

Research Dialogue

Should we ask our children about sex, drugs and rock & roll? Potentially harmful effects of asking questions about risky behaviors

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Abstract

Research shows that asking questions can fundamentally change behavior. We review literature on this question-behavior effect, which demonstrates that asking questions changes both normal and risky behaviors. We discuss potential explanations for the effect and review recent findings that reveal interesting moderators of the influence of questions on behavior. We then highlight the potential impact of the question-behavior effect in an important public health context: screening adolescents for risky behavior. While medical guidelines emphasize the importance of asking adolescents questions about substance (drug, alcohol) use and sexual behaviors, research on the question-behavior effect suggests that asking adolescents about risky behaviors has the potential to increase the frequency with which they engage in these behaviors. We argue that the act of screening or measuring risky behavior is potentially counterproductive. We emphasize the importance of interventions beyond screening, and suggest ways in which screening can be carried out to minimize its impact. In short, asking questions about behaviors can change behavior, and asking questions about risky behaviors may itself be a risky undertaking.

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The issue of when or how to talk to children about behaviors that parents view negatively is one that all parents must address as their children approach and progress through adolescence. While we might like to pretend that our children would never engage in risky behaviors the reality of teenage life is quite sobering. In the United States each year, there are 831,000 pregnancies among women aged 15–19 years, an estimated 9.1 million cases of sexually transmitted diseases among persons aged 15–24 years, and an estimated 4,842 cases of HIV/AIDS among persons aged 15–24 years. The prevalence of these conditions is partially caused by sexual behavior among adolescents: 46.8% of high school students have had sexual intercourse at least once, and 37.2% of sexually active high schoolers did not use a condom during their last sexual episode. In the past 30 days, 43.3% of our children have drunk alcohol, 9.9% have driven a car or other vehicle when they had been drinking alcohol; 18.5% have carried a weapon; and 20.2% have used marijuana. In the past 12 months, 28.5% of students nationwide have felt so sad or hopeless almost every day for

more than 2 weeks in a row that they stopped doing some usual activities, and 13% of students have made a suicide plan. 8.4% of teens have actually attempted suicide in the past year (Centers for Disease Control, 2007). How can we know if our own children are at risk? Should we, as parents and public policy makers, ask children about these issues? If so, what should we say?

Our focus in this paper will be on interacting with children about what we refer to as “risky behaviors” or “vices.” Examples of these behaviors are listed above, and are referred to as risky because performance of the behaviors entails a risk or threat to the mental or physical health of the individual or others, immediately or in future. Why would a person engage in such a behavior if it has obvious potentially negative consequences for them? Our premise, which we will discuss in more depth throughout this paper, is that this category of behaviors is one toward which individuals hold complex attitudes. On the one hand, they realize at a conscious or explicit level that risky behavior is bad for them. Yet, at the same time they are drawn toward the behavior, often at a nonconscious or implicit level. In part, this is a natural outgrowth of the fact that adolescence is a time of upheaval, and often of experimentation. Teens are exploring and trying out

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new things to determine what their own attitudes are. Some of this exploration is explicit and conscious rebellion, while other backlash and reactance may be much less conscious in nature. The result of the teenage experience is often a set of attitudes and beliefs, implicit and explicit, which are in opposition to parents and adult social norms. Implicit attitudes in particular are very difficult to measure reliably and may guide behavior in ways that could be harmful to the teenager, perhaps outside of their conscious awareness and ability to control. Nonetheless, given the magnitude of the consequences of engaging in vice behaviors, parents and public policy makers have attempted to tap into adolescents' attitudes toward risky behaviors as well as measure the occurrence of the behaviors themselves by asking adolescents about these behaviors.

Indeed, a relatively common approach to understanding human behavior is to simply ask about it directly. As Fishbein and Ajzen (1975) comment, "if one wants to know whether or not an individual will perform a given behavior, the simplest and probably most efficient thing that one can do is to ask the individual whether he intends to perform that behavior" (p. 369). Asking individuals questions about past and future behavior is widespread in academic and applied domains. Intention measures about engaging in future behavior are used as dependent variables in academic fields including marketing (Pechmann & Stewart, 1990), social psychology (Ferguson & Bargh, 2004), and health psychology (Jemmott & Jemmott, 1992), while questions about past behavior may be used to predict future behavior (Ouellette & Wood, 1998; Lechner, de Vries, & Offermans, 1997). Surveys about past and future behaviors are perhaps even more common in applied settings. Political parties might survey individuals about the frequency with which they have voted in the past, who they voted for, and whether (and for whom) they will vote in the future. Market researchers ask individuals about the frequency with which they have purchased certain goods or brands, frequented stores, or used coupons, as well as their likelihood of engaging in these activities in future. Public health practitioners regularly question individuals about how often they engage in protective (e.g. wearing sunscreen) and risky behaviors (e.g. smoking, substance abuse, or unsafe sex).

While there are clear positives to researchers, managers, politicians, and public health officials from asking questions about behaviors, we also believe there may be hidden negatives that need to be examined. The explicit assumption in virtually all survey research is that the act of responding to a question does not affect the probability of subsequently engaging in the behavior in question. Yet a growing literature on the question-behavior effect has documented that the simple act of asking a question can lead to a change in actual behavior that would not have occurred had the question never been asked (e.g., Levav & Fitzsimons, 2006; Sherman, 1980; Spangenberg, Sprott, Grohmann, & Smith, 2003). Take, for example, a study conducted by Morwitz, Johnson, and Schmittlein (1993). They compared the automobile purchasing rates for two groups—one that had been asked a question six months prior about whether they were likely to purchase an automobile in the coming months, and a second group that was not asked such a question.

The simple act of being asked a question led to a 37% increase in actual automobile purchases.

In this first part of this paper, we review the question-behavior literature, focusing on the effects of asking questions on both "everyday" and risky behaviors. Asking questions about future behavior can increase or decrease that behavior, depending on individuals' attitudes toward the behavior. We discuss potential explanations for the question-behavior effect such as the increased accessibility of attitudes following a question, and review recent research that focuses on moderators of this effect. The existing literature demonstrates the robust influence of asking questions on subsequent behavior, despite the prevailing assumptions of many survey researchers. We argue that this effect is now well established, and should be considered in the various domains of survey research, whether these are commercial, political, or public policy oriented.

Thus, in the second part of this paper, we draw attention to the implications of the question-behavior effect for an important public health issue: interacting with adolescents about "risky behaviors" such as substance use (tobacco, alcohol, or drugs) and unsafe sex. We focus on screening adolescents about these behaviors, and specifically on surveillance of risky behavior among adolescents, a common practice worldwide. For example, the Youth Risk Behavior Surveillance System (YRBSS), a nationally representative sample of both public and private school children in grades 9 through 12, is conducted every two years by the Centers for Disease Control and Prevention and averages approximately 14,000 respondents per wave. Data from this survey and similar others generated the statistics presented in the opening paragraph of this paper.

