The Role of Injunctive Norms in Alcohol Misuse and Drink/Driving

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Abstract

BACKGROUND: The Theory of Normative Social Behavior (Rimal, Real, 2005) hypothesizes that the association between descriptive norms and outcome behaviors is moderated by injunctive norms and outcome expectations. Injunctive norms are the individual’s perceptions of how they are expected to behave by important others (e.g., parents, friends). Outcome expectations are anticipated costs and benefits associated with the outcome behavior.

AIMS: To examine descriptive and injunctive normative influences on alcohol misuse and drink/driving. We hypothesized that descriptive norms would predict alcohol misuse and drink/driving, and that this association would be reduced when accounting for injunctive norms and outcome expectations. METHODS: The sample for this study was 5,464 (49% male), mostly white, US young adults, age 24 years, participating in a longitudinal study of alcohol use and driving, who were interviewed by telephone. Multiple linear regression models were estimated separately by sex. RESULTS: In models predicting alcohol misuse, after adjusting for demographics (i.e., marital status, race, income, parenthood), individuals who perceived their similar-aged peers to use alcohol (both sexes) were more likely to misuse alcohol. These associations were reduced, but remained significant when best friends’ and parents’ attitudes toward drinking and drink/driving, and risk-taking propensity and perceived likelihood of negative consequences of drink/driving (e.g., arrest, injury) were entered into the model (R$^2$ men=0.42, women=0.38). Adjusting for demographics, similar-aged peers’ drinking (both sexes) predicted drink/driving. Prediction by these variables was reduced when injunctive norms (parents’ and friends’ attitudes toward drinking and drink/driving) were accounted for, and when outcome expectations and alcohol misuse were introduced into the model (R$^2$ men and women=0.47). CONCLUSIONS: These results suggest that interventions should focus on weakening the influence of descriptive norms on alcohol misuse and drink/driving, while strengthening injunctive norms and outcome expectations that are not supportive of alcohol use and drink/driving.

Background

Alcohol-impaired driving (i.e., driving with a BAC $> 0.08$g/dL) in the US resulted in 9,878 fatalities and accounted for 31% of all traffic fatalities in 2011. Those killed included 6,507 impaired drivers, 1,612 passengers of impaired drivers, 1,049 occupants of other vehicles, and 710 non-occupants. The majority of these fatal crashes occurred at nighttime, when the rate of alcohol-involved crashes was 4.5 times higher than during the day, and on the weekend, then the number of alcohol-involved crashes was nearly two times greater than during weekdays. These levels of fatalities persist in spite of a decades-long downward trend in fatalities involving alcohol-impaired drivers in the US (National Highway Traffic Safety Administration, 2012).

The age groups accounting for the largest proportion of alcohol-involved motor vehicle fatalities are 21-24, 25-34, and 35-44 years, who accounted for 33, 29, and 26 percent of all drivers involved in fatal crashes, respectively in 2011. Rates of alcohol-impaired driving increase sharply at age 21, when it becomes legal to purchase alcoholic beverages in the US.
Male alcohol-impaired drivers are more common than female, with the large majority of impaired drivers involved in crashes being male (National Highway Traffic Safety Administration, 2012). Although these are statistics from one year, they demonstrate a pattern that has remained consistent for some time. Several studies have also reported race/ethnicity differences in alcohol-involved crashes (Braver, 2003; Caetano & McGrath, 2005; Caetano, Ramisetty-Mikler, & Rodriguez, 2008; Delcher, Johnson, & Maldonado-Molina, 2013). For example, Roudsari and associates (Roudsari, Ramisetty-Mikler, & Rodriguez, 2009) found that among males and females of Asian descent both had lower percentages of fatalities with BACs of .08 or greater compared to other race/ethnic groups.

Social norms are hypothesized to play an important role in at-risk drinking generally, and in drink/driving (i.e., driving after consuming alcohol), specifically. Injunctive norms are a specific form of social norms based on individual perceptions of what important others expect them to do and not do, and a concept in the Theory of Normative Social Behavior (TNSB) (Rimal, 2005; Rimal & Real, 2003). According to TNSB, three normative mechanisms moderate the association between descriptive norms and behavior: Injunctive norms; outcome expectations; and group identity. Descriptive norms refer to individuals’ perceptions of the prevalence of a behavior, and have been shown to generally be exaggerated (Perkins & Berkowitz, 1986). The greater the perceived prevalence of a behavior, the more likely an individual is to construe their own excessive behavior as being normative (Perkins, Meilman, Leichliter, Cashin, & Presley, 1999). Injunctive norms are an individual’s perception that influential others expect them to behave in a specific manner, and that negative social consequences will ensue if they do not (Rimal, 2005; Rimal & Real, 2003). Outcome expectations include anticipated benefits to self and others, and anticipatory socialization (i.e., being welcomed into a peer group). Group identity is the individual’s perceived self-similarity to a specific group, and their aspiration to belong to that group. According to TNSB, injunctive norms modify the association between descriptive norms and behavior, and can be so strong that a person’s behavior is opposite what would be expected based on their descriptive norms (Rimal, 2005).

