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Enhancing Prediction of Inhalant Abuse Risk in Samples of Early Adolescents: A Secondary Analysis

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Abstract

The theory of reasoned action (TRA) was used to estimate adolescents' vulnerability to inhalant abuse, operationalized by intentions to use or avoid inhalants. The model correctly differentiated 78% of all respondents ($N = 596$). A second analysis highlighted variables that discriminated properly identified from misclassified youth. False positives, those defined as being at risk, but who repudiated inhalants, were significantly less likely than their at risk peers to have used inhalants; they used inhalants and marijuana less frequently; were monitored more closely by parents; and were less rebellious (all $p < .05$). False negatives, defined as not at-risk, but who had not unequivocally rejected inhalants, were significantly more likely than their similarly classed peers to have used inhalants and marijuana, and to have used both more frequently; also, they were less highly acculturated. This study reaffirmed the utility of the TRA and underscored factors that might improve classification accuracy. This approach may facilitate prevention efforts, and may be extrapolated to any context in which risk categorization is used as a basis for prevention or amelioration.

Keywords

inhalant abuse; at risk populationsm; risk factors; early adolescence; theory of reasoned action

1. Introduction

Data from a variety of sources have raised widespread concerns regarding young adolescents' abuse of inhalants, chemical vapors inhaled intentionally for purposes of intoxication. The National Survey on Drug Use and Health (Office of Applied Statistics, 2003) reported that 2.6 million American youth 12–17 years of age (19.5%) had used an inhalant drug at least once. The annual prevalence of inhalant use for 8th graders rose significantly each year from 2002–2004 (from 7.7% to 9.6%), while usage of other common illicit drugs (marijuana, LSD, methamphetamines) fell; more recent results show that annual inhalant prevalence in 8th graders dropped to 9.1% in 2006, but this figure did not differ significantly from the prior year's estimate of 9.5% (Johnston, O'Malley, Bachman, & Schulenberg, 2006). Inhalant use appears remarkably resistant to the secular trends of decreasing illicit drug use among youth.

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The short and long-term effects of inhalant abuse are diverse and well-established. The National Institute on Drug Abuse (2004) describes a host of undesirable social consequences associated with inhalant use, including belligerence, impaired judgment in work and social situations, apathy, dizziness, slurred speech, lethargy, and stupor. Some of the principal medical consequences of these drugs can be severe; they include asphyxiation, suffocation, choking, and sudden sniffing death, which can occur after only a single episode of prolonged inhalant use. Regular use of inhalants can damage the brain, heart, kidneys, and liver.

The picture painted by current research is bleak. The rate of inhalant drug use appears stable at approximately 10% in a vulnerable segment of the population, early adolescents, many of whom are too young even to be eligible for inclusion in common surveys of risk. As such, it is difficult to estimate the true magnitude of youth inhalant use, but it probably is underestimated. Identifying factors that differentiate those at risk for inhalant use from those who are not would foster prevention efforts. If features associated with susceptibility can be identified, the goal of the present study, then possibilities for prevention or amelioration are enhanced. Information of this sort could help inform media campaigns, school programs, and parental training.

The research adopts a methodology that extends the theory of reasoned action (TRA) approach to risk categorization. The TRA holds that attitudes and subjective norms affect intentions, which in turn influence behavior (Albarracín, Johnson, Fishbein, & Muellerleile, 2001; Fishbein & Ajzen, 1975). We use the TRA identify to identify youth at greater or lesser risk for inhalant involvement, and then engage a complementary analytic approach to pinpoint variables that might be responsible for model misspecifications. This complementary analysis is designed to illuminate the factors that separate false positives from true positives, and false negatives from true negatives. In addition to serving inhalant-prevention purposes, our approach may be generalized broadly to the study of other at-risk groups, in other prevention contexts. The terms false positive and false negative are not used in a pejorative sense. Rather, they signify cases in which the TRA and respondents' self reports are at variance. As these self-reports may be predictive of later illicit drug involvement, identifying sources of misspecification may improve prediction of risk.

