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The Social Prioritization Index and Tobacco Use Among Young Adult Bar Patrons

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Abstract

Social benefits likely play a role in young adult tobacco use. The Social Prioritization Index (SPI) was developed to measure the degree to which young adults place a great importance on their social lives. We examined the usefulness of this measure as a potential predictor of tobacco use controlling for demographics and tobacco-related attitudes. Young adults completed cross-sectional surveys between 2012 and 2014 in bars in seven U.S. cities ($N = 5,503$). The SPI is a 13-item scale that includes personality items and information on how frequently participants attend bars and how late they stay out. Three step-by-step multinomial regression models were run using the SPI as a predictor of smoking status (nondaily and daily smoking vs. nonsmoking): (1) SPI as the sole predictor, (2) SPI and demographics, and (3) SPI, demographics, and tobacco-related attitude variables. Next, we conducted an exploratory factor analysis to examine if the number of items in SPI could be reduced and retain its strong relationship with smoking. Higher scores on the SPI were related to an increased probability of being a Nondaily Smoker (odds ratio = 1.09, 95% confidence interval [1.04, 1.14], $p < .001$) or Daily Smoker (odds ratio = 1.14, 95% confidence interval [1.07, 1.22], $p < .0001$) compared to a Nonsmoker, controlling for demographics and other tobacco-related attitudes. The SPI and reduced SPI were independently related to young adult tobacco use. The measure's brevity, ease of use, and strong association with tobacco use may make it useful to tobacco and other prevention researchers.

Keywords

cancer prevention and screening; community health promotion; health promotion; measurement issues; smoking and tobacco use; tobacco control and policy

While smoking prevention efforts have largely focused on adolescents (Backinger, Fagan, Matthews, & Grana, 2003), it is important to also target emerging adults (Arnett, 2004). Emerging adulthood is characterized by uncertainty and is often associated with trying new

things, including high initiation rates into smoking and other drugs (Sussman, 2010). Smoking initiation and transition from experimentation to regular smoking often occur over time, and thus sustained prevention efforts from adolescence into young adulthood are essential.

While the importance of young adulthood in tobacco control has been described in detail (Backinger et al., 2003), there are numerous factors that increase or decrease young adult tobacco use risk and it is unclear which factors are most important to inform tobacco control programs. For example, gender (Centers for Disease Control and Prevention, 2010), ethnicity (Stahre, Okuyemi, Joseph, & Fu, 2010), sexual orientation (Balsam, Beadnell, & Riggs, 2012), college/work status (Centers for Disease Control and Prevention, 2010), and income (Chuang, Cubbin, Ahn, & Winkleby, 2005) have all been reported as critical determinants for young adult tobacco use risk and disparities. However, these demographic factors do not account for all of the variance associated with tobacco use risk, thus limiting the effectiveness of interventions designed based on demographic factors alone.

In addition to demographic characteristics, social and personality factors, such as frequenting bars (Jiang & Ling, 2013), risk-taking propensity (Munafo, Zetteler, & Clark, 2007), and having friends who smoke (De Vries, Engels, Kremers, Wetzels, & Mudde, 2003) also contribute significantly to young adult tobacco use. Young adult tobacco users frequently report tobacco use for social benefits and frequently self-identify as "social smokers" (Schane, Glantz, & Ling, 2009). Furthermore, the tobacco industry has historically attempted to identify "social leaders" among young people in order to estimate peer influence among friends to encourage smoking (Sepe, Ling, & Glantz, 2002). Thus, a scale that measures how much a young adult prioritizes social activity, or "social prioritization," may be an efficient way to assist in identifying at-risk young adults. The Social Prioritization Index (SPI) was developed to help identify young adults who place a high priority on their social lives and thus to enhance tailored tobacco control interventions.

