (or it was read to me). I know that being in this study is voluntary and I choose to be in this study. I know I can stop being in this study without penalty. I will get a copy of this consent form now and can get information on results of the study later if I wish.

Participant Name: _____ Date: _____

Participant Signature: _____ Time: _____

Participant or Parent/Guardian Signature: _____

Consent form explained/witnessed by: _____

Signature _____

Date: _____ Time: _____

Universidad de Texas en El Paso (UTEP) Consejo Institucional de Revisión

Información de Forma de Consentimiento para la Información de los Seres Humanos

Título del Protocolo: ¿Qué piensa USTED?

Investigador Principal: Holly Mata y José Guevara

En esta forma de consentimiento “usted” siempre significa el participante del estudio. Si usted es un representante legalmente autorizado (por ejemplo, un padre o un tutor), por favor recuerde que “usted” se refiere al participante del estudio.

1.Introducción

Se le pide participar voluntariamente en un proyecto de investigación que se describe a continuación. Por favor, tome su tiempo para decidirse y no dude en consultar a su familia y amigos. Antes de decidir participar en este estudio, es importante que lea la forma de consentimiento que describe el estudio. Por favor pida al investigador del estudio que le explique cualquier palabra o información que no entienda claramente.

2. ¿Por qué se está haciendo este estudio?

Se le ha pedido participar en un estudio que evaluará lo que los jóvenes de su comunidad piensan sobre algunas campañas actuales en los medios de comunicación. Estas campañas pueden incluir información sobre temas como tabaquismo, nutrición y ejercicio.

Aproximadamente 380 participantes se inscribirán en este estudio en el Club de Boys and Girls de El Paso.

Se le pide que participe en el estudio porque usted tiene entre 12 y 18 años y vive en uno de los barrios cercanos a el Club de Boys and Girls de El Paso.

Si usted decide participar en este estudio, su participación durara alrededor de 90 minutos.

3. ¿En que consiste el estudio?

Si usted decide participar en este estudio, el equipo de investigación le pedirá que conteste algunas preguntas sobre cómo se siente sobre el tabaquismo, la nutrición y el ejercicio. Estas preguntas son acerca de su comportamiento y actitudes en relación con estos comportamientos. Entonces, como parte de un de las actividades de grupo pequeño, se le pedirá que evalúe alguna información educacional sobre tabaquismo o sobre nutrición o hacer ejercicio. La información educacional que tendrá que evaluar (tabaquismo o nutrición y ejercicio) será determinada al azar (por ejemplo, tirando una moneda al aire). En cualquiera de los casos, los investigadores le pedirán sus comentarios sobre las diferentes campañas en los medios de comunicación y en los folleos que se han diseñado para los jóvenes de su edad. Como parte de la experiencia, también puede recibir un formulario de sugerencias que describe algunas de sus actitudes, creencias y comportamientos. Alrededor de una semana más tarde, los investigadores le pedirán que responda otro pequeño cuestionario sobre los mismos temas. Usted puede hacer este cuestionario en persona o por teléfono.

4. ¿Cuáles son los riesgos y las incomodidades del estudio?

No existen riesgos conocidos o asociados a esta investigación.

5. ¿Qué sucede si me lesiono en este estudio?

La Universidad de Texas en El Paso y sus afiliados no se ofrecen a pagar o cubrir los gastos de tratamiento médico para las enfermedades o lesiones relacionadas con la investigación. Ninguno de los fondos se han destinado a pagar o reembolsar a usted en caso de lesión o enfermedad. Al firmar esta forma de consentimiento usted no renuncia a ninguno de sus derechos legales. Usted debe reportar cualquier lesión a Holly Mata al 575-551-1458 o Jose Guevara al 915-227-8512 y a UTEP al Consejo de Institucional de Revisión (IRB) al (915-747-8841) o irb.orsp@utep.edu

6. ¿Hay beneficios por participar en este estudio?

El único beneficio directo que puede recibir es que usted puede aprender más acerca de cómo su comportamiento actual podría afectar su salud, para bien y para mal. Esta investigación puede ayudarnos a entender como los jóvenes interpretan la información de los medios de comunicación sobre el tabaquismo, la nutrición y el ejercicio. También nos puede ayudar a saber más sobre los comportamientos de salud entre los jóvenes de nuestra comunidad.

7. ¿Qué otras opciones hay?

Usted tiene la opción de no participar en este estudio. No habrá sanciones involucradas si usted decide no participar en este estudio.