The role of injunctive norms on drink/driving behavior of college students was examined in a paper by LaBrie and associates (LaBrie, Napper, & Ghaidarov, 2012). Students were found to consistently overestimate their peers’ approval of drink/driving, and this overestimation was predictive of drink/driving behavior. The operationalization of injunctive norms as consisting entirely of peer approval is somewhat limited, and while this research is suggestive of the role of injunctive norms in drink/driving behavior, it fails to test the broader concepts of TNSB.

Aims
The purpose of this paper was to examine the role of the Theory of Normative Social Behavior in predicting drink/driving behavior of young adult males and females using both parental and peer indicators of injunctive norms.

Methods
Participants / Data Collection
Young adults who previously participated in a longitudinal study evaluating a school-based alcohol misuse prevention program (Shope, Copeland, Maharg, & Dielman, 1996; Shope, Dielman, Butchart, Campanelli, & Kloska, 1992), and who had a Michigan driver license (N=10,627) were invited to complete a telephone interview during 1997-1998, approximately six years following their high school graduation. The participants averaged 23.5 years of age, and were 49% male, 26% married, 88% white, 22% had at least one child, and a median
household income of US $25,000-$34,999. All the respondents (n=5,464) had previously completed at least one of six school-administered questionnaires from grade 5/6 through 12. The University of Michigan Medical School’s Institutional Review Board approved the study for Human Subject Research.

**Measures**

**Demographics**

Demographics included sex, marital status (1=ever married, 0=never married), race (1=white, 0=other), income (≤$5,000, $5,000-14,999, $15,000-24,999, $25,000-34,999, $35,000-44,999, $45,000-54,999, ≥$55,000), parent status (1=yes, 0=no), and church attendance (1=annually, 2=monthly, 3=weekly, 4=daily).

**Descriptive Norms**

Two single items measured the perceived number of friends who drank alcohol or smoked marijuana regularly. Perception of friends’ alcohol use was measured as the mean of three items assessing how many close friends drink alcohol weekly or more often, have five or more drinks when drinking and, drove at least once in the past year after drinking three or more drinks (1=none, 2=some, 3=about half, 4=most, or 5=all).

**Injunctive Norms**

Two single items measured the likelihood that friends or parents would ride with the participant after s/he had been drinking (1=very unlikely, 2=somewhat unlikely, 3=somewhat likely, or 4=or very likely). The comparative influence of parents versus friends on participants was measured as the mean of three items asking who the respondent would ask for advice regarding an important decision (1=parents more, 2=parents and friends equally, or 3=friends more). Friends’ and parents’ approval of alcohol misuse by the respondent was measured as the means of two pairs of items regarding binge drinking and drink/driving (1=disapprove strongly, 2=disapprove, 3=neither approve nor disapprove, 4=approve, or 5=approve strongly).

**Outcome Expectations**

Six items measured the likelihood of negative outcomes of drink/driving (1=very likely, 2=somewhat likely, 3=somewhat unlikely, or 4=very unlikely). Drink/driving risk was measured by a single item asking how dangerous it would be for a man/woman to drive within an hour of having three/two alcoholic drinks (1=very dangerous, 2=somewhat dangerous, 3=a little dangerous, or 4=not at all dangerous). Risk-taking propensity was measured as the mean of four items (1=not at all like me, 2=a little like me, or 3=a lot like me).

**Alcohol Misuse and Drink/Driving: Outcome Measures**

Alcohol misuse was measured using the AUDIT (Babor, la Fuente, Saunders, & Grant, 1992), a 10-item clinical diagnostic tool for measuring at-risk drinking. A total score was calculated as the sum across item responses. Drink/driving was measured as the mean of five items asking how many times in the past year participants had driven after drinking or while feeling impaired by alcohol (1=1; 2=2; 3=3; 4=4; 5=5; 6-9=6; 10-14=7; 15-19=8; 20-24=9; 25-29=10; 30-49=11; 50-99=12; 100 or more=13) (Donovan, 1993).