The research plan involves the study of a large group of early adolescents (6^{th} and 7^{th} graders), few of whom have used inhalants. It is at this age that inhalant use typically begins (Johnston et al., 2006). TRA-relevant variables (attitudes and subjective norms) predictive of future inhalant intentions are used to predict intentions, the critical outcome variable. Intention has proved an excellent proxy for behavior (Conner & Armitage, 2008; Fishbein et al., 2002). This analysis allows identification of youth who are at greater or lesser risk for inhalant involvement. We hypothesize that the TRA will prove a powerful predictive model for inhalant risk, even given the relative youth of the respondents (H_1). As in most analyses of this type, some respondents will be misclassified. Some youth identified by the as being at risk will have stated an unequivocal intention not to use inhalants; some identified as being at low risk will have admitted to the possibility that they might initiate inhalant use. Respondents identified as being at risk, but who have reported unequivocally that they will not use inhalants, are termed *resolute* abstainers. Those identified as not being at risk; but who have indicated at least some intent to use inhalants, are termed *vulnerable*. Such self-reports have been strongly linked to later use or abstinence (Wakefield, Germain, & Henriksen, 2006).

To delve into TRA predictive misspecifications, the second phase of the analysis makes use of variables that past research and theory suggest may distinguish between correctly classified and misclassified youth. A correct identification is operationally defined as one in which the TRA categorization and the respondent's stated intent to use or avoid inhalants are congruous. If our complementary approach operates as anticipated, the variables that emerge from this

phase will illuminate features of at-risk adolescents who avoid inhalant use and, equally importantly, factors associated with adolescents who appear not to be at risk (as defined by the TRA), but who may nonetheless report some intent to use inhalants. The paucity of research on early adolescent inhalant use renders development of risk models for this age group difficult. However, TRA-relevant variables are available in a data set of school-age youth collected by Ramirez et al. (2004), the basis of the present analyses. The data set includes numerous individual and socio-demographic indicators, along with inhalant attitudes, perceived norms, intentions, and use. Ramirez et al. isolated a number of factors associated with inhalant and marijuana use: They found Hispanic youth more likely than non-Hispanic youth to use inhalants and marijuana; parental monitoring and family cohesion were strongly associated with diminished inhalant and marijuana use; and the interaction of knowledge with these variables suggested the positive effects of monitoring and familism were intensified when respondents were knowledgeable about the substance in question. Other factors that discriminated inhalant users from nonusers included acculturation level, general drug attitudes, estimates of friends' attitudes, and rebelliousness (Donohew, Palmgreen, Lorch, Zimmerman, & Harrington, 2002).

Whereas Ramirez et al. (2004) were concerned with drug use across a wide age range, the present analysis is focused on early adolescents' inhalant usage intentions, because the bulk of new users is drawn from this age group (Johnston et al., 2006; Office of Applied Studies, 2003), and the common finding that stated intentions are strongly related to subsequent actions (Albarracín et al., 2001). The research plan involves developing a parsimonious model (Phase 1) based on the TRA, and then expanding these insights (Phase 2) by using a series of variables not employed in the TRA, but which our own research suggests will be useful in a complementary analysis. We hypothesize that the Phase 2 analysis will enlarge and refine TRA predictions (H_2). Integrating the TRA with factors shown in Phase 2 to be significant will produce insights for understanding adolescent inhalant use that may prove useful in future prevention efforts.

2. Method

2.1. Respondents

The sample consisted of 596 6^{th} and 7^{th} grade children from southwest Arizona. It was drawn from a larger group of 4^{th} through 12^{th} grade schoolchildren that was the basis of Ramirez et al.'s (2004) earlier research on inhalant and marijuana use. Only 6^{th} and 7^{th} graders are included in the present study, as our goal is to identify predictive features of drug use for early adolescents. It was assumed that few of the respondents had already begun usage, and this assumption largely was borne out. Respondents were drawn from five school districts (12 schools: 5 urban, 7 rural) in southern Arizona. The gender breakdown was relatively even: 304 (51%) males and 292 (49%) females. Forty two percent of the sample was 6^{th} graders. Most respondents described themselves as White (62.4%), followed by Hispanic (18.8%). The remaining 18.8% reported their ethnicity as Black, Asian, American Indian, or "other."