8. ¿Quién paga por este estudio?

Financiación externa:

Esta investigación es financiada por el Centro Hispano de Investigación de las Disparidades de la Salud.

9. ¿Cuáles son mis costos?

No hay costos directos. Usted será responsable de su transportación hacia y desde el sitio de la investigación y por cualquier otro tipo de gastos relacionados con esto.

10. ¿Me pagarán por participar en este estudio?

Se le pagará a su hijo por su participación en la forma de una tarjeta de regalo de \$5.00 dólares.

11. ¿Qué pasa si me quiero retirar o me piden que me retire del estudio?

La participación en este estudio es voluntaria. Usted tiene el derecho de decidir no participar en este estudio. Si usted no participa en el estudio, no habrá penalización.

Si decide participar, usted tiene el derecho de dejar de hacerlo en cualquier momento. Sin embargo, le animamos a que hable con un miembro del grupo de investigación para que sepan porque está abandonando el estudio. Si hay nuevos hallazgos durante el estudio que puedan afectar su decisión de seguir participando, se le hará saber sobre ellos.

El investigador puede decidir terminar su participación sin su permiso, si él o ella piensan que estar en el estudio puede causarle daño.

12. ¿A quien llamo si tengo preguntas o problemas?

Usted puede hacer cualquier pregunta que tenga ahora. Si más adelante usted tiene preguntas, puede contactarse con Holly Mata al 575-551-1458 o con José Guevara al 915-227-8513.

Si usted tiene preguntas o inquietudes sobre su participación o como participante de la investigación, por favor comuníquese a UTEP con el Consejo Institucional de Revisión (IRB) al (915-747-8841) o irb.orsp@utep.edu

13. ¿Qué pasa con la confidencialidad?

Su participación en este estudio es confidencial. Ninguna información será identificada con su nombre. Todos los registros se mantienen bajo llave.

Todo esfuerzo será hecho para mantener su información confidencial. Su información personal puede ser revelada si así lo requiere la ley. Las organizaciones que pueden inspeccionar y/o copiar sus registros de la investigación para garantizar la calidad y el análisis de los datos incluidos, pero no se limitan necesariamente a:

- El patrocinador o un agente para el patrocinador
- Departamento de Salud y Servicios Humanos
- UTEP Consejo Institucional de Revisión

Debido a la necesidad de dar información a estas partes, la confidencialidad absoluta no se puede garantizar. Los resultados de este estudio de investigación pueden ser presentados en las reuniones o en las publicaciones, sin embargo, su identidad no será revelada en las presentaciones.

14. Notificación obligatoria

Si la información revela abuso infantil o negligencia o un comportamiento futuro potencialmente peligroso para los demás, la ley exige que esta información sea reportada a las autoridades correspondientes.

15. Autorización oficial

He leído cada página de este documento sobre el estudio (o se me leyó). Sé que mi participación en este estudio es voluntaria y yo decido tomar parte en este estudio. Sé que puedo dejar de participar en este estudio sin ninguna penalización. Ahora me darán una copia de esta forma de consentimiento y puedo obtener información sobre los resultados del estudio más adelante si lo deseo.

Nombre del participante: _____ Fecha: _____

Firma del participante: _____ Fecha: _____

Firma del **Padre o Tutor** del participante: _____

Forma de consentimiento explicada/testigo: _____

Firma

Nombre en letra de molde: _____

Fecha: _____ Hora: _____

(Pretest: Baseline data collected at assessment)

How old are you? _____ What grade are you in at school? _____ Nickname you chose _____

Are you: ____ male ____ female

Which one of these words would you pick to describe your ethnic background?

____ Hispanic

____ Mexican

____ Mexican-American

____ White or Anglo

____ Black or African-American

____ Asian or Asian American

____ Indian or Native American

____ Other (please write) _____

Which language do you speak at home? Please circle one.

Spanish only More Spanish than English Both equally More English than Spanish English only

Which language do you speak with your friends? Please circle one.

Spanish only More Spanish than English Both equally More English than Spanish English only

In which language do you think? Please circle one.

Spanish only More Spanish than English Both equally More English than Spanish English only

Thinking about the culture or cultures that you feel like you a part of, would you say:

I feel like I am a part of Mexican culture

false : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ :: true
extremely quite slightly neither slightly quite extremely

I feel like I am a part of Anglo or American culture

false : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ :: true
extremely quite slightly neither slightly quite extremely

Do you think that you will smoke a cigarette in the next year?

