LGBTQ Adolescent Smoking:

A Social Media Approach to Primary Smoking Prevention

By

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Submitted to the School of Nursing and The Graduate Faculty of the University of Kansas in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice.

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11 February 2019

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Date Project Proposal Accepted

The DNP Project committee for Jason Gordon Gray certifies that this is the approved version of the following DNP Project:

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Abstract

Objective This paper briefly reviews the literature about increased smoking among lesbian, gay, bisexual, transgender, and queer (LGBTQ) adolescents and evaluates both the deployment of a primary smoking prevention intervention and the surveying methodology used to query LGBTQ adolescents. *Methods* The authors designed an educational intervention with three components, including education about the long-term effects of smoking and how the tobacco industry has targeted the LGBTQ community; a guided discussion about select images and messages that normalize smoking among the LGBTQ community; and a group activity to storyboard, or draw and write, primary smoking prevention messages designed for distribution on social media platforms. Items evaluated in pre- and post-questionnaires included basic demographics, sexual orientation and gender identity, smoking and tobacco-related behaviors, curiosity about smoking, and goal-directed behavior (or hope). *Results* Participants (n = 9) in this pilot project demonstrated increased smoking and tobacco-related behaviors than previously reported in the literature. Statistically significant changes in pre- and post-questionnaire items emerged for goal-directed behavior. Low non-response to questionnaire items used in this project was evident. *Conclusion* A lack of primary smoking prevention interventions among LGBTQ adolescents make this project worthy of further examination, though the authors recommend that deployment of this intervention would be best accomplished in collaboration with a formal support group structure such as Gay-Straight Alliances.

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Casual experimentation with smoking, taking one puff or smoking one cigarette at young ages has been shown to be predictive of future tobacco habituation (Azagba, Baskerville, & Minaker, 2015; Doubeni, Reed, & DiFranza, 2010). LGBTQ youth experiment with cigarettes both more frequently and at younger ages than their straight peers (Kann et al., 2015; Newcomb, Heinz, Birkett, & Mustanski, 2014). The consequences of early cigarette experimentation can be seen in LGBTQ adults, who appear to sustain proportionally higher smoking rates than heterosexual referents (Buchting et al., 2017; Jamal et al., 2016; Smalley, Warren, & Barefoot, 2016). Because the long-range, deleterious effects of cigarette smoking are well documented as the leading, preventable cause of morbidity and mortality in the United States (US Department of Health and Human Services, 2014), early primary prevention is critical to mitigate healthcare disparities among this vulnerable population.

Research has consistently demonstrated that sexual and gender minority (SGM) adolescents and young adults have increased risks for smoking cigarettes compared to their straight peers (Azagba, Asbridge, Langille, & Baskerville, 2014; Corliss et al., 2013; Coulter, Bersamin, Russell, & Mair, 2018). The high prevalence of smoking behaviors among this population has led to a body of research to identify contributing risk factors (Newcomb et al., 2014). Investigators who examined these risks largely based their work on Minority Stress Theory (Hendricks & Testa, 2012; Meyer, 2003) that has helped to explain substance use among LGBTQ persons in the context of prolonged exposure to external and internal stressors. Additionally, targeted marketing to LGBTQ persons, including specific efforts to reach SGM youth by tobacco companies, was found to be an independent risk factor associated with greater cigarette consumption (Smith, Thomson, Offen, & Malone, 2008; Stevens, Carlson, & Hinman, 2004). While federal and state legislation has made marketing and advertising channels for

tobacco promotion increasingly restrictive (Family Smoking Prevention and Tobacco Control Act of 2009; National Association of Attorneys General, 1999; Public Health Cigarette Smoking Act of 1969), cigarette companies have adapted to these restrictions by engaging potential customers on social media, a strategy which appeared to increase the favorable attitudes towards smoking among youth (Cavazos-Rehg, Krauss, Spitznagel, Grucza, & Bierut, 2014).

The literature examining primary prevention interventions for smoking experimentation and uptake among SGM youth is scarce (Baskerville et al., 2017). There is evidence of protective influences suggesting that social supports were an important preventative factor for smoking behaviors among SGM youth, particularly supportive families (McConnell, Birkett, & Mustanski, 2016). Disclosure of sexual orientation to family members, however, is not always practical or desired by SGM adolescents due to --often well-placed-- fears of rejection, displacement, and abuse (Durso & Gates, 2012; Krause et al., 2016; Puckett, Woodward, Mereish, & Pantalone, 2015). In lieu of familial support, peer-to-peer affiliation and school connectedness demonstrated some protective influences for this population (Eisenberg et al., 2017; Poteat, Calzo, & Yoshikawa, 2016; Tunac De Pedro, Esqueda, & Gilreath, 2017).

Social media platforms have also been identified as an important avenue for adolescent SGM in both identity formation and sources of support (Craig & McInroy, 2014; Craig, McInroy, McCready, & Alaggia, 2015). Social media may also be an important strategy to consider when developing and marketing prevention messaging among the difficult to reach LGBTQ adolescent population (Ybarra, Liu, Prescott, Phillips, & Mustanski, 2018). Peer education, media advocacy, social marketing, and setting-based approaches were shown to be effective strategies to pursue for smoking prevention (Goleccha, 2016), all of which may be adapted for use with social media platforms. However, to best communicate primary smoking

prevention messaging, LGBTQ community members should be included and integral to the creation of marketing materials (Remafedi & Carol, 2005).

These important findings lead to the following related question: "For sexual and gender minority youth, does participation in creating peer-to-peer, primary smoking prevention messaging decrease the favorable attitudes and perceptions of smoking?" The purpose of this project was to begin to address the gap in primary smoking prevention literature among this population with three specific aims:

1. To understand the nature and scope of SGM adolescent smoking through a review of the literature as well as the literature regarding risk and protective influences that have been linked to smoking behaviors among this vulnerable population.
2. To design and implement an evidence-based educational health promotion intervention pilot program, based on the findings from the review of literature and national recommendations.
3. To evaluate the querying methodology used in this pilot project to determine if questionnaire items were acceptable and relevant to participants so that if deployed on a larger scale, researchers may glean important data to better understand the vulnerable LGBTQ youth population.

Review of the Literature

In 2010, the National Academy of Medicine (NAM; formally the Institute of Medicine [IOM]) appointed a committee to exam the health of the LGBT community and issued a report with recommendations to address disparities in access, care, and research among SGM. The Committee on LGBT Health Issues and Research Gaps and Opportunities recognized increased risks and prevalence of mental health issues, obesity, cardiovascular and communicable diseases,

cancer, and substance use (IOM, 2011). However, they cautioned that constraints in study methodologies limited generalizability among this population. The authors asserted that most research concerning LGBT health was focused on mental health morbidity, including, depression, anxiety, suicidality, eating disorders, and substance use. As these are the best-understood phenomena, they provide a more robust opportunity to design health-promoting interventions for SGM persons.

Sexual and Gender Minority Cigarette Smoking Trends

Sexual and gender minority youth have consistently demonstrated increased risk for smoking behaviors across multiple measures. Studies have described increased odds of current smoking, defined as smoking one or more cigarettes within 30 days, among sexual orientation minority adolescents compared to straight adolescents (Azagba et al., 2014; Corliss et al., 2013). Greater incidence of LGB adolescents having ever tried smoking cigarettes compared to straight peers has also been reported (Corliss et al., 2014; Kann et al., 2015). Additionally, adolescents reporting mostly or completely homosexual, bisexual, and mostly heterosexual attractions compared to peers who report exclusively opposite-sex attractions demonstrated younger ages of smoking experimentation and routine cigarette consumption (Corliss et al., 2013; Kann et al., 2015; Newcomb et al., 2014).

Earlier ages of smoking experimentation has been found to be a powerful predictor of future smoking behaviors among all adolescents. Doubeni et al. (2010) found that most adolescents who reported inhaling from a cigarette did so at least once a month (62%) and that participant risk for developing symptoms of nicotine addiction was 9.9 times higher than among less frequent smokers. Additionally, Zhan, Dierker, Rose, Selya, and Mermelstein (2012) found that the odds that cigarette consumption had increased were greater among less frequent smokers

and that participants reported better functioning in the morning when compared to daily smokers. These findings suggested accelerated smoking behaviors and adoption of routine cigarette smoking related to nicotine dependence among infrequent adolescent smokers and may be contextually important to LGBTQ youth as described above.

