The Construct of Social Influence

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GENERAL DEFINITION

The general definition of social influence is that health-related **behavior is influenced by a person's social context**. The behavioral social context can be represented by the behaviors of individual peers or family members (e.g., smoking) with whom the person interacts regularly, or by behaviors observed in a larger social environment such as the neighborhood in which a person lives. The normative social context is represented in an individual's perceptions about the acceptability of a behavior (e.g., alcohol use), derived from communications from network members, or by portrayals of behaviors in mass media such as TV or movies that the person watches. The concept of social influence is included in a number of theoretical models that have been used to predict health-related behaviors and to guide preventive interventions. However, the way in which social influence has been conceptualized and measured varies considerably across theoretical models. This ranges from concepts of more overt forms of influence, where some individuals actively exert pressure on others, to more indirect forms where normative perceptions (e.g., perceiving smoking as frequent in the population) or social perceptions (e.g., perceiving typical smokers as cool or popular) act as a form of "silent" influence. Each conceptualization of social influence has some empirical support, but researchers should consider what aspect of social influence is most relevant for the question being studied.

In this section we first consider how the concept of social influence is represented in health behavior theory. Since there have been several different conceptions of social influence used in theoretical approaches, these are discussed separately. In the second section we describe measures that have been used to index various aspects of social influence. Examples of single-item measures and multiple-item scales are given in the section and an appendix.

USE OF THE CONSTRUCT IN HEALTH BEHAVIOR THEORIES

Social Modeling Theory. The original version of social learning theory posited that behavior is influenced by **modeling processes**. In this theory a person observes the behavior of other persons and tends to model that behavior, particularly so if he/she feels a sense of attachment to the others (Bandura, 1977). For example, younger children could acquire healthy vs. unhealthy habits through observing the behavior of their parents (e.g., parental smoking or eating patterns). Evidence has shown correlations for example between parental substance use and children's smoking and alcohol use (Hawkins, Catalano, & Miller, 1992), consistent with a modeling process (though there are other possible mechanisms). From the prevention perspective, this theory suggested that improvements in health-related behavior could be achieved by altering the modeling influence, for example through helping parents to quit smoking or adopt healthier diets (e.g., Loken, Swim, & Mittelmark, 1990).

Social Pressure Theory. A development in social learning theory gave more emphasis to the role of peers, and posited that adoption of a health risk behavior (e.g., trying cigarettes) was influenced by **explicit social pressure** from peers in group contexts. Here it was suggested that peers might provide offers of cigarettes and then apply social pressure, through taunts or criticism, to teens who did not immediately go along with the offers (Evans, 1984; Evans & Raines, 1990). This model of social factors became the basis for what was termed a social-inoculation approach to prevention, using filmed models to demonstrate assertive responses to social pressure situations, and thereby aiming to increase teens' resistance to peer pressures for unhealthy behaviors (Evans, Rozelle, Mittelmark, Hansen, Bane, & Havis, 1988; Evans, Rozelle, Maxwell, Raines, Dill, Guthrie, Henderson, & Hill, 1991). Evidence has shown peers' substance use to be a direct influence on an adolescent's behavior (Ennett & Bauman, 1994; Wills & Cleary, 1999). The precise mechanism of peer influence remains under debate, because there is

some discrepancy between adolescents' reports of peer behavior and the peers' own reports about their behavior (Bauman & Ennett, 1996), and there is little evidence that peer influence occurs through the exertion of explicit pressure on other teens (Kobus, 2003).

Social Norm Theory. While the previous models focused on more direct forms of influence, several models have focused more on individuals' **perceptions of social norms** about a health behavior. These perceptions, whether accurate or not, can serve as a form of social influence if individuals adopt health-related behaviors that they perceive to be approved by their social reference group. This conception of social influence derives in part from the **Theory of Planned Behavior** which postulates that perceptions of social norms about a behavior are an important influence on action (Ajzen, 1985, 1991). It is also represented in theories about the impact of **social consensus,** which suggest that individuals make inferences about the acceptability of a behavior through consulting their perceptions of how prevalent the behavior is in the population (Marks & Miller, 1987). This perception is particularly important for behaviors such as adolescent smoking, because studies show that young persons tend to overestimate the frequency of smoking among teens (Sherman, Presson, Chassin, Corty, & Olshavsky, 1983) and smokers tend to overestimate this even more (Gibbons, Gerrard, & Helwig-Larsen, 1995; Sussman, Dent, Mestel-Rauch, Johnson, Hansen, & Flay, 1988). This conception of social influence has been embedded in prevention programs that aim to reduce smoking initiation through correcting erroneous perceptions of social norms through showing participants real data indicating that relatively few adolescents smoke and the majority of teens have relatively negative norms about smoking and other drug use (Hansen & Graham, 1991). This approach can have advantages because social-inoculation programs tend to have reverse effects with teens who are already smoking (Donaldson, Graham, Piccinin, & Hansen, 1995).