2.2. TRA-Relevant Variables: Attitudes, Subjective Norms, and Intentions (Phase 1)

2.2.1. Attitudes—A multi-operational approach was used to define relevant TRA variables. Unless otherwise noted, all scales used a 5-point Likert-style scoring format. Three scales were used to define respondents' general openness, or attitude, toward drug use. The inhalant attitude scale ($\alpha = 0.72$) included, "Inhalants are: dangerous; exciting; enjoyable; dumb." A second measure tapped attitudes toward marijuana ($\alpha = .85$) and included "Smoking marijuana is: bad for you; stupid; cool; fun." A final indicator of openness to drugs tapped respondents' self-reported likelihood of marijuana use: "Do you intend to smoke marijuana in the next year?" and "Do you think you might use marijuana in the future?" Dichotomous (yes/no) scoring was

used. A "no" response was recorded if respondents answered "definitely no" on both items; all other response patterns were categorized as "yes." Marijuana beliefs were used in the openness to drugs indicator because our research suggests that young adolescents do not strongly differentiate inhalants from marijuana – the substances are seen as interchangeable (Siegel, Alvaro, Patel, & Crano, in press).

2.2.2. Subjective norms—Two measures assessed perceptions of the normative nature of inhalant use. The first asked respondents to estimate their friends' attitudes toward inhalants. This 3-item measure ($\alpha = .60$) contained the following true-false items: "My friends would tell me it's stupid to use inhalants," "If I used inhalants my friends would think I was cool," and "My friends would like me more if I used inhalants." A second indicant of subjective norm required respondents to estimate the number of their friends (from 0 to 5 or more) who had used inhalants.

2.2.3. Intentions to use inhalants—Intention to use inhalants, the central dependent measure, was assessed with two items: "Do you intend to use inhalants in the next year?" and "Do you think you might try inhalants in the future?" Response options ranged from 1 (definitely yes) to 5 (definitely no). The two items were combined to create an intention index. Respondents were categorized as nonintenders if they answered "definitely no" on both items; all other response choices were coded as "yes."

2.3. Phase 2 Variables

2.3.1. Prior inhalant use—Respondents were asked if they had ever used inhalants. Those answering affirmatively reported their frequency of use. The response scale ranged from 1 (1 to 2 times) to 5 (9 or more times). Prior drug use has been found to be a strong predictor of future use (Ramirez et al., 2004).

2.3.2. Prior marijuana use—Respondents were asked if they had ever used marijuana. Those answering affirmatively were asked, "During the past 30 days, how many times have you smoked marijuana?" This item used a 5-point Likert–type scale, which ranged from 1 (once) to 4 (more than 10 times); they also could indicate if they had not smoked in the past 30 days.

2.3.3. Acculturation—Acculturation was assessed using four items from Cuellar, Harris, and Jasso's (1980) Acculturation Rating Scale for Mexican Americans. The items used in this abbreviated scale ($\alpha = .82$) were: "What language do you speak at home?" "What type of music do you listen to?" "What language do you read best?" and "What type of TV do you watch?" These items measure language preference in various domains, which are strongly associated with the total acculturation score (Dawson, Crano, & Burgoon, 1996).

2.3.4. Rebelliousness—A scale to assess respondents' tendencies to break or follow rules and directions was created with five items ($\alpha = .67$). Examples of items are: "I feel guilty when I break a rule," and "When rules and regulations get in the way I sometimes ignore them."

2.3.5. Familism—Familism was measured with a seven-item scale, which was composed of items concerned with the importance of parents, other relatives, and elders ($\alpha = .67$). Examples of items used are: "I think about what is good for my family before thinking about what is good for me," and "I owe it to my parents to do well in life."

2.3.6. Parental Monitoring—A scale to assess the degree to which adolescents felt parents were aware of their children's daily activities ($\alpha = .85$) consisted of 3 items that included, "When I am not at home, my parents know: where I am; who I am with; what I am doing."

