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The Effects of Drug-Prevention Messages on the Accessibility of Identity-Related Constructs

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Abstract

Recent theoretical work has posited that the self-system guides behavior via currently activated self-concepts. We adopt this framework to the study of drug-prevention messages by examining the extent to which messages can alter the accessibility of views of self and of drugs that would support non-use. Participants were exposed to one of three print-ad conditions: autonomy-themed prevention messages (treatment), health-information themed prevention messages (comparison), and informational consumer ads (control). Outcomes were reaction times to make dichotomous judgments. Relative to comparison and control ads, treatment ads were more successful at activating a self-view as a nonuser, a view that marijuana use is inconsistent with autonomy, and unwillingness to use marijuana. Post-hoc analysis revealed that the effect of ad condition on unwillingness was partially mediated by the accessibility of self-view as a nonuser.

A central task in health communication research is the identification of psychological mechanisms by which messages affect behavior and other persuasive outcomes (Slater, 2006). One mechanism that has not yet been much explored is the activation of self-concepts and related constructs. We believe this is a critical gap particularly in the area of youth-aimed drug-prevention messages, given the key tasks of identity formation and development that occur during adolescence and young adulthood (Erikson, 1968).

From a theoretical perspective, the study contributes by expanding current thinking on self-concept activation as a behavioral guide (Wheeler, DeMarree, & Petty, 2007). The study also contributes from a methodological perspective by measuring key outcomes using automatic measures, which tap the relatively spontaneous processing of information that can occur when there is little opportunity or motivation to process (Fazio, 2001), as may be the case with advertising. Further, because we use materials from a previously field-tested campaign (Slater et al., 2006), our study is an opportunity to probe the impact of the campaign in ways that are not feasible in the field but are nonetheless important to understanding campaign effects.

Background

Self-concept activation

The primary theoretical framework we employ is the Active-Self Account (Wheeler et al., 2007), which is based on the notion that currently activated self-concepts guide behavior,

and that the accessibility of those concepts can be temporarily altered by external stimuli. This view of self complements other perspectives on the self that focus on social identity (Tajfel & Turner, 1986) that have been developed within communication (e.g., Harwood, 2005) and consumer-behavior frameworks (Reed, 2004).

The Active-Self Account underscores the multifaceted nature of the self and the role of these many “possible selves” (once activated) in guiding behavior (see also Comello, 2009; James, 1890/1981; Markus & Nurius, 1986). While there are aspects of self that are chronically accessible, there are others that are less accessible in memory, or there may be competition among chronically accessible self-concepts. In the context of substance-use prevention, it is likely that youth who are regular users or who are fully committed to non-use may have stable self-concepts with respect to use. However, youth who are inclined to experiment presumably have competing self-concepts and other cognitions relevant to substance use. For example, a young person may consider herself responsible, independent, adventurous, and popular. The association of substances with such characteristics, and their accessibility in memory, seem likely to influence behavior. Even for young people who are disinclined to use, a problem from a prevention perspective is that *not* being a user is unlikely to be a salient element of self-concept. However, to the extent that being a nonuser is made more accessible, that self-concept would also be likely to exert a preventive effect. These arguments are consistent with work demonstrating the effect of attitude accessibility in strengthening the link between attitude and behavior (Fazio, Powell, & Williams, 1989), as well as with the more general proposition that the accessibility of a construct influences the extent to which an object will be categorized in terms of that construct (Bruner, 1957).

The activation of self-concepts can occur in a number of ways, such as engaging participants in activities designed to make the self-related construct salient and then measuring outcomes relevant to the primed construct. The present study investigates whether media messages can serve as sources of self-concept activation. In so doing, this study links processes described by the Active-Self Account to the literature on media priming, which has been defined as the effect of media content on people's later judgments and behavior relative to the content (Roskos-Ewoldsen, Roskos-Ewoldsen, & Carpentier, 2002, p. 97).

Accessibility of self-views as an effect of prevention messages

We focus on marijuana prevention given the health risks of marijuana use (O'Shea, McGregor, & Mallett, 2006; Pope & Yurgelun-Todd, 1996; Ramaekers, Berghaus, van Laar, & Drummer, 2004). As source material for stimuli, we used PSAs from a large-scale prevention campaign that was shown to reduce uptake of marijuana in a randomized community trial (Slater et al., 2006). The campaign focused on personal autonomy and aspirations. The randomized trial, however, did not examine mechanisms for campaign effects via activated self-concepts; the present study tests the viability of this mechanism in an experimental context.

