Published in final edited form as:

Addict Behav. 2008 April ; 33(4): 605–615. doi:10.1016/j.addbeh.2007.11.010.

Perceptions of Level of Intoxication and Risk Related to Drinking and Driving

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Abstract

This study investigated variables of perceived risk associated with one's decision to drink and drive, as well as with the occurrence and successfulness of intervention efforts by others in preventing individuals from drinking and driving. Undergraduate students were presented with scenarios manipulating number of drinks, consumption time, and distance needed to drive. Participants then provided estimates of intoxication, degree of impairment, and likelihood of getting in an accident and getting arrested for drinking and driving. In addition, participants rated three criterion variables: intention to drive, likelihood someone would try to intervene, and receptiveness to someone attempting to intervene. Data was analyzed using three random effects regression models, one for each of the criterion variables. Results indicated that perceptions of risk were associated with decisions to drive after drinking and expected likelihood of, and receptiveness to, intervention efforts, over and above one's estimate of intoxication.

Keywords

drinking and driving; perceived risk; intervention

1. Introduction

Drinking and driving remains a serious issue among college students. According to the 2001 College Alcohol Survey, one in three college students who regularly drove reported driving after drinking in the previous month (Wechsler, Lee, Nelson, & Lee, 2003). In 2005, there were 16,885 traffic fatalities due to alcohol-related crashes and over 1.4 million drivers were arrested for driving under the influence of alcohol or narcotics (NHTSA, 2005). Despite these harmful consequences, many individuals continue to drink and drive, revealing the need for an enhanced understanding of variables influencing one's decision to drink and drive.

1.1 Estimates of intoxication and risk

Numerous variables may be associated with one's decision to drink and drive. Individuals are not always accurate in estimating their level of intoxication (MacDonald, Zanna, & Fong, 1995; Turrissi & Jaccard, 1991) and thus, may drive when they are unaware that they are intoxicated. However, even if individuals are aware of their level of intoxication, they may still

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drink and drive (Lewis & Merz, 1995; Turrissi & Jaccard, 1991). Lewis and Merz (1995) found that although individuals considered their level of impairment, close to half of participants (48%) drove even though they were aware that they should be careful driving due to the amount of alcohol they had consumed. The fact individuals choose to drive despite their level of intoxication and impairment indicates that additional variables impact one's decisions concerning drinking and driving.

The tendency of one to drink and drive has been found to decrease as both the perceived probability of being arrested or in an accident increase (Thurman, 1986; Turrissi & Jaccard, 1991). Driving distance has also been associated with one's perceptions regarding being in an accident or being arrested, as well as related to one's decision to drink and drive. Specifically, individuals are more likely to drink and drive if they only have a short distance to drive (MacDonald et al., 1995; Thurman, 1993; Turrissi & Jaccard, 1991). Perceptions of risk play an important role in one's decision to drink and drive. Nonetheless, drinking most often occurs in a social context, thus, other individuals may also influence decisions to drink and drive.

1.2 Prevalence of intervention and predictors of intervention efforts

Fortunately, past results have indicated that not only is the occurrence of intervention efforts by others reasonably common, these efforts are also fairly successful. Among college students, 68% of students reported intervening to attempt another from driving drunk and 73% of individuals reporting an intervention attempt indicated that the attempt was successful (Newcomb, Rabow, Hernandez, & Monto, 1997). Results have suggested that if an individual perceives more danger in a drinking and driving situation, they will be more likely to intervene (Wolfinger, Rabow, & Newcomb, 1994). It is unclear from the existing literature whether receptiveness to interventions increases or decreases as a function of intoxication and impairment. Due to both a lack of available research and inconsistencies in the research that currently exists concerning intervention efforts, further research in this area is warranted.