3. Results

3.1. Prior Use

As expected, few of the respondents had used inhalants. Of 594 usable responses (2 missing), 563 (95%) reported never having used inhalants. A similar result was found for marijuana use; 562 respondents (95%) reported never having tried marijuana.

3.2. Self vs. Friends' Estimated Inhalant Use

Analysis of self-reported and estimated friends' inhalant use revealed major discrepancies, as shown in Figure 1. The illustration suggests that respondents overestimated the proportion of their friends who had used inhalants. Whether these overestimates were motivated, that is, related to respondents' own usage, was addressed in an analysis of variance (ANOVA), in which the user vs. nonuser classification was employed as the independent variable, and estimated friends' usage as the dependent measure. The ANOVA revealed a strong association between own use and estimated friends' use, $F(1, 588) = 68.04$, $p < .0001$. Those who had never used an inhalant estimated that significantly fewer of their friends had done so than did users (M =1.78 vs. 3.52, respectively). This result counsels caution when using respondents' estimates of friends' use, a proxy for subjective norms.

3.3 Phase 1: TRA Model Development

The TRA makes use of attitudes and subjective norms to predict intentions. Adopting a multi-operational orientation, respondents' attitudes were estimated by the three openness to drugs measures discussed earlier. Subjective norms were estimated via respondents' estimates of friends' inhalant intentions and the number of friends who used inhalants. These five measures were entered simultaneously as predictors in a binary logistic regression analysis. The dependent variable was respondents' self-reported intentions to use inhalants.

The classification analysis based on the TRA correctly predicted 86% of respondents' intentions (Table 1). Quality of the predictive model was supported by a number of indicators: a binary logistic regression statistic (Nagelkerke's $R^2 = .56$) revealed a strong association between predicted and obtained intention to use. Hosmer and Lemeshow's (1989) goodness of fit test shows little difference (i.e., a good fit) between predicted and obtained intention scores, χ^2 (df = 6, $N = 585$) = 5.03, p =.54. Finally, Lambda-p (Λ-p), a test of proportional reduction in error revealed that the TRA resulted in a 42% reduction in error of prediction over a strategy based on a choice of the most frequent category -- in this case, always guessing that respondents would report an intention not to use inhalants, the most common response on the dependent variable.

A more restricted analysis using as predictors only respondents' inhalant attitudes and their estimate of the number of their friends who used resulted in a significant prediction of intention as well. This restricted analysis correctly identified the intentions of 76% of respondents. However, the relationship was weaker, as might be expected when using a restricted predictor set: Nagelkerke's $R^2 = .24$; and the proportional reduction in error was not as great, Λ-p = .13. Hosmer and Lemeshow's goodness of fit test was nonsignificant, χ^2 ($df = 6$, $N = 585$) = 5.87, p =.32, as in the main analysis. The expanded predictor list affords a more certain estimate of attitudes and subjective norms, so the analysis based on the larger predictor set will be used.

Table 1 provides a good picture of the predictive efficacy of the TRA. The presentation crosses the model-based prediction of respondents' intentions to use nhalants with respondents' self-reported intentions. The TRA classified 158 of the sample of 585 respondents for whom complete data were available as being "at risk." The model promotes the expectation that these youth intended to use inhalants. The prediction was largely supported. Approximately 69%

(109 of 158 respondents) of those expected to respond positively to the question of future usage did so. Similarly, 393 of the 427 respondents who stated that they did not intend to use inhalants were identified correctly by the TRA, a hit rate of 92%. The overall predictive validity of the model (86% correctly identified) is noteworthy, and confirms H_1.

3.2. Phase 2: Enhancing Discrimination within TRA-Defined Categories

In Phase 2, a multivariate analysis of variance (MANOVA) complements the TRA by isolating variables that discriminate between successes and failures of the classification model. Respondents first are classed as at-risk or not at-risk on the basis of the TRA. A second classification variable, which is crossed with the first, defines respondents as vulnerable to inhalants or resolutely abstinent on the basis of their responses to the inhalant intention items. The 2 (TRA-defined Risk) × 2 (vulnerable/resolute) MANOVA used as dependent variables the auxiliary measures described earlier: marijuana use (ever, and number of times), inhalant use (ever, and number of times), familism, parental monitoring, rebelliousness, and acculturation.