Rescue Social Change Group created the SPI based on years of experience working closely with high-risk youth and young adults developing interventions that fit within settings where risk behaviors take place, such as bars and nightclubs. The measure was developed for use with youth and young adults encountered in these social contexts. As such, the items were designed to be simple and specific, and such that the entire index could be completed in less 5 five minutes. Over 10 years, staff at RSCG have conducted more than 400 interviews and 200 focus groups with young adults, and consistently found that those young people engaged in the most risky behavior frequently placed the most value on social rewards and most actively sought social activities. Consequently, the SPI was developed to measure how socially oriented individuals are—that is, their prioritization of their social life and identity over other parts of their life. For example, when invited to a social gathering, a less socially oriented person would want more about why people are getting together and what they are doing, while a more socially oriented person would commit without knowing the answers to these questions since they simply prioritize their social life. Thus an individual who scores high on the SPI should be most interested in the fact that people in their social group are getting together, regardless of what they are going to do.

The SPI was developed based on well-developed theories in the literature. The first, social identity and self-categorization theories (Hogg, 2001; Hogg & Abrams, 1990; Tajfel & Turner, 1979), posits that the "social identity" is the portion of an individual's sense of identity or self-concept that is derived from perceived membership in a particular social group. In-group identification enhances self-esteem and thus incentivizes individuals to become more directly aligned with the values of their social group. As such, the SPI seeks to identify individuals who are more likely to desire belonging to a social group and are at a higher risk of conforming to the perceived norms of said group.

Previous research indicates that the index is feasible and acceptable for youth and young adults to complete, and prior studies (Fallin, Neilands, Jordan, & Ling, 2014; Ling et al., 2014) found that social prioritization is strongly associated with smoking. It might be possible that individuals who place greater importance on their social lives may also place greater importance on their social identity among peers. For decades, the tobacco industry has focused on associating desirable social characteristics with smoking and smokers, such as being rebellious, attractive, cool, fashionable, and outgoing (Ling & Glantz, 2002a, 2002b; Pampel, 2009). As an individual's SPI score increases, the value he or she places on social identity may increase, thus making tobacco industry marketing strategies that reflect social success and aspirational social identities more relevant for those scoring high on the SPI.

In this study, we sought to (1) examine the single-predictor association between the SPI and tobacco use; (2) test for an independent association of the SPI with smoking controlling for demographics, including gender, age, self-reported sexual orientation, and education; (3) test for an independent association of the SPI with smoking controlling for both demographic factors and other smoking-related attitudes known to predict tobacco use, and last (4) determine how many and which items could be eliminated while retaining the integrity of the measure.

Method

Participants and Procedure

Data were collected as part of a larger tobacco use study from January 2012 through March 2014. This study used time–location sampling to generate a sample of a difficult-to-reach population, young adult (primarily age 18–26 years old) bar and club goers, in Albuquerque, Los Angeles, Nashville, Oklahoma City, San Diego, San Francisco, and Tucson. Venues, dates, and times were selected randomly from a sample of young adult–oriented bars and clubs to assign similar probabilities of selection to individuals within the sample—this methodology was developed to reach underserved populations in the venues they frequent (Magnani, Sabin, Saidel, & Heckathorn, 2005; Muhib et al., 2001). Time–location sampling methods used in this study have been described previously (Jiang, Lee, & Ling, 2014; Jiang & Ling, 2013). Participants who self-report their age is between 18 and 26 are invited to complete questionnaires, and age is later calculated based on self-reported date of birth. Participants in this between the ages of 18 and 29 by date of birth were retained for the purposes of this article in order to roughly approximate the emerging adulthood period of the life span ($N = 5,455$).

Measures

Demographics—Demographic variables included age, sex (male/female), race/ethnicity, and educational status. Age was calculated using data collection date and self-reported birthday. Race/ethnicity was based on participants' responses to two items: ethnicity (Hispanic or not) and to a single item where participants were asked, "What is your race?" and selected one category (Black, Asian, White, Hawaiian/Pacific Islander, American Indian/Alaskan Native, or more than one race). We recoded race/ethnicity into four categories (Hispanic, non-Hispanic White, non-Hispanic Black, non-Hispanic Other). Participants were also asked about their educational status (1 = *I go to college in the local area*, 2 = *I go to college NOT in the local area*, 3 = *I have graduated from college*, 4 = *I dropped out of college*, 5 = *I have graduated from high school/GED*), which was recoded into a dichotomous variable (*some or more college/no college*), and self-reported sexual orientation (1 = *straight*, 2 = *gay*, 3 = *bisexual*, 4 = *other*), which was recoded into a dichotomous variable (*straight/not straight*).