Definitely not : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : Definitely yes
maybe

Do you think that in the future you might experiment with cigarettes?

Definitely not : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Definitely yes
maybe

If one of your friends were to offer you a cigarette, would you smoke it?

Definitely not : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Definitely yes
maybe

Have you ever smoked a cigarette? Please circle your answer.

Yes No

Have you ever tried a cigarette, even a few puffs?

Yes No

Think about the last 30 days. On how many days did you smoke? _____

If you're not sure, was it more or less than 20 days?

More Less

Think about the last week. On how many days did you smoke?

0 1 2 3 4 5 6 7

Thinking of 10 people in your grade, how many do you think smoke cigarettes?

0 1 2 3 4 5 6 7 8 9 10

Thinking of your 3 best friends, how many of them smoke?

0 1 2 3

Smoking is:

harmful : 1 : 2 : 3 : 4 : 5 : 6 : 7 : beneficial

pleasant : 1 : 2 : 3 : 4 : 5 : 6 : 7 : unpleasant

good : 1 : 2 : 3 : 4 : 5 : 6 : 7 : bad

worthless : 1 : 2 : 3 : 4 : 5 : 6 : 7 : valuable

enjoyable : 1 : 2 : 3 : 4 : 5 : 6 : 7 : unenjoyable

Smoking makes people look

Very unpopular : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Very popular

My friends think smoking is

Very uncool : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Very cool

My family thinks smoking is

Definitely bad : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Definitely good

Whether or not I smoke is up to me

Definitely false : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Definitely true

I can quit smoking if I want to

a. Definitely false : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Definitely true

b. I don't smoke

I plan on staying smoke-free

Definitely false : 1 : 2 : 3 : 4 : 5 : 6 : 7 : 7 Definitely true

I plan to quit smoking

a. Definitely false : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Definitely true

b. I don't smoke

Do you think you would be able to quit smoking cigarettes if you wanted to?

a. Definitely not: 1 : 2 : 3 : 4 : 5 : 6 : 7 :: Definitely yes

b. I don't smoke

I intend to smoke cigarettes a month from now.

false : 1 : 2 : 3 : 4 : 5 : 6 : 7 :: true

How often are you around others who smoke cigarettes?

frequently : 1 : 2 : 3 : 4 : 5 : 6 : 7 :: never

If I wanted to I could easily not smoke cigarettes during the next month.

agree ____1____ : ____2____ : ____3____ : ____4____ : ____5____ : ____6____ : ____7____ : disagree

Most of the time, when my friends think I should do something, I go along with it.

agree : ____1____ : ____2____ : ____3____ : ____4____ : ____5____ : ____6____ : ____7____ disagree

Most of the time, when my family thinks I should do something, I go along with it.

agree ____1____ : ____2____ : ____3____ : ____4____ : ____5____ : ____6____ : ____7____ : disagree

Most of the time, when my best friend thinks I should do something, I go along with it.

agree ____1____ : ____2____ : ____3____ : ____4____ : ____5____ : ____6____ : ____7____ : disagree

How much control do you think you have over whether you smoke cigarettes?

no control ____1____ : ____2____ : ____3____ : ____4____ : ____5____ : ____6____ : ____7____ complete control

If I smoke cigarettes, most people who are important to me would:

approve ____1____ : ____2____ : ____3____ : ____4____ : ____5____ : ____6____ : ____7____ :disapprove

Do you think it would be difficult or easy for you not to smoke cigarettes during the next month?

easy ____1____ : ____2____ : ____3____ : ____4____ : ____5____ : ____6____ : ____7____ : difficult

If I smoke cigarettes, my friends would:

approve ____1____ : ____2____ : ____3____ : ____4____ : ____5____ : ____6____ : ____7____ : disapprove

If I smoke cigarettes, my family would:

approve ____1____ : ____2____ : ____3____ : ____4____ : ____5____ : ____6____ : ____7____ : disapprove

If I smoke cigarettes, my best friend would:

approve ____1____ : ____2____ : ____3____ : ____4____ : ____5____ : ____6____ : ____7____ : disapprove

Cigarettes help with concentration

Strongly disagree ____1____ : ____2____ : ____3____ : ____4____ : ____5____ : ____6____ : ____7____ Strongly agree