Other large-scale prevention campaigns have been studied in terms of psychological effects (e.g., Evans et al., 2005; Paek, 2008; Palmgreen, Donohew, Lorch, Hoyle, & Stephenson, 2001; Zhao et al., 2006), but at least two issues remain underexplored. First, most efforts to probe psychological impact have been concerned with attitudes and beliefs about substances, and not with beliefs about self and attributes of the substance relevant to the self. Second, most studies have assessed attitudes, cognitions, and other outcomes using deliberative measures (i.e., requiring conscious deliberation to respond) vs. non-deliberative measures. We suggest that non-deliberative measures may capture an important dimension of risk-behavior influence that deliberative measures do not.

Prior work (Fazio, 2001; Fazio & Towles-Schwen, 1999) has shown that when there is little motivation or opportunity to consider the consequences of a behavior, automatically activated attitudes can guide behavior without one's awareness that an attitude has been activated. Certainly in some risk-conducive social situations (such as being offered a joint at a party), there might be little motivation or opportunity to consider the consequences of one's actions. Given the lack of deliberation that characterizes risky social situations, non-deliberative measures have potential to be more informative than deliberative measures (see Czyzewska & Ginsburg, 2007).

Two self-concepts were hypothesized to be differentially activated by the autonomy-themed prevention ads evaluated in this study. First, if the propositions of the Active Self Account are valid, prevention ads that were able to reduce use and uptake of marijuana in the field should likewise be effective at eliciting a view of self as a nonuser of marijuana. Second, we predicted that a self-view as an autonomous person would be differentially activated, with higher accessibility of an autonomous self associated with autonomy-themed ads than with non-autonomy themed prevention ads or control ads. Although self-views as a nonuser and as autonomous are not presumed to be inherently linked, the autonomy-themed prevention messages frame both in an aspirational and mutually reinforcing light, in which non-use supports the capacity to act independently but at the same time can also serve as an expression of autonomy. Based on the prominence of both of these self-views in the autonomy-themed ads, we proposed:

H1-2: Relative to exposure to comparison PSAs and control ads, exposure to the autonomy-themed PSAs will be associated with greater accessibility of a self-view as a nonuser of marijuana (H1) and as an autonomous individual (H2).

Accessibility of substance-related views as an effect of prevention messages

Just as the Active-Self Account posits that there are numerous attributes that can be associated with self and that the ones that are activated are more likely (than ones not activated) to guide behavior, it can also be argued that objects can have different meanings and connotations, and the ones that are made accessible will be more likely to influence behavior relative to those that are less accessible. Although autonomy can be associated with outcomes of self-reliance or self-realization, there is a negative side that is related to detachment, rebellion, poor coping, and substance use (Lee & Bell, 2003). Accordingly, drug-prevention campaigns that use autonomy as a theme must elicit an autonomous self and at the same time undermine the association of autonomy with substance use. Otherwise, the activation of an autonomous self-view might result in greater willingness to use marijuana and alcohol. Substance use must therefore be framed as an activity that is *not* consistent with autonomy.

H3: Exposure to the autonomy-themed PSAs will be associated with greater accessibility of a view that substance use is inconsistent with autonomy, relative to exposure to comparison PSAs and control ads.

Behavioral willingness

An antecedent to behavior that should be examined in a prevention context is behavioral willingness (BW; Gibbons et al., 2003), which is described as an openness to engage in risky behaviors. BW is different from intention in that it is a path to behavior that is more reactive than reasoned. Although most respondents report intentions to avoid risky behaviors, they may nevertheless be willing to engage in the behaviors if they found themselves in risk-conducive circumstances. Findings by Gibbons and colleagues indicate that while BW is highly correlated with behavior, BW predicts behavior independent of intention and expectations. In recent research, BW proved sensitive to the effects of

exposure to alcohol advertisements and counteradvertisements (Goodall, 2009) and anti-marijuana messages (Comello, in press). Thus, BW is important to consider in contexts of risky behaviors.

H4: Exposure to the autonomy-themed PSAs will be associated with less behavioral willingness to use marijuana, relative to exposure to comparison PSAs and control ads.

It may also be of interest to compare whether the reaction-time measures of behavioral willingness will be more sensitive to the effects of condition than will deliberative measures of intention. Therefore, we asked:

RQ: Will exposure predict intention to use marijuana?