The MANOVA revealed a statistically significant Risk multivariate main effect, Wilks' $\Lambda = .89$, $F(8, 570) = 9.22$, $p < .001$, and a statistically significant multivariate main effect of Vulnerability, Wilks' $\Lambda = .96$, $F(8, 570) = 3.12$, $p < .002$. The Risk × Vulnerability interaction also was statistically significant, Wilks' $\Lambda = .94$, $F(8, 570) = 4.91$, $p < .001$. As this interaction subsumes the two main effects, it will be the focus of our attention. The interaction suggests that significant variation on the auxiliary variables is present within correctly identified and incorrectly identified vulnerable and resolutely abstinent groups. A series of univariate ANOVAs were conducted to pinpoint these pattern differences.

3.2.1. Within groups defined by TRA as at-risk—As shown in Table 1, 158 respondents were categorized by the TRA as being at-risk of intending to use inhalants. As intention has been shown a strong precursor to later action (Albarracín et al., 2001;Conner & Armitage, 2008), such a categorization is a sign of impending problems. However, of this at-risk group, 49 respondents stated categorically that they had no intention whatever of using inhalant drugs. Do these resolute respondents differ in systematic ways from the 109 vulnerable respondents, whom the TRA identified as intenders and whose self-reported intentions were consistent with this prediction? To answer this question, we calculated a series of univariate ANOVAs. Within the at-risk group, the Vulnerability categorization serves as the independent variable, and the auxiliary variables as the dependent measures. The ANOVAs revealed a number of statistically significant between-group differences. As shown in Table 2, resolute anti-inhalant respondents identified by the TRA as being at-risk reported significantly less frequent marijuana use than the inhalant-vulnerable respondents whom the TRA also had identified as at-risk. Resolute respondents were significantly less likely to have used inhalants, and when they did, did so less frequently than their properly identified peers. Resolute anti-inhalant respondents also were monitored more closely by their parents and were less rebellious than their peers who were similarly identified by the TRA as being at-risk, but who had not stated an unequivocal intention to avoid inhalants.

3.2.2. Within groups defined by TRA as not at-risk—Of the 427 respondents whom the TRA categorized as being not at-risk for inhalant use, 34 were defined operationally as vulnerable (they did not state a categorical intention to avoid inhalants). The remaining (resolute) respondents reported intentions consistent with TRA-based expectations; that is, they reported a definite intention not to use inhalants. Within the total group that was defined as not at-risk, a series of ANOVAs using Vulnerability as the independent variable, and the auxiliary variables as dependent measures, revealed a number of statistically significant between-group differences. As shown in Table 3, vulnerable respondents -- those identified as not at-risk, but

who did not categorically reject future inhalant use -- were more likely to have used marijuana than the resolute respondents whom the TRA similarly defined as not at-risk, and they used marijuana more frequently. Vulnerable respondents also were more likely to have used inhalants and to have done so more frequently than their not at-risk, resolute peers. The two groups did not differ on familism or parental monitoring, and were equally rebellious. However, as shown in Table 3, vulnerable respondents were less highly acculturated than their resolute peers. In combination, the results of the Phase 2 analyses confirm H_2 by showing that the variables entered into the auxiliary analyses substantially refined and extended the reach of the TRA, and highlighting variables that affected the model's predictive accuracy.

4. Discussion

This research was designed to serve multiple purposes. The first was to secure information on inhalant use from an understudied group, early adolescents, and to determine ways of improving upon a widely used method of assigning risk. Another goal was to suggest and illustrate an approach to understanding factors that facilitate or retard drug use that complements the TRA, which does not discriminate within groups of individuals who show some evidence of having been misclassified. Consistent with H_1, the results of Phase 1 demonstrate once again the power of the TRA and its utility in prevention contexts. As the analyses showed, the model provided a strong prediction of intention (an 86% accuracy rate), a good fit between predicted and obtained responses, and an improvement of 42% in predictive accuracy over a purely pragmatic approach in which the most frequent response category across respondents was used to predict risk. These results indicate that even young adolescents' intentions to use inhalant drugs are systematically predictable. General attitudes or openness toward drugs (marijuana and inhalants), along with subjective norms, strongly predicted young adolescents' inhalant use intentions.