Social Perception Theory. **Social-perception models** take a somewhat different approach through positing that an individual's perceptions of persons who engage in healthy or unhealthy behaviors can have a motivating effect for their own behavior. For example with adolescent smoking, the basic concept is that if an individual perceives teens who smoke in relatively favorable terms (i.e., popular, attractive) then he/she will be more likely to take up cigarette smoking. One conception of this type of influence posits that smoking initiation occurs through wanting to adopt the **social image of the prototype** user and hence become more popular/attractive (Gibbons & Gerrard, 1995; Gibbons, Gerrard, & Lane, 2003). Another conception of this type of influence is a desire to identify with a particular subgroup of adolescents ("crowds") who are viewed as socially attractive or influential in the school setting (Mosbach & Leventhal, 1988; Sussman, Dent, McAdams, Stacy, Burton, & Flay, 1994). Even though teens tend to have fairly negative perceptions of users in general, studies show that those who relatively more favorable perceptions of users are more likely to adopt smoking or alcohol use (Blanton, Gibbons, Gerrard, Conger, & Smith, 1997; Chassin, Tetzloff, & Hershey, 1985), and this concept has been extended to behaviors such as contraception and condom use (Blanton, VandenEijnden, Buunk, Gibbons, Gerrard, & Bakker, 2001; Gibbons, Gerrard, & Boney-McCoy, 1995). In contrast, relatively favorable perceptions of abstainers have been shown to have a protective effect with regard to substance use and sexual risk behavior (Gerrard, Gibbons, Reis-Bergan, Trudeau, Vande Lune, & Buunk, 2002; Wills, Gibbons, Gerrard, Murry, & Brody, 2003). Because social perceptions are malleable, intervention programs have used the approach of modifying social images in a healthier direction in order to deter early onset of smoking and alcohol use (Brody, Murry, Gerrard, Gibbons, Molgaard, McNair, Brown, Wills, Spoth, Luo, Chen, & Neubaum-Carlan, 2004; Gerrard, Gibbons, & Gano, 2003; Gerrard, Gibbons, Brody, Murry, Cleveland, & Wills2006).

Social Communication Theory. Communication models consider how discussions between parents and children are focused to directly **communicate parental norms and values** about health-related behavior. It is known that parental norms about substance use by teens (which tend to be fairly negative) are related to adolescents' behavior, and communication models have generated evidence showing that frequency of parent-child communication about the behaviors is related to rates of adolescent substance use and sexual risk taking (Brody, Flor, Hollett-Wright, & McCoy, 1998; Whitaker & Miller, 2000; Wills et al., 2003). Intervention models have used this conception of social influence to design educational components to stimulate parent-child discussion about health behaviors and provide guidelines to parents on how to communicate their norms and values about these topics (Brody, Murry, Gerrard, Gibbons, McNair, Brown, Wills, Molgaard, Spoth, Luo, & Chen, 2006; Spoth, Redmond, & Shin, 1999).

