
CONCURRENT PREDICTORS OF DRUG USE CONSEQUENCES AMONG U.S. AND RUSSIAN ADOLESCENTS

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ABSTRACT

We describe correlates of drug use-consequences related variables (addiction concern, problem consequences, and drinking alcohol/using drugs while driving) among two samples of high school students, one in the Russian Federation (n = 365), and one in the United States (n = 965). The correlates used in the analyses are based on the Theory of Triadic Influence, which organizes predictors of adolescent substance misuse into intrapersonal (e.g., depression), cultural/attitudinal (e.g., perceived harmfulness of drug use), and interpersonal (friend and family drug use) types of influence. We examined measures from each type of influence, along with drug use (cigarette and alcohol use) as correlates. Overall, correlates from each of the types of influence were significant predictors of substance use consequences variables in both samples. The most consistent predictors of consequences across countries were depression, perceived harmfulness of drug use, family substance abuser, friends' substance use, and last 30-day cigarette use. These results suggest that the Theory of Triadic Influence is relevant to both countries. We specu-

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late that drug prevention efforts may share common features among some U.S. and Russian youth populations.

Key Words: correlates of drug use consequences, Russian Federation, U.S., adolescents, Triadic influence theory

INTRODUCTION

Substance abuse and dependence may be defined as the accumulation of negative consequences resulting from drug use (Newcomb & Bentler, 1988; Sussman, Dent, & Leu, 2000; Sussman, Skara, & Ames, 2008). Adolescent substance abusers suffer numerous social, academic, physical, and legal consequences (e.g., problems at school, truncated development; Newcomb & Bentler, 1988; Sussman & Ames, 2008). Victims of substance dependence suffer additional consequences such as drug tolerance effects, withdrawal symptoms, and preoccupation with using a drug to the exclusion of other activities. The adverse effects of drug use are recognized as major public health problems internationally (Rutter, 2002; Weinberg, Harper, & Brumback, 2002; Woodroffe, Glickman, Barker, & Power, 1993). However, relatively few studies have been conducted on correlates of consequences of drug use among teens (Leccese & Waldron, 1994; Sussman & Ames, 2008; Sussman, Skara, & Ames, 2008; Winters, 1990).

The primary objective of the present paper was to assess the generalizability of psychosocial and social-environmental drug use consequences correlates across two youth samples: one in the Russian Federation and one in the U.S. Although there are cultural differences between the U.S. and Russia with regard to their political and economic histories, there are still a number of similarities in terms of correlates of drug use (Gunning et al., in press; Hibbell et al., 2000; Knyazev, 2004; Knyazev et al., 2004; Kuposov et al., 2002; Parna, et al., 2003; Scheer & Linger, 1997;; Zhuravleva, 1999). Several correlates of drug use consequences studies have been previously investigated in U.S. adolescent samples (e.g., Borges, Walters, & Kessler, 2000; Brook, Balka, & Whiteman, 1999; Newcomb & Bentler, 1988; Johnson & Kaplan, 1990; Sussman, Dent, & Galaif, 1997; Sussman, Dent, & Leu, 2000; Whitbeck, Hoyt, & Bao, 2000), but we know of very few such studies completed with adolescents in the Russian Federation (Hibbell et al., 2000; Tsarouk et al., 2007).

CORRELATES OF DRUG USE CONSEQUENCES: USE OF THE THEORY OF TRIADIC INFLUENCE

The Theory of Triadic Influence (Petraitis, Flay, & Miller, 1995) organizes predictors of adolescent substance misuse into three distinct types of influence, (1) intrapersonal, (2) cultural/ attitudinal, and (3) social/ interpersonal. This theory has been used in a previous study to explain the relationship between correlates of substance use in U.S. and Russian adolescent samples (Gunning et al., in press), and in a couple of studies to investigate substance abuse, consequences, and dependence in U.S. adolescent samples (Rohrbach, Sussman, Dent, & Sun, 2005; Sussman, Dent, & Galaif, 1997; Sussman, Dent, & Leu, 2000). Intrapersonal correlates of drug use are those that describe personality traits, affective states and beliefs about one's ability to either use or avoid substances (Petraitis et al., 1995). Cultural/attitudinal correlates of drug use include beliefs and evaluations regarding substance use, as well as general values and behaviors that contribute to substance use. Social/interpersonal variables are those that operate within the subject's social environment, generally as reported by the subject, and influence teens' perceptions of their social world. These include drug use by friends or family.