1.3 Study Overview

The current study examined factors related to drinking and driving behaviors in a sample of undergraduate students. It was hypothesized that individuals would report stronger intentions to drive after drinking, expect an intervention effort would be less likely to occur, and be less receptive to an intervention effort if they: (1) had a short, versus long distance needed to drive, (2) perceived they were less intoxicated, and (3) perceived they were less impaired, perceived the likelihood of arrest be less, or perceived the likelihood of accident to be less.

Overall, the study was designed to demonstrate that perceived risk is a significant predictor, over and above both actual and estimated BAC, of decisions to drink and drive, perceived likelihood of intervention, and receptiveness to interventions.

2. Method

2.1 Participants

Participants consisted of 277 undergraduate students from a state university, 18–45 years of age ($M = 20.5$ years, $SD = 3.22$). Seventy-five percent of participants were female; 96% white, 1% Asian, 2% Multiracial, and 1% other. Three percent of the sample indicated they were Hispanic. Data from fourteen individuals was not included in analyses, as they either did not indicate their weight or complete the questionnaires.

2.2. Measures

2.2.1 Alcohol use and drinking and driving history—Past month weekly alcohol consumption was assessed using the Modified Daily Drinking Questionnaire (DDQ-M;

Dimeff, Baer, Kivlahan, & Marlatt, 1999). The questionnaire contains a grid in which participants indicated the number of standard drinks they typically consume in a week, as well as the number of hours they typically drink. Participants also indicated their past month alcohol use frequency and quantity on 9- and 11- point scales, respectively. Participants completed open-ended questions assessing the number of times they had “driven under the influence of alcohol” in the past 30 days and the past 6-months.

2.2.2. Scenarios—Drinking scenarios described *X* number of drinks (2, 3, 4, or 5 drinks for female participants and 3, 4, 5, or 6 drinks for males) consumed over *Y* period of time (1, 2, or 3 hours). The scenarios consisted of 24 presented combinations of numbers chosen so that for both an average sized man and an average sized woman their estimated BAC would be over .08% (the legal limit for South Dakota) approximately half of the time. Participants randomly received one of four different scenario orders. The following is an example: “Assume you have been drinking at a party at the house of someone you just met and have drank 4 drinks in the past 2 hours.” Participants were asked to assume that they had been drinking the type of alcohol they usually drink and were provided with definitions of a standard drink. During 12 of the presented scenarios, participants were asked to assume the distance needed to drive to their destination was a short-distance, or in the vicinity (2–3 miles) and in the other 12, that the distance needed to drive was a long-distance (25–30 miles). Distance order was counterbalanced.

2.2.3. Post Scenario Ratings—After each scenario, participants estimated how over or under the legal limit they believed they would be after drinking the presented *X* amount of drinks after *Y* time period on a 21-point rating scale with numbers ranging from –10 to 10. The labels *extremely under the limit*, *quite under the limit*, and *slightly under the legal limit* were placed underneath the numbers –9, –6, and –3 respectively. The number 0 represented *at the legal limit*, and labels *slightly above the legal limit*, *quite above the legal limit*, and *extremely above the legal limit* were placed under numbers 3, 6, and 9, respectively (Jaccard & Turrissi, 1987). Participants indicated their perceived impairment on a 9-point scale ranging from 0 (*not at all impaired*) to 8 (*extremely impaired*). In addition, participants indicated their perceived ability to drive after each scenario on a 9-point rating scale ranging from 0 (*completely safe to drive*) to 8 (*extremely unsafe to drive*). Perceived impairment was defined as the mean of the above two variables ($\alpha = .97$).

Likelihood of arrest and accident were both assessed using scales ranging from 0 (*extremely unlikely*) to 8 (*extremely likely*). Arrest was defined as the likelihood of being stopped by a police officer. Following each individual trial, participants indicated whether or not they would drive considering the presented scenario information, as well as the likelihood someone would intervene to prevent them from driving, on 9-point scales ranging from 0 (*extremely unlikely*) to 8 (*extremely likely*). Intervening was defined as *someone tried to convince you not to drive after drinking* (Kennedy, Isaac, Nelson, & Graham, 1997). Participants indicated how receptive they would be if someone were to intervene to prevent them from drinking and driving on a 9-point rating scale ranging from 0 (*extremely unreceptive*) to 8 (*extremely receptive*).