Media Exposure Theory. A recent development in social influence theory is studies that consider how exposure to **cues in mass media** (television, movies, or print advertising) affects viewers' attitudes and intentions about health behaviors. With a focus on adolescents, there is accumulated evidence that tobacco advertising and marketing strategies could influence teens' behavior through portraying smoking as attractive, and possibly weight-reducing (Pierce, Lee, & Gilpin, 1994). This research was based on a variant of modeling theory, positing that frequent exposure to cues showing smoking in exciting and pleasurable situations, and associated with attractive or unconventional characters, would lead to more favorable attitudes toward smoking (DiFranza, Richards, Paulman, Wolf-Gillespie, Fletcher, Jaffe, & Murray, 1991; Evans, Farkas, Gilpin, Berry, & Pierce, 1995). Recent studies have found that movie exposure to smoking by actors is related to smoking initiation among adolescents, so there is evidence of an influence on smoking behavior (Distefan, Pierce, & Gilpin, 2004; Sargent, Beach, Dalton, Mott, Tickle, Ahrens, & Heatherton, 2001). The exact mechanism through which this effect occurs has not

been established at present; it may involve some combination of cognitive/attitudinal changes or effects on affiliation with substance-using peers (Sargent, Wills, Stoolmiller, Gibson, & Gibbons, 2006). The implications of these findings for preventive intervention have been explored in several projects with mass media programs designed to deter teen smoking or alcohol use (Donohew, Lorch, & Palmgreen, 1991; Sargent, Dalton, Heatherton, & Beach, 2003; Wakefield, Flay, Nichter, & Giovino, 2003).

Neighborhood Context Theory. Environmental theories have added another dimension to health behavior theory through considering the influence of **larger social contexts**. In this conception, the attributes of larger social units such as neighborhoods may have an influence on behavior, above and beyond the impact of factors impinging on a person from his/her immediate social context of family and friends (Leventhal & Brooks-Gunn, 2000). It has been hypothesized that adoption of unhealthy behavior may be influenced by neighborhood variables including the overall level of poverty and residential instability, and the prevalence of crime and aggressive behavior (Hawkins et al., 1992; Petraitis, Flay, & Miller, 1995; Wills, Pierce, & Evans, 1996). Conversely, factors that help to bind a community together, such as social trust and civic engagement, can serve as protective factors (Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997). Research on neighborhood factors and health behavior are still emerging but recent studies have shown that environmental factors are related to smoking behavior (Diez-Roux, Merkin, Hannan, Jacobs, & Kiefe, 2003; Novak & Clayton, 2001) and that family and peer risk factors have more effect on adolescent substance in adverse environments (Gibbons, Gerrard, Cleveland, Wills, & Brody, 2004). The implications of this theoretical approach are beginning to be explored but suggest that approaches such as neighborhood policing, economic development, and modifications to the built environment may have an impact on health status.

MEASURES OF SOCIAL INFLUENCE CONSTRUCTS

In this section we describe measures that have been utilized to index different aspects of social influence. Because many of these are single-item measures we do not detailed data about reliability. Validity of these measures has been demonstrated in longitudinal studies through demonstrating their ability to predict initiation and escalation of tobacco/alcohol use and other problem behaviors.

Social Modeling Measures. Many studies have used items that index smoking, alcohol use, and other behaviors by **social network** members. Measures of peer substance use typically ask: "How many of your friends smoke cigarettes / drink alcohol (beer, wine, liquor, or wine coolers) / use marijuana?" Answers are on ordinal scales having response points from None of My Friends to Four or More of My Friends (Wills & Cleary, 1999). Measures of tobacco and alcohol use by parents may have a dichotomous structure, for example "Does your mother/father smoke cigarettes?" with response Yes/No. Alternatives ask about parental substance use with numerical scales to index frequency of use (e.g., "During the last month how often did your father drink beer?" with responses Never to Three or More Times a Week. Measures of sibling use typically ask about sib's tobacco, alcohol, or other drug use during the past year on a frequency scale with response points such as Never to Five or More Times (Pomery, Gibbons, Gerrard, Cleveland, Brody, & Wills, 2005). These are presumed to represent modeling influences. Prospective studies consistently show items on peer or parental substance use to predict initiation and escalation of use among adolescents (e.g., Gibbons, Gerrard, Cleveland, Wills, & Brody, 2004; Gibbons, Gerrard, Vande Lune, Wills, Brody, & Conger, 2004; Wills & Cleary, 1999). There is less evidence on reliability of the single items used to measure modeling. Studies that have obtained measures of smoking from peers themselves have found that adolescents' smoking is correlated more highly with perceptions of peer smoking than with direct peer reports of their own smoking, though significant relations are found in both cases

(Ennett & Bauman, 1994; Urberg, Shyu, & Liang, 1990). Thus it is desirable to obtain independent reports of parent and peer substance use when the research context makes this feasible.