Research regarding smoking prevalence and risk among transgender men and women has demonstrated variable results. One in four transgender adults reported current smoking in a recent national survey (Shires & Jaffee, 2016) and another study found the risk of current smoking among transgender adults was 2.1 times greater compared to cisgender adults (Buchting et al., 2017). On the other hand, Meyer, Brown, Herman, Reisner, and Bockting (2017) found no differences in current smoking among transgender men and women compared to cisgender adults. Researchers have begun to identify increased risk for smoking behaviors among adolescent gender identity minorities and have found a range of increased odds for current smoking based on younger ages and grade in school (Coulter et al., 2018).

Intersectionality of LGBT Smoking Risks

Sexual orientation and gender identity measures should be included in population-based national surveys so that concepts of intersectionality may also be applied on a broad scale to SGM persons (IOM, 2011). Rather than viewing SGM health-related risks solely through the lens of sexual orientation, intersectionality attempts to describe interrelated variables such as gender, race/ethnicity, socioeconomic status, and regional residence (among other variables) as coexistent factors that influence health behaviors. For example, African American and Asian Pacific Islander adolescents who identify as sexual orientation minorities have increased risk for smoking compared to Caucasian sexual orientation minority peers (Corliss et al., 2014).

Associations between socioeconomic factors and smoking prevalence have been described for some time. Lesbian and bisexual women below the poverty line smoked more than straight women in the same socioeconomic category (Mark et al., 2016). Newcomb et al. (2014) found increased smoking behaviors between SGM and straight adolescents but did not find racial differences in this study; the authors theorized this might be due to the lower socioeconomic characteristics of their setting and sample. Based on these studies it appeared that lower socioeconomic status amplified smoking behaviors among sexual and gender minority adults, though how this impacts LGBTQ adolescents remains unclear.

Another factor regarding increased smoking prevalence was found to be regional location of residence. Persons living in the Midwest region of the U.S. who smoked was greater than other regions (Jamal et al, 2016) as well as LGB adults living in rural areas who were more likely to be current smokers when compared to both urban peers and heterosexual referents (Bennett, McElroy, Johnson, Munk, & Everett, 2015). LGBTQ adolescent smoking by state demonstrated wide variations based on sexual identity (LGB range 16.8 [in Massachusetts] – 34.2% [in West Virginia]) and sexual behavior (only same-sex and bisexual range 23.2 [in California] – 47.2% [in Wyoming]) (Kann et al., 2015). To better tailor smoking prevention interventions and messaging for regional audiences, further study is needed to understand these variations in smoking prevalence among SGM youth.

Though we have a good understanding of how the intersectional concepts briefly discussed above relate to adult risk for smoking, in general, we have a poorer understanding of the impact to SGM men and women. There also appears to be some evidence supporting variations in smoking behaviors between SGM and straight youth based on intersectional characteristics like gender, race, age, and socioeconomic factors related to smoking. Because the

purpose of this project was to develop an educational primary smoking prevention intervention for LGBT youth, what we currently know about risk and protective factors for smoking among this vulnerable population may provide the best opportunity for development until the broader concepts of intersectionality are clearer.

Risk and Protective Factors Related to SGM Adolescent Smoking

The IOM (2011) recommended examining the health behaviors of SGM in the context of Minority Stress Theory as a research priority. Minority Stress Theory (Hendricks & Testa, 2012; Meyer, 2003) helped explain how external stressors (prejudice, stigmatization, and discrimination) led to internal stressors (internalized homophobia, identity concealment, and fear of rejection) and, subsequently, deleterious coping mechanism such as substance abuse, rather than inherent proclivity among LGBTQ persons.

External and internal stressors. External stressors associated with increased smoking experimentation and habituation among LGBTQ adolescents that have been studied include lack of social supports and victimization or bullying. Due to fear of rejection, displacement, and abuse, LGB adolescents may choose to conceal their sexual identities from family (Puckett et al., 2015). Disclosure of sexual orientation and gender identity to families commonly led to adverse outcomes like homelessness, suicidality, psychiatric pathology, and substance misuse and abuse (Ryan, Russell, Huebner, Diaz, & Sanchez, 2010). Additionally, one in three LGBTQ adolescents reported experiencing physical, emotional, and/or sexual abuse by parents and/or other family members following sexual orientation disclosure (Durso & Gates, 2012). These findings likely validate fears of identity disclosure among LGBTQ adolescents when deciding whether to come out (and understandably so).

Another external stressor implicated in increased smoking risk for LGBT adolescents is victimization, such as harassment, physical assault, and property destruction. In-school victimization experienced by SGM youth has previously been shown to be pervasive, 42.6%, and appeared to influence increased smoking among this population (Huebner, Thoma, & Neilands, 2015). Bontempo and D'Augelli (2002) found that adolescents who identified as gay, lesbian or bisexual and reported ten or more victimization events per month were more likely to smoke at least half a pack of cigarettes per day than their heterosexual peers. Anti-LGBT victimization, or gay bashing, also predicted participant affiliation with social groups who were more likely to misuse a range of substances, including cigarettes (Huebner et al., 2015). These findings suggested that protective measures for at-risk LGBT youth in schools should include safe spaces that encourage healthier peer-group interactions, such as the availability of support groups.

To examine the influence of different sources of support for LGBT adolescents in the context of health-related behaviors McConnell et al. (2016) used the Multidimensional Scale for Perceived Social Support. Participants who reported low levels of perceived support from families, peers, and significant others demonstrated the greatest risk of stress-related health outcomes. Conversely, the authors found increased resilience, self-esteem, and enhanced coping mechanisms among adolescents who reported high levels of support in all three categories, which appeared to lead to decreased psychiatric morbidity and substance misuse. Perceived lack of support from families, due to inability/unwillingness or participant concealment of sexual orientation, was moderated by peer and significant other support which provided some protective influence for SGM youth.

Internalized homophobia among men who have sex with men, either gay, bisexual, or "not sure," positively predicted smoking behaviors when paired with psychological distress and

low value for personal health (Holloway et al., 2012). However, internalized homophobia paired with gay community involvement, such as frequent attendance at gay bars, was associated with lower rates of internalized homophobia and increased smoking behaviors (Holloway et al., 2012). This suggested that adoption of routine smoking was normalized as a group behavior among young men who have sex with men based on setting. Rosario, Schrimshaw, and Hunter (2009) when examining risks for increased cigarette use among self-identified "butch" (masculine/androgynous presenting) vs. "femme" (feminine/androgynous presenting) SGM women theorized that femme respondents would show increased smoking compared to butch participants due to internalized homophobia. Instead, the authors found that butch participants demonstrated both internalized homophobia and smoking behaviors at rates greater than femme participants. Though the authors did not make this connection in their report, these findings suggested that prolonged exposure to discrimination, stigmatization, and prejudice consistent with Minority Stress Theory may have influenced negative coping strategies such as substance misuse among butch participants (Meyer, 2003).

Lastly, depression has been shown to be an independent risk factor for future smoking habituation among all adolescents (McKenzie, Olsson, Jorm, Romaniuk, & Patton, 2010). SGM youth, who have previously demonstrated higher rates of depression and anxiety than heterosexual peers, may be particularly vulnerable to this risk factor for smoking (Blosnich, Lee, & Horn, 2013). More recently Kann et al. (2015) found an increased number of LGB adolescents who reported feeling sad or hopeless for two or more weeks leading to a disruption of normal activities compared to straight adolescents. Though this finding lacks a clinical diagnosis of depression, it suggests symptomology of anhedonia which is consistent with depression diagnoses. Additionally, negative reactions to sexual identity disclosure by LGBT adolescents

predicted both increased depressive symptoms and substance misuse, including smoking (Rosario et al., 2009). An important caveat to note is that Rosario et al. (2009) found that increased reports of depression among participants seemed to be a dose response to the overall number of negative reactions to sexual orientation disclosure by peers, adult authorities, and family members. This finding underscores the need for social platforms for SGM youth to explore sexual identity and express themselves in a positive, supportive environment.

Social support and social media. A recent systematic review of the literature suggested that SGM youth who reported better support systems had fewer negative psychiatric outcomes, including depression, anxiety, and substance abuse (McDonald, 2018). An example of this was provided by Tunac De Pedro et al. (2017) who conducted a secondary analysis of the California Healthy Kids Survey to evaluate risks for substance use in the context of participants' perceptions of broad school climate (School Connectedness Scale) and the presence of supportive faculty or staff (Adult Support Scale). They found decreased odds of smoking among SGM youth who reported higher levels of school connectedness and the presence of at least one concerned adult. Combined with the findings of McConnell, Birkett, and Mustanski (2015) described above, in-person social supports for SGM youth appear to be important moderators of smoking behaviors. Social media may also influence the health behaviors of SGM youth.

