The Relationship between Emotion Regulation, Social Support, and Alcohol-Related Problems among Racially Diverse Adolescents

Briana A. Woods-Jaeger[1], **Richard H. Nobles**[2], **Linnea Warren**[3], and **Mary E. Larimer**[4]

[1]Children's Mercy Kansas City, 2401 Gillham Road, Kansas City, MO 64108. Phone: 816-760-5950. Fax: 816-234-3327

[2]Truman Medical Center, University of Missouri—Kansas City School of Medicine, 300 SE 2nd Street, Suite 100, Lees Summit, MO 64063

[3]RAND Corporation, 4570 Fifth Avenue #600, Pittsburgh, PA 15213

[4]Center for the Study of Health and Risk Behaviors (CSHRB), Dept. of Psychiatry and Behavioral Sciences (PBSCI), University of Washington 1100 NE 45th, Suite 300, Office 312 Box 354944 Seattle, WA 98105

1. Introduction

Alcohol use and alcohol-related problems are prevalent among adolescents in the United States. Recent survey data indicate that 28% of 8th graders have experimented with alcohol use, 10% endorsed drinking within the last month and 12% reported being drunk at least once (Johnston, O'Malley, Bachman, & Schulenberg, 2014). Additionally, over one-third (34%) and more than half (52%) of 10th and 12th graders, respectively, reported drinking alcohol to inebriation (Johnston et al., 2014). A variety of consequences are associated with adolescent alcohol use (e.g., social, academic, and physical problems; NIAAA, 2004/2005)). Further, alcohol has been implicated in the leading causes of death among youth, including unintentional injury, suicide, and homicide (Masten et al., 2008; Kulig & American Academy of Pediatrics Committee on Substance Abuse, 2005) and in the development of alcohol use and abuse in adulthood (Griffin & Botvin, 2010). The wide range of consequences and experiences associated with adolescent alcohol use make it important to focus not only on drinking itself, but on alcohol-related problems specifically, establishing factors related to alcohol-related problems over and above alcohol use.

The Social Stress Model of Substance Abuse (SSMSA) incorporates aspects of social learning theory (Bandura, 1977; 1986) and emphasizes supportive, prosocial social networks, social competencies, and community resources. This model views adolescent substance use initiation as a coping mechanism for dealing with stressors that may originate in the family, the community, the school, or the peer group (Rhodes & Jason, 1990). If adolescents have strong prosocial social support networks and sufficient resources, the risk

Correspondence to: Briana A. Woods-Jaeger.

for problem substance use is decreased. These supports and resources manifest in social competencies that equip adolescents to more effectively manage the stressors of adolescence (Rhodes & Jason, 1990). This model highlights the importance of the adolescent's response to stress as well as the social support available to the adolescent in understanding substance abuse.

Rhodes & Jason (1990) empirically evaluated SSMSA with urban high school students and found that weak parental and sibling relationships, family problems, and lack of perceived support were related to higher substance use, and that socioeconomic status, school support, and stress factors did not have a direct effect on substance use. However, a direct examination of stress response competencies was not included in this study and surprisingly little empirical work examining the model has been published since the initial study. Further study of these stress response competencies, particularly with diverse samples due to limited variance in socio-cultural factors among students in the initial study (Rhodes & Jason, 1990) is warranted.

While SSMSA has not been extensively tested, research supports several of its components. For example, research suggests social support such as familial support and collective efficacy (i.e., social cohesion within neighborhoods) may be influential in adolescent alcohol use and problems (Barrera, Chassin, & Rogosch, 1993; Wills & Cleary, 1996; Rankin & Quane, 2002; Leventhal & Brooks-Gunn, 2000). Further, research indicates the primary function of some adolescent problem behaviors is to regulate emotion (Nock & Prinstein, 2004; Cooper, 1994), and coping (i.e., use of alcohol to cope with negative emotions) and enhancement (i.e., use of alcohol to pursue positive affect) drinking motives are associated with alcohol consequences and heavy drinking respectively (Kuntsche, Knibbe, Gmel, & Engels, 2005; Cooper, 1994), supporting SSMSA's emphasis on coping and suggesting the importance of emotion-related coping specifically.

The aim of this preliminary study was to examine constructs emphasized by the SSMSA theoretical framework in a sample of racially diverse adolescents, with more specific attention to emotion-related stress response factors and alcohol consequences. The present study examined associations between social support (family support and collective efficacy) and emotion coping factors (emotion regulation drinking motives and limited access to emotion regulation strategies) and the presence and severity of alcohol consequences among racially diverse adolescents. In particular, the utility of these variables in predicting alcohol consequences over and above alcohol use was examined.