Given the "health crisis facing today's youth" (American Medical Association, 1997), this information is vitally important. Surveys such as the YRBSS help practitioners and policy makers measure the prevalence of risky behavior in various populations, track changes in behavior over time, develop appropriate interventions, and ultimately improve health outcomes for youth by reducing morbidity and mortality stemming from risky behavior (Montalto, 1999). However, despite these benefits, there are potential costs of simple health screening surveys and questions that are not generally considered. In fact, research on the question-behavior effect suggests that if questions are asked about a risky behavior toward which a respondent holds a positive attitude (perhaps only implicitly), the act of asking a question about it can lead to an increase in the performance of that risky behavior.

In this paper, we will take a position on how best to address risky behavior, given what we know about the link between asking questions and actual behavior. We believe that parents and public policy makers have four essential options in dealing with potentially risky behavior amongst our children: 1. Do nothing; 2. Ask a question only; 3. Ask a question and perform an "intervention"; 4. Ask "better" questions. The first option obviously leaves the child with whatever attitude they had about the behavior intact. If positive, it remains positive and is likely to guide their future behavior. The third option has an opportunity to change the underlying positive attitude through a dialogue about the pros and cons, for example. The second

option is the alternative we caution most against. Simply asking a question with no follow-up is likely to activate the positive attitude and lead to subsequent increases in the behavior. As such, it seems the worst of the three options. It is better to turn a blind eye to the potential behavior than to ask about it and walk away. Option four presents perhaps the most attractive option, but is perhaps the option we know the least about. We will review what is known about how the manner of asking a question influences risky behavior, and consider which question formats and types appear to reduce any potential unintended harm. Finally, we will recommend that parents and public policy makers take great care in measuring risky behavior among children, and make an effort to provide interventions after asking questions, or at the very least, ask questions that minimize the potential for harm.

In the rest of this paper, we first discuss the literature on the relationship between questions and behavior, as well as potential causes and moderators of the question-behavior effect. We then outline current procedures in terms of measuring risky behaviors in children and discuss the implications of the question-behavior effect for such measurement practices. Finally, we suggest ways to mitigate the effects of asking questions about risky behaviors, focusing on options 3 and 4 above: providing interventions and asking questions that minimize the potential for harm.

The question-behavior effect: Does asking questions change behavior?

Asking people questions about their future behavior has been shown in many situations to lead to biased responses. A classic example of such effects is found in [Schwarz and Clore's \(1983\)](#) study of the misattribution of mood. They found that respondent's answers to a question about life satisfaction were markedly higher on sunny days than on rainy days, but only if their attention was not drawn to the weather first. In other words, responses to a life satisfaction question were dramatically different if they were preceded by a question about the weather. More generally, this study nicely illustrates that the context in which questions are asked can lead to very different answers.

A related stream of research has found a perhaps even more surprising result. Asking a question about a particular behavior can lead not only to a biased response, but can actually change the subsequent behavior of the respondent. In what he coined as "the self-erasing error of prediction" [Sherman \(1980\)](#) found that respondents over-predicted how likely they were to engage in socially desirable behaviors (e.g., volunteering for the American Cancer Society) and under-predicted how likely they were to perform socially undesirable behaviors (e.g., singing the Star Spangled Banner over the phone). More interestingly, however, these same participants actually changed their subsequent behavior. Those asked about volunteering dramatically increased volunteering behavior (versus a control group not asked a question) while those asked about singing over the phone dramatically decreased their behavior versus a non-question control group. Since Sherman's first demonstration

that asking questions changes behavior, many studies have documented similar effects. We will not review all of these studies but instead will highlight a representative sampling of work on what we refer to as the question-behavior effect.

First, in a voting domain, [Greenwald et al. \(1987\)](#) showed that asking questions about likelihood to register and likelihood to vote changed subsequent voting behavior. Greenwald and colleagues asked participants in the question condition how likely they were to register to vote or to actually vote, and then checked their actual voting behavior by examining the publicly available voter roles. Consistent with Sherman's work, they found that asking a question about the behavior led to a change in the actual behavior. As most respondents held voting behavior in a positive light, they found that asking a question about it led to an increase in voting behavior.

Further evidence suggests that actually writing or speaking a response to the question may not even be necessary. [Spangenberg and colleagues \(Spangenberg et al., 2003\)](#) conducted a quasi-experiment in which instead of asking questions in a one-to-one fashion, they posted the question "Ask Yourself ... Will You Recycle?" on an electronic reader board (approximately 2 feet by 7 feet), on wooden stop signs placed at key entrances, and on flyers hung on bulletin boards in a building on a university campus. They measured recycling prior to the campaign, as well as during and afterwards, by counting the proportion of aluminum cans purchased from vending machines in the building that were placed in recycle bins. They found that the question campaign led to an increase in recycling behavior from 16% to 28%, an incredible 75% increase in actual recycling behavior. In the domain of consumer and marketing research, consumers are often asked questions about future purchasing plans. In a fascinating study involving a large national panel, [Morwitz, Johnson, and Schmittlein \(1993\)](#) examined purchasing behavior for consumers that either had been asked an earlier purchase intention question or had not been asked such a question. For example, they asked consumers questions of the form "How likely are you to purchase an automobile?" and then tracked actual purchase behavior over the coming six months. They found that not only did asking a question about buying a car lead to a change in behavior, but it led to a 37% increase in the purchase of automobiles, which are obviously a consequential purchase for most consumers.

In a related paper, [Fitzsimons and Morwitz \(1996\)](#) examined the effect of measuring general category-level purchase intentions on the specific choices consumers made. They found that current automobile users that were asked whether they might buy an automobile were more likely to re-purchase that brand (than a control group of automobile users not asked a general intentions question). For those that did not own an automobile, asking whether they might buy an automobile led to a large increase in their likelihood of purchasing one of the more popular brands on the market (i.e., large market share brands). Fitzsimons and Morwitz argued that these results suggested that asking a question about buying an automobile increased the accessibility of thoughts related to the most accessible option in the choice set (i.e., the brand previously owned for repeat buyers, and large market share brands for first

time buyers). As a result, respondents were more likely to buy the automobile that had positive and more accessible thoughts.

What drives the question-behavior effect?