Social Pressure Measures. While measures indicating that friends smoke have been presumed to be reflected in **peer pressure** for use, there is actually little direct evidence on this point. Urberg et al. (1990) developed a measure of explicit pressure with items that asked "Have you felt pressure to smoke cigarettes?" and "Have you felt pressure not to smoke?" with 4-point response scales (Never to Often). Variant items ask about whether a person has recently been offered cigarettes or other substances, for example "How many times have you been offered a drink in the past month?" with a write-in response (Graham, Marks, & Hansen, 1991). Data from explicit pressure items indicate that participants tend to report not having experienced much social pressure to smoke (Sussman, Hahn, Dent, & Stacy, 1993; Urberg et al., 1990), and in multivariate analyses these measures usually do not have significant relations to adolescent smoking (Urberg et al., 1990). Thus reviewers have concluded that perceived normative pressure from observed peer use may be more influential than explicit social pressure (Kobus, 2003). Still, it may be desirable to include these kinds of items in research for descriptive purposes to characterize the type of level of social pressure occurring in a given population.

Social Norm and Consensus Measures. Measures of normative influence assess the **perceived prevalence** of use and **perceived approval** for use in a respondent's social environment. A typical measure of perceived prevalence (consensus perception) provides the respondent with a ratio scale (0-10 scale or 100-point line) and asks: "What would you say is the percentage of kids in the XXth grade at your school who smoke cigarettes regularly (at least a few a week)?" The respondent then checks a point on the line to indicate his/her perception of the percentage of schoolmates who are smokers, drinkers, etc. Prospective studies show that

such measures predict onset of smoking and alcohol use, controlling for other variables (Graham, Marks, & Hansen, 1992; Sussman et al., 1988). Measures of social norms ask about perceived reactions of network members to smoking or alcohol use (Appendix, Section 1) or ask the participant (plus parents, peers, etc.) how acceptable it would be for a youth to use tobacco or alcohol in various situations (Appendix, Section 2). Studies have indicated that measures of perceived norms show significant relations to adolescents' smoking and alcohol use controlling for actual peer use (Brody, et. al., 1998; Urberg et al., 1990). Findings on normative influence and consensus perceptions have led to the suggestion that peer use operates as a **"silent influence"** on youth smoking, because adolescents may be influenced by their perception that smoking is common and/or approach among age-mates (Kobus, 2003). Ironically these perceptions tend to be mistaken, as adolescents typically overestimate the prevalence of substance use among teens and underestimate how common negative attitudes about smoking and alcohol use actually are in the school population (Prentice & Miller, 1993; Sussman et al., 1988). Correcting erroneous perceptions about prevalence and normative acceptability has in fact proved to be useful in prevention programs (Gerrard et al., 2002, 2003, 2006; Hansen & Graham, 1991; Schroeder & Prentice, 1998).

Social Perception Measures: Adolescent "Crowds." Measures of recognized adolescent subgroups or "crowds" have been used in several studies. In these measures the adolescent is provided with a list of recognized crowds in the school and is asked which one he/she identifies with. For example Sussman et al. (1994) used a measure that stated, "People often hang out in different groups at school. Please circle the one group below which most closely matches the group you belong to." Studies have found reasonable replication across geographic areas in identifying groups labeled "freaks/stoners/dirtballs," "jocks/athletes," "hotshots" (brains, socials, or populars), and "regulars" or ordinary students, with an additional group termed

"skaters/surfers" found in West Coast samples (Mosbach & Leventhal, 1988; Sussman, Dent, Stacy, Burciaga, Raynor, Turner, Charlin, Craig, Hansen, Burton, & Flay, 1990; Sussman, Simon, Stacy, Dent, Ritt, Kipke, Montgomery, Burton, & Flay, 1999). Measures of **group identification** show significant associations with current substance use, with the most use among freaks and skaters, and longitudinal studies show that group self-identifications predict onset and escalation of substance use (Sussman et al., 1994).