Social Prioritization Index—The SPI measure is composed of 13 items. For the first eight items, participants were asked "For EACH box below, circle the phrase that best describes you:" followed by pairs of two choices such as "Up for anything" or "Picks chooses what to do" and "Plan it out" or "Wing it" (with each pair coded as 0 = *the less socially oriented choice*, 1 = *the more socially oriented choice*). Participants were also asked three true/false questions, such as "In groups of people, I am rarely the center of attention." The remaining three questions were, "When someone is taking a photograph of you, which are you more likely to do?" ("Strike a pose" or "Smile big"). Finally social activity was measured by asking, "In an average week, on how many nights do you go out to have fun?" (0–7) and "When you go out, how late do you usually stay out until?" (1 = *9:59 p.m. or earlier*, 2 = *10:00–10:59 p.m.*, 3 = *11:00–11:59 p.m.*, 4 = *midnight–12:59 a.m.*, 5 = *1:00–1:59 a.m.*, 6 = *2:00–2:59 a.m.*, 7 = *3:00–3:59 a.m.*, 8 = *4:00 a.m. or later*). To investigate reducing the SPI index the items were standardized and their mean was calculated.

Tobacco-Related Attitudes and Perceptions—Participants were asked a variety of questions regarding their attitudes and perceptions related to tobacco use. Support for action against the tobacco industry was measured using three items: "I want to be involved with efforts to get rid of cigarette smoking," "I would like to see the cigarette companies go out of business," and "Taking a stand against smoking is important to me" (1 = *not at all* to 5 = *a great deal*). The mean score across the three items was treated as a continuous variable. Participants were also asked to report their perceived prevalence of smoking with the question "Based on what you have seen, how many people your age smoke tobacco?" (0% to 100%). They were also asked perceived prevalence among social and popular people with the item "Think about the most social, well-known people that hang out where you do. How many of them smoke?" (0% to 100%). Participants were also asked, "What are the trends in tobacco smoking that you have seen in the past year?" and responses included level of agreement with the following two statements: "In the places I party, people are smoking tobacco" and "People I party with are trying to stop smoking" (1 = *not at all* to 5 = *a great deal*).

Smoking Status—Two smoking status variables were created from the questionnaire item where participants reported the number of days they smoked cigarettes in the previous 30 days. To distinguish daily smokers from nondaily smokers, a three-level variable was created for Nonsmoker (0 days), Nondaily Smoker (1–29 days), and Daily Smoker (30 days).

Analytical Plan

Descriptive information for the sample was computed across all cities (Table 1). We fit three multinomial logistic regression models by gradually adding predictors to examine the predictive validity of the SPI. The SPI was used as a predictor of smoking status (Nondaily and Daily Smoking compared to Nonsmoking). The model was run in three steps: (1) the SPI was entered, (2) standard demographic factors (age, sex, race/ethnicity, educational status, sexual orientation and location) were entered, and (3) tobacco-related variables were entered to determine if the SPI was independently associated with nondaily and daily smoking compared to not smoking.

Next, an exploratory factor analysis was conducted on the full sample to determine the variables that might be dropped (those with the lowest loadings from the singlefactor solution). Variables were dropped until the Cronbach's alpha fell below an acceptable cutoff (<.65; Josefsson, Ekdahl, Jakobsson, & Gard, 2013). We refit all of the models using the reduced index to verify that reducing the number of items did not affect the strength of association between SPI and tobacco use behavior. Because of the categorical nature of the data, mean and variance-adjusted weighted least squares estimation was used in M*plus* (Muthén & Muthén, 2007). M*plu*s was used for the factor analyses, and the remaining analyses were completed using SAS 9.4.

