



Incentives for college student participation in web-based substance use surveys

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HIGHLIGHTS

- ▶ Students in the promised incentive group were more likely to complete the survey.
- ▶ Substantive data did not differ across incentive structure.
- ▶ The promised incentive condition was more cost-efficient.
- ▶ The promised incentive condition gave a more representative sample.

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ABSTRACT

The purpose of this study was to examine the effects of two incentive conditions (a \$10 pre-incentive only vs. a \$2 pre-incentive and a \$10 promised incentive) on response rates, sample composition, substantive data, and cost-efficiency in a survey of college student substance use and related behaviors. Participants were 3000 randomly-selected college students invited to participate in a survey on substance use. Registrar data on all invitees was used to compare response rates and respondents, and web-based data collection on participants was used to compare substantive findings. Participants randomized to the pre-incentive plus promised incentive condition were more likely to complete the survey and less likely to give partial responses. Subgroup differences by sex, class year, and race were evaluated among complete responders, although only sex differences were significant. Men were more likely to respond in the pre-incentive plus promised incentive condition than the pre-incentive only condition. Substantive data did not differ across incentive structure, although the pre-incentive plus promised incentive condition was more cost-efficient. Survey research on college student populations is warranted to support the most scientifically sound and cost-efficient studies possible. Although substantive data did not differ, altering the incentive structure could yield cost savings with better response rates and more representative samples.

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1. Introduction

Across survey modes and target populations, researchers are facing declining survey response rates (e.g., Cantor, O'Hare, & O'Connor, 2008; Curtin, Presser, & Singer, 2005; McCluskey & Topping, 2011; Singer & Ye, 2013; Van Horn, Green, & Martinussen, 2009). As a result, studies require more resources in the form of monetary incentives, administrative time spent tracking non-respondents, and attempts at refusal conversion. Unfortunately, these declining response rates are currently paired with tighter budgets for research from a variety of funding streams, including the federal government and universities (e.g., Atkinson & Stewart, 2011; Collins, 2011). Therefore, it is more important than ever to run cost-efficient research studies with high-quality sampling designs that use resources wisely. The current study was designed to test the differences between two incentive structures for

survey responders in a web-based survey of substance use among college students.

Cost-efficiency means balancing costs with data quality, in an effort to maximize quality with available resources. In this study, we operationalize high quality data based on three criteria. First, a representative sample is an important component of survey quality to insure that the data obtained reflect unbiased prevalence and trend estimates (Singer & Ye, 2013). Second, a high response rate is important for statistical power, precise estimation, and credibility of the study (Van Horn et al., 2009). Third, accurate data in the area of substantive interest are obviously essential in order to make correct inferences and draw meaningful conclusions.

As substance use among college students is a major public health concern, examining the most cost-efficient survey designs is an important component of conducting high-quality research. Monetary incentives are an effective tool for increasing survey response across a variety of modes (Van Horn et al., 2009; Singer & Ye, 2013). However, little research regarding the effects of incentives on non-response or sample composition in web-based surveys is available (Singer & Ye, 2013; for exceptions see Couper, 2008; Göritz, 2006). Little is known

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about the effects of incentive among college students, except that among prospective students lotteries have very limited effectiveness (Porter & Whitcomb, 2003). Previous work on incentives, largely in surveys via postal mail, distinguishes between pre-paid incentives, given to those invited to a survey before they respond, and promised incentives, which are guaranteed to be paid only if the individuals participate in the survey. For example, Cantor et al. (2008) reviewed the literature and concluded that prepaid incentives (as little as \$1 to \$5) led to higher response rates, while promised incentives in the range of \$5 to \$25 tended not to increase response rates in telephone surveys. Similarly, Singer and Ye (2013) conclude from their review that monetary, pre-paid incentives increase response rates more than promised incentives, although they acknowledge that little work regarding incentives in internet surveys has been conducted. Therefore, this study was designed to compare data quality and cost-efficiency of two respondent incentive designs.

In our case, the substantive area of interest was college student substance use. Substance use behaviors are an important area of public health concern (Hingson & White, 2010), so that tracking the frequency of various types of use and predicting individuals most at risk of experiencing negative consequences are areas of critical importance. College students are an important population to study, given their high rates of substance use. Alcohol use among college students is associated with negative consequences for individuals and communities (Hingson, Heeren, Winter, & Wechsler, 2005). Cigarette use has been declining among youth and young adults (Johnston, O'Malley, Bachman, & Schulenberg, 2012), although the serious health risks resulting from smoking have led to continued research interest in the area (e.g., Dierker et al., 2007). Marijuana use is on the rise among youth and young adults (Johnston et al., 2012) and also can lead to serious health and social consequences (Hall & Babor, 2000; Lee, Neighbors, Kilmer, & Larimer, 2010). Finally, nonmedical use of prescription medications among college students is now at its highest level in the past two decades (Johnston et al., 2012; McCabe, West, & Wechsler, 2007). Accurate data regarding these behaviors is necessary to support prevention and intervention efforts.