2.2.4 Blood alcohol concentration (BAC)—Participant’s BAC was calculated for each trial by using the number of drinks and time taken to consume from the individual trials, as well as each individual’s weight and gender. BAC was calculated by means of an updated “Widmark formula.” (U.S. Department of Transportation, 1994).

2.3 Procedure

Students in undergraduate courses completed randomly presented questionnaires online. Participation was voluntary, and students received course credit as compensation for their time.

All participants provided informed consent and procedures were approved by the university IRB. Participants were required to have a driver's license in order to be eligible for participation.

3. Results

3.1. Descriptive statistics

Seventeen percent of participants indicated that they did not drink at all in the past 30 days. Those reporting some alcohol consumption in the past 30 days reported drinking an average of one day per week (rating scale $M = 3.80$, $SD = 1.38$) and consuming an average of 15 drinks each week ($SD = 12.5$). Forty-two percent of individuals reported driving under the influence of alcohol in the past 6 months. Rates of alcohol use and drinking and driving are thus high compared to national norms. For example, the 2006 National Survey on Drug Use and Health reported 33.6% of full-time college students did not indicate past month alcohol use and 27.3% of individuals 21 to 25 years of age endorsed driving under the influence of alcohol in the prior year (SAMHSA, 2007). In the current sample, of those indicating that they had driven under the influence of alcohol in the past 30 days, mean number of times driving under the influence was 1.92 ($SD = 1.38$). Concerning the experimental manipulation of number of drinks and hours for scenarios, BAC ranged from .00% to .19% for men and .01% to .22% for women indicating that appropriate values were utilized in covering a range of BACs for both men and women.

3.2. Random Effects Models

Random effects models allow for the nesting of multiple observations within person. Higher-level (L2) units, or the covariates of participants in the study, are between-subject variables and are held constant across repeated observations of the person. Repeated measures, lower level units (L1), are allowed to vary across the higher-level units (Diez Roux, 2004). All continuous within-subject repeated measure predictors were centered at the subject mean and the continuous between-subject variable (weekly alcohol consumption) was centered at the grand mean. Grand mean-centered subject mean scores of the within-person variables were used to differentiate between-subject differences across scenarios (Snijders & Bosker, 1999). Due to the high correlation between the subject mean scores of likelihood of arrest and likelihood of getting in an accident, only the subject mean for likelihood of arrest was included in the analysis.

A series of three random effects regression models were tested with the following criterion variables: intention to drink and drive, likelihood of intervention, and receptiveness to intervention efforts. Analyses were conducted using the xtreg command in Stata 8 (StataCorp, 2003). The current study controlled for gender, typical weekly alcohol consumption, and calculated BAC. For each of the models the following eight predictors were included: gender (L2), average weekly alcohol consumption (L2), calculated BAC (L1, L2), distance (experimental effect), perceived intoxication (L1, L2), perceived impairment (L1, L2), likelihood of arrest (L1, L2), and likelihood of getting in an accident (L1).

3.2.1 Likelihood of driving—At Step 1, gender, calculated BAC (L1, L2), and weekly alcohol consumption (L2) were entered. L1 BAC was negatively, and L2 consumption positively, associated with intentions to drive. At Step 2, distance was negatively associated with intentions. At Step 3, L1 perceived intoxication and L2 perceived intoxication were negatively associated with intentions. At Step 4, perceived impairment (L1, L2), likelihood of getting in an accident (L1), and likelihood of arrest (L1, L2) were entered. Level 1 perceived intoxication was no longer significant in the final model and L2 perceived intoxication changed in sign to a positive coefficient. L1 perceived impairment, L2 perceived impairment, and L1

arrest were all negatively associated with intentions. Exploratory analyses indicated that perceived behavioral tolerance may be a potential explanation for the L2 perceived intoxication change in sign, as the difference between one's estimate of intoxication and impairment suggested that a greater distance between these two estimates (i.e., high degree of intoxication yet low perceived impairment) may be associated with a greater likelihood of driving. Results are presented in Table 1.