Results

Demographics and Smoking Variables

Of the 5,503 total participants, 2,217 respondents were classified as smokers based on the item regarding number of days in the past 30 where the participant smoked cigarettes, such that those who reported 1 or more smoking days were classified as smokers (Table 1). Approximately half the sample was male, the majority of the sample was non-Hispanic White (48.1%), and most reported straight (83.6%) sexual orientation. The number of observations for each city was relatively even, except for Oklahoma City, which saw a lower number of participants because of certain events that transpired during the data collection period. For information by smoking status see Table 1.

Predictive Validity: Logistic Regression Models With Full SPI

As predicted, in the single-predictor model, the SPI was related to a higher probability of both nondaily smoking (odds ratio [OR] = 1.15, 95% confidence interval [CI; 1.05, 1.21], p < .0001) and daily smoking (OR = 1.28, 95% CI [1.20, 1.38], p < .0001) compared to nonsmoking. In the subsequent model, we added demographic characteristics and found that the SPI was significantly related to smoking status, such that higher SPI scores were related to higher likelihood of being both a Nondaily (OR = 1.14, 95% CI [1.09, 1.19], p < .0001) or Daily Smoker (OR = 1.25, 95% CI [1.17, 1.33], p < .0001) compared to a Nonsmoker. Last,

we entered the tobacco-related attitude variables to the model and found the SPI was still significantly related to smoking status (see Table 2), such that higher scores on the SPI were related to an increased probability of being a Nondaily (OR = 1.09, 95% CI [1.04, 1.14], p < .001) or Daily Smoker (OR = 1.14, 95% CI [1.07, 1.22], p < .0001) compared to a Nonsmoker. All models controlled for location. Race/ethnicity, sex, education, sexual orientation, stance against tobacco, peer smoking, and trends in smoking were also associated with daily and nondaily smoking.

Exploratory Factor Analysis

In an effort to examine if the full scale could be reduced to make it even more efficient all 13 items were factor analyzed and loadings were examined from the single-factor solution (Table 3). Items with the smallest loadings were dropped using an iterative approach until the Cronbach's alpha was no longer acceptable. Internal consistency for the full measure was .68, and after dropping items D8, D9, D10, D11, and D13, remained acceptable (α = .65) leaving eight total items (D1–D7 and D12).

Predictive Validity: Logistic Regression Models With Reduced SPI

We ran identical models as above using the reduced SPI to examine whether the measure would remain a significant predictor of smoking status in the single-predictor models and models including demographic and tobacco related variables. The reduced SPI was consistently found to be related to smoking status in all models. We will present results only from the final model with all the predictors (controlling for location). In the multinomial logistic regression model, the reduced SPI was significantly related to nondaily smoking (OR = 1.31, 95% CI [1.22, 1.40], p < .0001) and daily smoking (OR = 1.50, 95% CI [1.36, 1.65], p < .001) compared to nonsmoking.

Discussion

The present study examined the basic psychometric properties of the SPI in a bar-going emerging adult sample. We found that the SPI was associated with increased odds of daily and nondaily smoking independent of demographic factors and other tobacco-related factors. In addition, we found evidence to support relationships of demographic variables and their association with smoking status that has been found in other literature. Specifically, males, those who were not college-educated (Control & Prevention, 2010), non-Hispanic Whites compared to Hispanics and non-Hispanic Blacks (Stahre et al., 2010), and those who self-reported as gay or bisexual compared to straight (Balsam et al., 2012) were more likely to be smokers. The SPI was independently associated with smoking status when controlling for these demographic and other factors, suggesting the measure has utility to add to demographics and tobacco-related variables to more effectively identify high-risk young adults.

An exploratory factor analysis was conducted to reduce the number of items while still retaining a meaningful measure of how socially oriented individuals are. Using factor loadings to iteratively eliminate items until the measure was no longer above an acceptable

reliability threshold allowed us to reduce the measure without reducing its significant relationship with the outcome.

