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Assessing College Students' Perceptions of Tolerance to Alcohol Using Social Cues: The Social Tolerance Index

Kimberly Mallett, Ph.D.¹, Christine M. Lee, Ph.D.², Rob Turrisi, Ph.D.³, and Mary E. Larimer, Ph.D.²

¹Prevention Research Center, The Pennsylvania State University, 204 East Calder Way, Suite 208, State College, PA 16801

²Center for the Study of Health and Risk Behaviors, Department of Psychiatry and Behavioral Sciences, University of Washington, Box 354944, Seattle, WA 98195

³Department of Biobehavioral Health and Prevention Research Center, The Pennsylvania State University, 315 East Health and Human Development Building, University Park, PA 16802

Abstract

Increased tolerance to alcohol is considered a risk factor for developing future problems. While college students are considered a high-risk population in relation to alcohol use it is suggested that tolerance operates differently in this population than in chronic drinking samples. Individuals' perceptions about their level of tolerance measured by social cues and comparisons to peers may influence drinking behavior. The present study evaluated the Social Tolerance Index (STI), a measure designed to examine perceptions about personal tolerance to alcohol using social cues in college students. College students (n=177) completed measures of social tolerance, social desirability, drinking rates, and demographic information at baseline, 2-week, and 4-week follow-up assessments to assess test-retest reliability. A confirmatory factor analysis was conducted on the STI. In addition, tests of discriminant, construct and predictive validities were also conducted. The STI demonstrated good reliability and validity for use in a college student population.

Keywords

Tolerance; College Students; Alcohol

Introduction

Tolerance to alcohol has been shown to be a risk factor for developing alcohol problems and experiencing consequences (Schuckit, Smith, & Tipp, 1997; Vogel-Sprott, 1997). Both physical and behavioral components of tolerance have been studied extensively in chronic drinkers, however few studies have examined the impact of tolerance in college student populations (Daugherty & Van Tubergen, 2002; Lipscomb & Nathan, 1980). Research has shown college students engage in drinking for a variety of reasons, the primary incentive consisting of social facilitation (Borsari, Murphy, Barnett, 2007). Research has also shown that

Correspondence should be sent to: Kimberly Mallett, Ph.D., Research Associate, Alcohol and Skin Cancer Projects, Prevention Research Center, The Pennsylvania State University, 204 E. Calder Way, Suite 208, State College, PA 16801; Email: kmallett@psu.edu.

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individuals' perceptions of what others in their social network do and believe are important determinants of drinking behavior and college students often overestimate the prevalence of alcohol use among their peers (Borsari & Carey, 2003).

To date, previous research has not examined the social component associated with tolerance in the college student population. Considering social influences have a significant influence on alcohol consumption, it is important to understand students' perceptions of tolerance based on social cues and how these relate to drinking behavior. From this perspective, social tolerance could be defined as individuals' perceptions of their tolerance to alcohol in different domains relative to others' perceptions and behaviors. Social tolerance is not the same as physical (requiring more alcohol for the same effect) or behavioral (feeling less functionally impaired by alcohol due to non-pharmacological factors such as learned behavior) elements, but rather represents a social comparison of one's personal response to alcohol relative to the responses of one's peers. For example, if individuals perceive they can drink more than the average person before becoming intoxicated, they may be more inclined to consume large quantities of alcohol. This type of social modeling may in turn influence their friends' perceptions and behaviors pertaining to alcohol (Borsari & Carey, 2001), putting these individuals at risk of engaging in risky drinking and experiencing consequences.

Three dimensions that involve individuals' social comparisons of themselves to peers in the realm of social tolerance will be examined in the context of a new measure created to examine this phenomenon. These dimensions include *endurance* for drinking (e.g., individuals' perception of their ability to drink more than their peers in competitive drinking situations), *approval of drinking* (e.g., positive feedback individuals receive from peers regarding their own drinking ability), and the physical *effect* or response to drinking (e.g., individuals perceive they can drink more alcohol in comparison to their peers and feel fewer effects related to intoxication). The focus of the present study is to create a measure of social tolerance, which will demonstrate good reliability and validity for use in a college student population in order to identify individuals at risk of engaging in risky drinking behaviors.

2. Methods

2.1 Participants

The sample consisted of 177 (57% women) college students recruited from introductory psychology courses at a large, public, northwestern university. The sample consisted of 49% freshmen, 27% sophomores, 15% juniors, and 9% seniors with an average age of 19.7 (2.6). The ethnic distribution consisted of 50% Caucasian, 41% Asian/Asian American, and 9% Other.

2.2 Procedure

Participants received credit toward their psychology course for completing three identical 1-hour questionnaires at baseline ($n = 177$), 2-week ($n = 169$; 95% completion rate), and 4-week follow-ups ($n = 151$; 85% completion rate). The university's human subjects review board approved all procedures used in the study.