Gunning and colleagues (in press) investigated the relations of these sets of correlates with cigarette smoking and alcohol use in samples of U.S. and Russian adolescents. Overall, correlates from each of the types of influence were significant predictors of substance use in both samples. The most consistent predictors of cigarette and alcohol use across countries were friends' substance use, sensation seeking behavior, and perceived harmfulness. Having a substance abuser in one's family was negatively associated with alcohol use in the Russian sample, but positively associated with alcohol use in the U.S. sample. With this exception, a similar pattern of relationships between predictors and substance use were seen across both countries.

THE PRESENT STUDY

We examined the relationship among intrapersonal, attitudinal, and social context variables, and drug use (alcohol and cigarettes), with drug use consequences measures in the same sample of youth from Russia and the U.S. reported previously by Gunning et al. (in press). We hypothesized that intrapersonal-level variables (depression, perceived

stress, and sensation seeking behavior), cultural/attitudinal variables (health as a value, recognizing the harmfulness of drug use, school performance, and motivation to improve one's life), and social/interpersonal variables (family conflict, having a family substance abuser, and higher levels of friends' substance use), along with high levels of drug use (30-day cigarette smoking and alcohol use) would be found to be associated with (a) higher levels of addiction concern, (b) a greater number of drug use problem consequences, and (c) greater frequency of drinking alcohol/using drugs while driving.

We compared the correlates of drug use consequences among high school samples from Ufa, Bashkortostan Republic, Russian Federation, and from Los Angeles, California, United States. Bashkortostan is a republic in the Russian Federation spanning 143,600 sq km (0.8% of the Russian territory) with a population of 4.1 million (2.7% of the Russian population), and includes dozens of ethnicities (Shakurov, 1996). The capital city of Bashkortostan is Ufa, located near the Ural Mountains, with a population of a little over one million, making it the 11th highest populated city in Russia. The Los Angeles high school sample provided a comparable sample in which to replicate previous findings regarding these associations (e.g., Sussman, Dent, & Leu, 2002).

METHODS

DATA COLLECTION

A convenience sample of six regular high schools with approximately equal student enrollment was selected from Ufa, Bashkortostan, and four high schools with approximately equal student enrollment were selected in the Los Angeles Basin. Tenth grade (15-16 year old) students were selected from both sites. In Ufa, data were collected from two randomly selected classes per school. In Los Angeles, data were collected from eight health classes at each school, which allowed us to survey all 10th grade students in each school. We over sampled non-Hispanic White students in the Los Angeles sample to better match the Russian sample. Participation was anonymous, and assent/consent was obtained for all subjects and their parents, through the Bashkir State Medical University Institutional Review Board (IRB) for the Ufa data, and the University

of Southern California Health Science Campus IRB for the Los Angeles data. Data were collected from the Spring of 2007 through the Spring of 2008. In both countries, data collection took place in the classroom over one 45-minute class period and was administered by trained program staff that explained survey procedures and clarified students' questions.

QUESTIONNAIRE MEASURES

The questionnaire was developed in English, translated into Russian and back-translated into English (e.g., Brislin, 1970), by two bilingual speakers, one in Los Angeles and one in Ufa. Except for the difference in language of the questionnaires (Russian versus English), and the construction of two items assessing ethnicity and language-based acculturation, the questionnaire contents used for this study at both sites were the same. The questionnaire was 17-pages long and measured demographic characteristics (age, gender, ethnicity, and parents education; see Table 1), intrapersonal influence correlates, cultural/attitudinal influence correlates, social/interpersonal influence correlates, drug use behavior, and drug use consequences.