Exposure to cigarette advertisements through social media channels has been shown to influence the positive perceptions of smoking while simultaneously mitigating negative perceptions (Cavazos-Rehg et al., 2014). Patel, Masyukova, Sutton, and Horvath (2016) found ubiquitous and frequent use of social media among SGM males and transgender females related to risky sexual behavior. Every participant in this study reported using social media and 87.3% reported accessing these sites multiple times daily. The authors suggested that the potential for

leveraging social media to provide education and prevention interventions was ripe among this population. Recruitment through Facebook and a subsequent text messaging intervention among young men who have sex with men improved the use of HIV transmission prevention strategies, particularly among youth who had not experienced sexual debut (Ybarra et al., 2018). Though not related to cigarette use, these findings suggested that early deployment of social media interventions may be useful for other prevention efforts.

Social media channels have previously been demonstrated to assist and support SGM youth in identity formation by providing a resource for information, the ability for participants to find likeness among peers, and facilitating the coming out process (Craig & McInroy, 2014). In a later study, Craig et al. (2015) found that resilience among LGBTQ youth was enhanced via media exposure to positive messaging about sexual and gender minorities by providing youth an avenue towards coping, self-efficacy, advocacy (or fighting back), and finding and fostering community. Both of these studies recommend a social media approach for LGBTQ adolescents to find much needed sources of support.

Exposure to and awareness of smoking cessation marketing campaigns were found to be equal between LGBTQ and straight adults (Fallin, Lee, Bennett, & Goodin, 2016). However, the authors found that LGBTQ adults make fewer attempts to quit smoking. The authors suggested that this discrepancy may be related to a lack of LGBT-specific messaging. To best-position prevention and cessation marketing campaigns meant to influence the LGBTQ community members of the community want to (and should) be integral in their creation (Remafedi & Carol, 2005).

Though not evaluated specifically for the unique needs of sexual and gender minorities, Goleccha (2016) provided good advice for smoking prevention strategies that included, in part,

peer education, media advocacy, social marketing, and settings-based approaches. The author found that peer-to-peer education reduced smoking uptake across multiple studies. Also recommended was media advocacy which referred in this study to mass communication with the intent to change public perception and policy-making decisions. Social marketing as described in this study may be the most applicable prevention strategy for the SGM population. Per the author, the intent of social marketing is to generate sustainable changes in perception and behavior by creating, communicating, and delivering values-based messaging to target audiences. However, it is unclear how marketing efforts regarding smoking cessation and prevention were inclusive of LGBTQ persons to assure that messaging was leveraged to promote the unique needs of this community.

Tobacco industry marketing. In 1998, as a component of the Master Service Agreement, tobacco companies were forced to release internal documents related to marketing efforts targeting vulnerable populations (Stevens et al., 2004). Review of these documents uncovered Project Sub-Culture and Urban Marketing, internally referred to as Project SCUM, that detailed the marketing blueprint of the R. J. Reynolds Company in developing the LGBTQ community as a loyal consumer base. Target marketing of specific populations has been associated with the development of enhanced community identity, independent of messaging, which was true in the context of normalized cigarette use in the LGBTQ community (Smith et al., 2008). A large portion of the LGBTQ community, 70%, were aware of advertising and promotional salvos by the tobacco industry and acknowledged the effectiveness of their efforts as contributing to increased smoking among their community (Remafedi, 2007). Furthermore, Dilley, Spigner, Boysun, Dent, and Pizacani (2008) found that LGB men and women were more receptive to marketing efforts by the tobacco industry than heterosexual participants.

In summary, research has consistently described risks for increased smoking among SGM adolescents, including, intersectional concepts like race, socioeconomic status, regional variations, and age; external and internal stressors consistent with Minority Stress Theory; and targeted marketing by the tobacco industry. Our understanding of the extent to which these interrelated concepts play a role in risk for smoking among LGBTQ youth remains limited but warrant consideration for primary prevention interventions. Specifically, more recent attention in the literature of the importance of social supports to the physical and emotional well-being of SGM youth makes a targeted social media intervention approach worthy of investigation. LGBTQ persons utilizing similar, targeted techniques as the tobacco industry to instead normalize non-smoking behaviors among their peers may be equally effective with a social marketing approach.

Best-Practices for Measuring Sexual and Gender Identity

In their scoping review, the IOM (2011) asserted that three primary concerns related to study of the LGBT community were prominent in the existing literature, including, difficulty in defining the population, reluctance of participants to self-identify/select sexual orientation measures on surveys and questionnaires, and constraints in data collection that rendered small sample sizes from which to draw generalizable conclusions. For purposes of defining SGM populations for study, the acronym LGBT is frequently employed and was the approach taken by the IOM in their report. A more current acronym used by the community and advocated for by the Gay and Lesbian Alliance Against Defamation (GLAAD) (2016) is LGBTQ, where Q stands for either “Queer” or “Questioning.” Yet, LGBTQ may not encompass how SGM persons identify for purposes of self-selection in data collection; the acronym may extend to

LGBTQQIA+ and beyond (AlphysAssistant, 2017, March 1). How an individual identifies, however, is one of only three dimensions of sexual orientation.

Based on the seminal work of Sell (1997), sexual orientation is widely endorsed as the interplay of three phenomena: sexual attraction, behavior, and identity. Though none of these phenomena are inherently implicated in smoking risks among LGBTQ youth, sources of conflict associated with sexual orientation variables may play a role. Igartua, Thombs, Burgos, and Montoro (2009) found that among participants who identified as not-exclusively-heterosexual in one or more dimension, 71% of students reported same-gender attraction compared to 52% of respondents who reported gay, lesbian, or bisexual identity and 31% reporting having engaged in intimate, same-sex behaviors. While this may simply represent sexual fluidity during identity formation and delay in sexual debut, it also suggests discordance between the dimensions of sexual orientation.

Though SGM subpopulations are frequently grouped together by researchers to achieve statistical power for analysis, doing so may mask important relationships. An example of this was provided by Corliss et al. (2013) who conducted secondary analysis of the Growing Up Today Study (GUTS) data related to SGM adolescents and smoking. The GUTS survey assessed one dimension of participants sexual orientation, attraction, by asking, “Which of the following best describes your feelings?” Possible answers included “completely heterosexual (attracted to persons of the opposite sex), mostly heterosexual, bisexual (equally attracted to men and women), mostly homosexual, completely homosexual (gay/lesbian, attracted to persons of the same sex), and not sure” (p. 214). Participants reporting either “completely” or “mostly” same-sex attractions were combined into gay/lesbian subgroups, bisexual identifying participants served as a second subgroup, and mostly heterosexual identifying persons served as a third

subgroup, all of whom were compared to a completely heterosexual referent. Participants who responded not sure or did not respond to the survey item were excluded from analysis.

As reported above, Corliss et al. (2013) found increased odds of current smoking behavior among SGM youth. However, when stratified by gender and sexual attraction, the relative risk that males reported current smoking remained equal compared to females who had increased risk for smoking based on sexual attraction. The relationship between gender and sexual attraction for increased risk of smoking has been described in other research, as well (Azagba et al., 2014). Both studies discussed above point to the need for large-scale analysis of the SGM adolescent population to better understand risks for smoking so that primary prevention efforts may be better designed to reach the most vulnerable among an at-risk population.

While Corliss et al. (2013) and Azagba et al. (2014) revealed differences for smoking between genders of SGM persons, the authors of these studies were only able to analyze a single measure of sexual orientation, attraction, in their secondary analyses. They were not alone in this limitation. In a systematic review of the literature regarding cigarette consumption among SGM adolescents, Blosnich et al. (2013) found most studies measured sexual orientation solely as identity. According to the authors, fewer studies examined the influence of sexual behavior and gender attraction and only one study measured all three dimensions of sexual orientation. However, operationalization of sexual orientation measures among SGM youth needs to be carefully considered due to concerns for widely variable results between sexual identity and behavior when analyzed as combined and individual variables in statistical models (Matthews, Blosnich, Farmer, & Adams, 2014). The dimensions of sexuality should not be used as proxies, one for another, if we are to more fully understand risks for smoking among the adolescent SGM

population. Doing so may conceal important relationships related to risk for smoking behaviors among SGM youth.

The Sexual Minority Assessment Research Team ([SMART], 2009) provided guidance and recommendations for best-practices in measuring sexual orientation of study participants that incorporates the three dimensions to better elucidate characteristics among SGM participants. The authors recommended sexual identity measures for adolescents should only include options for: "heterosexual or straight," "lesbian or gay," and "bisexual." Querying participants in this way was determined to be less confusing for the target population and reduced non-response rates in general population surveys. They also recommended including questionnaire items for gender attraction and sexual behavior with Likert-scale type response options to incorporate a wider spectrum of sexual orientation variables for analysis.