A number of mechanisms have been proposed to explain the effect of asking questions on behavior. As discussed above, it is possible that questions may increase the accessibility of attitudes toward the target behavior (Fitzsimons & Morwitz, 1996; Morwitz & Fitzsimons, 2004). Evidence also suggests that asking questions may increase the perceptual fluency of the target (Janiszewski & Chandon, 2007), making perceptions at the time of judgment easier and leading to subsequent changes in behavior. Considerable research also suggests that asking questions reminds respondents of the inconsistency between what they want to do and what they should do. This heightened focus on what they should do leads them to be more likely to behave as they “should,” thus avoiding the potential cognitive dissonance caused by gaps between social norms and their own behavior (e.g., Spangenberg & Greenwald, 1999; Spangenberg et al., 2003). Each of these mechanisms predict a common outcome, which is that asking questions about a behavior leads to an increase in the behavior for positively viewed behaviors and a decrease in behavior for those that are negatively viewed by the respondent. But what happens if the behavior being asked about does not have an unambiguously positive or negative attitude? In which direction will asking a question change behavior?

Asking questions about risky behaviors

As noted, the work reviewed above on the question-behavior effect has focused on behaviors toward which respondents are assumed to hold a straightforward attitude that is either positive or negative. Yet there is an increasing acceptance that attitudes are often complex and may have conflicting elements leading to ambivalent overall attitudes (e.g., Cacioppo & Berntson, 1994). People may or may not be consciously aware that there is conflict between elements of their attitudes. Wilson, Lindsey, and Schooler (2000), for example, argue that people may have long-standing (implicit) attitudes, such as habitual responses that are relatively accessible (see also Greenwald & Banaji, 1995). At the same time, recent consciously constructed evaluations (explicit attitudes) may also exist. These attitudes are relatively more context dependent, vary in terms of accessibility, and require capacity and motivation to retrieve. Wilson et al. (2000) argue that implicit and explicit attitudes co-exist and may at times conflict with one another, though the individual may not experience any conflict as the implicit attitude is largely inaccessible to conscious awareness. Similar dual representations can be inferred from a number of other theories and models of memory (e.g., Wyer & Srull, 1986, 1989).

Risky behaviors or vices are categories of behavior that individuals likely have complex or conflicting attitudes toward; how is behavior affected by answering questions about these types of behaviors? To foreshadow our later discussion of

question-behavior effects in the domain of surveillance screening, we discuss the impact of asking questions about risky behaviors in the context of adolescents. Risky behaviors such as unsafe sex, drinking, and using drugs are highly likely to be behaviors that teenagers hold conflicting attitudes toward. While a teenager might realize at one level that using drugs has a number of negative health consequences, at another level they may be drawn to smoking marijuana when a friend passes it to them at a party. What happens if we ask teens questions about risky behaviors toward which they hold both positive and negative attitudes?

Unfortunately, a number of mechanisms likely to be at work in the domain of risky behavior suggest that the positive, more implicit attitude towards engaging in the risky behavior is likely to guide actions among respondents who have ambivalent or conflicting attitudes. Dovidio and colleagues (e.g., Dovidio, Kawakami, & Gaertner, 2002; Dovidio et al., 1997), amongst others, have repeatedly shown a strong relationship between implicit measures of attitudes and more impulsive or nonconscious behaviors. Further, there is substantial evidence that the impact of questions on behavior operates largely through more automatic versus and deliberative channels. Fitzsimons and Williams (2000), for example, used an adapted version of Jacoby’s (1991) process dissociation procedure and found that asking intention questions impacted behavior far more through nonconscious than conscious paths (by a ratio of approximately 3:1 nonconscious to conscious processing). Further, Williams, Fitzsimons, and Block (2004) demonstrated that respondents tend to view questions as largely innocuous, leading their impact to fly “under the radar” of conscious defensive processes.

Thus, if adolescents hold conflicting attitudes toward engaging in a particular risky behavior and the less conscious element of the attitude is positive, this implicit element is highly likely to be activated by asking them a question about the behavior. When teens find themselves in settings in which highly deliberative, effortful self-regulatory behavior is not likely (e.g., at a party with friends), those more active implicit attitudes are likely to guide their behavior. The net result is that being asked a question about a particular vice behavior is likely to lead to an increase in that behavior, assuming the respondent holds at least an implicit positive attitude toward it.

Two empirical investigations have directly tested what happens when we ask questions about risky behaviors. The first, Williams, Block, and Fitzsimons (2006), examined whether asking undergraduates questions about future drug use changed subsequent self-reports of actual drug use. Two groups were asked questions about their future behavior. The control group was asked a question about a behavior (i.e., exercising) that was unrelated to the target risky behavior, drug use. The treatment group was asked a question about how many times they would use illegal drugs in the coming two months. At the end of the two month period both groups were asked to report how many times in the prior two months they had engaged in illegal drug use. The results were quite provocative. Participants in the control group reported mean drug use of 1.0 times over the two month period while those in the group asked

the drug question reported mean drug use of 2.8 times. Focusing on only the subset of respondents that had reported at least some drug use, the authors found the control group reported mean drug use of 4.0, while the question group reported mean drug use of 10.3 times over the two month period. These results were not without controversy (Fitzsimons, Block, & Williams, 2007; Schneider, Tahk, & Krosnick, 2007) and the study could be critiqued on a number of statistical (e.g., distribution of responses is non-normal) as well as methodological grounds (e.g., the principal dependant variable is a self-report). Ideally, this effect would be replicated while eliminating some of the potential points of criticism before any definitive conclusions are drawn.

The second paper to explicitly examine the impact of asking questions about vice behaviors on actual behavior is Fitzsimons, Nunes, and Williams (2007). They are the first to provide direct process evidence that asking a question does indeed increase the accessibility of an implicit, positive attitude toward a vice behavior. Using a response latency task they found that participants that had been asked how many times they were likely to skip class were much faster at categorizing “skip class” as positive in a response time task than was a control group not asked the question. As expected, their explicit attitudes toward the vice behavior were generally negative. In a second experiment, Fitzsimons, Nunes et al. (2007) asked participants in a first session about drinking more than two drinks in a sitting in the coming week or about watching television instead of studying. One week later participants reported both their television watching and their drinking behavior from the prior week. They found that asking a question about drinking behavior increased drinking behavior from 1.2 times to 3.2 times over the week. Similarly, those asked about watching television instead of studying increased reported television watching when they should have been studying from 2.7 to 3.9 times.