INTRAPERSONAL INFLUENCES

Depression was measured with five items from the shortened form of the Center for Epidemiologic Studies-Depression (CES-D) scale, measured on 4-point scales ranging from "less than 1 day" to "5-7 days" in last week, such as "How often did you feel depressed in the last 7 days" (alpha coefficient=.73; see Galaif, Chou, Sussman, & Dent, 1998; Radloff, 1977). Three items measured perceived stress, on 4-point scales, such as "In the last month, I have felt nervous and stressed" ranging from "never" to "all of the time" (alpha coefficient = .81; see Sussman & Dent, 2000). Sensation seeking was measured through an impulsivity sensation seeking subscale with six items, measured on "true-false" binary scales such as "I sometimes do 'crazy' things just for fun" (alpha coefficient=.79; e.g., see Simon et al., 1994).

CULTURAL AND ATTITUDINAL INFLUENCES

A set of three items measured the importance of health as a value on 4-point scales ranging from "not at all" to "very much," such as "How important is it for people to be physically healthy?" (alpha coefficient

= .90; see Lau, Hartman, & Ware, 1986) Perceived harmfulness of drug use was measured through 24 items, on 3-point scales ranging from “no risk” to “huge risk”. One such item asked students “How much do people take the risk to harm themselves (physically or in other ways) if they (e.g., smoke marijuana or hashish sometimes)?” (alpha coefficient = .97; Ledoux, Miller, Choquet & Plant, 2002; also see Johnston et al. 2008). Self-rating of school performance was measured through two items, measured on 4-point scales, “How well do you feel you are doing in school right now?” from “poorly” to “very well” and “How interested are you in school now?” ranging from “not at all” to “very much” ($r_{xy} = .66$; e.g., see Sussman & Ames, 2008). A set of three items measured students’ motivation to improve using 4-point scales ranging from “not at all” to “very much” such as “How much do you believe that you can really improve yourself?” (alpha coefficient = .80; see McCuller et al., 2006).

SOCIAL AND INTERPERSONAL INFLUENCES

Family conflict was measured with three items, using 4-point scales ranging from “all of the time” to “never” such as “I have a lot of arguments with my family.” (alpha coefficient = .82; e.g., see Sussman, et al., 1995). Having a family member as a drug abuser or alcoholic was a binary yes-no item. The measure of five closest friends’ drug use was averaged from four items (tapping alcohol, marijuana, cigarettes, and hard drugs) with six response options ranging from 0-to-5 friends (alpha coefficient = .82; e.g., see Rohrbach et al., 2005).

DRUG USE MEASURES

The drug use measures included self-reported past 30-day cigarette and alcohol use, assessed on 12-point scales (i.e., 0, 1-10, 11-20, ..., 91-100, over 100 times; e.g., Simon, Stacy, Sussman, & Dent, 1994; Sussman & Ames, 2008). The drug use items were binary coded into any 30-day use (0 = No, 1 = Yes) for the analyses.

SUBSTANCE USE CONSEQUENCES MEASURES

Three types of substance use consequences measures were assessed. An addiction concern index was composed of four items, measured on 4-point scales ranging from “not at all likely” to “very likely” such

as "Do you think you will ever become a drug addict?" (alpha coefficient=.83; e.g., see Sussman and Dent, 1996).

A problem consequences index was assessed with the 11-item Personal Consequences subscale (alpha coefficient=.87) of Winter's and colleagues' (1993) Personal Experience Inventory (PEI). The PEI has been recommended by the National Institute on Drug Abuse (NIDA) for use in evaluating adolescent substance abuse. The Personal Consequences subscale provides good discriminant validity between interview derived diagnostic groups (e.g., no diagnosis, abuse, dependence; biserial correlation=.72). It is perhaps the best self-report measure available to assess adolescent substance abuse disorder because of its length (only 11 items), ability to tap content that is more than just drug use per se, and its relatively high prediction of involvement with drug treatment (Lecese & Waldron, 1994; Tarter, 1990; Winters, 1990; Winters, Stinchfield, & Henly, 1993). Example items include: "In the last 12 months, how many times have you sold personal things like your clothes or jewelry to get or pay for alcohol or other drugs?" and "In the last 12 months, how many times have you had trouble at school or work due to using drugs or alcohol?" Responses included: "none", "once or twice", "sometimes (3 to 9 times)", or "often (10 or more times)".