Similar to SMART recommendations, the Gender Identity in the U.S. Surveillance group ([GenIUSS], 2014) provided guidance for best-practices in querying participants about gender identity. The authors recommend a two-step approach for surveying adults, which includes (a) "What sex were you assigned at birth, on your original birth certificate"; and (b) "How do you describe yourself?" with Likert-style options (p. 10). They additionally found a promising question regarding gender identity to be, "What is your current gender identity? (Check all that apply)" with selection options of male, female, trans male/trans man, trans female/trans woman, genderqueer/gender non-conforming, and different identity (with the option to write in personal identity) (p. 10). These recommendations, like SMART, were based on missing and/or non-response rates in previously published data. The authors were not able to recommend a two-step querying method among adolescents due to lack of relevant research suggesting its' use. They did, however, recommend that the questionnaire items related to gender identity posed to

adolescents avoid complex verbiage and sentence structure so that they were easily understood among this population.

Methods

Based on risk and protective influences on smoking behaviors among SGM youth described above, a smoking prevention pilot project was developed that guided participants in creating messaging that could be used on social media channels. The intervention included education about the long-term effects of smoking and how the tobacco industry has targeted the LGBTQ community, a facilitator-led discussion of selected images and messages used by the tobacco industry to promote smoking among the LGBTQ community, and a group storyboard activity wherein participants brainstormed and created primary smoking prevention messages in opposition to tobacco-industry messaging.

Theoretical Framework

The theoretical framework that guided this project design was the Health Promotion Model (HPM) (Pender, Murdaugh, & Parsons, 2015). Systematic review demonstrated that the HPM was one of the most applicable and frequently used nursing theories guiding research with adolescents (Montgomery, 2002). Pender's revised HPM is based on three interacting concepts, including an individual's own characteristics and personal experiences, cognition and affect specific to behavior, and the behavioral outcome. Included among individual characteristics are "prior related behavior" and "personal factors; biological, psychological, and sociocultural" (see Figure 1). Prior related behaviors support both positive and negative habit formation and automaticity related to frequency of engaging in specific activities, such as tobacco usage or an exercise program. Personal factors may include biological (age and pubertal status), psychological (self-esteem and self-motivation), and sociocultural (race, ethnicity, and

acculturation). Components of both prior related behavior and personal factors helped researchers explain the increased risk for smoking among LGBT adolescents.

According to Pender et al. (2015), behavior specific cognitions and affect serve as the core, testable components of the HPM . Included in this concept are activity-related affect, perceived self-efficacy, perceived barriers to action, perceived benefits of action, interpersonal influences, and situational influences (see Figure 1). Interpersonal influences regarding health behaviors are primarily motivated by family, peers, and health care providers. Included in this concept are social norms, social support, and modeled behavior. As previously discussed, tobacco industry marketing portrays tobacco use as normal behavior and may influence SGM adolescents. Conversely, increased social support from family, peers, and supportive adults appears to have a protective influence against tobacco usage. Situational influences describe concepts that facilitate or impede behavior, including perception of available options, demand characteristics, and characteristics of the environment. According to Pender et al. (2015), "Individuals are drawn to and perform more competently in situations or environmental contexts in which they feel compatible, related, and safe and reassured" (p. 38). Perceived self-efficacy and activity-related affect, according to the HPM, are reciprocal concepts that affect both an individual's perception of barriers to action and perceived benefit of action. The HPM proposes that the greater the positive emotional response to a particular action, the greater the individual's perception of initiating or maintaining behavior. This may result in both positive and negative health outcomes, like the adolescent who feels that they fit in to their social group better by smoking is positively reinforced to smoke. Theoretically, the adolescent who is supported by family, peers, and supportive adults to avoid smoking is positively reinforced to abstain from using tobacco products. Propositions of the HPM that guided this project design include:

> Positive affect toward a behavior results in greater perceived self-efficacy, which can in turn, result in increased positive affect. When positive emotions or affect are associated with a behavior, the probability of commitment and action is increased. Families, peers, and health care providers are important sources of interpersonal influence that can increase or decrease commitment to and engagement in health-promoting behavior. Situational influences in the external environment can increase or decrease commitment to or participation in health-promoting behavior. (Pender, 2011, p. 5 –6)

Based on the HPM and review of the literature, assumptions made by the author of this paper that guided the project design were as follows: (a) LGBTQ adolescents are at increased risk for smoking; (b) little is known about primary prevention of smoking in this vulnerable population; (c) social supports have previously demonstrated protective influences against LGBTQ adolescent smoking; (d) social media has the potential to be a powerful method of communication for health-based interventions; and (e) LGBTQ adolescents may benefit from inclusion in the creation of health promotion messages.

Human Subjects

An expedited review by the authors' Institutional Review Board (IRB) was conducted due to proposed research with a thrice vulnerable population (adolescent participants, sexual and gender minorities, and potential adolescent cigarette smokers) and approval was obtained. The project leader pursued and was granted both a waiver of parental consent and written participant assent requirements due to increased risks for SGM participants related to unintentional disclosure of sexual orientation and potential tobacco usage. This waiver request was consistent with the Office for Human Research Protections of the U.S. Department of Health and Human Services recommendations for the protection of vulnerable minors involved in research,

specifically statutes 45 CFR 46.116 (c) and (d). The project leader additionally requested and was granted a waiver of written participant assent. Rather, verbal assent was granted to reduce participant risk of unintentional sexual orientation disclosure, consistent with 45 CFR 46.408(a). As an added layer of protection, potential participants were given time to consider participation in this pilot project during recruitment efforts by the Project Leader as outlined below.

Sample and Recruitment

This pilot project used a convenience sample of SGM adolescents in an urban, midwestern setting. The participants in this study were recruited by a snowball strategy, which started by identifying potential participants through word of mouth among colleagues. When potential participants were identified, the project leader requested an in-person meeting to describe the pilot project and encourage identification of peers who might also be interested in participating. When candidates indicated that they might know of additional peers who would be interested in participating, they were given a recruitment letter as a means of communicating with the project leader. To protect anonymity during this process, the recruitment letter avoided verbiage specific to sexuality and included the project leader's email and phone number so that interested parties could contact him in a way they deemed safest to prevent unintentional disclosure of their sexual orientation. When contacted by additional community members, the project leader explained the purpose and aims of the pilot project and provided an opportunity for potential participants to ask questions so that they could make informed decisions to participate or not in this project.

To assess this pilot project, a target number of five to ten participants was estimated to be adequate. Recruitment of participants concluded when fifteen participants agreed to participate, assuming there would be some drop-out on the dates of deployment.

Procedures

The pilot project was designed to take place during one, 90 – 120-minute session and each session began with an introduction to the project leader and the purpose of the intervention, including verbal assent of participants. Following the introduction and assent procedures, pre-intervention questionnaires were given to participants. Participants were then given a brief educational presentation about the long-term effects of smoking and how the tobacco industry has targeted marketing efforts at the LGBT community, particularly adolescents. The second component of this intervention was a facilitated group discussion about select advertising images and messages used by the tobacco industry to identify both overt and hidden persuasive messaging that encouraged or normalized smoking among the LGBTQ community. The final part of the pilot project was a group activity to storyboard, or draw and write, opposing smoking prevention messages based on tobacco-industry marketing and advertising. Each session ended with the administration of post-intervention questionnaires, which were collected immediately following the sessions. Though it was beyond the scope of this pilot project, participants were encouraged to make digital media with the group-developed smoking prevention messages for distribution on social media platforms.

Data Collection and Measures

To maintain participant confidentiality, each person was given a packet with both questionnaires that were pre-labeled with serialized, two-digit numbers. The pre-intervention questionnaire included 33-items designed to measure demographic, sexual orientation, smoking behaviors and attitudes, and goal-directed behaviors. Post-intervention questionnaires included 17-items to re-measure smoking behaviors and attitudes and goal-directed behaviors with the addition of three open-ended questions to gauge how participants perceived the intervention.

Demographic. To compare with previous research about smoking behaviors in the LGBT adolescent population and embrace intersectional concepts related to smoking behaviors, basic demographics were included, specifically, age, years of education completed, race, ethnicity, and highest level of parental education attained (see Appendix A).