While the drug data in Williams et al. (2006) and the drinking or watching television experiment just described were based on self-report data, two other experiments in Fitzsimons, Block et al. (2007), utilized actual behaviors rather than self-reported behavior. In one of those studies participants were asked how many times they were likely to be distracted from studying in the coming week or were asked a control question. After a delay, participants were provided with an opportunity to sign up for a behavior that would result in a substantial distraction from studying (i.e., going to four movie screenings in a single week during the semester) by providing their email address, ostensibly to be passed along to the movie studio. Those asked the question about the vice behavior were substantially more likely to sign up for the vice behavior (76.6% versus 53.1% for a control group).

Similarly, in another study reported in Fitzsimons, Block et al. (2007), participants were asked a number of questions relating to their education on the first day of a semester length class. One group was also asked a question about how many times they were likely to miss classes over the semester. Actual class attendance was monitored over the course of the semester, and 10% of the participants' grades were based on attendance.

A control group that was not asked a question about skipping missed only 2.95 classes. By contrast, the group that had been asked how many times they would skip ended up missing 3.78 classes over the semester.

Moderators of the question-behavior effect

There is ample evidence to suggest that asking questions about behaviors changes the behavior in question; what factors might influence the degree to which individuals are impacted by questions about their behavior? In this section, we review a number of moderators that influence the size of the question-behavior effect. These moderators include warning individuals about the question-behavior effect, and the framing of questions in terms of time course and actual wording.

There is evidence from at least one study that advance warning prior to being asked a question may serve to reduce the question-behavior effect. Williams, Fitzsimons, and Block (2004) found that warning respondents in advance that questions can at times change behavior dramatically reduced the impact of asking a question on behavior. Respondents became more wary of the questioner, were more likely to perceive the question as an attempt to persuade them, and were able to consciously correct for any influence of being asked a question. However, simply instructing respondents to think more deeply about questions, without a warning that they may be influence attempts, appears to have a counterproductive effect. Fitzsimons and Shiv (2001) instructed respondents to reflect upon the question they were being asked (a question about voting behavior). Instead of reducing the impact of the question on voting behavior, those asked to think more deeply actually showed an enhanced effect of being asked the question versus those simply asked the question with presumably normal levels of thinking occurring. Thus, it appears that warnings about questions influencing behavior should occur in advance, and need to be more specific than advising respondents to think deeply about the questions they will be asked; to protect themselves from question-behavior effects, individuals need to be aware that they might be influenced.

Levav and Fitzsimons (2006) presented some interesting evidence with respect to the target of the question itself. They asked respondents either how likely they were to floss in the coming week, or how likely a member of their class was to floss in the coming week. When the question was about themselves, flossing behavior increased from 4.1 times per week to 6.3 times, consistent with the basic question-behavior effect (e.g., a question about a positively viewed behavior led to an increase in actual behavior). However, when the question was about a classmate flossing, no increase in flossing behavior was observed. They argued this was due to the fact that it was quite difficult to imagine another person flossing but easy to imagine yourself doing so.

Levav and Fitzsimons (2006) also provided some evidence that temporal focus may play a role in the question-behavior effect. They found that when the time frame naturally fit the behavior being asked about, the impact of questions on behavior was much greater. For example, they found that asking

respondents how likely they were to floss their teeth 7 times in the coming week led to a substantial increase in flossing while the same question with 8 times in the coming week substituted did not yield a change in flossing behavior versus a control group. As with the self/other study described above, Levav and Fitzsimons argued that it was easier to answer the 7 times in a week question, and this feeling of ease led to an increase in the behavior.

Other interesting differences in question framing were also found in the Levav and Fitzsimons (2006) investigation that may well be relevant to the current issues. They found that changing the wording of questions from a straightforward frame (e.g., “how likely are you to ...”) did not differ at all from a negation framed question (e.g., “how likely are you not to ...”). This negation framing changed behavior at the same rate as the straightforward frame. Levav and Fitzsimons argued this was likely driven by the fact that when people interpret questions, they construct representations of what is true in the question. Negations are not mentally construed as they are more difficult to represent. As a result, information about the negation (e.g., the “not”) is soon forgotten (Johnson-Laird, Legrenzi, Girotto, Legrenzi, & Caverni, 1999). Levav and Fitzsimons did however, find that asking an avoidance-framed question (e.g., “how likely are you to avoid ...”) led to a substantially greater impact than did either of the other framings. They argued that this question frame likely activated a different representation.

We conclude based on this evidence that asking questions about risky behaviors can in fact lead to substantial increases in performance of the actual behavior. While there are clearly benefits to asking questions about such behaviors in terms of understanding how widespread a risky behavior is within a given population, they must be weighed against the negative impact on the respondents themselves. If one is to ask questions about risky behaviors, it seems clear that the questioner should go beyond simply asking a question, which reinforces an underlying positive attitude toward engaging in the behavior. However, in the domain of surveillance screening, questions are asked without such intervention; we now briefly review current screening practices in the area of adolescent risky behavior, raise cautionary flags where appropriate, and develop recommendations for dealing with the potentially harmful effects of screening.

Screening in adolescent health risk behavior

Various professional associations and government agencies have responded to the “health crisis facing today’s youth” (American Medical Association, 1997) with recommendations for increased or even universal screening for sexual behaviors, suicide, and substance use as a means of identifying adolescents at risk in order to provide interventions and support (Department of Health and Human Services, 1994; Elster & Kuznets, 1994; Green, 1994; Stein, 1997; US Preventive Services Task Force, 1996). Indeed, screening is an essential component of good medical practice (Wilson & Jungner, 1968) and is defined as “the presumptive identification of unrecognized disease or defect by the application of tests, examinations, or other

procedures which can be applied rapidly” (Commission on Chronic Illness, 1957). Screening may be applied to the (early) identification of disease (e.g. HIV, other STDs), or to the identification of behaviors which might lead to disease, as is the case in calls for increased screening of health risk behavior (e.g. smoking, which can lead to cardiovascular disease). In reviewing existing screening practices, we differentiate between screening and surveillance (Wilson & Jungner, 1968). Individual screening focuses on a single individual in order to identify potential disease or risk and provide counseling or referral. Surveillance uses the same techniques as individual screening (e.g. tests or questionnaires), but focuses on identifying the prevalence of and long-term trends in disease or risk behaviors in the broader population. Current practices, goals, and uses for both types of screening are discussed below with respect to screening adolescents about health risk behaviors.

Individual screening

Individual screening assesses individual adolescents for risky behaviors as they come in contact with the medical system. In this section, we focus on the American Medical Association’s *Guidelines for Adolescent Preventive Services* (GAPS) (Elster & Kuznets, 1994) because of their emphasis on adolescents and the breadth of health risk behaviors considered.