3.2.2 Likelihood of intervention—At Step 1, L1 BAC was positively, and L2 consumption negatively, associated with likelihood of intervention. At Step 2, distance was positively associated with likelihood of intervention, though did not add to the overall variance accounted for. At Step 3, perceived intoxication (L1, L2) was entered. Level 2 consumption was no longer significant, while L1 perceived intoxication and L2 perceived intoxication were positively associated with likelihood of intervention. At Step 4, perceived impairment (L1, L2), likelihood of getting in an accident (L1), and likelihood of arrest (L1, L2) were entered. Distance, L1 perceived intoxication, L1 and L2 perceived impairment, L1 and L2 arrest, and L1 accident were positively associated with the criterion. L2 perceived intoxication was negatively associated with the criterion in the full model. Results are presented in Table 2.

3.2.3 Receptiveness to intervention effort—At Step 1, L1 BAC and L2 consumption were positively associated with expected receptiveness to intervention efforts. At Step 2, distance was positively associated with the criterion. At Step 3, perceived intoxication (L1, L2) was entered. Level 2 consumption was no longer significant; however, L1 and L2 perceived intoxication were both positively associated with expected receptiveness to intervention. At Step 4, perceived impairment (L1, L2), likelihood of getting in an accident (L1), and likelihood of arrest (L1, L2) were entered. Distance and L1 and L2 perceived impairment were positively associated with expected receptiveness to intervention in the full model. L2 perceived intoxication was negatively associated with receptiveness in the full model. Results are presented in Table 3.

3.3 Associations between perceptions of risk and actual drinking and driving behaviors

In order to evaluate if participants' mean risk perceptions in the scenarios were associated with actual behaviors, *t* tests and effect sizes were computed. Individuals indicating that they drove under the influence of alcohol in the past six months reported perceiving the likelihood of arrest ($n = 112$, $M = 3.20$, $SD = 1.53$) to be less than those that did not drive under the influence of alcohol ($n = 157$, $M = 4.34$, $SD = 1.81$), $t(267) = 5.40$, $p < .001$, Cohen's $d = .64$, as well as perceived they would be less likely to be in an accident ($M = 3.17$, $SD = 1.51$); when compared with those that did not drive after drinking ($M = 4.38$, $SD = 1.82$), $t(267) = 5.77$, $p < .001$, Cohen's $d = .67$. Those driving after drinking perceived their level of impairment ($M = 3.66$, $SD = 1.46$) to be less than those that did not drive after drinking alcohol ($M = 4.83$, $SD = 1.72$), $t(267) = 5.85$, $p < .001$, Cohen's $d = .68$. Thus, perceptions of risk in the vignettes were related to actual reported drinking and driving behavior.

4. Discussion

The present study investigated variables of perceived risk associated with decisions to drink and drive, as well as with the likelihood and successfulness of intervention efforts by others to prevent drinking and driving. Individuals indicated they would be more likely to drink and drive, felt an intervention effort would be less likely, and would be less receptive to an intervention effort when asked to assume they have a short distance to travel, versus a long distance. Furthermore, results indicated that risk factors, including perceived impairment, likelihood of arrest, and likelihood of accident, affect individuals' perceptions of drinking and driving behaviors and intervention efforts over and above level of intoxication.

Gender was not found to be associated with one's likelihood of drinking and driving, the likelihood one felt another would intervene, or how receptive one would be to an intervention effort by another. Individuals reporting higher weekly alcohol consumption were more likely to indicate they would drive after drinking, felt an intervention effort would be less likely, and would be less receptive to an intervention effort by another. However, after variables of perceived risk were added, weekly alcohol consumption was no longer significant. This suggests that the association between typical alcohol consumption and perceptions of drinking and driving behaviors is, in part, due to differences in the perception of associated risk.