Analysis of the subjective norm data revealed an interesting and potentially instructive relationship between use and normative estimates. The results summarized in Figure 1 suggest respondents grossly overestimated the proportion of their peers who used inhalants, and this overestimate grew from one year to the next. Further, those who had used inhalants estimated that a significantly higher proportion of their friends used them as well. As inhalants are largely used in social groups rather than in isolation, users probably do have a higher proportion of friends who use inhalants than do nonusers (Beauvais, Wayman, Jumper-Thurman, Plested, & Helm, 2002;Sharp & Brehm, 1977). However, given the gulf between self-reported usage and projections of friends' use, and in accord with earlier results (Prinstein & Wang, 2005;Wolfson, 2000), it is arguable that Figure 1 depicts a discontinuity between respondents' estimates and reality. Prior social psychological research supports the view that such overestimates are motivated, and bolster users' own actions. The extensive literature on false or assumed consensus (Crano, 1983;Marks & Miller, 1987) suggests that inhalant using youth were motivated to overestimate the consensual nature of their actions to bolster the legitimacy of their actions. This result suggests that a prevention campaign that does nothing more than convey credible normatively correct information might have a positive preventive impact.

The results of Phase 1 reaffirm the utility of the TRA. Our complementary approach refined and expanded the model's risk classification system and consequent utility, consistent with H_2. The variables used in Phase 2 extend beyond those used in the TRA. Consider, for example, the children whom the model defined as not being at-risk. Most of the youth in this group (92%) confirmed this assessment by indicating that they had no intention whatever of using inhalants. But what of the 8% of this large group whom the TRA misidentified, who contrary to the model's prediction indicated that they were not unequivocally opposed to future use? The complementary analysis identified specific factors that distinguished these vulnerable respondents from their resolutely abstinent peers. Those whom the model identified as not

being at-risk, but who, nonetheless, did not unequivocally reject future inhalant use, were more likely to have smoked marijuana and to have used marijuana with greater frequency than their resolute peers. They also were more likely to have used inhalants, and to have used them more often, than resolute abstainers. These results suggest that anti-marijuana campaigns may have positive secondary effects on inhalant use. Indirect effects of this type have been reported in the persuasion literature (e.g., Alvaro & Crano, 1997). Finally, in the group identified as being not at-risk, the less acculturated students of Hispanic descent identified as vulnerable were more likely than their more highly acculturated resolute Hispanic peers to report future inhalant-use intentions. This result suggests that prevention campaigns targeting Hispanic school children should attend closely to less acculturated youth, even those identified as being not at-risk.

The model categorized 158 respondents as being at-risk for inhalant use. Of this group, 109 expressed an intention to use inhalants in the future, consistent with TRA predictions. However, 49 of the at-risk pool (31%) appeared to have been misclassified. The analytic approach of Phase 2 showed that these two groups differed systematically. The at-risk resolute (anti-inhalant) respondents used marijuana considerably less frequently than their vulnerable peers. They were less likely ever to have used inhalants, and if they did, they did so at a much lower frequency than the vulnerable group. The at-risk resolute nonusers also were monitored more closely by parents or guardians, and were less rebellious. These differences suggest that prevention campaigns focused on high risk groups should emphasize parental monitoring, as did some of the ads in the National Youth Anti-Drug Media Campaign (“Parents – the anti-drug”), and present ads designed to appeal to rebellious youth, congruent with the work of Donohew et al. (2002).

It is conceivable that the TRA misclassifications in this group were attributable to self-serving self-reports. It is more socially desirable for vulnerable respondents to deny their intent than for resolute nonusers to invent an intention to do so. However, the systematic and logical nature of the results pattern found in both the TRA-identified at-risk and not at-risk groups suggests that social desirability is not a plausible alternative explanation in this instance.