**Statistical Analysis**

Descriptive statistics and hierarchical multiple regression models were estimated using SAS Release 9.2. Two hierarchical multiple regression models were estimated separately by sex. The first pair of models predicted alcohol misuse, and the second pair predicted
drink/driving. Hierarchical blocks of variables were entered in the following order: Model 1 (M1), descriptive norms; Model 2 (M2), injunctive norms; Model 3 (M3), outcome expectations; and in the model predicting drink/driving, Model 4 (M4), alcohol misuse. All models were adjusted for demographic characteristics.

**Results**

**Alcohol Misuse**

Descriptive norms accounted for 37% of the variance in alcohol misuse for men and 32% for women (Table 1). When injunctive norms were added the model the estimates for descriptive statistics were reduced in size but there was no change in significance, and the model accounted for 41% and 35% of the variance in alcohol misuse for men and women, respectively. Adding outcome expectations caused a further reduction in estimate size for descriptive norms, and resulted in a change in significance for women. The model accounted for 42% and 38% of the variance in alcohol misuse for men and women, respectively.

Table 1. Predictors of alcohol misuse (estimates in bold significant at p<0.05)

<table>
<thead>
<tr>
<th>Theoretical Construct</th>
<th>Predictor Variables</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M1</td>
<td>M2</td>
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<tr>
<td>Descriptive Norms</td>
<td>Friends’ Marijuana Use</td>
<td>0.12</td>
<td>0.11</td>
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<td></td>
<td>Friends’ Alcohol Use</td>
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<td>0.39</td>
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<tr>
<td></td>
<td>Friends’ Risky Drinking</td>
<td>2.47</td>
<td>2.07</td>
</tr>
<tr>
<td>Injunctive Norms</td>
<td>Friend Drink Ride</td>
<td>0.19</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>Parent Drink Ride</td>
<td>0.06</td>
<td>0.15</td>
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<tr>
<td></td>
<td>Parent/Friend Influence</td>
<td>0.59</td>
<td>0.52</td>
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<td></td>
<td>Friends Approve Binging</td>
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<td>0.75</td>
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<tr>
<td></td>
<td>Parents Approve Binging</td>
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<td>0.03</td>
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<tr>
<td>Outcome Expectations</td>
<td>Drink/driving Outcomes</td>
<td></td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>Drink/driving Risk</td>
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<td>0.55</td>
</tr>
<tr>
<td></td>
<td>Risk Taking Propensity</td>
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<td>0.67</td>
</tr>
<tr>
<td></td>
<td>R²</td>
<td>0.37</td>
<td>0.41</td>
</tr>
</tbody>
</table>

**Drink/Driving**

Descriptive norms accounted for 34% of the variance in drink/driving for men and 26% for women (Table 2). Adding injunctive norms to the model increased the predicted variance to 40% and 33% for men and women, respectively, and reduced the effect of descriptive norms on drink/driving, but there was no change in significance. With outcome expectations included the model accounted for 42% of the variance in drink/driving by men and 37% by women. The addition of outcome expectations further reduced the effect of descriptive norms, but did not change significance. Finally, the addition of alcohol misuse to the model accounted for a total of 47% of the variance in drink/driving for both men and women, reduced the effect of descriptive norms, but did not change significance for that construct.

**Discussion and conclusions**

This research used the Theory of Normative Social Behavior (TNSB) (Rimal, 2005) to examine the moderating effect of normative mechanisms, including injunctive norms and outcome expectations on the association between descriptive norms and alcohol misuse and drink/driving. The results support the role of injunctive norms and outcome expectations on
alcohol misuse and drink/driving behavior, and have implications for future research and efforts to reduce drink/driving among young adults.

Table 2. Predictors of drink/driving (estimates in bold significant at p<0.05)

<table>
<thead>
<tr>
<th>Theoretical Construct</th>
<th>Predictor Variables</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M1</td>
<td>M2</td>
</tr>
<tr>
<td>Descriptive Norms</td>
<td>Friends’ Marijuana Use</td>
<td>-0.09</td>
<td>-0.09</td>
</tr>
<tr>
<td></td>
<td>Friends’ Alcohol Use</td>
<td>0.38</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>Friends’ Risky Drinking</td>
<td>1.27</td>
<td>0.91</td>
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<tr>
<td>Injunctive Norms</td>
<td>Friend Drink Ride</td>
<td>0.37</td>
<td>0.29</td>
</tr>
<tr>
<td></td>
<td>Parent Drink Ride</td>
<td>0.16</td>
<td>0.10</td>
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<tr>
<td></td>
<td>Parent/Friend Influence</td>
<td>0.10</td>
<td>0.04</td>
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<tr>
<td></td>
<td>Friends Approve Binging</td>
<td>0.31</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>Parents Approve Binging</td>
<td>0.07</td>
<td>0.00</td>
</tr>
<tr>
<td>Outcome Expectations</td>
<td>Drink/driving Outcomes</td>
<td>0.12</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td>Drink/driving Risk</td>
<td>0.37</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>Risk Taking Propensity</td>
<td>0.38</td>
<td>0.29</td>
</tr>
<tr>
<td>Alcohol Misuse</td>
<td>AUDIT</td>
<td>0.18</td>
<td>0.24</td>
</tr>
</tbody>
</table>