Cigarettes help a person forget about problems at home

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

When someone is sad, smoking helps him or her feel better

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

When someone is feeling mad or upset, a cigarette helps him or her deal with it

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

Parties are more enjoyable when a person is smoking

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

People look up to those who smoke

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

Smoking makes a person feel older or more mature

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

Hanging out with friends is more fun if everyone is smoking

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

Most popular people smoke cigarettes

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

Smoking burns a person's throat

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

Smoking will make a person cough

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

Smoking makes people look dumb

Strongly disagree ____1____: ____2____: ____3____: ____4____: ____5____: ____6____: ____7____ Strongly agree

Smoking makes a person seem less attractive

Strongly disagree ____1____: ____2____: ____3____: ____4____: ____5____: ____6____: ____7____ Strongly agree

If you smoke, circle the number that indicates where you are now in your thinking about quitting smoking. If

you don't smoke, leave this question blank.

10 ➡ Taking action to quit (cutting down, enrolling in a program)

9

8 ➡ Starting to think about how to change my smoking patterns

7

6

5 ➡ Think I should quit but not quite ready

4

3

2 ➡ Think I need to consider quitting someday

1

0 ➡ No thought of quitting

How many times **per week** do you eat fruit? _____

How many times **per week** do you drink soda (don't count diet soda)? _____

How many times **per week** do you exercise or play sports for at least 30 minutes?

0 1 2 3 4 5 6 7

Think about a **typical day**: How many hours do you watch TV or play video games?

0 1 2 3 4 5 6 7 8 9 10 11 12

Regular Exercise is:

pleasant : ____1____: ____2____: ____3____: ____4____: ____5____: ____6____: ____7____: unpleasant

good : ____1____: ____2____: ____3____: ____4____: ____5____: ____6____: ____7____: bad

worthless : ____1____: ____2____: ____3____: ____4____: ____5____: ____6____: ____7____: valuable

enjoyable : ____1____: ____2____: ____3____: ____4____: ____5____: ____6____: ____7____: unenjoyable

(Immediate post-test: time 2)

Nickname: _____

Do you think that you will smoke a cigarette in the next year?

Definitely not : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : Definitely yes
maybe

Do you think that in the future you might experiment with cigarettes?

Definitely not : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : Definitely yes
maybe

If one of your friends were to offer you a cigarette, would you smoke it?

Definitely not : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : Definitely yes
maybe

Thinking of 10 people in your grade, how many do you think smoke cigarettes?

0 1 2 3 4 5 6 7 8 9 10

Smoking is:

harmful : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : beneficial

pleasant : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : unpleasant

good : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : bad

worthless : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : valuable

enjoyable : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : unenjoyable

If you smoke, circle the number that indicates where you are now in your thinking about quitting smoking. If you don't smoke, leave this question blank.

10 ➡ Taking action to quit (cutting down, enrolling in a program)

9

8 ➡ Starting to think about how to change my smoking patterns

7

6

5 ➡ Think I should quit but not quite ready

4

3

2 ➡ Think I need to consider quitting someday

1

0 ➡ No thought of quitting

Regular Exercise is:

pleasant : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : unpleasant

good : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : bad

worthless : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : valuable

enjoyable : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : unenjoyable

(Follow-up: Post test 2)

Nickname you chose _____

Do you think that you will smoke a cigarette in the next year?

Definitely not : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : Definitely yes
maybe

Do you think that in the future you might experiment with cigarettes?

Definitely not : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : Definitely yes
maybe

If one of your friends were to offer you a cigarette, would you smoke it?

Definitely not : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : Definitely yes
maybe

Have you ever smoked a cigarette? Please circle your answer.

Yes No

Have you ever tried a cigarette, even a few puffs?

Yes No

Think about the last 30 days. On how many days did you smoke?_____

If you're not sure, was it more or less than 20 days?

More Less

Think about the last week. On how many days did you smoke?

0 1 2 3 4 5 6 7

Thinking of 10 people in your grade, how many do you think smoke cigarettes?

0 1 2 3 4 5 6 7 8 9 10

Thinking of your 3 best friends, how many of them smoke?