Sexual orientation and gender identity. Sexuality questionnaire items were consistent with recommendations by SMART (2009) and included items for sexual identity, gender attraction, and sexual behavior (see Appendix A). Gender identity questionnaire items were consistent with recommendations by the The GenIUSS Group (2014). Though reliability and validity studies have not been conducted on these questionnaire items, recommendations by SMART were based on previous research that evaluated non-response rates to sensitive questions regarding adolescent sexuality. The GenIUSS Group was unable to endorse a two-step process for measuring gender identity among adolescents; the authors of this paper chose to query participants based on recommendations for adult study participants with rewording of specific items to present participants with easily understood options (see Appendix A).

Smoking behaviors and attitudes. To assess use of tobacco-related products, a portion of the Youth Risk Behavior Survey (YRBS) was used (Centers for Disease Control and Prevention, 2017) (see Appendix B). The YRBS was developed by the Centers for Disease Control to assess six categories of adolescent health known to impact morbidity and mortality, including, "unintentional injuries and violence; tobacco use; alcohol and other drug use; sexual behaviors that contribute to unintended pregnancy and sexually transmitted disease, including human immunodeficiency virus infection; dietary behaviors; and physical activity" (Brener et al., 2002, p. 336). Tobacco-related questionnaire items from the YRBS were used in their entirety and all other questions were excluded from this project. The reliability of tobacco-related

questions included in the YRBS demonstrated kappa statistic ranges between 60.4 to 85.7%, suggesting moderate to substantial reliability (Brener et al., 2002).

The Adolescent Smoking Curiosity Scale (ASCOS) is a newly-created, seven-item measure of smoking-related attitudes (see Appendix C) developed by Khalil, Calabro, and Prokhorov (2018) which demonstrated good validity and reliability. The purpose of this measurement tool is to predict susceptibility to smoking experimentation. Multiple regression analysis of known antecedents to smoking demonstrated good Pearson correlation coefficients (r) for five of six items, including, temptation to try smoking ($r = 0.43$, $p < 0.001$), number of friends who smoke ($r = 0.26$, $p < 0.01$), agreeing with the pros of smoking ($r = 0.40$, $p < 0.001$), sensation seeking ($r = 0.21$, $p < 0.05$), and depression ($r = 0.29$, $p < 0.01$). Overall reliability of this tool was demonstrated by a Cronbach's alpha of 0.83 with individual scores ranging from 0.80 to 0.83 for the seven individual items. ASCOS was additionally able to predict adolescent susceptibility to smoking cigarettes (OR = 3.40, $p < 0.05$) and cigars (OR = 6.66, $p < 0.01$).

Goal-directed behavior. Consistent with previous research that supported youth agency, or "the belief in one's capacity to initiate and sustain actions" (Poteat, Calzo, & Yoshikawa, 2016, p. 2), the State Hope Scale (SHS) was used (see Appendix D). The SHS was developed to measure goal-directed behavior and the ability for participants to envision pathways to achieve goals (or hope) as a temporal measure rather than an engraved personality characteristic (Snyder et al., 1996). Previous research utilizing this tool with LGBT adolescents who participated in GSAs demonstrated a Cronbach's alpha of 0.91, suggesting excellent reliability among this population.

Participant comments. Open-ended questions were presented to participants in the post-questionnaire to help understand participant experience of the intervention, as designed.

Questions presented to participants were, “What did you like about this activity,” “What would you change about this activity,” and “How will you use the messages and images we worked on today?”

Results

Each session, as described above in our procedures, lasted 120 minutes. The sample for this pilot project (n = 9) was comprised of two, separate community groups; six candidates who agreed to participate during recruitment did not attend. One participant did not complete the post-intervention questionnaire, having left prior to completion of the intervention, and was excluded from repeated measures analysis of both the ASCOS and SHS. The racial makeup of the groups was predominantly white (n = 7) with one participant identifying as multi-racial and one participant identifying as other. No participants identified as having Hispanic/Latino/Spanish ethnicity. The age of participants ranged from 12 to 22 years of age and years of education completed ranged between 7th grade and one year of college with one participant who did not answer the question for years of education completed. For a summary of demographic findings, see Table 1.

Every participant reported an assigned gender at birth of female (n = 9). Most participants currently identified as female (n = 6), with options for transgender (not exclusively male/female) (n = 1) and other (n = 2) also selected by participants. Participants identified as lesbian (n = 2), bisexual (n = 4), and other (n = 3) for sexual identity. Three participants who selected other for sexual identity wrote in pansexual (n = 2) and non-binary (n = 1). Sexual orientation and gender identity findings are reported in Table 2.

The majority of participants in this pilot project (n = 7) reported having ever tried smoking, four of whom took their first puff or smoked their first whole cigarette at ≤ 16 years of

age. Additionally, three participants reported current smoking within 30 days. Though none of the participants reported using other forms of combustible or smokeless tobacco-related products, 66.7% reported having ever tried vapor products. For a complete reporting of tobacco-related data, see Table 3.

No statistically significant relationships were evident when comparing pre- and post-responses between ASCOS questionnaire items (see Table 4). However, side-by-side comparison of participant responses showed a trend towards decreased curiosity. Two items on the SHS suggested significant change in participant perception of goal-directed behavior (see Table 5). There was a significant difference in the repeated scores for "At this time, I am meeting the goals that I have set for myself" ($M = -1.000$, $SD = 1.069$); $t(7) = -2.646$, $p = 0.033$ and trending towards significance was the repeated score for "There are lots of ways around any problem that I am facing now" ($M = -1.125$, $SD = 1.458$); $t(7) = -2.183$, $p = 0.065$.

Feedback largely reflected positive perceptions of the intervention. Responses to the question, "What did you like about this activity," included appreciation of the educational component of the intervention that focused on LGBTQ history (n = 5) and group discussion about how the tobacco industry targeted marketing efforts to their community (n = 3). Most participants suggested that they would not change the intervention as designed (n = 5) for the question, "What would you change about this activity," while two participants indicated that they would like either more examples of tobacco industry advertisements or a concrete starting place as inspiration for the storyboard component of the intervention. Responses to the question, "How will you use the messages and images we worked on today," included intention to discuss what they learned informally with their peers (n = 3) and intent to use the group storyboard activity to create memes for distribution (n = 2) on social media platforms. One participant sent an email to

the authors that included the meme that they created and distributed to their peer group (not shown here due to concerns about copywrite issues with the use of a popular cartoon figure). One participant reported that the intervention was useless information and did not intend to do anything with it.

Discussion

The purpose of this project was to begin addressing the gap in primary smoking prevention literature targeted to SGM adolescents. To achieve this goal, briefly, the authors had three specific aims: (a) to understand the scope and nature of SGM adolescent smoking; (b) to design and implement an evidence-based, smoking prevention pilot program; and (c) to evaluate the querying methodology used to determine if questionnaire items were acceptable and relevant to participants.

The small sample size for this pilot project was not reflective of population characteristics of the United States for race, ethnicity, or gender. This was likely due to both the recruitment strategy and the community make up of each group. The authors of this paper did not expect to approach a representative sample and therefore make no claims as to how the intersectional characteristics described previously may have impacted smoking behaviors of this group. However, until intersectional characteristics of smoking are more evident and able to be leveraged for smoking prevention, messages created by LGBTQ adolescents may better reflect regional and group variations unique to each cohort.

Participants in this pilot project demonstrated increased smoking and tobacco-related behaviors in a number of questionnaire items compared to the most recent data from the CDC regarding sexual minority youth (Kann et al., 2015). Participants in this pilot project reported higher rates for having ever tried smoking, experimenting with cigarette smoking at $\leq$ 13 years of

age, current smoking, and ever having used vapor products compared with CDC data. These findings may also reflect the strategy used to recruit participants, who referred other potential participants; this may have reflected group behaviors among participants who agreed to participate in this pilot project. Additionally, Huebner et al. (2015), as discussed above, reported that in-school victimization predicted affiliation with groups more likely to abuse a range of substances, including cigarettes. We did not collect data for measures related to victimization, harassment, and perception of sources of support, so the extent to which these may have played a part with our sample is unknown.

We did not expect to find any statistically significant changes in either smoking curiosity or goal-directed behavior given our small sample size. However, the SHS was designed to represent a repeated, temporal measure of goal-directed behavior and perceived pathways to achieving goals among participants. Revealing significant changes in pre- and post-questionnaires from this perspective may reflect participant hope after engaging in an intervention designed to increase awareness and group advocacy. Though we did not reveal significant changes related to smoking curiosity, the trend of the data suggested that significant relationships might emerge with a larger sample size.