Method

Participants

The sample was composed of 157 undergraduates (60% female) at a large Midwestern university. The mean age was 20 ($SD = 2.17$). The breakdown by ethnicity was White (84%), Black (8%), Asian (5%), and other (3%).

Design and Stimuli

The study used a post-test-only experimental design with random assignment to one of three conditions: 1) treatment condition featuring autonomy-themed PSAs from the field-tested campaign described earlier, 2) comparison condition featuring drug-prevention PSAs that describe marijuana risks, and 3) control condition featuring ads for consumer products. A purposive sample of print ads was used in this study to maximize contrasts between the treatment condition and the other conditions. Each condition featured four, professionally produced print ads that have been previously used in the media or in the public arena. The treatment PSAs conveyed a message that substance use is *not* consistent with personal autonomy and the achievement of future goals. The four ads from the campaign were chosen based on two criteria: that they focused on relating autonomy to substance non-use, and that the models portrayed were relatively mature-looking adolescents, given that the population studied here are typically in their late teens.

In contrast to the autonomy-themed appeal of the treatment PSAs, the comparison PSAs conveyed information about the health risks of marijuana use. To find a suitable selection of comparison PSAs, we turned to print ads used in a major national anti-drug campaign employing major national advertising agencies, to ensure that production quality would be at least as high as in the treatment PSAs, which were developed by a regional advertising firm. We selected three PSAs from the campaign that focused on conveying risk information; no other print PSAs from the campaign that were available on-line met that criterion. The fourth comparison PSA was from a national source that develops health education materials for schools, thus also ensuring comparable production quality.

The control condition featured informational ads for neutral products such as mattresses and air travel that appeared in print publications. As with the treatment and comparison prevention ads, the control ads were of sufficient quality to be used for national dissemination. To further ensure comparability, we selected ads that were similar in copy length across exemplars and conditions. Moreover, the stimulus materials were comparable in overall levels of arousal produced. Previous research has shown that higher levels of arousal are associated with slower reaction times (Lang, Bolls, Potter, & Kawahara, 1999). Thus, if the conditions differed in arousal capacity, we would expect to see differences in

baseline reaction speed in the practice task that was administered immediately after exposure. However, there were no group differences on this task, $F(2,154) = .88, p = .42$.

Together, the comparison and control conditions helped rule out the possibility that effects on substance-incongruent views would not be due simply to an anti-drug message; if this were the case, activation of substance-incongruent views would be observed in both prevention PSA conditions but not in the control condition.

Measures

Dependent variables—Our approach in measuring accessibility of self-concepts and related constructs was to use response-time latency in speeded categorization tasks, which has been validated as a measure of category-item associative strength (Fazio, Powell, & Williams, 2000). A response-time task that has been developed with respect to identity is the “me/not-me” self-categorization task (Markus, 1977), which has been used in numerous studies to assess activated self-concepts (e.g., Forehand, Deshpandé, & Reed, 2002; Smith & Henry, 1996) but not to the best of our knowledge in a prevention-message study to date. The outcome is the time in milliseconds to make speeded judgments about whether an attribute applies to the self or not. Participants were presented with a set of attributes, with each attribute appearing on the computer screen one at a time. Participants were asked to indicate as quickly as possible whether the word was self-descriptive or not by pressing keys representing “yes” or “no”. Thus, the outputs are valence (yes/no) as well as reaction time, with quicker responses indicating greater accessibility. For all tasks, filler words appeared with target words in random order.

To assess the extent to which the conditions elicited a self-view as a nonuser of marijuana (H1), the dependent variable was reaction time to indicate that “pothead” did *not* describe the self. Although this variable could have been operationalized using “yes” responses to target words or phrases meaning “nonuser of marijuana,” the reaction-time task demanded target words that were very short yet unambiguous about marijuana non-use. Because suitable words were difficult to find, the variable was operationalized by self-categorization as not a “pothead.”

For accessibility of an autonomous self-view (H2), the dependent variable was the mean reaction time to indicate that the attributes “independent” and “free” described the self ($\alpha = .66$). We employed a similar format for assessing strength of association between autonomy and marijuana use (H3). Participants viewed a set of words and, for each one, quickly indicated the extent to which the word was consistent with autonomy or not. We calculated the mean reaction time to categorize “marijuana” and “weed” as inconsistent with autonomy ($\alpha = .65$) to create a dependent variable.