The items retained tap a variety of dimensions representing the degree to which an individual is socially oriented by using simple-to-choose options such as "Up for anything vs. Picks and chooses what to do" or "Low-key vs. Outgoing." These items, taken together, have been found to be consistently related to smoking behaviors in a variety of studies (Fallin et al., 2014; Ling et al., 2014). The current study reduced this already easy-to-use measure by eliminating five items while still retaining the strong relationship of the scale with smoking while controlling for wide array of other variables. Specifically, those scoring higher on the SPI were more likely to be Smokers than Nonsmokers but were also more likely to be both Daily and Nondaily Smokers compared to Nonsmokers. The reduced SPI consists of eight items that are quick and easy to answer, which may make it a useful tool to identify at-risk young adults efficiently. While there is a small decrease in reliability, it is more than compensated for by the likely improved validity of the index. In addition, the elimination of five items does not appear to distort the scale, and we strongly recommend the use of this more parsimonious and cohesive measure in light of the present findings.

These data suggest that high social orientation is also associated with young adult tobacco use, independent of these demographic factors, and the SPI may efficiently identify those at higher risk of tobacco use for intervention. One strategy that has been used to target highly socially oriented young adults is Social Branding. Social Branding interventions are designed to counter market tobacco industry efforts to initiate young smokers. Social Branding uses strategies that directly compete with tobacco industry marketing campaigns that target young adults to associate healthy behaviors with desirable lifestyles. Social Branding interventions are tailored for young adults with high social prioritization by associating living tobacco-free with social success, and delivering the intervention where these individuals are socializing (i.e., bars and nightclubs for young adults). Social Branding interventions have been associated with significant decreases in tobacco use among young adults at the highest risk in pilot studies in San Diego, Oklahoma City, and Las Vegas (Fallin, Neilands, Jordan, Hong, & Ling, 2015; Fallin, Neilands, Jordan, & Ling, 2015; Ling et al., 2014).

Limitations

First, the psychometric properties of this measure were evaluated for what is most important from a utilitarian point of view rather than a complete psychometric validation. Nonetheless, the SPI proved to have a strong, independent relationship with smoking status, and provides evidence for the utility of continuing to use this measure in future research. Second, the results from this study may not be generalizable outside a young adult bar-going population. Third, the study did not include measures that would allow us to determine that the SPI is actually measuring what it is intended to measure (content validity). We assume, based on the items, that the measure indeed indicates the degree to which an individual is socially oriented. Fourth, the reliability (alpha) is adequate, but not excellent, so while a higher reliability is desirable, the other qualities of this measure such as its easy implementation and strong relationship with smoking outweigh this concern. Fifth, other potential mediators

might help explain the relationship between the SPI and smoking behaviors such as attention deficit hyperactivity disorder and stress, were not measured in the data set. Future research should continue to employ the SPI and include other personality measures so as to gain a clearer validation of what the SPI is measuring.

Conclusion

The SPI was independently associated with young adult tobacco use, controlling for age, gender, race, ethnicity, sexual orientation, and tobacco-related attitudes. In addition, the reduced SPI appears to retain high correlation with smoking status, and its use is strongly recommended. The scale is potentially predictive of outcomes of interest to tobacco (and presumably other prevention) researchers. The SPI is a useful, brief, and easy-to-use measure that addresses social and personality factors related to tobacco use that can be used to identify young adults at high risk for smoking efficiently. Future research should explore the SPI with other susceptible age groups, such as teens, and other risk behaviors that commonly occur in social environments, such as binge drinking and drug use.

Acknowledgments

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Table 1

Demographics by Smoking Status.

Demographics	Overall sample (N = 5,503)	Smokers (N = 2,217)	Nonsmokers (N = 3,004)	p smokers vs. nonsmokers
Age, M (SD), years	23.83 (1.8)	23.83 (1.8)	23.83 (1.8)	.8969
Sex (% male)	51.5	58.3	54.04	<.0001
Race/ethnicity (%)				
Hispanic	31.16	29.02	32.6	.0195
Non-Hispanic White	48.09	49.75	47.07	
Non-Hispanic Black	6.51	6.02	6.67	
Non-Hispanic Other	14.24	15.21	13.67	
Education (% no college)	20.77	25.81	16.33	<.0001
Self-reported sexual orientation (%)				
Straight	83.60	82.74	88.94	
Gay	5.05	6.39	4.21	
Bisexual	5.75	7.61	4.38	
Other	2.90	3.26	2.47	
City (%)				<.0001
San Francisco	15.68	18.85	13.35	
Albuquerque	15.06	13.04	16.41	
Los Angeles	13.96	15.56	12.95	
Nashville	16.23	17.05	15.08	
Oklahoma City	8.54	9.07	7.82	
San Diego	15.19	15.16	16.05	
Tucson	15.34	11.28	18.34	

Note. Chi-square tests (for categorical variables) and *t* tests (for continuous variables) were conducted to test for differences between smokers and nonsmokers.