0 1 2 3

Smoking is:

harmful : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : beneficial

pleasant : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : unpleasant

good : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : bad

worthless : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : valuable

enjoyable : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : unenjoyable

Smoking makes people look

Very unpopular : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : Very popular

My friends think smoking is

Very uncool : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : Very cool

My family thinks smoking is

Definitely bad : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : Definitely good

Whether or not I smoke is up to me

Definitely false : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : Definitely true

I can quit smoking if I want to

a. Definitely false : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : Definitely true

b. I don't smoke

I plan on staying smoke-free

Definitely false : ____ 1 ____ : ____ 2 ____ : ____ 3 ____ : ____ 4 ____ : ____ 5 ____ : ____ 6 ____ : ____ 7 ____ : 7 Definitely true

I plan to quit smoking

a. Definitely false : ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ : Definitely true

b. I don't smoke

Do you think you would be able to quit smoking cigarettes if you wanted to?

a. Definitely not: ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ : Definitely yes

b. I don't smoke

I intend to smoke cigarettes a month from now.

false : ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ : true

How often are you around others who smoke cigarettes?

frequently : ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ : never

If I wanted to I could easily not smoke cigarettes during the next month.

agree ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ : disagree

Most of the time, when my friends think I should do something, I go along with it.

agree : ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ : disagree

Most of the time, when my family thinks I should do something, I go along with it.

agree ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ : disagree

Most of the time, when my best friend thinks I should do something, I go along with it.

agree ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ : disagree

How much control do you think you have over whether you smoke cigarettes?

no control ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ complete control

If I smoke cigarettes, most people who are important to me would:

approve ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ : disapprove

Do you think it would be difficult or easy for you not to smoke cigarettes during the next month?

easy ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ : difficult

If I smoke cigarettes, my friends would:

approve ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ : disapprove

If I smoke cigarettes, my family would:

approve ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ : disapprove

If I smoke cigarettes, my best friend would:

approve ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ : disapprove

Cigarettes help with concentration

Strongly disagree ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ Strongly agree

Cigarettes help a person forget about problems at home

Strongly disagree ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ Strongly agree

When someone is sad, smoking helps him or her feel better

Strongly disagree ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ Strongly agree

When someone is feeling mad or upset, a cigarette helps him or her deal with it

Strongly disagree ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ Strongly agree

Parties are more enjoyable when a person is smoking

Strongly disagree ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ Strongly agree

People look up to those who smoke

Strongly disagree ___1___ : ___2___ : ___3___ : ___4___ : ___5___ : ___6___ : ___7___ Strongly agree

Smoking makes a person feel older or more mature

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

Hanging out with friends is more fun if everyone is smoking

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

Most popular people smoke cigarettes

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

Smoking burns a person's throat

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

Smoking will make a person cough

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

Smoking makes people look dumb

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

Smoking makes a person seem less attractive

Strongly disagree ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___ Strongly agree

If you smoke, circle the number that indicates where you are now in your thinking about quitting smoking. If you don't smoke, leave this question blank.

10 ➡ Taking action to quit (cutting down, enrolling in a program)

9

8 ➡ Starting to think about how to change my smoking patterns

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5 ➡ Think I should quit but not quite ready

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2 ➡ Think I need to consider quitting someday

1

0 ➡ No thought of quitting

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How many times **per week** do you drink soda (don't count diet soda)? _____

How many times **per week** do you exercise or play sports for at least 30 minutes?

0 1 2 3 4 5 6 7

Think about a **typical day**: How many hours do you watch TV or play video games?

0 1 2 3 4 5 6 7 8 9 10 11 12

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worthless : ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: valuable

enjoyable : ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: unenjoyable

VITA

Holly J. Mata entered the PhD program in Interdisciplinary Health Sciences at The University of Texas at El Paso in the fall of 2007 and successfully defended her dissertation on September 6, 2011. Prior to enrolling at UTEP, she was a middle school guidance counselor and taught undergraduate Psychology courses for Park University and Central Texas College at Holloman AFB, NM. She has continued to teach throughout her time at UTEP, and enjoys working with her military students.

Holly Mata earned her MS in Counseling and Psychology (Clinical Mental Health) from Troy University and is a Licensed School Counselor (NM) and a Certified Health Education Specialist. For the past two years, she has been the Research Associate with the Community Engagement and Outreach Core of the Hispanic Health Disparities Research Center, facilitating community/academic collaboration and working with undergraduate and graduate student health educators. She has presented and published regionally and nationally on border health issues, social justice approaches to health equity, and cultural influences on substance use behavior. Holly enjoys numerous collaborations with community, student, and faculty colleagues, and loves the opportunities she has to mentor students in their health promotion practicum.

Holly is active in the Society for Public Health Education at the local and national levels, and is also a member of the American Public Health Association and the International Neuroethics Society. She is currently involved in research with students and faculty at UTEP in the Department of Public Health Sciences and the Department of Philosophy, and also collaborates with faculty from the UT Houston School of Public Health and Texas Tech University Health Sciences Center.