Behavioral willingness (H4) was operationalized by asking participants to respond to the following scenario: “Suppose you are at a party with friends, and one of them passes you a joint. What would you do?” This was followed by another screen presenting the response option “I would smoke until I was high” and the response options of yes or no. This operationalization is consistent with the traditional use of risk-conducive scenarios in measuring BW; however, the operationalization is different in that the dependent variable is reaction time to a single risky choice, rather than a deliberative response indicating the likelihood of engaging in behavior at different risk levels (e.g., Gibbons et al., 2003). Because BW has been conceptualized as an essentially non-reasoned readiness to act, we argue that a non-deliberative measure is a congruent operationalization.

A deliberative measure of behavioral intention to use marijuana was also included to explore the RQ. Participants indicated how true the following statement was for them: “I’ve decided

for sure I will stay away from marijuana.” The response options were definitely true, mostly true, maybe true, and not at all true.

Covariates—Given the reaction-time measures of the present study, it was critical to account for individual differences in ability to respond quickly to prompts (Fazio, 1990). The measure of baseline quickness to respond was participants’ mean reaction time in a practice task. Other covariates included age and past-month marijuana use (0 days, 1 or 2 days, 3 or 4 days, 5 or 6 days, 7 or 8 days, 9 or 10 days, 11-20 days, and 21-30 days).

Procedure

The study used MediaLab (Jarvis, 2006a) and DirectRT (Jarvis, 2006b) software programs for presenting stimuli and recording responses. In each condition, participants viewed four print ads for 20 seconds each. After each ad, participants were asked to give a one-sentence description of the ad as a viewing check. Next, participants went through the practice task to gain familiarity with the reaction-time tasks. This was followed by the reaction-time tasks assessing the link between autonomy and marijuana use, accessibility of self-views, and behavioral willingness to use marijuana. Finally, participants answered deliberative questions measuring demographics, past-month marijuana use, and marijuana-use intention.

Data Cleaning and Analysis Plan

Reaction-time data were handled adapting Fazio's recommendations (1990). First, raw reaction times greater than five seconds were dropped from analysis ($n=2$). Given the strong positive skew of reaction-time data, a negative reciprocal transformation was used ($-1000/x$) and the distribution of the transformed variables inspected again to check for extreme outliers; only one case was found and dropped from analysis. Analyses were conducted using these transformed scores, which correspond to raw scores in that lower scores (i.e., more negative scores) indicate shorter latencies.

Next, we considered the direction of responses. As suggested by Fazio (1990), in situations where one response is expected to be numerically dominant (such as when there is an objectively “right” answer), it is useful to limit analysis to the subsample of dominant responses. For the first two outcomes, this was the approach we took because the relatively few responses in the opposite direction of self-view as a nonuser ($n = 7$) and of self-view as autonomous ($n = 6$) would not have supported meaningful comparisons across conditions; these were therefore dropped. For the other two outcomes, however, responses in the opposite direction were more numerous; thus, separate analyses were performed for responses in the opposite direction of inconsistency of marijuana with autonomy ($n = 25$) and of unwillingness to smoke a joint ($n = 22$). It should be noted that the distribution of consistent and inconsistent responses was independent of condition across outcomes, as indicated by non-significant chi-square tests.

The analysis plan was to conduct separate ANCOVAs for each dependent variable using the numerically dominant responses. The independent variable was condition, and the model controlled for the effects of average baseline quickness to respond, age, and past-month marijuana use. Planned contrasts to the treatment condition were then performed to test each hypothesis. Separate analyses were conducted for opposite-direction responses for two of the outcomes as described above. There were no violations of assumptions for homogeneity of error variances.

Results

Table 1 reports adjusted raw mean reaction times and numbers of participants by condition for each dependent variable.

H1 predicted that exposure to treatment PSAs would be associated with greater accessibility of a self-view as a nonuser of marijuana, relative to comparison and control ads. The hypothesis was supported. The overall test of group differences was significant, $F(2, 144) = 2.99$, $p = .05$, partial $\eta^2 = .04$. Planned contrasts showed that participants exposed to the treatment condition were quicker to categorize self as a nonuser relative to those exposed to the comparison (contrast estimate = .116, $SE = .052$, $p = .05$) and control conditions (contrast estimate = .112, $SE = .051$, $p = .04$). Contrast estimates represent mean differences; positive sign indicates shorter response latency in the treatment vs. other conditions.