As expected, the within-subject variable blood alcohol concentration was a significant predictor across models. This finding indicates that participants were responding to the presented stimuli. Interestingly, for both criterion variables related to intervention efforts by another, the within-subject variable BAC was no longer significant after variables of perceived risk were entered in the model.

The finding that individuals will be less likely to drink and drive if they feel they only have a short distance to drive is consistent with previous research (MacDonald et al., 1995; Thurman, 1986). The current results extend past research concerning distance needed to drive by examining the effect of distance on the likelihood of and receptiveness to intervention efforts. As expected, if individuals were asked to assume they had a long distance to drive, they felt the likelihood of an intervention effort would be greater and also indicated they would be more receptive to an intervention effort by another.

Perceived intoxication had a significant within-subject effect in each of the models. Nonetheless, after adding variables of perceived risk, the within-subject effect of perceived intoxication was no longer a significant predictor for the likelihood of driving or the receptiveness of an intervention effort. This implies that perceived intoxication is primarily associated with these outcomes due to its effect on perceived risk. In the full models, the between-subject effect of level of intoxication was positively associated with drinking and driving intentions and negatively associated with likelihood and receptiveness to intervention efforts. Exploratory analyses focusing on the difference between one's perceived intoxication and impairment suggested that a greater distance between these two estimates may be associated with a greater likelihood of driving. Thus, those that feel they have more of a behavioral tolerance may be more comfortable driving as they do not feel as impaired, despite recognizing that they are likely quite intoxicated. The current study adds to previous findings by suggesting that although perceived intoxication may be a significant predictor, perceived risk may be a more proximal one.

Both between- and within- person effects for individuals' perceived level of impairment were found to be significant. Individuals indicated that as they felt more impaired, they would be less likely to drive, felt the likelihood of another intervening in preventing them from drinking and driving to be greater, and would be more receptive to an intervention effort by another. Previous research has suggested that individuals may choose to drink and drive, despite feeling impaired (Lewis & Merz, 1995). Indeed, in the current study, perceived likelihood of an accident or arrest were found to play a role in one's decision of whether or not to drink and drive, over and above perceived level of impairment. Individuals indicated that if they perceived the likelihood of arrest to be greater, they would be less likely to drive after drinking. Although both likelihood of accident and arrest were associated with expectations of intervention, they were not associated with perceived receptiveness to intervention efforts.

It is important to note limitations of the current study. The sample was a predominantly White college population and thus generalization to other samples remains to be tested. Nonetheless, individuals aged 21–25 report the highest rate of driving under the influence of alcohol,

revealing the importance of studying drinking and driving behaviors amongst this at risk group (SAMHSA, 2007). Due to the fact that individuals were asked to complete the study free of the effects of alcohol, it may be argued that the results lack external validity. However, MacDonald and colleagues (1995) reported that intoxicated participants were no more likely to underestimate their BAC when compared with sober participants.

It is also of importance to mention the strengths of this study. Few studies have integrated the variables included in the present study to obtain a better understanding of their combined effects. By employing random effects models, the current study was able to provide information concerning both between- and within- person effects. Given that variables of perceived risk were found to be significant predictors, over and above estimated level of intoxication, results from the current study suggest that prevention efforts focusing on BAC levels are not sufficient. It would be beneficial for prevention efforts to also address risk perceptions.

In sum, the current study examined drinking and driving behaviors and intervention efforts through the use of hypothetical vignettes. Results from random effects regression models indicated that individuals were more likely to drink and drive, felt an intervention effort by another would be less likely, and would be less receptive to an intervention effort when asked to assume they had a short distance to travel versus a long distance. Furthermore, results indicated that perceptions of risk were associated with decisions to drive after drinking and expected likelihood of, and receptiveness to, intervention efforts, over and above one's estimate of intoxication.