1.1. Aims

This study aimed to compare two incentive structures (with otherwise identical sampling and data collection procedures) on three domains: response rates (Aim 1), sample representativeness (Aim 2), and substantive data (Aim 3). In addition, the cost of the two conditions was examined to determine the more cost-efficient strategy for survey data collection in this population (Aim 4). The first condition was a \$10 prepaid incentive provided to all invited respondents in the initial mailing. Condition 2 was a \$2 prepaid incentive provided to all invited respondents in the initial mailing and a \$10 promised incentive delivered in a second mailing to those who participated in the survey. In our sample, we hypothesized that Condition 2 would yield a higher response rate and be more cost-efficient than Condition 1. Based on prior research (e.g., Singer & Ye, 2013), we hypothesized that a \$2 prepaid incentive would be enough to get students' attention and establish the survey's credibility, since they already had an ongoing relationship with the organization conducting the survey. And, because even non-respondents get the prepaid incentive in Condition 1, we hypothesized that the cost per respondent would be lower in Condition 2. Finally, because respondents in Condition 2 get a total of \$12 rather than \$10, we hypothesized that the response rate would actually be higher in that condition (Church, 1993; Singer, Gebler, Raghunathan, Van Hoewyk, & McGonagle, 1999).

2. Material and methods

2.1. Participants

Participants were part of the *Student Life Survey* (SLS; e.g., Boyd, McCabe, & d'Arcy, 2003a,b; McCabe, Teter, & Boyd, 2005, 2006;

McCabe, 2008), an ongoing biennial survey of a random sample of undergraduate students at a large university in the Midwest. As with other surveys of various types (Cantor et al., 2008; Curtin et al., 2005; McCluskey & Topping, 2011; Singer & Ye, 2013; Van Horn et al., 2009), SLS response rates have been declining historically, from 68% in 1999, when the only incentive offered was entrance into a drawing for cash and prizes (McCabe, 2002). In 2009, the response rate dropped to only 54% with a \$10 pre-incentive and eligibility for a drawing for cash and prizes. As a result, in 2011 an experimental manipulation was planned.

2.2. Procedures

Contact information for a random sample of 3000 students was drawn from the Registrar's Office. Selected students received a mailed pre-notification letter inviting them to participate and informing them that they would receive an email containing a link to the web-based survey. With the letter, 2000 students received an incentive of \$10 (Condition 1) and 1000 students received \$2 with a promised \$10 incentive for completion (Condition 2). Participants were randomly assigned to condition. However, we note that it is possible that students saw the invitation letters of other students and compared the incentive structures. Up to four reminder emails were sent to non-responders.

2.3. Measures

Past 30-day frequency of alcohol use was measured with the question, "On how many occasions (if any) have you had alcohol to drink (more than just a few sips) during the past 30 days?" Past 30-day frequency of marijuana use was assessed by asking, "On how many occasions in the past 30 days have you used marijuana or hashish (hash)? Do not include drugs used under a doctor's prescription." Past 30-day frequency of nonmedical use of prescription stimulant and pain medication were measured with the following, "Sometimes people use prescription drugs that were meant for other people, even when their own doctor has not prescribed it for them. On how many occasions in the past 30 days have you used the following types of drugs, *not* prescribed to you? ...Stimulant medication (e.g., Ritalin®, Dexedrine®, Adderall®, Concerta®, methylphenidate); Pain medication (i.e., opioids such as Vicodin®, OxyContin®, Tylenol®3 with codeine, Percocet®, Darvocet®, morphine, hydrocodone, oxycodone)." The response options for all four measures were 1 = none, 2 = 1–2 occasions, 3 = 3–5 occasions, 4 = 6–9 occasions, 5 = 10–19 occasions, 6 = 20–39 occasions, and 7 = 40+ occasions. A "rather not say" option was also given for all substances; these responses were coded as missing. Past 30-day frequency of cigarette use was assessed by asking, "How many cigarettes have you smoked in the past 30 days?" Response options were 1 = none, 2 = less than one cigarette per day, 3 = 1–5 cigarettes per day, 4 = about ½ pack per day, 5 = about 1 pack per day, 6 = about 1 ½ packs per day, and 7 = 2 or more packs per day. Substance use measures were largely based on measures from Monitoring the Future (Johnston et al., 2012).

2.4. Plan of analysis

To address the first study aim, examining response rates from the two conditions, *t*-tests were used to compare complete and partial response rates in the overall samples and for each subgroup (i.e., by sex, class year, and race). In addition, a logistic regression analysis was used to predict survey response based on sex, class year, race, and condition, as well as interactions of condition by each of the other variables. To address the second study aim, examining sample representativeness, chi-square tests were used to assess whether, among complete responders, there were differences by sex, class year, and race. To address the third study aim, assessing differences in substantive

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