H2 predicted that exposure to the treatment PSAs would be associated with greater accessibility of autonomy as a self-view relative to the other conditions. The data did not support the hypothesis: there were no differences across conditions in quickness to categorize self as independent and free, $F(2, 145) = .97$, $p = .38$.

The data supported *H3*, which predicted that exposure to the treatment PSAs would be associated with greater accessibility of a view that substance use is inconsistent with autonomy, relative to the other conditions. The overall test of group differences was significant, $F(2, 126) = 5.107$, $p = .007$, partial $\eta^2 = .075$. Planned contrasts showed that participants in the treatment condition were quicker to categorize marijuana and weed as inconsistent with autonomy than were those in comparison (contrast estimate = .157, $SE = .057$, $p = .007$) and control conditions (contrast estimate = .161, $SE = .058$, $p = .006$). Separate analysis on opposite-direction responses showed no significant effects of condition on quickness to categorize either “weed” or “marijuana” as consistent with autonomy.

There was also support for *H4*, which predicted that exposure to the treatment PSAs would be associated with less BW (i.e., more unwillingness) to use marijuana in a risky social situation, relative to other conditions. Quickness to indicate unwillingness to smoke a joint at a party differed by condition, $F(2, 127) = 5.674$, $p = .04$, partial $\eta^2 = .082$. Those in the treatment condition were quicker to make this decision relative to comparison (contrast estimate = .104, $SE = .041$, $p = .012$) and control (contrast estimate = .135, $SE = .042$, $p = .002$). Separate analysis of those who responded that they were willing to smoke a joint showed that condition had no effect on quickness, $F(2, 16) = 2.17$, $p = .146$.

Finally, the RQ asked whether behavioral intention would be a function of condition. ANCOVA results showed that condition had no detectable effect on intention, $F(2, 152) = .068$, $p = .93$. Thus, it appears that a deliberative measure of behavioral intention was less sensitive to the effects of condition than was a non-deliberative, reaction-time measure of behavioral willingness.

Post-hoc analysis

We explored whether the effect of the treatment condition on self-view accessibility was merely a function of superiority of the treatment condition in eliciting self-relevant thought in general. To examine this possibility, we tested for group differences in the accessibility of three other self-views (intelligent, friendly, and boring) that were used as filler attributes in the “me/not-me” task. No group differences were observed for any of the outcomes (p values greater than .4 in all cases).

Post-hoc analysis also explored the possibility of mediation of condition effects via activated self-concepts, as suggested by the Active Self Account (Wheeler et al., 2007) and other work (Comello, 2009). Because the statistically preferable approaches to studying mediation do not as yet accommodate categorical predictors with more than two levels, we first dichotomized the ad condition variable by collapsing the comparison and control conditions (which were comparable in prior analyses) into a single condition ($n = 77$) to contrast with the treatment condition ($n = 39$). We employed a macro designed for assessing indirect effects in single or multiple mediator models (INDIRECT version 3.0; Hayes, 2007). Ad condition was specified as the independent variable, and BW as the dependent variable. Self-view as a nonuser and marijuana inconsistency with autonomy were both specified as potential mediators. There was evidence of indirect effects through self-view as nonuser (estimate = .0165, CI = .0001 to .0457), but not through marijuana inconsistency with autonomy (estimate = -.0045, CI = -.0336 to .0196). The direct effect of ad condition on BW remained significant after controlling for the effect of other variables ($b = .12$, $SE = .04$, $p = .004$), suggesting partial mediation.

Discussion

Communication researchers have been strongly encouraged to examine the paths by which messages have effects on behavior in order to better inform persuasive message design and evaluation (Cappella, 2006; O'Keefe, 2003; Slater, 2006). This study draws attention to the potential of messages to increase the accessibility of the particular views that support the behavior, thereby providing a mechanism for health message effects. Within the context of the marijuana-prevention messages studied here, exposure to the autonomy-themed ads resulted in greater accessibility of views that one is not a user, that one would not smoke marijuana at the prompting of friends at a party, and that marijuana does not support personal autonomy. That these differences were found between treatment and comparison PSAs suggests that greater accessibility of these constructs is not a result of merely presenting an anti-drug message. The post-hoc analysis provided evidence for the proposed mechanism suggested by the Active-Self Account and other recent thinking (Comello, 2009) in which media exposure increases the accessibility of self-concepts, which in turn influence behavior. Hence, the recommendation for message design is that messages may seek to increase the accessibility of self concept as a nonuser so that it will be more likely (relative to possibly competing self concepts) to guide behavior.