Social Perception Measures: Prototypes of Users. Measures on prototypes of substance users assess the respondent's perception of the qualities of the typical person his/her age who smokes cigarettes, drinks alcohol, or engages in other problem behaviors. The measure gives an initial instruction to imagine a typical (same age/same sex) user and then rate the characteristics of the typical user on a set of adjective descriptors (Appendix, Section 3). A number of studies with adolescents have shown that while perceptions of users tend to be somewhat negative, persons with relatively more favorable perceptions of users are more likely to smoke or drink (e.g., Blanton et al., 1997; Gibbons et al., 1995). Prototype measures for various aspects of sexual behavior are in Blanton et al. (2001), Gibbons, Gerrard, and Boney-McCoy (1995), and Wills et al. (2003). It is important to note that prototypes for substance or sex abstainers, asking about perceptions of the typical teen who doesn't smoke, drink, etc., show a significant protective effect (Gerrard et al., 2002; Wills et al., 2003, Wills, Murry, Brody, Gibbons, & Gerrard, 2007).

Social Communication Measures. Communication measures tap the **frequency and quality of communication** between parents and youth about tobacco/alcohol use and other problem behaviors. Measures on the frequency of communication across a broad spectrum of behaviors are in the Appendix, Section 4A; this can be modified as necessary by selecting items that focus on a specific behavior. Frequency items may be combined when appropriate with items on quality of communication (Appendix, Section 4B). Measures of communication have

been shown to correlate with children's norms about substance use and their level of risk behavior (Brody, Flor, Hollett-Wright, McCoy, & Donovan, 1999; Whitaker & Miller, 2000; Wills et al., 2003).

Media Exposure Measures. Measures on advertising exposure typically are single items asking about how often, in a recent time frame, the respondent has seen advertising about a given topic such as cigarette smoking (see Wakefield et al., 2003); an additional dimension is tapped through asking the respondent about his/her reactions to such items. Examples are included in the Appendix, Section 5. Measures of exposure to smoking and alcohol use in movies are more complicated. These involve first determining which movies (from a list of 50 or more) a respondent has seen, coding the amount of smoking/alcohol use in each movie through records made by trained coders, and then determining the total amount of movie smoking or alcohol use a given respondent has been exposed to (see Sargent et al., 2001). A variant measure involves asking the respondent about his/her favorite movie star and then determining exposure to smoking by the star in the movies the respondent has seen (see Distefan, Gilpin Sargent, & Pierce , 1999; Distefan et al., 2004). Measures of **exposure to advertising and movie smoking/alcohol use** have been linked in several studies to onset of smoking and drinking among adolescents (Dalton, Sargent, Beach, Titus-Ernstoff, Gibson, Ahrens, Tickle, & Heatherton, 2003; Henriksen, Feighery, Wang, & Fortmann, 2004; Pierce et al., 1994; Sargent, Beach, Adachi-Meija, Gibson, Titus-Ernstoff, Carusi, Swain, Heatherton, & Dalton, 2005; Sargent, et al., 2006; Tickle, Sargent, Dalton, Beach, & Heatherton, 2001).

Neighborhood Context Measures. Measures of neighborhood context as utilized in previous research reflect several dimensions. Some neighborhood measures are obtained from census data through determining parameters such as average income, residential instability, or percent of families on welfare at the block-group level (Brody, Ge, Conger, Gibbons, Murry,

Gerrard, & Simons, 2001). Measures derived from Sampson's **theory of collective efficacy** (Sampson, Raudenbush, & Earls, 1997) reflect dimensions of **collective socialization, interpersonal trust and cohesion,** and **neighborhood characteristics**. These are presented in the Appendix, Sections 6A-6C. Specific measures for school environments ask about attributes such as organization and discipline (Appendix, Section 6D). Measures of neighborhood and school environments have been found to be related to adolescent substance use, and/or to act as a moderator of other social influence measures, in several studies (Gibbons et al., 2004; Novak & Clayton, 2001).

SIMILAR CONSTRUCTS

Social Network. Measures of social network composition typically ask about the number of persons with whom one has regular social interaction. Having a larger social network is a significant protective factor for physical health problems, but the mechanisms for this are not well understood (Uchino, 2004). It has been suggested that persons who are more **integrated in their community** are more susceptible to social pressure through network enforcement of norms discouraging smoking or alcohol use (Berkman, Glass, Brissette, & Seeman, 2000). There is some evidence showing **network size** related to substance use (Hanson, 1994; Umberson, 1987) but there is little direct evidence on whether a social influence process is involved in this effect (see Urberg, Degirmencioglu, & Pilgrim, 1997; Wills & Filer, 2001).