The querying methodology for this pilot project appeared to be acceptable to participants with very few items left unanswered (n = 2). Our methodology varied from recommendations by SMART (2009) by offering an option for other related to sexual orientation questionnaire items. While participants answered every question for sexual orientation, other response items with written descriptions were used for sexual identity by 33.3% of participants. This suggested that future researchers include an option for other so that participants may provide more nuanced descriptions for personal identity. Participants were also able to find personally acceptable

options for gender identity based on The GenIUSS Group (2014) recommendations for surveying adults. Unlike SMART, The GenIUSS group recommended inclusion of an other option for participants to select with space for written descriptors, which were used by 33.3% of our participants.

The intervention itself was deemed largely acceptable by the participants. Additionally, no one suggested that the questionnaires used were too cumbersome to complete in the open-ended questions designed to explore participant feedback. We believe this intervention may be best deployed among support groups for SGM adolescents, which have been shown to increase both self-esteem and self-efficacy by providing healthy social opportunities in safe environments (Romijnders et al., 2017).

Gay-Straight Alliances (GSA), which are youth-led support groups who primarily provide support, socialization, information, resources, and advocacy for LGBT students along with their supportive peers and educators from Kindergarten through college (Poteat et al., 2016) are ideal groups for implementation of this kind of intervention. Additionally, the Gay and Lesbian Student Educator Network (GLSEN), who provides resources, research, education, and support to students and adults, reported over 6,500 registered Gay-Straight Alliance (GSA) groups in the United States (n.d.), making partnering with this organization ideal for deployment of a primary smoking prevention intervention.

Through formative analysis of transcribed individual interviews of SGM youth, Porta et al. (2017) identified three major themes regarding both access to and participation in GSAs, including, “providing and building community,” “serving as gateways,” and “representing safety.” Gateways, per study participants, were associated with connecting students with supportive adults, i.e. GSA advisors, faculty, and school administrators. As previously described,

the presence of even one supportive adult in the school environment demonstrated reduced smoking behaviors among SGM adolescents (Tunac De Pedro et al., 2017). Additionally, empirical evidence supporting GSA participation was provided by Poteat et al. (2016) who found that GSA members demonstrated improved agency, or, "belief in one's capacity to initiate and sustain actions," in all tested primary functions of youth groups, including information/resources, support/socialization, and advocacy. The authors additionally asserted that improved group structure demonstrated the greatest benefit for the support/socialization and advocacy functions common to support groups. Based on this research, it seems hypothetically likely that an intervention focused on structured, goal-directed behavior for youth advocacy within a GSA merits evaluation in the SGM adolescent population.

It should be noted that this intervention was originally designed to be conducted in a GSA group; this proved to be more difficult than initially anticipated. Having secured approval from school district officials through their Review Board for external researchers, the project leader partnered with a high school GSA. Unfortunately, the intervention was canceled when the faculty advisor abruptly left the school. Other high schools within the district, when approached, were not willing to collaborate with the project leader due to concerns about parental consent for students under the age of 18. Our experience was analogous with those previously reported when attempting to work with vulnerable sexual and gender minority adolescents based on regulatory and ethical considerations (Fisher & Mustanski, 2014; Mustanski, 2011).

One constraint for delivering this intervention in scheduled GSA meetings would be time. Each session in our pilot project took 120 minutes, which may exceed the allotted time for scheduled student group activities. An approach to resolving this problem would be to organize the intervention slightly differently into two sessions. The first session could include the pre-

questionnaire, the educational component, the facilitated group discussion about tobacco-industry marketing, and a brief introduction to the storyboard activity. The second session could then be devoted to the storyboard activity and close with the post-questionnaire. This approach may be better, in fact, based on participant feedback from our pilot project as it would allow time for participants to think about what messages and images they may want to use when generating their own media.

Another potential limitation would be a live facilitator at each participating location. This would be difficult to achieve and possibly effect the outcomes of the intervention, as designed, without additional training and support. This weakness could be addressed in several ways. Our recommendation would be to offer this intervention as a pre-recorded toolkit that interested groups may use as source material. This video solution may best be combined with a user manual that expands speaker notes to provide examples of questions that facilitate group discussion. Another option would be to provide conference attendees train-the-trainer sessions with an opportunity to explore the intervention tools and practice facilitation skills. The best-case scenario for this approach, based on the benefits of group advocacy in GSAs discussed above, would be aligning these train-the-trainer sessions with GLSEN or GSA conferences so that SGM adolescent participants may lead smoking prevention efforts in their groups. This approach is also consistent with peer-to-peer education for smoking prevention which has been identified as a successful strategy to employ (Goleccha, 2016). Additionally, GSA-initiated, youth-led interventions would unlikely garner the same scrutiny as an outside researcher attempting to work with these vulnerable students. A third option would be to facilitate the intervention, as currently designed, for a group of adolescent SGM who were attending a GLSEN or GSA conference.

The strategy of using paper and pencil questionnaires, however, would likely cause unnecessary complications were this intervention to be extended to a larger audience at various locations. Based on the low non-response rates in this pilot project, our recommendation would be the development of a web-based database stemming from this process. Further protections for individual participants that ensures their anonymity when utilizing a web-based survey would also need to that considered.

Despite the limitations described above, the lack of primary smoking prevention interventions targeted to school-aged SGM in the literature lends itself to expanding its evaluation and use.

Conclusion

LGBTQ adolescents are at increased risk for smoking compared to their heterosexual peers. Multiple risk and protective factors have been identified that contribute to smoking behaviors among this population. A lack of literature devoted to primary smoking prevention specifically aimed at mitigating smoking behaviors among SGM adolescents places these young people at additional risk and this intervention is the first of its kind, to our knowledge, to address the problem. Furthermore, inclusion of our target population in the creation of social marketing endeavors makes this intervention unique and may give participants a sense of ownership of the process as they advocate for themselves and their peers. The pilot project evaluated in this paper showed promise and a potential way forward for vulnerable LGBTQ youth.

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Appendix A

Demographic and Sexual Orientation Questionnaire

1. Age (in years): _____
2. What class are you currently in?
   - ☐ Freshman
   - ☐ Junior
   - ☐ Senior
3. Are you of Hispanic, Latino, or of Spanish origin?
   - ☐ Yes
   - ☐ No
4. How would you describe yourself?
   - ☐ American Indian or Alaska Native
   - ☐ Asian
   - ☐ Black or African American
   - ☐ Native Hawaiian or Other Pacific Islander
   - ☐ White
   - ☐ Multi-racial
5. What is the highest degree or level of school either of your parents or legal guardian has completed?
   - ☐ Less than a high school diploma
   - ☐ High school degree or equivalent (e.g. GED)
   - ☐ Some college, no degree
   - ☐ Associate degree (e.g. AA, AS)

- ☐ Bachelor's degree (e.g. BA, BS)
- ☐ Master's degree (e.g. MA, MS, Med)
- ☐ Professional degree (e.g. MD, DDS, DVM)
- ☐ Doctorate (e.g. PhD, EdD)

6. What was your assigned gender at birth (gender recorded on your original birth certificate)?
   - ☐ Female,
   - ☐ Male, or
   - ☐ Not sure.
7. To which gender do you most identify?
   - ☐ Female,
   - ☐ Transgender (male to female),
   - ☐ Male,
   - ☐ Transgender (female to male),
   - ☐ Transgender (not exclusively male or female), or
   - ☐ Not sure.
   - ☐ Other: _____
8. Do you consider yourself to be:
   - ☐ Heterosexual or straight,
   - ☐ Gay or Lesbian, or,
   - ☐ Bisexual
   - ☐ Other: _____
9. In the past who have you had sex with?
   - ☐ Males only,

- ☐ females only,
- ☐ both males and females, or
- ☐ I have not had sex

10. People are different in their sexual attraction to other people. Which best describes your feelings? Are you:

- ☐ Only attracted to females?
- ☐ Mostly attracted to females?
- ☐ Equally attracted to females and males?
- ☐ Mostly attracted to males?
- ☐ Only attracted to males?
- ☐ Not sure?

Appendix B

2017 Youth Risk Behavior Survey (YRBS) (Tobacco-Related Measures)

The next 4 questions ask about cigarette smoking.