GAPS provides medical practitioners with specific recommendations on screening adolescents for a variety of health risk behaviors. The guidelines were developed to emphasize the importance of prevention, and are comprised of twenty-four specific recommendations that enable providers to deliver preventive services to adolescents. GAPS recommends annual preventive services visits for youth aged 11 to 21, and suggests that at these visits, individuals should be screened for “specific conditions that are relatively common to adolescents and that cause significant suffering either during adolescence or later in life” (AMA, 1997, p. 1). These specific conditions include risky behaviors such as tobacco use, the use and abuse of alcohol and other drugs, recurrent depression and suicide, and sexual behaviors. Thus, it is suggested that practitioners screen adolescents at least annually by asking them if they engage in each of these risky behaviors.

The goal of this frequent and comprehensive individual screening is to identify adolescents engaging in risky behaviors, and to assess their level of risk for “adverse consequences” stemming from these behaviors; this risk assessment allows practitioners to provide immediate referral for individuals at the highest levels of risk, and provides an opportunity to discuss the situation with moderate risk individuals. That is, the development of GAPS (and other screening guidelines) is based on the belief “that high-risk behaviors and negative lifestyle patterns can be identified at an early age and that interventions can reduce premature morbidity and mortality while the patient is a teenager” (Montalto, 1999, p. 2063). In other words, individual screening provides an opportunity for immediate action if an adolescent is identified as engaging in health risk behavior, providing immediate and long-term benefit to the individual and to the medical system (Montalto, 1999).

However, these potential benefits are counteracted by some obvious costs in terms of time and resources—for doctors administering the screens, for those being screened, for researchers and organizations developing screening questionnaires, etc. (Eckert, Miller, DuPaul, & Riley-Tillman, 2003; Hallfors, Brodish et al., 2006; Miller et al., 1999). Further, screening procedures can cause psychological discomfort or distress for those being screened, and can lead to a false sense of security for individuals who are at low risk (Feldman, 1990). We would add to these costs that there is a risk of increasing the risky behavior itself, due simply to being asked the question. If the respondent answers the question “honestly” and indicates a potential of engaging in a risky behavior in the future, the one-on-one nature of the individual screen provides an opportunity for the physician or health care provider to engage the patient in a dialogue, hopefully changing their implicit and explicit attitudes toward it to be more negative. A cautionary note should be raised, however, if there is reason to believe the teenager will not indicate a positive likelihood to engage in the future (or a history of engaging in the past). As we discussed above, research suggests that there may be many behaviors in the risky behavior family towards which respondents hold a positive implicit but negative explicit attitude. In this case, the health care provider will receive a negative response to the screening question but could activate the positive implicit attitude, which could guide subsequent behavior.

Population screening: surveillance

A second facet of current screening practice is surveillance, which determines the prevalence of health risk behaviors in the population at large. Surveillance programs are epidemiological; rather than focusing on individual adolescents, they measure the health (or ill health) of a population to identify risk factors and develop prevention programs. A number of long-term and large-scale surveillance studies are carried out in the United States and worldwide by various organizations, both governmental and non-governmental. Since these studies are widespread, we describe only three representative surveillance programs (one European, two American) to provide a sketch of the methodologies employed, the prevalence of such surveillance, and the goals behind this type of screening.

Methodology, prevalence, and uses of surveillance

The European School Survey Project on Alcohol and Other Drugs (ESPAD) collects information on adolescent drug habits and alcohol use, and has been conducted every four years since 1995 (Hibell et al., 2003). The latest survey, conducted in 2003, surveyed over 100,000 16-year olds in 35 countries. ESPAD uses a questionnaire methodology, and asks a variety of questions about current (past 30 day) and lifetime use of cigarettes, alcoholic beverages and drunkenness, and illicit drugs such as marijuana, inhalants, amphetamines, and ecstasy.

Similar surveillance programs exist in the United States. Monitoring The Future (MTF), funded by the National Institute on Drug Abuse, has surveyed nationally representative samples

of adolescents in 12th grade annually since 1975, and has surveyed 8th and 10th graders since 1991 (Johnston, O'Malley, Bachman, & Schulenberg, 2006). MTF also uses a questionnaire format and reaches approximately 50,000 youth annually. MTF focuses on determining usage levels for cigarettes, illicit drugs, and alcohol, and measures lifetime use, use in the past 12 months, and use in the past 30 days. Students are also asked about the risks they perceive in using each substance, and whether they personally disapprove of the use of each substance.

A second surveillance program in the United States was developed and launched in 1991 by the Centers for Disease Control and Prevention (Centers for Disease Control, 2007). The Youth Risk Behavior Surveillance System (YRBSS) is conducted once every two years, and uses an 87-question survey to assess health risk behavior in a nationally representative sample of approximately 14,000 adolescents in 9th through 12th grade. Behaviors assessed fall into six categories: tobacco use, unhealthy dietary behaviors, inadequate physical activity, alcohol and other drug use, sexual behaviors, and behaviors which contribute to unintentional injury and violence. These behaviors contribute significantly to the leading causes of death, disability, and social problems among adolescents in the United States. Similar to ESPAD and MTF, the YRBSS evaluates lifetime and current (12 month and 30 day) engagement in risky behavior.

The goals of these three surveillance programs are similar. Generally, they aim to: provide data about the prevalence of risky behaviors that is comparable across populations, locations, and time periods; monitor the co-occurrence of risk behaviors; and measure progress toward policy goals, such as the Department of Health and Human Services *Healthy People 2010* objectives (U.S. Department of Health and Human Services, 2005).

While surveillance screening has multiple goals, the primary goal is the measurement of risky behavior in a given population. Understanding the prevalence of risk behaviors is a first step in understanding their precedents and consequences, as well as their co-occurrence. Large-scale surveillance data as discussed above, and smaller-scale surveillance data collected for specific studies, has been used to investigate important issues in the domain of adolescent health risk behavior. For example, a screening questionnaire distributed to Indiana school children identified a trend toward increased use of inhalants, indicating a need to incorporate this category of drugs into prevention programs (Ding, Torabi, Perera, Mi Kyung, & Jones-Mckyer, 2007). A surveillance study conducted in Italy identified predictive factors leading to risky behavior as well as protective factors that decrease risky behavior (Bonino, Cattelino, & Ciairano, 2005). Other studies have used YRBSS or other surveillance data to understand the relationships among risky behaviors in adolescents, leading to calls for more comprehensive intervention programs for individuals identified as engaging in these behaviors (Huizinga & Loeber, 1993; Middleman & Faulkner, 1995; Tapert, Aarons, Sedlar, & Brown, 2001). Further, the data collected via surveillance methods has led to the improvement of programs directed at

adolescents by providing guidance on populations to be targeted (Weller et al., 1999), specific behaviors that require interventions, and training for individuals interacting with adolescents (Kolbe, Kann, & Collins, 1993).