Social Support. The construct of social support refers to the **availability of persons who can be supportive** when one has a problem, through behaviors such as empathic listening or providing needed tangible goods (Wills & Filer, 2001; Wills & Shinar, 2000). Most measures of social support are usually not referenced to a specific type of problem or health behavior, though they may be predictors of substance use (Brennan & Moos, 1990; Peirce, Frone, Russell, & Cooper, 1996; Wills, Resko, Ainette, & Mendoza, 2004). There are instances where measures of

emotional/instrumental supportiveness have been adapted for a specific behavior, such as smoking or alcohol cessation (Cohen & Lichtenstein, 1990; Havassey, Hall, & Wasserman, 1991).

DOING RESEARCH ON SOCIAL INFLUENCE

There is little question that social influence is an important determinant of health-related behaviors, including not only cigarette smoking and alcohol use but a range of other behaviors as well. Thus the basic question for new research on health behavior is not necessarily whether social influence should be studied, but what aspect should be measured. This section provides a few simple suggestions about research in the area, to augment the investigator's reading of primary literature and theory in his/her area of interest.

Including multiple measures. It can be suggested that **multiple measures**, assessing different aspects of social influence, are preferable to a single measure. If assessment space is limited and actuarial prediction is the only research goal, then items indexing peer behavior (smoking, alcohol, etc.) are a reasonable choice because they typically have strong correlations with respondent behavior. However a single measure of peer behavior may provide little understanding of how social influences operate: for example is it through explicit pressure, normative perceptions, or social image processes? For this reason it is desirable to include two or more measures of social influence processes, in order to understand more about how social networks influence individual behaviors.

Choosing the dimensions. A number of social measures are potentially available so a researcher needs to consider which ones may be most relevant for a given population. For example measures of peer influences may be very relevant for younger persons who commonly spend their time in large school populations, but less relevant for older samples where primary networks are more important. Social processes may operate differently for behaviors that are

common vs. rare in the general population, and researchers should consider how social influence mechanisms may differ in these conditions. Similarly, asking about whether the health-related behavior is simple or complex to adopt suggests ancillary questions about what aspects of the social environment may be involved in either supporting or deterring the adoption (or cessation) of the behavior. Through asking these kinds of questions, the investigator may construct a preliminary model of the causal chains that produce or inhibit the behavior, and this kind of thinking can suggest what measures will be most relevant for the research.

Doing descriptive research. Existing measures of general social influence processes may be supplemented with **descriptive studies** to gather detailed information about social processes as they occur in the investigator's population. For example qualitative studies of adolescent smoking have been informative in providing perspectives about smoking onset that differ somewhat from common expectations about why teens smoke (see Friedman, Lichtenstein, & Biglan, 1985; Lucas & Lloyd, 1999; Sussman et al., 1993). Preliminary research using individual open-ended interviews for focus groups may be helpful for evaluating the applicability of proposed measures and suggesting new facets or dimensions that are not precisely represented in existing scales.

Thinking about subgroups. The measures described in this section were validated in epidemiologic research but there is always the possibility that social influence processes may have differential impact in subgroups of the population. It is desirable for investigators to consider what they know about a given population (students, community residents, or clinic patients) and anticipate how measures might be focused or adapted for these persons. For example there is some evidence that peer influences processes may differ by ethnicity (Landrine, Richardson, Klonoff, & Flay, 1994; Vaccaro & Wills, 1998). Hence in planning a new study the investigator may use existing knowledge about the population to consider what types of

subgroup effects (by gender, age, ethnicity, etc.) there may be in the population and to consult literature on cultural variables (e.g., Catalano, Hawkins, Krenz, Gillmore, Morrison, Wells, & Abbott, 1993). As suggested above, qualitative research and pilot studies may also be useful in this regard.

Considering the larger environment. Recent research has drawn attention to the effect of larger environments on health and illness, (Diez-Roux et al., 2003; Gibbons et al., 2004; Kawachi et al., 1997; Lee & Cubbin, 2002). Investigators planning research on health-related behavior might be advised to consider including measures of **environmental-level variables** relevant to the behaviors they wish to study, either measures of specific environments for younger persons (Novak & Clayton, 2001) or measures of larger social environments for research with adults (Brody et al., 2001). The measures are relatively brief ones and can provide an increment in predictive power, above and beyond the contribution of individual-level characteristics, so the research balance can be a favorable one.