1. Have you ever tried cigarette smoking, even one or two puffs?

    Yes

    No

2. How old were you when you first tried cigarette smoking, even one or two puffs?

    I have never tried cigarette smoking, not even one or two puffs

    8 years old or younger

    9 or 10 years old

    11 or 12 years old

    13 or 14 years old

    15 or 16 years old

    17 years old or older

3. During the past 30 days, on how many days did you smoke cigarettes?

    0 days

    1 or 2 days

    3 to 5 days

    6 to 9 days

    10 to 19 days

    20 to 29 days

    All 30 days

4. During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?

    □ I did not smoke cigarettes during the past 30 days

    □ Less than 1 cigarette per day

    □ 1 cigarette per day

    □ to 5 cigarettes per day

    □ 6 to 10 cigarettes per day

    □ 11 to 20 cigarettes per day

    □ More than 20 cigarettes per day

The next 3 questions ask about electronic vapor products, such as blu, NJOY, Vuse, MarkTen, Logic, Vapin Plus, eGo, and Halo. Electronic vapor products include ecigarettes, e-cigars, e-pipes, vape pipes, vaping pens, e-hookahs, and hookah pens.

5. Have you ever used an electronic vapor product?

    □ Yes

    □ No

6. During the past 30 days, on how many days did you use an electronic vapor product?

    □ 0 days

    □ 1 or 2 days

    □ 3 to 5 days

    □ 6 to 9 days

    □ 10 to 19 days

    □ 20 to 29 days

    □ All 30 days

7. During the past 30 days, how did you usually get your own electronic vapor products? (Select only one response.)

   - ☐ I did not use any electronic vapor products during the past 30 days
   - ☐ I bought them in a store such as a convenience store, supermarket, discount store, gas station, or vape store
   - ☐ I got them on the Internet
   - ☐ I gave someone else money to buy them for me
   - ☐ I borrowed them from someone else
   - ☐ A person 18 years old or older gave them to me
   - ☐ I took them from a store or another person
   - ☐ I got them some other way

The next 3 questions ask about other tobacco products.

8. During the past 30 days, on how many days did you use chewing tobacco, snuff, dip, snus, or dissolvable tobacco products, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, Copenhagen, Camel Snus, Marlboro Snus, General Snus, Ariva, Stonewall, or Camel Orbs? (Do not count any electronic vapor products.)

   - ☐ 0 days
   - ☐ 1 or 2 days
   - ☐ 3 to 5 days
   - ☐ 6 to 9 days
   - ☐ 10 to 19 days
   - ☐ 20 to 29 days
   - ☐ All 30 days

9. During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars?

   □ 0 days

   □ 1 or 2 days

   □ 3 to 5 days

   □ 6 to 9 days

   □ 10 to 19 days

   □ 20 to 29 days

   □ All 30 days

10. During the past 12 months, did you ever try to quit using all tobacco products, including cigarettes, cigars, smokeless tobacco, shisha or hookah tobacco, and electronic vapor products?

    □ I did not use any tobacco products during the past 12 months

    □ Yes

    □ No

Appendix C

Adolescent Smoking Curiosity Scale (ASCOS)

1. I want to know how a cigarette, a cigar, or a hookah tastes.
   - □ Not at all,
   - □ a little bit,
   - □ somewhat,
   - □ a lot, or
   - □ very much
2. I am interested in knowing how smoking feels.
   - □ Not at all,
   - □ a little bit,
   - □ somewhat,
   - □ a lot, or
   - □ very much
3. I am interested in knowing what effect smoking would have on me.
   - □ Not at all,
   - □ a little bit,
   - □ somewhat,
   - □ a lot, or
   - □ very much
4. I want to know how a cigarette, a cigar, or a hookah feels.
   - □ Not at all,
   - □ a little bit,

- somewhat,
- a lot, or
- very much

5. I am curious to know what is special about smoking.
   - Not at all,
   - a little bit,
   - somewhat,
   - a lot, or
   - very much
6. I am interested in knowing what other people would think of me if I tried smoking.
   - Not at all,
   - a little bit,
   - somewhat,
   - a lot, or
   - very much
7. I am curious to know why other people like smoking.
   - Not at all,
   - a little bit,
   - somewhat,
   - a lot, or
   - very much

Appendix D

The State Hope Scale

Directions: Read each item carefully. Using the scale shown below, please select the number that best describes how you think about yourself right now and put that number in the blank provided. Please take a few moments to focus on yourself and what is going on in your life at this moment. Once you have this "here and now" set, go ahead and answer each item according to the following scale:

1 = Definitely False, 2 = Mostly False, 3 = Somewhat False, 4 = Slightly False,

5 = Slightly True, 6 = Somewhat True, 7 = Mostly True, and 8 = Definitely True.

1. If I should find myself in a jam, I could think of many ways to get out of it. _____
2. At the present time, I am energetically pursuing my goals. _____
3. There are lots of ways around any problem that I am facing now. _____
4. Right now I see myself as being pretty successful. _____
5. I can think of many ways to reach my current goals. _____
6. At this time, I am meeting the goals that I have set for myself. _____

Figure 1. The Health Promotion Model (Revised)

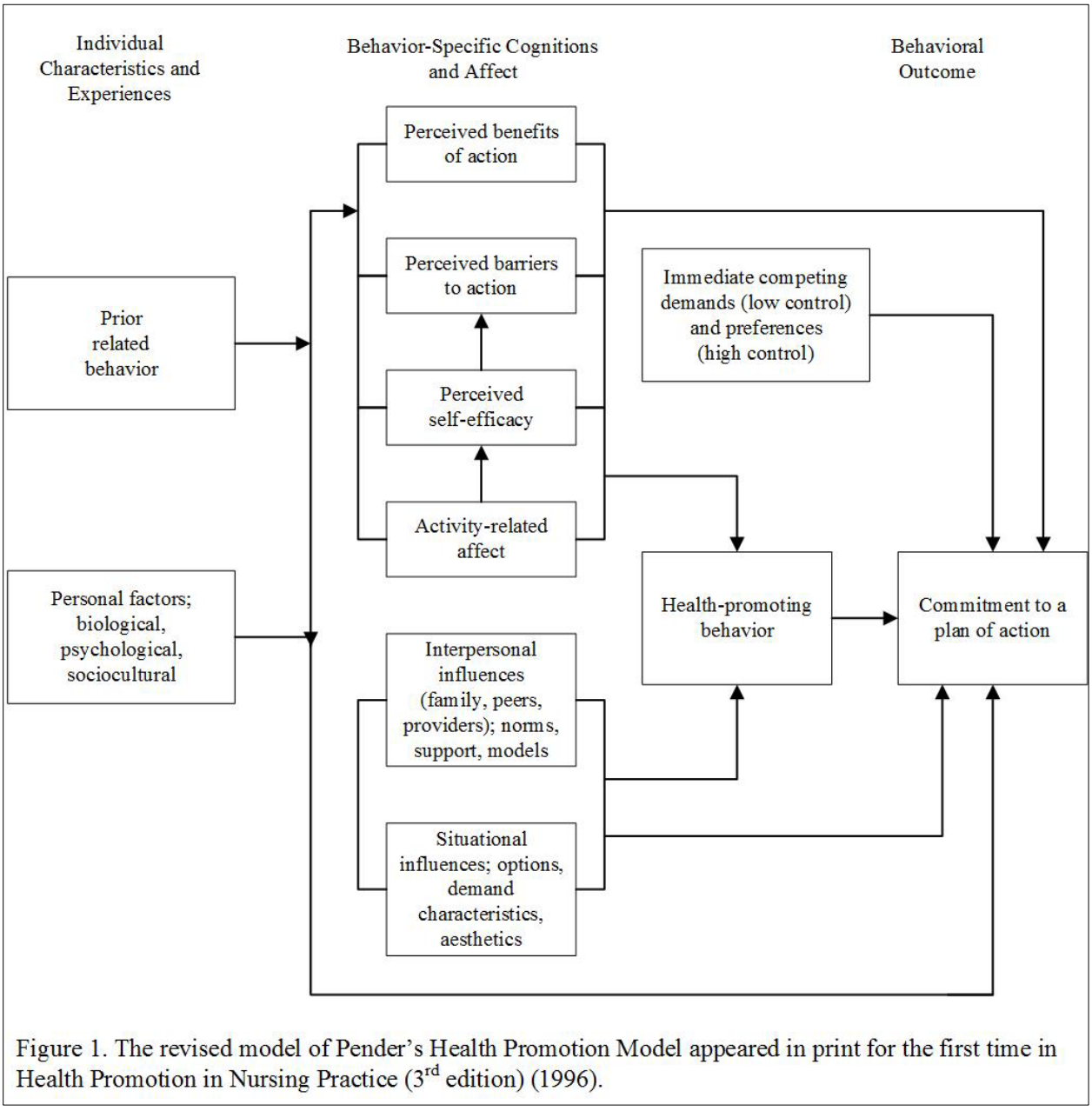

Figure 1. The revised model of Pender's Health Promotion Model appeared in print for the first time in Health Promotion in Nursing Practice (3rd edition) (1996).