Surveillance and the question-behavior effect

Unlike individual screening, surveillance studies ask questions without providing any mechanism for later identification or referral, and are not concerned with follow up or individual responses. Indeed, surveillance studies are carried out anonymously, and great lengths are taken to ensure student confidence in the anonymity of their responses, in order to encourage truthful reporting of health risk behaviors (Kolbe et al., 1993). However, surveillance provides information on the prevalence of risk behaviors overall and in specific populations, trends in risk behaviors over time, correlations among risky behaviors, and factors which encourage or discourage risky behavior. As stated in the 2007 UNICEF report card on child welfare, “to improve something, first measure it” (UNICEF, 2007, p. 6) – that is, surveillance is the first step in understanding and therefore reducing adolescent health risk behavior in the population by developing prevention and intervention programs in the long-term.

Despite these benefits, it is this class of questions about risky behaviors that we believe warrants the greatest attention as it has the greatest potential for inadvertent harm. Surveillance programs ask questions without any follow up or even identification of individuals at risk. Thus any potential harmful effect of asking a question would have no opportunity to be counteracted through ongoing dialogue with the respondent. Even if the outcome of a surveillance program were to identify a particular segment of the population at high risk of a particular behavior and develop a mass intervention for that behavior, all the other behaviors asked about in the screen would be left unattended to. If answering questions about health risk behavior can influence the behavior asked about, then we would encourage survey designers to explicitly consider this cost when developing and implementing surveillance programs in the future.

The studies reviewed above provide empirical evidence that asking questions about risky behaviors such as drug use can increase the frequency of drug use among individuals with positive attitudes toward the behavior. Although the question behavior literature has focused largely on forward-looking questions (e.g. How often in the next week do you plan to use drugs?), surveillance and individual screening methods typically use past-looking questions (e.g. How often in the last 30 days have you used drugs?). We suggest that despite their difference in time orientation, these two types of questions likely have similar effects in activating or increasing the accessibility of implicit attitudes among respondents, which suggests that both types of questions might have the adverse effect of increasing risky behavior for those with positive implicit attitudes toward the behavior. One study that suggests this might be the case was conducted by Dholakia and Morwitz (2002). In this field study, customers of a financial service

organization were asked how satisfied they were with their prior experiences. Compared to a group not asked any satisfaction questions, those asked the question used more of the company’s products, were less likely to defect, and were more profitable for the company even up to one year after the questions were asked. Despite this evidence that asking questions about past behavior can change future behavior, the studies reported above that are most closely aligned with screening procedures asked questions about future behavior, while many screening procedures ask questions about past behavior. To date, no systematic studies of the temporal focus of questions have been conducted; thus our concerns about potential negative effects of current screening practices should be considered cautions requiring future investigation, rather than recommended prohibitions.

Despite the potential for adolescents to be influenced by answering questions about risky behaviors, the prevailing view amongst those involved public health and surveillance is that there is no danger associated with asking questions about health risk behaviors. The null effects of asking questions are described on the CDC website (<http://www.cdc.gov/HealthyYouth/yrbs/faq.htm>) and in an article authored by some of the individuals who developed the YRBSS (Kolbe et al., 1993). These authors state:

Some behaviors [measured by the YRBSS] may be controversial to measure, such as sexual intercourse and attempted suicide. All behaviors measured in the survey, however, are critical to the nation’s health. *There is no evidence that voluntarily responding to questions about any health risk behavior will encourage or discourage a respondent with regard to practicing that behavior.* (emphasis added; Kolbe et al., 1993, p. 6)

There is no evidence cited in Kolbe and colleagues’ (1993) article in support of or against the idea that questions do not influence behavior. However, there is support in the press, among organizations that would prefer to pretend risky behaviors do not exist (Ashford, 2005; Ferguson, 2004), and among educators and parents (Eckert et al., 2003; Hayden & Lauer, 2000; Miller et al., 1999) for the opposite point of view: that it is (too) dangerous to ask adolescents about risk behaviors.

We located only one empirical article in the medical literature that addressed possible iatrogenic effects of suicide screening on adolescents (Gould et al., 2005); that is, the potential for questions about suicidal behavior and ideation to lead to increased suicidal ideation and distress among screened adolescents. Over three days, 2300 students in New York State high schools completed screening questions. On Day 1, students completed screening questionnaires with respect to current mood, drug use, and depression. Half of these students (the experimental group) were randomly assigned to answer additional questions related to suicidal ideation and suicide attempt history. On Day 3, all students completed the same measures again, and in addition were asked whether they had thought about committing suicide or had felt depressed since filling out the first set of surveys. This study found no significant differences between the experimental group and the

control group in terms of distress levels or suicidal ideation immediately after the Day 1 survey or on Day 3; there were obviously no measures of suicidal behavior that could be meaningfully interpreted. Further, high-risk students (those with substance use problems, depressive symptoms, or previous suicide attempts) in the experimental group were no more distressed or suicidal than those in the control group. In fact, they were less distressed and less suicidal than high-risk students in the control group. Gould et al. (2005) conclude that there are no iatrogenic effects of asking questions on suicidal ideation or depressive feelings.

In other words, Gould and colleagues (2005) argue that asking questions about suicide does not have a negative influence on individuals answering the questions (in fact, it appears to have helped high-risk individuals to answer these questions). This result seems at odds with the studies described above examining the link between asking questions about risky behavior and actual behavior. We suspect there are at least two reasons for this seeming discrepancy. The first, and most important difference, is the nature of the dependent variable in the Gould et al. study, which was not a behavior but instead was an explicit measure of a risky behavior (i.e., suicidal ideation). No measures of implicit attitudes were taken and obviously there were no behavioral measures available to the researchers. A second, more minor point, is that the percentage of respondents in the at-risk category for suicide is likely to be much lower than the percentage that viewed skipping class or drinking positively at an implicit level. This fact would obscure any increase in the explicit measures taken by Gould and colleagues. As we have argued and presented evidence in support of, we believe that the potential harm from asking questions about risky behaviors occurs largely at a nonconscious level. Given the measures Gould et al. (2005) had available to them, perhaps their null results are not surprising.

What is a conscientious social scientist to do?

The goal of this paper is to raise awareness of the potential hazards of asking adolescents questions about risky behaviors. Instead of being purely innocuous information gathering tools, surveillance surveys have a potential downside risk which is quite dangerous if not followed up by more thorough interventions. These questions function as a form of influence that operates largely outside the respondent's ability to detect or correct. While asking questions does not fit cleanly into any of Cialdini's weapons of influence (Cialdini, 2001), asking children questions about risky behaviors could be viewed as a weapon of influence of sorts. Such a technique is all the more powerful as it seems so innocuous to the respondent. What can parents, public policy makers, and researchers do to reduce the impact of questions, while maximizing the potential positives that come from better understanding their teenagers' behavior?