Acknowledgements

This research and manuscript preparation was supported in part by a National Institute on Alcohol Abuse and Alcoholism Grant AA014573 to Jeffrey S Simons.

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Table 1
Summary of Random Effects Regression Analysis for Variables Predicting
Likelihood to Drive (N = 277)

Variable	<i>B</i>	<i>SE B</i>	<i>p</i> -value
Step 1			
Gender (L2)	−0.28	0.30	.347
Weekly alcohol consumption (L2)	0.04	0.01	.000
BAC (L1)	−20.74	0.53	.000
BAC (L2)	−5.45	5.47	.319
Step 2			
Gender (L2)	−0.27	0.30	.357
Weekly alcohol consumption (L2)	0.04	0.01	.000
BAC (L1)	−20.73	0.53	.000
BAC (L2)	−5.43	5.48	.322
Distance	−0.25	0.04	.000
Step 3			
Gender (L2)	−0.17	0.29	.558
Weekly alcohol consumption (L2)	0.03	0.01	.001
BAC (L1)	−11.86	0.69	.000
BAC (L2)	−2.24	5.47	.682
Distance	−0.25	0.04	.000
Perceived intoxication (L1)	−0.16	0.01	.000
Perceived intoxication (L2)	−0.11	0.03	.001
Step 4			
Gender (L2)	−0.35	0.27	.193
Weekly alcohol consumption (L2)	0.01	0.01	.371
BAC (L1)	−5.05	0.71	.000
BAC (L2)	−6.31	4.93	.201
Distance	−0.23	0.04	.000
Perceived intoxication (L1)	−0.01	0.01	.334
Perceived intoxication (L2)	0.16	0.04	.000
Perceived impairment (L1)	−0.45	0.03	.000
Perceived impairment (L2)	−0.83	0.16	.000
Likelihood of arrest (L1)	−0.05	0.03	.044
Likelihood of arrest (L2)	0.04	0.13	.725
Likelihood of accident (L1)	−0.02	0.03	.562

Note. Step 1 R^2 : within = .20, between = .08, overall = .14, χ^2 (4) = 1535.29, $p < .0001$;

Step 2 ΔR^2 : within = .00, between = .00, overall = .00, $\Delta\chi^2$ (1) = 32.61, $p < .0001$;

Step 3 ΔR^2 : within = .05, between = .04, overall = .04, $\Delta\chi^2$ (2) = 389.24, $p < .0001$;

Step 4 ΔR^2 : within = .07, between = .18, overall = .13, $\Delta\chi^2$ (5) = 703.58, $p < .0001$.

Final Model χ^2 (12) = 2990.72, $p < .0001$, R^2 : within = .33, between = .29, overall = .31

Table 2
Summary of Random Effects Regression Analysis for Variables Predicting
Likelihood of Intervention Efforts (N = 277)

Variable	<i>B</i>	<i>SE B</i>	p-value
Step 1			
Gender (L2)	0.00	0.32	.989
Weekly alcohol consumption (L2)	−0.03	0.01	.003
BAC (L1)	20.94	0.50	.000
BAC (L2)	3.74	5.91	.527
Step 2			
Gender (L2)	0.00	0.32	1.000
Weekly alcohol consumption (L2)	−0.03	0.01	0.003
BAC (L1)	20.93	0.50	0.000
BAC (L2)	3.72	5.91	0.529
Distance	0.20	0.04	0.000
Step 3			
Gender (L2)	−0.19	0.30	0.534
Weekly alcohol consumption (L2)	−0.01	0.01	0.380
BAC (L1)	8.62	0.63	0.000
BAC (L2)	−2.25	5.65	0.690
Distance	0.21	0.04	0.000
Perceived intoxication (L1)	0.22	0.01	0.000
Perceived intoxication (L2)	0.20	0.03	0.000
Step 4			
Gender (L2)	0.12	0.26	0.627
Weekly alcohol consumption (L2)	0.02	0.01	0.061
BAC (L1)	1.14	0.63	0.072
BAC (L2)	2.88	4.75	0.544
Distance	0.17	0.04	0.000
Perceived intoxication (L1)	0.06	0.01	0.000
Perceived intoxication (L2)	−0.11	0.04	0.011
Perceived impairment (L1)	0.40	0.02	0.000
Perceived impairment (L2)	0.64	0.15	0.000
Likelihood of arrest (L1)	0.12	0.02	0.000
Likelihood of arrest (L2)	0.32	0.12	0.008
Likelihood of accident (L1)	0.06	0.02	0.014