Table 1. Summary of demographic findings

Characteristic	Answered		Missing/Other	
	n	%	*n*	%
Age (Years)				
12 - 15	4	44.4		
16 - 19	1	11.1		
20 - 22	4	44.4		
Missing/Other			0	-
Education (Years)				
7 - 9	3	33.3		
10 - 12	2	22.2		
College	3	33.3		
Missing/Other			1	11.1
Hispanic/Latino/Spanish				
No	9	100		
Yes	0	-		
Missing/Other			0	-
Race				
Native American/Alaska Native	0	-		
Asian	0	-		
Black/African American	0	-		
Native Hawaiian/Other Pacific Islander	0	-		
White	7	77.8		
Multi-racial	1	11.1		
Missing/Other			1	11.1
Parental Education				
Less than high school	0	-		
High school or equivalent	2	-		
Some college, no degree	2	-		
Associate degree	0	-		
Bachelor's degree	2	-		
Master's degree	0	-		
Professional degree	1	-		
Doctorate	2	-		
Missing/Other			0	-

Note. One of the primary considerations for this pilot project was to determine best-practices in collecting information among sexual and gender minorities. The "Missing/Other" category is reported here to determine if the questions being asked of participants were easily identifiable and representative of the population.

Table 2. Summary of sexual orientation and gender identity findings

Characteristic	Answered		Missing/Other	
	n	%	*n*	%
Assigned Gender at Birth				
Female	9	100		
Male	0	-		
Missing/Other			0	-
Gender Identity				
Female	6	66.7		
Transgender (male to female)	0	-		
Male	0	-		
Transgender (female to male)	0	-		
Transgender (not exclusively male/female)	1	11.1		
Not sure	0	-		
Missing/Other			2	22.2
Sexual Attraction				
Only attracted to females	1	11.1		
Mostly attracted to females	6	66.6		
Equally attracted to females and males	2	22.2		
Mostly attracted to males	0	-		
Only attracted to males	0	-		
Not sure	0	-		
Missing/Other			0	-
Sexual Identity				
Heterosexual or straight	0	-		
Gay or Lesbian	2	22.2		
Bisexual	4	44.4		
Missing/Other			3	33.3
Sexual Behavior				
Males only	0	-		
Females only	1	11.1		
Both males and females	4	44.4		
I have not had sex	4	44.4		
Missing/Other			0	-

Note: One of the primary considerations for this pilot project was to determine if best-practices in collecting information among sexual and gender minorities are effective. The "Missing/Other" category is reported here to determine if the questions being asked of participants were easily identifiable and representative of the population.

Table 3. Summary of Youth Risk Behavior Survey (tobacco-related findings)

Characteristic	Answered *n*	Answered %	Missing/Other *n*	Missing/Other %
Have you ever tried cigarette smoking, even one or two puffs?				
No	2	22.2		
Yes	7	77.8		
Missing/Other			0	-
How old were you when you first tried cigarette smoking, even one or two puffs?				
I have never tried cigarette smoking, not even one or two puffs	2	22.2		
8 years old or younger	1	11.1		
9 or 10 years old	0	-		
11 or 12 years old	1	11.1		
13 or 14 years old	2	22.2		
15 or 16 years old	1	11.1		
17 years old or older	2	22.2		
Missing/Other			0	-
During the past 30 days, on how many days did you smoke cigarettes?				
0 days	6	66.7		
1 or 2 days	1	11.1		
3 to 5 days	1	11.1		
6 to 9 days	0	-		
10 to 19 days	1	11.1		
10 to 29 days	0	-		
All 30 days	0	-		
Missing/Other			0	-
During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?				
I did not smoke cigarettes during the past 30 days	5	55.6		
Less than 1 cigarette per day	3	33.3		
1 cigarette per day	0	-		
2 to 5 cigarettes per day	1	11.1		
6 to 10 cigarettes per day	0	-		
11 to 20 cigarettes per day	0	-		
More than 20 cigarettes per day	0	-		
Missing/Other			0	-
Have you ever used an electronic vapor product?				
No	3	33.3		
Yes	6	66.7		
Missing/Other			0	-

During the past 30 days, on how many days did you use an electronic vapor product?				
0 days	9	100		
1 or 2 days	0	-		
3 to 5 days	0	-		
6 to 9 days	0	-		
10 to 19 days	0	-		
20 to 29 days	0	-		
All 30 days	0	-		
Missing/Other			0	-
During the past 30 days, how did you usually get your own electronic vapor products?				
I did not use any electronic vapor products during the past 30 days	9	100		
I bought them in a store such as a convenience store, supermarket, discount store, gas station, or vape store	0	-		
I got them on the Internet	0	-		
I gave someone else money to buy them for me	0	-		
I borrowed them from someone else	0	-		
A person 18 years old or older gave them to me	0	-		
I took them from a store or another person	0	-		
I got them some other way	0	-		
Missing/Other			0	-
During the past 30 days, on how many days did you use chewing tobacco, snuff, dip, snus, or dissolvable tobacco products?				
0 days	9	100		
1 or 2 days	0	-		
3 to 5 days	0	-		
6 to 9 days	0	-		
10 to 19 days	0	-		
20 to 29 days	0	-		
All 30 days	0	-		
Missing/Other			0	-
During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars?				
0 days	9	100		
1 or 2 days	0	-		
3 to 5 days	0	-		
6 to 9 days	0	-		
10 to 19 days	0	-		
20 to 29 days	0	-		
All 30 days	0	-		
Missing/Other			0	-

During the past 12 months, did you ever try to quit using all tobacco products, including cigarettes, cigars, smokeless tobacco, shisha or hookah tobacco, and electronic vapor products?				
I did not use any tobacco products during the past 12 months	3	33.3		
No	2	22.2		
Yes	3	33.3		
Missing/Other			1	11.1

Note. One of the primary considerations for this pilot project was to determine best-practices in collecting information among sexual and gender minorities. The "Missing/Other" category is reported here to determine if the questions being asked of participants were easily identifiable and representative of the population.

Table 4. Repeated measures t-test of the Adolescent Smoking Curiosity Scale (ASCOS)

Question	Mean	SD	SEM	95% CI	t	df	*p*
I want to know how a cigarette, a cigar, or a hookah tastes.	.625	1.061	.375	-.262, 1.512	1.667	7	.140
I am interested in knowing how smoking feels.	.500	.756	.267	-.132, 1.132	1.871	7	.104
I am interested in knowing what effect smoking would have on me.	-.875	1.458	.515	-2.094, .344	-1.698	7	.133
I want to know how a cigarette, a cigar, or a hookah feels.	.625	1.061	.375	-.262, 1.512	1.667	7	.140
I am curious to know what is special about smoking.	.375	1.923	.680	-1.232, 1.982	.552	7	.598
I am interested in knowing what other people would think of me if I tried smoking.	-.125	1.126	.398	-1.066, .816	-.314	7	.763
I am curious to know why other people like smoking.	-.125	1.246	.442	-1.167, .917	-.284	7	.785

Note. SD = standard deviation; SEM = standard error of the means; 95% CI = 95% confidence interval; t = t-statistic; df = degrees of freedom; *p* = p-value. The questions above were presented with Likert-style options for participant selection and included, “Not at all,” “A little bit,” “Somewhat,” “A lot,” or “Very much.”

Table 5. Repeated measures t-test of the State Hope Scale (SHS)

Question	Mean	SD	SE	95% CI	t	df	*p*
If I should find myself in a jam, I could think of many ways to get out of it.	-.125	.835	.295	-.823, .573	-.424	7	.685
At the present time, I am energetically pursuing my goals.	.000	1.069	.378	-.894, .894	.000	7	1.00
There are lots of ways around any problem that I am facing now.	-1.125	1.458	.515	-2.344, .094	-2.183	7	.065
Right now I see myself as being pretty successful.	-.625	1.061	.375	-1.512, .262	-1.667	7	.140
I can think of many ways to reach my current goals.	-.125	1.126	.398	-1.066, .816	-.314	7	.763
At this time, I am meeting the goals that I have set for myself.	-1.000	1.069	.378	-1.894, -.106	-2.646	7	**.033**

Note. SD = standard deviation; SEM = standard error of the means; 95% CI = 95% confidence interval; t = t-statistic; df = degrees of freedom; *p* = p-value. The questions above were presented with Likert-style options for participant selection and included, “Definitely false,” “Mostly false,” “Somewhat false,” “Slightly false,” “Slightly true,” “Somewhat true,” “Mostly true,” or “Definitely true.”