Table 2

Results for Logistic Regression.

| | Model 1: Multinomial regression (reference = nonsmoker) | | | | | |
| | Nondaily (1–29 days) | | | Daily (30 days) | | |
Independent variables	Odds ratio	95% Confidence interval	p	Odds ratio	95% Confidence interval	p
Social Prioritization Index (full measure)	1.087	[1.04, 1.14]	<.001	1.143	[1.07, 1.22]	<.0001
Age	1.017	[0.98, 1.06]	.4035	1.031	[0.98, 1.09]	.2738
Sex (reference = female)	1.418	[1.23, 1.63]	<.0001	1.531	[1.25, 1.87]	<.0001
Race/ethnicity (reference = non-Hispanic White)						
Hispanic	0.870	[0.74, 1.03]	.1069	0.467	[0.36, 0.61]	<.0001
Non-Hispanic Black	0.622	[0.45, 0.85]	.0033	0.561	[0.38, 0.84]	.0045
Non-Hispanic Other	0.909	[0.74, 1.12]	.3736	1.029	[0.78, 1.35]	.8395
Education (reference = college)	1.087	[0.90, 1.29]	.3565	1.972	[1.58, 2.46]	<.0001
Self-reported sexual orientation (reference = straight)						
Gay	1.576	[1.17, 2.21]	.003	1.435	[0.93, 2.22]	.1072
Bisexual	1.987	[1.48, 2.68]	<.0001	2.224	[1.52, 3.31]	<.0001
Other	1.407	[0.94, 2.10]	.0945	0.868	[0.48, 1.58]	.6409
Support for action against the tobacco industry	0.694	[0.65, 0.74]	<.0001	0.495	[0.45, 0.54]	<.0001
Based on what you have seen, how many people your age smoke tobacco?"	1.006	[1.01, 1.02]	.0117	1.011	[1.01, 1.02]	.0004
Think about the most social, well-known people that hang out where you do. How many of them smoke?	1.014	[1.01, 1.02]	<.0001	1.022	[1.02, 1.03]	<.0001
What are the trends in tobacco smoking that you have seen in the past year?						
In the places I party, people are smoking tobacco	1.283	[1.20, 1.37]	<.0001	1.480	[1.35, 1.63]	<.0001
People I party with are trying to stop smoking	1.015	[0.95, 1.09]	.6534	0.972	[0.89, 1.07]	.5501

Table 3

Factor Loadings From Exploratory Factor Analysis of Single-Factor Solution.

Item	Factor loadings
D1: Select one phrase: Up for anything/Picks and chooses what to do	.528
D2: Select one phrase: Low-key/outgoing	.590
D3: Select one phrase: Center of attention/Lay low	.608
D4: Select one phrase: Street smart/book smart	.482
D5: Select one: Studier/Partier	.556
D6: Select one phrase: Plan it out/Wing it	.482
D7: Select one phrase: The carefree one/The responsible one	.592
D8: In a picture, I am more likely to (select one): Strike a pose/Smile big	.330
D9: In groups of people, I am rarely the center of attention (true/false)	.353
D10: I have considered being an entertainer or actor (true/false)	.416
D11: I can look anyone in the eye and tell a lie with a straight face (true/false)	.283
D12: How many nights did you go out to have fun this week? (0–1, 2–3, 4–5, 6–7)	.459
D13: When you go out, how late do you usually stay out until? (9:59 p.m.–10:59 p.m., 11 pm–12:59 p.m., 1 a.m.–2:59 a.m., 3 a.m. or later)	.353