Finally, driving while intoxicated was measured with two items: "In the last 12 months, how many times have you driven a car under the influence of alcohol?" and "In the last 12 months, how many times have you driven a car under the influence of marijuana or other drugs?" ($r_{xy}=.39$). Responses included: "none", "once or twice", "sometimes (3 to 9 times)", or "often (10 or more times)" (Sussman & Ames, 2008).

SUBJECTS

Demographics of the students in both locations are shown in Table 1. Data were collected from 365 youths in Ufa of whom 38% were Russian, 31% were Tatar, 18% were mixed (Tatar/Bashkirian, Russian/Tatar, Bashkirian/Tatar), 9% were Bashkirian, and 4% were other (Georgian, Vietnamese, primarily). In the Los Angeles sample, data were collected from 965 youths; 49% were male, 40% were Hispanic, 31% non-Hispanic white, 17% mixed, 5% African American, and 7% other (mostly Asian, Pacific Islander, or Native American). There were differences between the two samples with respect to ethnic breakdown; yet in both the Rus-

sian and U.S. samples relatively one-third of the sample was white (38% Russian vs. 31% white, respectively). We failed to find significant differences between the two samples on reported last month alcohol use, addiction concern and friends' drug use ($p's > .05$), however there were differences among the other measures examined in this study (see Table 1). The U.S. sample reported a greater mean number of problem consequences of drug use and likelihood of driving while drinking or using.

ANALYSIS

Data analysis was conducted separately with data from each country. First we established sets of correlates for each of our outcome variables (addiction concern, problem consequences, and alcohol/drug use while driving). The sets of correlates included (1) three intrapersonal variables, (2) four cultural/attitudinal variables, (3) three social/interpersonal variables, and (4) two drug use variables (see Table 2). Next we evaluated three generalized mixed-linear models (SAS Institute, 2004) in which each correlate set was regressed on the outcome variable (each of the three consequence measures), controlling for the demographic covariates (age, gender, parent's education level and ethnicity). These models accounted for intra-class correlation within clustered units (school) on computed significance levels for each drug use outcome. Then correlates that were significant predictors of substance use consequence measures in both countries in the previous models were placed into a final generalized mixed-linear model for each outcome variable (e.g., Gunning et al., in press; Rohrbach et al., 2005). These models also controlled for the demographic covariates. Multicollinearity was not a problem in any of the models. We report odds ratios and 95% confidence intervals, with significance set at $p < .05$, using two-tailed tests. All analyses were conducted using SAS v.9.1.3 statistical package (SAS Institute, 2004).

RESULTS

Table 2 shows the results of the models that examined the relationships between each of the three sets of correlates with addiction concern, problem consequences, and alcohol/drug use while driving.

Table 1. Characteristics of Two Youth Samples

	Russian Cohor (n = 365)	US Cohort (n = 965)	P1
<i>Demographics</i>			
US Ethnicity			
Asian	--	2.75%	
Latino	--	39.53%	
African American	--	4.97%	
Non-Hispanic White	--	30.87%	
Native American	--	1.69%	
Mixed	--	17.23%	
Other	--	2.96%	
Russian Ethnicity			
Bashkir	8.76%	--	
Tatar	31.36%	--	
Russian	37.85%	--	
Mixed	18.08%	--	
Other	3.95%	--	
Age	15.65(0.75)	15.14(0.93)	<.0001
Gender (% male)	44.97%	51.46%	.04
Parents Education	4.52(0.93)	3.69(1.27)	<.0001
<i>Intrapersonal Correlates</i>			
Depression	1.55 (0.67)	1.74 (0.81)	.0001
Perceived Stress	2.03(0.69)	2.21(0.81)	.0001
Sensation Seeking	0.61 (0.30)	0.65 (0.30)	.05
<i>Cultural/attitudinal Correlates</i>			
Health as a Value	3.56(0.59)	3.30(0.94)	<.0001
Perceived Harmfulness	2.31(0.55)	2.20(0.74)	.01
School Performance	2.74 (0.62)	3.09 (0.82)	<.0001
Motivation to Improve	3.15(0.59)	3.33(0.79)	<.0001
<i>Social/interpersonal Correlates</i>			
Family Conflict	2.09(0.69)	2.34(0.88)	<.0001
Family Drug Abuser	0.07(0.26)	0.42(0.49)	<.0001
Friend's Drug Use	1.61(1.36)	1.65(1.57)	.60
<i>Drug Use Correlates</i>			
Cigarette in Last Month (%)	35.78%	16.20%	<.0001
Alcohol in Last Month (%)	47.06%	42.63%	.16
<i>Outcomes</i>			
Addiction Concern	1.20 (0.38)	1.18 (0.44)	.35
Problem Consequences	1.08(0.27)	1.18(0.37)	<.0001
Alcohol and/or Drug use while Driving	1.09(0.39)	1.14(0.45)	0.07