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Appendix

1A. Normative Pressure to Smoke (Urberg et al., 1990).

"How would these people react to your smoking cigarettes" (5-point response scale, Strongly Encouraging to Strongly Discouraging")

1. Your best same-sex friend.
2. Your best opposite-sex friend.
3. Your other friends.
4. Does your best friend want you to smoke?
5. Do your other friends want you to smoke?

1B. Normative Pressure Not to Smoke (Urberg et al., 1990).

"How would these people react to your not smoking cigarettes" (5-point response scale, Strongly Encouraging to Strongly Discouraging")

1. Best same-sex friend.
2. Best opposite-sex friend.
3. Other friends.

2. Perceived Norms about Substance Use (Brody et al., 1998).

"Here are some questions about some things kids might do. What do you think about these?" (5-point response scale, Totally Unacceptable to Totally Acceptable.)

How acceptable is it for an X-year old to:

1. Have some sips from a parent's beer or wine during a family dinner.
2. Have some sips from an adult's beer or wine at a friend's house.
3. Have a drink of beer or wine at a family party (like New Year's eve).
4. Have a drink of beer or wine when you're alone at home.
5. Have a drink of beer or wine at a party at a friend's house.

6. Have a drink of beer/wine at a community event (like a block party).

7. Have some puffs on an adult's cigarette at home.

8. Have some puffs on a friend's cigarette outside of school.

9. Smoke a cigarette at a family party (like New Year's Eve).

10. Smoke a cigarette when you're alone at home.

11. Smoke a cigarette at a party at a friend's house.

12. Smoke a cigarette at a community event (like a block party).

<u>3. Prototypes of Users (Gibbons & Gerrard, 1995).</u>

"Take a moment to think about the type of kid your age who [smokes cigarettes]. We are not thinking about anyone in particular, just your image of kids who [smoke cigarettes]. How [xxx] are they?" (5-point response scale, Not At All [X] - Very [X])

1. Popular

2. Careless (recoded)

3. Smart

4. Cool

5. Attractive or good-looking

6. Dull or boring (recoded)

Gender-matched ratings are obtained through having boys rate male users and girls rate female users. Alternative rating targets are "the type of kid your age who drinks alcohol regularly" (drinker prototype), "the type of boy/girl your age who has sex regularly" (sex engager prototype), "kids your age who decide they are <u>not</u> going to drink alcohol, smoke cigarettes, or use drugs at all" (substance abstainer prototype), "the type of boy/girl your age who chooses <u>not</u> to have sex at all" (sex abstainer prototype).

<u>4A. Frequency of Communication (Wills et al., 2003).</u>

"In the past year, how often has your [mother/father] talked to you about ....? Please answer each one. (4-point response scale: Never, Once or Twice, A Few Times, Many Times)

1. School work.
2. Friends.
3. Things that bother you.
4. Smoking cigarettes.
5. Drinking alcohol.
6. Using drugs.
7. Sexual intercourse (sex).
8. Birth control.
9. Preventing sexually transmitted diseases (STD's) like "crabs," gonorrhea, chlamydia, herpes.
10. HIV and AIDs.

4B. Quality of Communication (Wills et al., 2003).

"The next questions about how things go when you talk with your [mother/father] about various things." (3-point response scale: Caregiver does most of talking / Usually talk about it in a way where we have to watch what we say / Usually talk about it openly and each say what we think)

1. When you and your [mother/father] talk about school work, how does the conversation go?
2. When you and your [mother/father] talk about things that bother you, how does the conversation go?
3. When you and your [mother/father] talk about your friends, how does the conversation go?
4. When you and your [mother/father] talk about smoking cigarettes, how does the conversation go?
5. When you and your [mother/father] talk about drinking alcohol, how does the conversation go?

6. When you and your [mother/father] talk about using drugs, how does the conversation go?

7. When you and your [mother/father] talk about having sex, how does the conversation go?

8. When you and your [mother/father] talk about birth control, how does the conversation go?

9. When you and your [mother/father] talk about preventing STD's, how does the conversation go?

10. When you and your [mother/father] talk about HIV and AIDS, how does the conversation go?

<u>5. Media Exposures (Wills et al., 2006).</u>

"How many hours a day do you usually watch TV during the week (not including weekends)? (One hour a day or less, about two hours a day, about three hours a day, four hours a day or more).