We believe there are essentially four options for interacting with children about the subject of risky behavior. The most popular to many parents is to simply do nothing. By not interacting with the child, a happy sense of self-delusion can continue to operate for the parent. Of course, this leaves the

child's attitudes and behavior in the domain of risky behavior unaffected. This is a good outcome in the unlikely event the child has no positive attitudes toward risky behaviors; unfortunately this doesn't seem to be a very frequent occurrence. The second option, which we have devoted the bulk of this paper to, is to ask questions about risky behavior, but not follow them up at all. This option is quite attractive to many as a parent can always tell themselves after a child finds their way into trouble that "I did everything I could—I even asked if he/she had ever used or thought about using drugs." Of course, as we have argued, it could well be the case that the seemingly innocuous question activated an implicit positive attitude toward the risky behavior and led the child towards, rather than away from, the dangerous path.

Ultimately, we recommend that when we ask children questions about risky behaviors, we take one of two paths: providing interventions after asking questions, or asking "better" questions. We believe the former is the most powerful method for preventing the potential harm that arises from asking questions, although the latter is a better alternative than asking surveillance questions without considering their consequences; we discuss these two possibilities below.

After asking questions: can interventions counteract potentially harmful question effects?

The fundamental concepts underlying screening, or asking adolescents about health risk behaviors, are those of prevention and early intervention. The earlier that individuals engaging in, or at risk for engaging in, risky behaviors can be identified and treated, the "better and cheaper will be the outcome" (Johnson, 2002). However, in order for early intervention to be effective, we must know "on whom to do it, and how to do it" (Johnson, 2002). The "how to do it" issue is answered by research on particular interventions; below, we briefly review the intervention literature. Our focus is not a comprehensive review, as the literature is extensive—we simply review evidence about which components of interventions make them more or less effective, focusing on adolescent autonomy and in particular on the implementation of interventions (for comprehensive reviews, see Ammerman & Hersen, 1997; DiClemente, Hansen, & Ponton, 1995).

Several factors have been identified which increase the probability of a successful intervention: a strong theoretical basis for intervention design (D'Angelo & DiClemente, 1995; Kim, Stanton, Li, Dickersin, & Galbraith, 1997; Windle, Shope, & Buckstein, 1995); sensitivity to specific populations' needs and characteristics (cultural, developmental, or medial) (Hanson, Bateman, Simon, O'Grady, & Carswell, 2002; Lyles et al., 2007; Majors & Weiner, 1995; Pedlow & Carey, 2004; Weinhardt, Carey, Johnson, & Bickham, 1999); and parental monitoring and communication (Kim et al., 1997; Li, Stanton, & Feigelman, 2000; Stanton et al., 2004; Stanton et al., 2000; Ying et al., 2003). We focus in more depth below on two additional factors: adolescent autonomy and implementation.

A fundamental component of successful interventions is a focus on preserving and respecting adolescent autonomy.

Adolescence is characterized by the “desire for independence and individuality along with a concomitant disavowal of authority” (Grandpre, Alvaro, Burgoon, Miller, & Hall, 2003)—in other words, adolescents have a strong desire to retain the freedom to think and behave as they like (Brehm & Brehm, 1981; Hong, Giannakopoulos, Laing, & Williams, 1994), though they often perceive their lives as being controlled by external forces (Botvin & Eng, 1980). This desire to maintain behavioral and choice freedoms can even lead to behavioral backlash, where individuals engage in prohibited or recommended-against behaviors with greater frequency than before (Chartrand, Dalton, & Fitzsimons, 2007; Fitzsimons & Lehmann, 2004). Thus, interventions that induce reactance may not simply fail to reduce risk behavior, but may actually *increase* adolescent engagement in risky behavior.

In support of this view, interventions which support adolescent autonomy and “foster adolescents’ development and the establishment of themselves as capable and independent individuals” (Johnson, 2002, p. 248) are the most effective (Allen, Kuperminc, Philliber, & Herre, 1994). In practice, this means designing interventions which allow adolescents to come to their own conclusions about risk behaviors; the focus of those delivering interventions should be on providing facts and asking questions, and not on judging, arguing, or moralizing (Marlatt et al., 1998). Above all, individuals delivering interventions should avoid providing categorical rules or statements about not engaging in risky behaviors (Messierlian & Derevensky, 2006). For example, smoking messages that explicitly draw conclusions and support or reject smoking behavior are less influential among adolescents than implicit messages, which allow adolescents to make their own choices (Grandpre et al., 2003). Related to this, there is evidence that parental communication about rules and discipline regarding risky behavior, which threatens freedoms, may escalate smoking and drinking among adolescents (Ennett, Bauman, Foshee, Pemberton, & Hicks, 2001); similarly, overly controlling or punitive parenting styles have been related to problem behavior in adolescents (Baumrind, 1991; Jackson, Bee-Gates, & Henriksen, 1994). Thus, to promote successful interventions, and to prevent interventions from causing harm by provoking behavioral backlash, programs must be designed with an understanding of the importance that adolescents place on behavioral freedoms.

A final, critical factor for successful interventions is implementing them in schools or communities after they have been tested. There are myriad issues in implementing proven interventions in “real-world” contexts, and there is evidence that these interventions do not replicate when applied beyond their initial test setting; this may be due to a number of factors, including larger sample sizes and more variance in delivering the intervention itself (Hallfors, Hyunsan et al., 2006). In one study that looked at screening high school students for suicide risk, staff in some schools actually discontinued screening after two semesters because of a lack of resources to provide follow-ups for the high number of students identified as being at risk (29%) (Hallfors, Brodish et al., 2006); lack of resources and lack of training or information are often cited as barriers to implementing suicide screening or other prevention programs in schools (Hayden & Lauer, 2000).

Beyond the challenges of implementing and assessing interventions in the “real-world”, there are even greater challenges associated with providing interventions after large-scale screening or surveillance programs. We have argued that surveillance screening without intervention may cause harm to some individuals who may be influenced simply by answering questions about engagement in risky behaviors. However, there are certainly costs and barriers to providing intervention after surveillance. Given the tens of thousands of adolescents surveyed in the United States and abroad annually, the cost of intervention or follow-up, even for those at the highest risk, is likely prohibitive. Further, intervention after surveillance would require a lack of anonymity in reporting, which would likely make prevalence measures less accurate. While we believe that appropriate interventions are the best way to change underlying attitudes and thereby minimize the potential harm from screening adolescents, we recognize that interventions will not always be possible to implement, particularly given the scale of current surveillance practices. As a less costly alternative, public health practitioners might consider changing the surveillance tool itself; we discuss this second option below.