Note: 1: p for difference across country; based on t-test for continuous variables, and χ^2 test for categorical variables.

Table 2. Predictors Modeled in Correlate Sets

Correlate Set	Addiction Concern		Problem Consequences		Alcohol and/or Drug use while Driving	
	Russian	US	Russian	US	Russian	US
Model 1: Intrapersonal						
Depression	0.20(0.06)*	0.11(0.04)*	0.33(0.05)*	0.06(0.04)	0.27(0.07)*	-0.02(0.04)
Perceived stress	0.13(0.07)+	0.10(0.04)*	-0.11(0.06)+	0.09(0.04)+	-0.11(0.07)	0.06(0.04)
Sensation seeking	0.11(0.05)*	0.18(0.04)*	0.04(0.04)	0.25(0.04)*	0.04(0.05)	0.18(0.04)*
Model 2: Cultural/attitudinal						
Health as a value	-0.17(0.07)*	0.01(0.03)	-0.02(0.04)	0.01(0.03)	-0.01(0.07)	0.01(0.04)
Perceived harmfulness	-0.13(0.06)*	-0.17(0.04)*	-0.12(0.03)*	-0.21(0.03)*	-0.17(0.06)*	-0.14(0.04)*
School performance	-0.14(0.06)*	-0.09(0.04)*	-0.01(0.03)	-0.19(0.03)*	-0.09(0.05)+	-0.10(0.04)*
Motivation to improve	0.05(0.06)	-0.26(0.04)*	-0.01(0.03)	-0.20(0.03)*	0.01(0.06)	-0.16(0.04)*
Model 3: Social/interpersonal						
Family conflict	0.11(0.06)+	0.08(0.03)*	0.01(0.05)	0.18(0.03)*	0.002(0.07)	0.06(0.03)+
Family substance abuser	0.57(0.18)*	0.20(0.07)*	0.02(0.15)	0.03(0.07)	-0.05(0.19)	0.09(0.07)
Friends' substance use	0.22(0.06)*	0.30(0.03)*	0.32(0.05)*	0.36(0.03)*	0.25(0.06)*	0.26(0.04)*
Model 4: Drug Use Correlates						
Cigarette in Last Month	0.39(0.13)*	0.80(0.10)*	0.32(0.11)*	0.71(0.10)*	0.32(0.14)*	0.45(0.11)*
Alcohol in Last Month	0.03(0.13)	0.43(0.08)*	0.16(0.11)	0.55(0.07)*	0.20(0.13)	0.37(0.08)*

Notes.
 Betas (standard error) are reported in the table. The levels were adjusted for age, gender, parent's education level and majority ethnicity for that country (US; white vs. other; Russia: Russian vs. other); possible intra-school correlations were modeled in mixed models.
 Variables standardized (mean = 0; std = 1).
 *: significance at p<0.05 based on two tailed t-test.
 +: significance at p<0.10 based on two tailed t-test.

ADDICTION CONCERN

In both the Russian and United States samples, among the intrapersonal variables, depression and sensation seeking were significantly associated with addiction concern ($p < .05$). However perceived stress was only associated with addiction concern in the U.S. sample ($p < .05$).

Among the three cultural/attitudinal variables, in both the U.S. and Russian samples perceived harmfulness and school performance were negatively related with addiction concern ($p < .05$). Health as a value was negatively associated with addiction concern only in the Russian sample only ($p < .05$). Motivation to improve was negatively associated with addiction concern only in the U.S. sample ($p < .05$).