"How many hours a day do you usually watch TV on weekends? (One hour a day or less, about two hours a day, about three hours a day, four hours a day or more).

"How often do you see people on TV smoke cigarettes? (Not at All, A Little, Some, A Lot)

"How often do you see people on TV drink alcohol? (Not at All, A Little, Some, A Lot)

"When you see alcohol commercials on TV, how much do you pay attention to them?"

I don't pay attention to them at all / I pay attention to them a little / I pay attention to them sometimes / I pay attention to them always

"Of the commercials you see on TV, how much do you like the commercials for alcohol."

I like the alcohol commercials the least / I like the alcohol commercials a little / I like the alcohol commercials somewhat / I like the alcohol commercials the most

"When you see alcohol commercials on TV, do you think they are funny?"

I think they're not at all funny / I think they're a little funny / I think they're somewhat funny / I think they're very funny

"When you see alcohol commercials on TV, do you wish you were like the people in the commercials?"

No, don't want to be like them at all / Want to be like them a little /Want to be like them somewhat / Very much want to be like them

"When you see advertisements for cigarette smoking (like on billboards or at sports events), how often do you pay attention to them?"

I don't pay attention to them at all / I pay attention to them a little / I pay attention to them sometimes / I pay attention to them always

"When you see advertisements for cigarette smoking (like on billboards or at sports events), how much do you like them compared to other types of advertising."

I like the smoking billboards the least / I like the smoking billboards a little / I like the smoking billboards somewhat / I like the smoking billboards the most

"When you see advertisements for cigarette smoking (like on billboards or at sports events), do you think they are funny?"

I think they're not at all funny / I think they're a little funny / I think they're somewhat funny / I think they're very funny

"When you see advertisements for cigarette smoking (like on billboards or at sports events), do you wish you were like the people in the commercials?"

No, don't want to be like them at all /Want to be like them a little / Want to be like them somewhat / Very much want to be like them

6A. Neighborhood Collective Socialization (Brody et al., 2001):

"Now I'm going to ask some questions about the neighborhood you live in." (4-point scale, Very Likely, Likely, Unlikely, Very Unlikely)

1. If a group of neighborhood children were skipping school and hanging out on a street corner, how likely is it your neighbors would do something like call the school or the parents?

2. If some children were spray-painting graffiti on a local building, how likely is it that the neighbors would do something about it?"

3. If a child was showing disrespect to an adult, how likely is it that the people in your neighborhood would scold the child or tell the child's parents?"

4. If a fight broke out in front of their house, how likely is it that the neighbors would do something about it?

5. If the fire station closest to their home was threatened by budget cuts, how likely is it that the neighbors would do something about it?"

6B. Neighborhood Trust and Cohesion (Sampson, Raudenbush, & Earls, 1997):

"Now I have some questions about your neighborhood. For each of the following statements, please tell me if this describes your neighborhood. (2-point scale, True or False)

1. People around here are willing to help their neighbors.

2. This is a close-knit neighborhood.

3. People in this neighborhood can be trusted.

4. People in this neighborhood generally don't get along with each other. (reversed)

5. People in this neighborhood don't share the same values. (reversed)

6C. Neighborhood Characteristics (Gibbons et al., 2004):

"Now I will read a list of problems in some neighborhoods. For each, please tell me whether it is a big problem, somewhat of a problem, or Not at all a problem in your neighborhood."

1. Litter, broken glass, or trash on the sidewalks or streets.

2. Graffiti on buildings or walls.

3. Vacant or deserted houses or storefronts.

4. Drinking in public.

5. People selling or using drugs.

6. Groups of teenagers or adults hanging out in the neighborhood and causing trouble.

7. Gang violence.

6D. School Discipline Environment (Novak & Clayton, 2001):

1. Everyone knows what the school rules are.

2. The punishment for breaking a school rule is the same no matter who you are.

3. The school rules are strictly enforced.

4. If a school rule is broken, everyone knows what kind of punishment will follow.

5. Students have a say in making the school rules.