Asking “better” questions: can asking questions differently counteract potentially harmful question effects?

When providing interventions after screening is not possible, practitioners might alter the surveillance tool itself to reduce its potentially harmful effects. We suggest several options to minimize the potential danger associated with asking questions about risky behavior, based on the question-behavior literature: providing warnings in advance, having the respondent commit to not engage in a behavior, and changing the target or framing of the question.

First, it might be possible to provide adolescents with warnings about the potential influence of questions before they complete surveillance surveys. Williams, Fitzsimons, and Block (2004) found that when individuals were warned about the possible influence of questions on their behavior before they answered questions, they were able to correct for the influence of the question. Thus, awareness of the question-behavior effect might attenuate its influence. We believe it is important that the Williams et al. (2004) study offered a warning to the respondents prior to the question being asked, rather than after they had been asked. In this way, the question itself could be interpreted differently, through a more cautionary lens. Of course, for such a conscious filtering of the question to occur, the respondent needs sufficient cognitive resources, which may not always be possible in the context of asking questions about risky behaviors. It is, of course, also possible that informed individuals may be able to correct for the influence of questions, but they may not be motivated to do so (Wilson & Brekke, 1994), especially if they have positive (explicit) attitudes toward the risky behavior.

A second possibility to reduce potential harmful effects of asking questions is suggested in Fitzsimons, Block et al. (2007). In one experiment they asked respondents given a question about alcohol use to either pre-commit to a self-reward if they

avoided engaging in excessive drinking behavior, or to develop implementation intentions (Gollwitzer, 1999) to avoid drinking behavior. Compared to those only asked a question about future drinking behavior, both the respondents in the self-reward and the implementation conditions were significantly less likely to engage in excessive alcohol consumption over the coming week. Again, it is important to note that these motivational tools needed to be set in motion prior to the question about risky behavior being asked. However, while such a counteraction might be successful against a question about one risky behavior, its effectiveness clearly weakens as the risky behavior surveyed goes beyond one behavior to two, three or fifty, as is the case in many current screening procedures.

A number of options are possible in terms of altering question wording to lessen the impact of answering questions about risky behavior. The Levav and Fitzsimons (2006) paper discussed previously showed that switching the target of an intention question from the individual to a class member eliminated the question-behavior effect; the authors argued this was due to differences in the ease with which individuals could imagine the behaviors taking place. Applying this result to the context of questioning children about risky behavior, to the degree it would be more difficult for adolescents to imagine (or remember) a classmate, etc. engaging in a risky behavior than to imagine themselves doing so, such question framing might lead to a reduced impact on subsequent behavior. Of course, if it is easier for a respondent to imagine a peer engaging in the behavior, this question framing could lead to an even greater increase in risky behavior than had the question been about the self. Similarly, Levav and Fitzsimons (2006) found that asking individuals intention questions using a time frame that fit the behavior changed subsequent behavior, while asking about unusual or unnatural time frames did not; they argued these results were also driven by the ease with which individuals can imagine themselves flossing (naturally) 7 times in the next week versus (unnaturally) 8 times. Thus, to the extent that the time framing or the target of questions makes them difficult to answer, the question-behavior effect might be eliminated or reduced. However, these two options do involve a tradeoff. If the goal of surveillance is to attain valid and reliable measures of adolescent engagement in risky behavior, asking questions that are difficult to answer, whether they are about the individual (e.g. how many times in the past 17 days have you done drugs?) or their peers (e.g. how many times in the past week have your friends done drugs?), might make answers less valid.

Another option related to question wording is to frame the question in different ways. Recall Levav and Fitzsimons' (2006) findings which showed that questions framed in terms of avoidance (i.e., how likely are you to avoid...) had a greater impact on behavior, than did either positively (i.e., how likely are you to...) or negatively framed (i.e., how likely are you not to...) framed questions. In the context of asking children about drug use, for example, perhaps it is the case that a question such as "how likely are you to avoid using drugs" may activate a representation of the self engaging in preventative behavior, whereas "...to do drugs" or "... to not

do drugs" simply activates a representation of the respondent engaging in the behavior. Questions framed in terms of avoidance would, of course, not help to measure the prevalence of risky behavior; however, it might be advisable to ask avoidance questions in a final section of the survey, after adolescents have answered questions about the frequency of their risky behaviors in the past. Note that this suggestion will only be effective if the avoidance-framed questions are not viewed as an attempt to manipulate or restrict adolescents' choice freedom.

Finally, whether or not the surveillance tool itself is altered, it may be worth considering a decrease in the number of adolescents surveyed in surveillance programs; although this decreases the number of individuals surveyed in particular subpopulations, it is worthwhile to consider how large surveillance samples need to be to realize the benefits of surveillance. If the size of the question-behavior effect in surveillance is as large as in the studies reviewed above (Spangenberg et al., 2003; Morwitz, Johnson, & Schmittlein, 1993), it may be worthwhile to reduce sample sizes in order to balance the costs of screening against the benefits gained from larger samples.

Conclusion

In this paper we have reviewed a substantial literature that documents that when we ask questions about behaviors, we do more than simply solicit responses. In many situations, the simple act of asking a question changes the respondent's future behavior. This effect is particularly concerning when the behavior being asked about is a risky behavior, and when the respondent is an adolescent. We reviewed a growing body of studies that suggest that answering questions about risky behaviors may well license the respondent to engage in increased levels of this risky behavior. However, we certainly do not recommend that social scientists stop investigating risky behavior. On the contrary, the only hope of changing risky behavior is through further investigation. We have recommended that researchers in this domain (not to mention parents of teenagers) not simply ask questions without careful consideration of the potential negative effect of the question itself. If interventions are not practicable, surveillance tools can be modified in a number of ways to minimize the potential harm of screening adolescents regarding risky behavior. By altering question target, time orientation, or wording, or by providing warnings about the impact of questions, individuals might be somewhat protected from question-behavior effects. We believe this attenuation can be achieved through any alteration to surveillance tools that reduces the likelihood of activating implicit attitudes toward the behavior. The question in turn becomes less likely to guide future behavior. Similarly, making individuals aware in advance of the influence of questions and motivating them to correct for this influence ought to minimize the potential harm stemming from these questions. At a minimum, we hope this article has drawn attention to the potentially harmful effects of asking questions about risky behavior, and hope readers that are parents won't simply ask

their children, “Are you planning to drink at that party?” and accept “No, of course not,” as the end of the exchange.

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