2.3 Measures

Social Tolerance was examined using the 7-item Social Tolerance Index (STI), a measure created for use in the present study, which asked individuals about their perception of their abilities after consuming alcohol in comparison to other people. The content of the items was based on how individuals might perceive the physiological and behavioral tolerance, reworded to capture social aspects of drinking important to college students (see Figure 1). Participants

responded to each item on a 7-point Likert scale ranging from “Strongly Disagree” to “Strongly Agree”.

Social Desirability was assessed using a 15-item measure created by Paulhus (1991). Response options ranged from “Strongly Disagree” to “Strongly Agree” on a 5-point scale.

Drinking Rates were examined using the Quantity/Frequency/Peak Index (QFP: Dimeff, Baer, Kivlahan, & Marlatt, 1999). The QFP assesses frequency of drinking from never to daily, quantity consumed on a typical weekend evening from zero to 25 or more drinks, and highest amount of alcohol consumed on a single occasion ranging from zero to 25 or more drinks within the past month.

Demographic Information including age, birth sex, ethnic background, and class standing was included in the questionnaire. Table 1 provides descriptive norms information.

3. Results

3.1 Analytic Strategy

Internal consistency was assessed with a confirmatory factor analysis using AMOS (Arbuckle & Wothke, 1999). Missing data for scale items was low (below 5%) and was handled using the EM strategy by Little and Ruben (1987). Test-retest reliability was assessed by correlating baseline measures with both the 2- and 4-week follow-up measures. Finally, construct, predictive, and discriminant validities were evaluated by correlating measures with drinking (at baseline, 2- and 4-week follow-up) and social desirability, respectively.

3.2 Internal Consistency

A confirmatory factor analysis was conducted to evaluate the factor structure for the items and corresponding three latent variables (“Effect”, “Endurance”, and “Approval”). The chi-square test of the model was non-significant $X^2(177, 11) = 17.87, p > .085$. The root mean square error of approximation (RMSEA) was .06 with 90% confidence intervals of .000 and .108. The p -value for the test of close fit was non-significant ($p = 0.33$). The comparative fit index was .99 and the goodness-of-fit index (GFI) was .97. All indices point toward good model fit. Path coefficients and between-factor correlations are displayed in Figure 1. Due to the fact that the three factors were highly correlated, we conducted an analysis utilizing a one-factor model however the fit statistics did not support a one-factor model.

3.3 Test-Retest Reliability

Scores from the items on each of the 3 STI factors were summed to create composite scores. Correlations between composite scores at baseline and both 2-weeks (.70 to .82) and 4-weeks (.77 to .85) were high suggesting good reliability.

3.4 Construct, Predictive Validity, and Discriminant Validity

To assess construct validity, the three factors were correlated with the QFP drinking variables at baseline (r 's ranged from .31 to .43). To assess predictive validity, the three factors were correlated with the QFP drinking variables at 4-week follow-up (r 's ranged from .36 to .46). Finally, as predicted correlations between the factors and measures of social desirability were small ranging from .00 to .21, demonstrating good discriminant validity.

4. Discussion

The STI was created to examine the perceptions individuals have about their social tolerance. The measure demonstrated good psychometric properties (reliability, construct and predictive

validity and discriminant validity). A confirmatory factor analysis established three factors (“Effect”, “Endurance”, and “Approval”) measuring different subtleties of social tolerance. For instance, while individuals may consume more alcohol in order to feel the effects, their decision to drink in a risky manner may be connected to their ability to win drinking games and drink more than their friends. While these mechanisms are influenced by tolerance, they may be viewed differently by each individual. The development of the STI also has the potential for several future directions of research. First, the STI can be used to explore beliefs about tolerance as a predictor of risky drinking and consequences. For example, individuals who make decisions about drinking based upon their perceptions of their social tolerance have the potential to engage in risky drinking behavior such as drinking games and in turn experience negative consequences (Borsari, 2004). Therefore, future studies examining the relationship between the STI, drinking, and future consequences are warranted. Second, addressing individuals’ perceptions about their social tolerance in the context of personalized and normative feedback may be useful for addressing high-risk college student drinking and strengthen existing interventions. Third, individuals who maintain a high social tolerance and engage in risky drinking for extended periods of time may be at risk of developing chronic alcohol problems. Finally, it may be beneficial for studies to examine the STI and other measures assessing physical tolerance such as the Self-Rating of the Effects of Alcohol Scale (Schuckit et al., 1997) as a comprehensive way to gain insight to individuals’ tolerance to alcohol.

In sum, the STI is a reliable and valid measure that may provide further insight into patterns of drinking in college students and in turn, may provide valuable information to bolster the efficacy of intervention strategies aimed at this population.