The results of the complementary analysis augment the TRA classification findings, and supplement its general applicability across prevention contexts. The variables used in this analysis were chosen on the basis of theory and the empirical literature. Obviously, other auxiliary variables could have been included in the analysis, and they might have provided more information regarding factors that might complement the TRA’s at-risk classification scheme; however, it is not likely that they would have proved incongruous with the predictors that were used. The present variable set, based on research and theory, is intended to suggest factors that might enhance inhalant prevention efforts, to provide an example of a method that might augment the already useful TRA, and to serve as a potential model for future prevention research. Coupled with persuasive approaches that capitalize on well-established tactics of persuasion (Crano & Prislin, 2006; Crano, Siegel, Alvaro, & Patel, in press), use of these variables can help identify groups of particularly vulnerable adolescents who should be targeted for ameliorative persuasive treatments. If this approach motivates researchers to extend and focus the variable sets they typically employ in their model-based interventions, the study will have fulfilled its goals.

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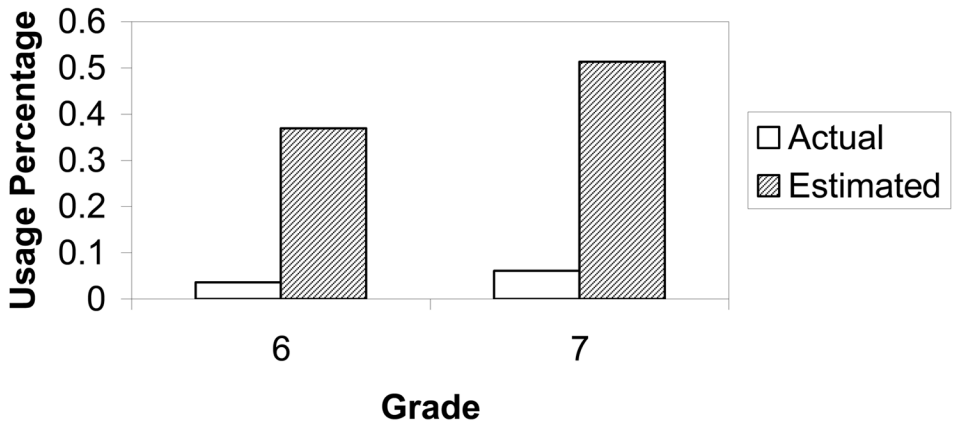

Figure 1.
Proportion of Inhalant Users in 6th and 7th Grade, Actual (Self-reported) and Estimated (Friends)

Table 1

Classification of Predicted and Obtained Intentions to Use Inhalants

	TRA-Based Classification: Predicted Intent to Use Inhalants	
Observed: Self-reported Intent to Use Inhalants	**Yes: At-Risk**	**No: Not At-Risk**
Yes	109	34
No	49	393

Table 2

Mean Differences and Analysis of Variance Results on Vulnerable vs. Resolute Anti-Inhalant Respondents Identified as At-Risk by the Theory of Reasoned Action

Variable	Vulnerable	Resolute	F(1, 154)	p=
Marijuana ever	.15	.10	.64	.42
Marijuana frequency	.21	.04	2.80	.10
Inhalant ever	.22	.02	10.98	.001
Inhalant frequency	.56	.02	8.07	.005
Familism	3.47	3.65	2.46	.12
Monitoring	3.23	3.63	5.66	.02
Rebelliousness	2.91	2.61	5.96	.02
Acculturation	4.41	4.51	.54	.46

Table 3

Mean Differences and Analysis of Variance Results on Vulnerable vs. Resolute Anti-Inhalant Respondents Identified as Not At-Risk by the Theory of Reasoned Action

Variable	Vulnerable	Resolute	F(1, 423)	p=
Marijuana ever	.09	.02	5.75	.02
Marijuana frequency	.29	.01	30.13	.001
Inhalant ever	.06	.01	5.35	.02
Inhalant frequency	.06	.01	5.35	.02
Familism	3.78	3.80	.05	.82
Monitoring	4.09	4.10	.01	.93
Rebelliousness	2.32	2.22	.91	.34
Acculturation	4.32	4.58	5.84	.02