Note. Step 1 R^2 : within = .22, between = .04, overall = .12, $\Delta\chi^2(4) = 1735.37$, $p < .0001$;

Step 2 ΔR^2 : within = .00, between = .00, overall = .00, $\Delta\chi^2(1) = 24.01$, $p < .0001$;

Step 3 ΔR^2 : within = .10, between = .11, overall = .11, $\Delta\chi^2(2) = 912.72$, $p < .0001$;

Step 4 ΔR^2 : within = .09, between = .26, overall = .19, $\Delta\chi^2(5) = 1063.06$, $p < .0001$.

Final Model $\chi^2(12) = 4475.42$, $p < .0001$, R^2 : within = .42, between = .41, overall = .41.

Table 3
Summary of Random Effects Regression Analysis for Variables Predicting
Receptiveness to Intervention Efforts (N = 277)

Variable	<i>B</i>	<i>SE B</i>	p-value
Step 1			
Gender (L2)	−0.17	0.34	.624
Weekly alcohol consumption (L2)	0.03	0.01	.005
BAC (L1)	13.87	0.48	.000
BAC (L2)	4.38	6.27	.484
Step 2			
Gender (L2)	−0.17	0.34	.615
Weekly alcohol consumption (L2)	−0.03	0.01	.006
BAC (L1)	13.87	0.48	.000
BAC (L2)	4.37	6.28	.487
Distance	0.21	0.04	.000
Step 3			
Gender (L2)	−0.35	0.33	.285
Weekly alcohol consumption (L2)	−0.01	0.01	.389
BAC (L1)	6.29	0.62	.000
BAC (L2)	−1.30	6.08	.831
Distance	0.22	0.04	.000
Perceived intoxication (L1)	0.14	0.01	.000
Perceived intoxication (L2)	0.19	0.04	.000
Step 4			
Gender (L2)	−0.10	0.29	.727
Weekly alcohol consumption (L2)	0.02	0.01	.099
BAC (L1)	0.77	0.65	.234
BAC (L2)	3.58	5.39	.507
Distance	0.21	0.04	.000
Perceived intoxication (L1)	0.01	0.01	.173
Perceived intoxication (L2)	−0.11	0.05	.016
Perceived impairment (L1)	0.41	0.02	.000
Perceived impairment (L2)	0.82	0.18	.000
Likelihood of arrest (L1)	−0.01	0.02	.730
Likelihood of arrest (L2)	0.11	0.14	.425
Likelihood of accident (L1)	0.01	0.02	.528

Note: Step 1 R^2 : within = .12, between = .04, overall = .07, $\Delta\chi^2(4) = 848.69$, $p < .0001$;

Step 2 ΔR^2 : within = .00, between = .00, overall = .00, $\Delta\chi^2(1) = 29.67$, $p < .0001$;

Step 3 ΔR^2 : within = .05, between = .09, overall = .07, $\Delta\chi^2(2) = 366.61$, $p < .0001$;

Step 4 ΔR^2 : within = .07, between = .20, overall = .16, $\Delta\chi^2(5) = 608.46$, $p < .0001$.

Final Model $\chi^2(12) = 2030.45$, $p < .0001$, R^2 : within = .24, between = .33, overall = .30.