Although there was support for H1 on self-view as a nonuser, there was no support for H2 on autonomous self view. Although the means were in the expected direction, we suggest that the differences did not achieve significance because a view of self as autonomous may already be chronically accessible for many college students (Chickering & Reisser, 1993). There would then be relatively little that an autonomy-themed message could do to heighten accessibility.

Overall, the findings corroborate and extend the Active-Self Account (Wheeler et al., 2007) and methodologically help adapt the Active-Self Account to media-effects studies. First, the study provided direct evidence of the ability of primes to alter the active self-concept. In contrast to previous studies that have measured an activated self concept only indirectly (e.g., by examining felt aggression as an indicator of activated African-American identity; DeMarree, Wheeler, & Petty, 2005, Study 1), the present study measured self-concept accessibility directly using a reaction-time identity measure (the "me/not-me" task) in addition to a behavior-relevant outcome (behavioral willingness). The study also provided direct evidence that primes can alter the extent to which an object is perceived as consistent with a self-relevant concept.

The effect of the autonomy-themed ads on behavioral willingness is intriguing relative to the potential influence on behavior. One may be skeptical of the reaction-time measure of behavioral willingness because it is a new measure that has yet to undergo formal testing to establish validity and reliability. However, it should be noted that the original field experiment that tested the ads used in this study also examined more conventional mechanisms for campaign effects (peer norms, risk perceptions) but found little explanatory value in these variables (Slater et al., 2006). Thus, it appears that the present study suggests an explanatory mechanism that may not only help explain impact of that media intervention, but may also suggest a mechanism of more general interest that has not been previously identified and tested.

What kinds of long-term consequences would result from increased automatic processing and construct accessibility? Although there is no model of behavior influence that claims that automatic processing will hold sway when there are other factors that motivate more effortful processing, we argue that sometimes the objective may be to reinforce existing but possibly weakly held views that can, over time and with repeated exposure, compete with strongly held views. Particularly in the case of risky behavior among youth, it is likely that youth already have competing beliefs (e.g., marijuana use is bad for my health but will make me more relaxed at parties). Media messages that automatically activate cognitions that do not support use would make these cognitions more accessible, particularly if exposure to the messages occurred over time (Higgins, 1996).

Based on significant findings for reaction-time measures and non-significant findings for the deliberative measure of intention, the results suggest that non-deliberative measures should be considered in situations where social desirability may have bearing on self-report. A person who is not likely to engage in risky behavior would quickly reply “no” because this view of self would be easily accessible; in contrast, a person who *would* engage in risky behavior but who gives the socially desirable response of “no” will have a slower reaction time, because of the extra cognitive effort required to edit self-report.

The convenience sample of college students limits the generalizability of findings, and effect sizes were modest. However, it should be noted that the campaign messages tested here were aimed at middle-school students, so this was a conservative test with respect to effects on the intended audience. The purposive sample of comparison and control ads also limits generalizability to the population of risk-information themed messages as a competing strategy, or to informational product ads. To increase generalizability, future study would benefit by employing random sampling from predefined populations of ads. In terms of measurement, two of the outcomes were single-item measures; future work is planned that will develop and test multiple-item measures.

In summary, given the range of “possible selves” that individuals possess, and given the range of possible meanings that can be associated with objects, a promising approach for persuasive health communication is to increase the accessibility of advocated self-concepts, as well as of object-construals that are consistent with those self-concepts.

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Table 1

Raw Mean Reaction Times by Condition

Outcome	Raw mean reaction times (<i>SE</i> in parentheses)		
	Treatment	Comp.	Control
Self-view as nonuser	812.52 (32.47) n = 53	909.84 (34.46) n = 47	883.74 (33.15) n = 50
Self-view as autonomous	767.38 (25.44) n = 52	800.76 (25.85) n = 50	799.06 (26.31) n = 49
Inconsistency of marijuana with autonomy	909.47 (62.81) n = 45	1146.87 (63.51) n = 44	1110.98 (64.57) n = 43
Unwillingness to smoke joint at party	1460.09 (89.09) n = 44	1691.86 (85.94) n = 47	1812.32 (90.69) n = 42

Note. Reaction times are in milliseconds. Means were adjusted for baseline quickness to respond, age, and past-month use. Raw data are reported in table; transformed data were used in analysis.