Among the social/interpersonal variables, having a family substance abuser and friends' substance use were positively correlated with addiction concern in both samples ($p < .05$). Family conflict was positively related to addiction concern marginally in the Russian sample ($p < .10$) but significantly in the U.S. sample ($p < .05$).

Among drug use correlates, cigarette use in the last month was related to addiction concern in the Russian sample ($p < .05$), while both cigarette and alcohol use in the last month were positively associated with addiction concern in the U.S. sample ($p < .05$).

PROBLEM CONSEQUENCES

Among intrapersonal factors, only depression was related to problem consequences in the Russian sample ($p < .05$) and only sensation seeking was associated with problem consequences in the U.S. sample ($p < .05$). Perceived stress was marginally negatively associated with problem consequences in both samples ($ps < .10$).

Among cultural/attitudinal variables, perceived harmfulness was negatively associated with problem consequences in both samples ($ps < .05$). School performance and motivation to improve were negatively associated with problem consequences only in the U.S. sample.

Among social/interpersonal factors, friends' substance use was positively associated with problem consequences in both samples ($p < .05$), while family conflict was only associated with problem consequences in the U.S. sample.

The same pattern of drug use correlates was found for problem consequences as was found for addiction concern where cigarette use in the

last month was positively associated with problem consequences in both samples ($p < .05$), but alcohol use in last month was only associated with problem consequences in the U.S. sample ($p < .05$).

ALCOHOL AND/OR DRUG USE WHILE DRIVING

Among the intrapersonal variables, depression was associated with alcohol and/or drug use while driving in the Russian sample ($p < .05$), and sensation seeking was associated with this variable in the U.S. sample ($p < .05$).

Among cultural/attitudinal variables, perceived harmfulness was the only variable negatively associated with alcohol and/or drug use while driving in both samples ($ps < .05$). In the U.S. sample only, school performance and motivation to improve were negatively associated with alcohol and/or drug use while driving ($p < .05$).

Among the social/interpersonal variables, friends' substance use was the only variable positively associated with alcohol and/or drug use while driving in both samples ($p < .05$), whereas family conflict was marginally positively associated with alcohol/drug use while driving in the U.S. sample.

Among drug use correlates, in the U.S. sample both cigarette and alcohol use in the last month was positively related to alcohol and/or drug use while driving ($p < .05$), but for the Russian sample, only cigarette use in the last month showed this relationship.

FINAL MULTIVARIATE MODELS

In the final models, where all significant covariates from Table 2 ($p < .05$) were modeled simultaneously, depression and family substance abuser remained predictors of addiction concern for both samples ($p < .05$). However, school performance was predictive only in the Russian sample, and sensation seeking, perceived harmfulness, friends' substance use, and cigarettes used in last month were found to be significantly correlated with addiction concern only in the U.S. sample ($ps < .05$).

Three variables (perceived harmfulness, friends' substance use, and cigarette use in last month) were regressed on problem consequences. All of these predictors remained significantly correlated with problem consequences in the U.S. sample ($p < .05$), where friends' substance use and cigarette use in last month were both positively related and per-

Table 3. Final Multivariate Models

Correlate Set	Addiction Concern		Problem Consequences		Alcohol and/or Drug use while Driving	
	Russian	US	Russian	US	Russian	US
Final Model:						
Depression	0.15(0.06)*	0.10(0.03)*	--	--	--	--
Sensation seeking	0.08(0.05)	0.08(0.04)*	--	--	--	--
Perceived harmfulness	-0.05(0.06)	-0.13(0.03)*	-0.09(0.04) +	-0.16(0.03)*	-0.21(0.07)*	-0.10(0.04)*
School performance	-0.13(0.06)*	-0.02(0.04)	--	--	--	--
Family substance abuser	0.70 (0.17)*	0.19(0.07)*	--	--	--	--
Friends' substance use	0.01(0.07)	0.15(0.04)*	0.18(0.05)*	0.28(0.04)*	0.03(0.07)	0.24(0.04)*
Cigarette in Last Month	0.18(0.11)	0.61(0.10)*	0.14(0.08)+	0.58(0.10)*	0.28(0.12)*	0.24(0.11)*

Notes.