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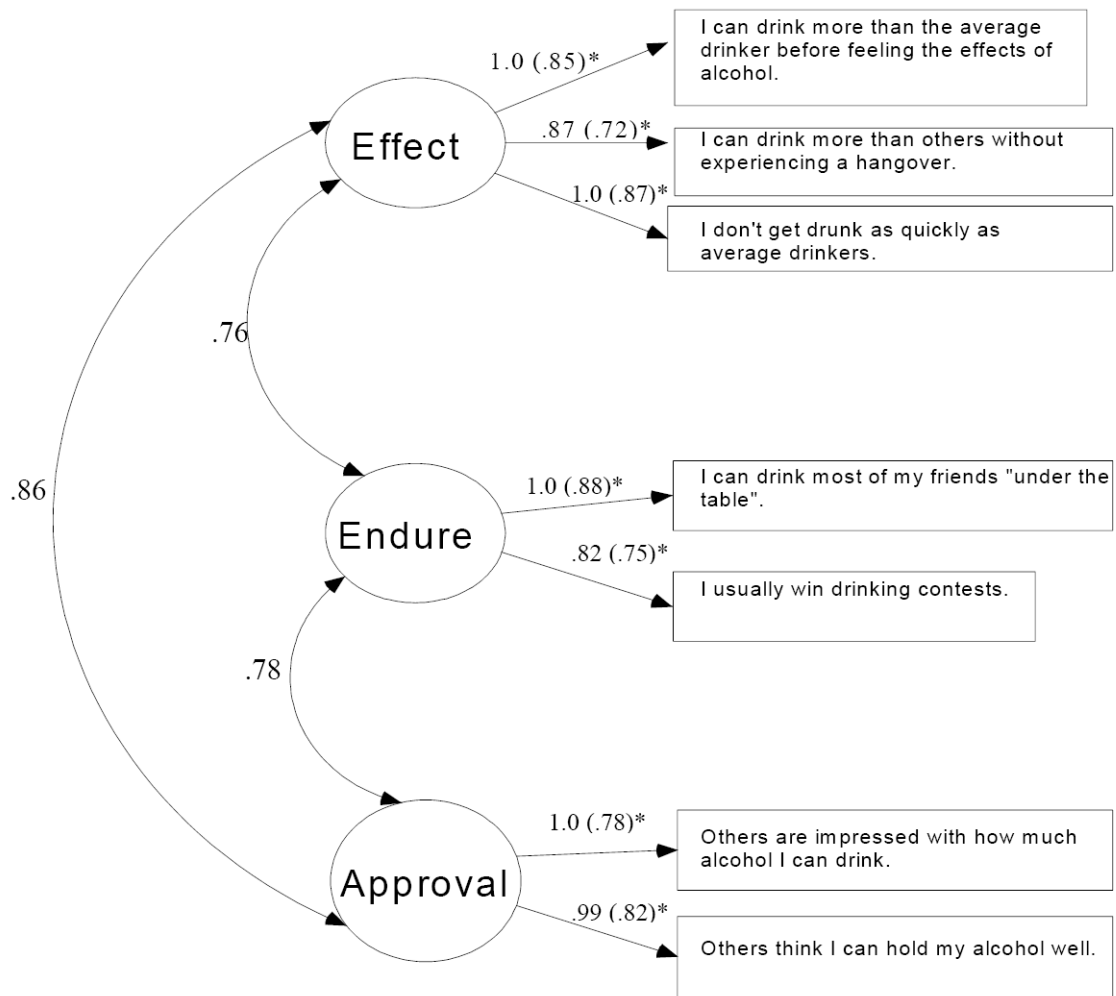


Figure 1. Structural model of the STI including the unstandardized and standardized regression weights (in parentheses) for each path of the model. Correlations between latent variables are also shown.

Table 1

Means and Standard Deviations for STI Latent Variables for Males, Females, Freshmen, Sophomores, Juniors, and Seniors

	Latent Factors	<i>M</i>	<i>SD</i>
Males (76)	Effect	11.83	4.47
	Endure	6.47	2.84
	Approval	7.92	2.62
Females (101)	Effect	8.43	4.80
	Endure	4.56	2.89
	Approval	5.96	3.45
Freshman (87)	Effect	10.05	4.89
	Endure	5.42	2.85
	Approval	6.82	3.08
Sophomores (48)	Effect	9.72	5.05
	Endure	5.44	3.11
	Approval	7.01	3.39
Juniors (27)	Effect	10.00	4.97
	Endure	5.77	3.12
	Approval	6.81	3.15
Seniors (15)	Effect	9.27	5.32
	Endure	4.27	3.39
	Approval	6.00	4.14

Note. The N of each group is shown in parentheses after each group