Social norms provide an indicator of the acceptability of behavior, and gauge the degree to which different behaviors are proscribed or desired among close friends, family members, acquaintances, and society. This research confirms past research, demonstrating the influence of social norms, both descriptive and injunctive, on alcohol misuse and drink/driving (Brooks-Russell, Simons-Morton, Haynie, Farhat, & Wang, 2013; Cleveland et al., 2013; Wardell & Read, 2013).

As posited based on TNSB, descriptive norms in the form of perceptions of friends’ use of alcohol was directly associated with participants’ levels of alcohol misuse and drink/driving. The strength of this association was reduced when the models were adjusted for injunctive norms and outcome expectations, but the effect of descriptive norms remained significant. This result indicates that injunctive norms and descriptive norms independently contribute to alcohol misuse and drink/driving. The relatively small change in the estimates of descriptive norms when injunctive norms were added to the model indicates that the contributions of these two are largely independent parallel processes. Similar patterns are observed with outcome expectations when predicting alcohol misuse and drink/driving.

Past research examining the role of injunctive norms in drinking behavior has found evidence that past behavior is predictive of subsequent norms, which in turn predict behavior longitudinally (Carcioppolo & Jensen, 2012). Alcohol misuse was added last to the model predicting drink/driving in order to adjust the effects of descriptive and injunctive norms and outcome expectations for level of alcohol misuse. Rather than reducing the effects of these previously entered constructs in the model, the addition of alcohol misuse provided additional prediction to the model. This is somewhat counter to research suggesting a reciprocal interaction between norms and behavior, in which case it would be
expected that including alcohol misuse would yield a more dramatic reduction in the predictions by descriptive and injunctive norms, and outcome expectations.

The results of this research have implications for interventions to reduce drink/driving, suggesting that enhancing an individual’s perceptions of important others’ expectations that they not drink drive, and reducing the expectation that drink/driving will lead to personally beneficial outcomes is one approach to prevent or reduce drink/driving behavior. This approach might be enhanced if descriptive norms were altered in the direction of less drink/driving and alcohol misuse. Programs, both marketing and broad media campaigns that continue to shift social and cultural norms away from acceptance of drink/driving are important; however, these broader norms must also be reinforced through the examples of others. This approach is much in line with Social Cognitive Theory (Bandura, 1986), which suggests that individual behavior change occurs in a reciprocal interaction between the individual, social and cultural norms evident in the individual’s context, and injunctive norms arising from individual values, ideas and perceptions, leading ultimately to behavior (Wardell & Read, 2013).

Strengths and Limitations
This research has significant strengths, including a large sample, and constructs assessed by multiple measures. In addition, though the sample is not representative in the strict sense, participants were originally recruited from a sample of public schools, and are therefore very characteristic of the population, and provide results that are broadly indicative of associations that would be expected in the population. Limitations also include attrition, cross-sectional measurement, and an assessment design relying on telephone surveys, which may have systematically included participants who were easier to reach by phone due either to accessibility to a personal phone, or the means to employ call-screening privacy services. Also, a standardized measure of descriptive and injunctive norms was not used, and instead the constructs of TNSB were measured using available survey items. Finally, the manner in which the models were constructed was not perfectly in line with TNSB, which posits that injunctive norms and other normative mechanisms interact with and modify the association of descriptive norms with subsequent behavior. Instead, these models test the degree to which the two processes operate in parallel. Future research should test this theory using structural equation modeling techniques and testing for moderation effects.

Future research should continue to examine the roles of descriptive and injunctive norms in alcohol misuse and drink/driving. This would be aided by the development of standardized approaches to the measurement of descriptive and injunctive norms.

Conclusions
Both descriptive and injunctive norms and outcome expectations play a role in the prediction of drink/driving behavior that is not accounted for by the level of alcohol misuse. These findings suggest that interventions to reduce drink/driving may be effective without requiring that drinking behavior be changed. It may be sufficient for interventions to focus more exclusively on shaping norms and expectations at both the social/cultural and individual level to have the desired effect of reducing or preventing drink/driving and the fatalities and injuries that result from it.
References


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