Includes only variables significant in Table 2 at $p < .05$;

Betas (standard error) are reported in the table. The levels were adjusted for age, gender, parent's education level and majority ethnicity for that country (US: white vs. other; Russia: Russian vs. other); possible intra-school correlations were modeled in mixed models.

Variables standardized (mean = 0; std = 1).

*: significance at $p < 0.05$ based on two tailed t-test.

+: significance at $p < 0.10$ based on two tailed t-test.

ceived harmfulness was negatively related with problem consequences. However, in the Russian sample, only friend's substance use was positively related to problem consequences ($p < .05$), and the other two measures were only marginally related to problem consequences ($ps < .1$).

Perceived harmfulness, friends' substance use, and cigarette use in the last month were regressed on alcohol and/or drug use while driving. In the U.S. sample, all three variables were found to be correlated with alcohol and/or drug use while driving ($p < .05$). In the Russian sample, perceived harmfulness was negatively related to alcohol and/or drug use while driving, while cigarette use was positively related ($p < .05$), and friends' substance use was no longer found to be a significant predictor.

DISCUSSION

The current paper serves as an important extension of the Gunning et al. (in press) paper. Triadic Influence Theory (Petraitis, Flay, & Miller, 1995) served a valuable heuristic function to suggest plausible and manageable groups of variables to test as predictors of drug use consequences. In the U.S. sample, a majority of the 12 predictors were significantly correlated with each of the consequences measures. However, in the Russian sample, a majority of the predictors were significantly associated only with the addiction concern consequences measure. Among the correlate set predictors (Table 2), 7 of 12, 3 of 12, and 3 of 12 predictors were common across the samples, on the addiction concern, problem consequences and alcohol/drug use while driving consequences measures, respectively. These results suggest that the samples are comparable, at least on these measures.

In the final multivariate models, depression and having a family member who is a substance abuser remained significant predictors of addiction concern in both samples. Having a family member who is a substance abuser apparently led youth to worry that they, too, are at risk (which might be associated to higher or lower levels of drug use depending on other variables; see Gunning et al., in press). Friends' substance use was positively correlated with problem consequences in the two youth populations. Both perceived harmfulness and cigarette

use in the last month were related to alcohol and/or drug use while driving in the U.S. and Russian population. Five of 12 predictors were associated with at least one of the three consequences measures in the final models across both samples. These five predictors represented at least one of the variables from each of the three types of influences posited from Triadic Influence Theory (Petraitis, Flay, & Miller, 1995). Thus, the theory-derived variables offer some support for application of the theory across samples. Perceived harmfulness, friends' substance use, and family substance abuser also were significant predictors in the final multivariate cigarette smoking or alcohol use models reported by Gunning et al. (in press), though depression was not a significant predictor of drug use in their final model (sensation seeking was). This difference could be due to the severity of the behaviors involved, the specific measures being examined (cigarette, alcohol use versus addiction concern, problem consequences, driving while drinking/using), or both.

Several limitations should be mentioned. The cross sectional nature of the data collection limits cause and effect presumptions. Longitudinal data are needed to provide a better idea on the order or precedence between the predictors and the consequences measures. Second, more replication studies are needed in other geographical locations in both countries to better understand the generalizability of these data. A third limitation offers a potential explanation as to why more predictors were found to be significantly correlated in the U.S. sample. The U.S. sample was larger ($n=965$) than the Russian sample ($n=365$). It is possible that had the Russian sample been bigger, more significant correlations would have been found, particularly regarding the predictors shown to be marginally predictive in Table 2.

One might speculate on the intervention possibilities that are consistent with these data. In particular, the findings from Table 3 suggest that depression, perceived harmfulness, having a family member that is a substance abuser, and friends' substance use are all important factors to consider when designing prevention or treatment programs. One may speculate that these variables suggest that cognitive misperception correction and social influence-based programming (among families and peers) are relevant to both countries (see Sussman & Ames, 2008). In any case, this paper provides direct evidence of the similarities of the

variables that predict drug consequences in youth from both the U.S. and Russia. Future prevention or treatment efforts should use evidence from both Russian and U.S. intervention programs to enhance the quality of these programs (e.g., see Williams et al., 2001 for an example).

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