A racially diverse sample was intentionally collected, as researchers have called into question the generalizability of some established risk factors, suggesting the applicability of much of the research on adolescent alcohol use and consequences to racial minority adolescents is questionable (Wallace & Muroff, 2002). To improve our understanding of alcohol-related problems among racially diverse adolescents it is crucial to identify risk and protective factors and relationships between these factors that may be applicable to adolescents across various racial backgrounds. Further, it is imperative to be theoretically grounded in these examinations and avoid using race as a substitute for theoretically based constructs (Helms, Jernigan, & Mascher, 2005). Examining observable phenomena

associated with racial categories instead of using race as an independent variable is recommended (Helms et al., 2005; Phinney, 1996). Therefore, instead of looking at race as an independent variable, we sought to examine if the independent variables supported by SSMSA and previous research are associated with alcohol consequences among a sample of racially diverse adolescents. SSMSA was used as a theoretical framework to guide the investigation of social and emotional factors that may be relevant to various racial groups. Factors with empirical support associating them with alcohol use and problems across racial groups (e.g., family support, emotion regulation drinking motives) as well as factors with substantial theoretical support but limited prior empirical support associating them with alcohol use and problems across racial groups (e.g., collective efficacy, access to emotion regulation strategies more broadly) were included.

2. Material and methods

2.1 Participants

An anonymous school survey was conducted in one school in the Pacific Northwest and one school in the Midwest. Schools were selected based on socio-demographic diversity. Information statements describing the study and decline postcards were sent to parents/guardians prior to the in-school survey (passive consent). After allowing time for parents/guardians to decline, trained research assistants administered surveys during students' classes as designated by the schools. One hundred fifty adolescents completed the survey yielding an overall 65% recruitment rate (73% recruitment for the Pacific Northwest and 51% recruitment for the Midwest). Study protocols were approved by the institution's review board.

The sample was diverse in gender and race. The mean age was 15.72 (SD = .99) and 53.3% were male. Fifty-five (36.7%) participants identified as European American/White, 38 (25.3%) as African American/Black, 29 (19.3%) as Asian American/Pacific Islander, 19 (12.7%) as Multiracial, 4 (2.7%) as Hispanic/Latino, 1 (0.7%) as Native American, and 4 (2.7%) as Other. Forty-four percent reported receiving free or reduced price lunch. One hundred nine participants (73%) resided in the Pacific Northwest. Seventy-seven (51%) participants reported they had not experienced alcohol-related problems in the past year and 73 (49%) indicated they had. The number of problems experienced ranged from 1–22 for those who endorsed the item.

2.2 Measures

2.2.1 Demographics—The *demographic questionnaire* included age, gender, ethnic and racial background, and receipt of free or reduced lunch.

2.2.2 Alcohol Use Index—The *alcohol use index* included three items: Lifetime drinking experience ("During your life, on how many days have you had at least one drink of alcohol?"); frequency of alcohol use in the past 3 months; and average quantity on days the participant drank in the past 3 months. Each item was highly skewed, so an alcohol use index was constructed by standardizing and summing the three items (cf., Jones, Hussong,

Manning, & Sterrett, 2008). The index has been studied in minority youth and was found to have acceptable internal consistency reliability (α = .71; Jones et al., 2008).

2.2.3 Rutgers Alcohol Problem Index (RAPI)—The RAPI (White & Labouvie, 1989), was used to assess consequences related to drinking (i.e. "got into fights, acted bad, or did mean things", "missed a day (or part of a day) of school or work", or "felt you were going crazy"). Developed for youth ages 12–21, the RAPI has excellent internal consistency reliability (α = .91) and can be scored to reflect both the number of consequences as well as frequency of each consequence. For the current study this scale was used in two ways: (1) as a dichotomous indicator of experiencing any alcohol consequence in the past year (0=no consequences, 1= at least one alcohol consequence in the past year) and (2) as an indicator of the number of alcohol consequences in the past year where each item was dichotomized (0 = did not experience this problem; 1 = experienced this problem at least once in the past year) and items totaled to indicate overall number of consequences in the past year (Martens, Neighbors, Dams-O'Connor, Lee, & Larimer, 2007).

2.2.4 Perceived Social Support-Family (PSS-Fa)—The PSS-Fa (Procidano & Heller, 1983) is a 20-item scale assessing whether the adolescent perceives their needs for support, information, and feedback are fulfilled by family (e.g., "My family gives me the moral support I need", "I rely on my family for emotional support"). Responses are scored "Yes" (1), "No" (0) or "I don't know" (0), with higher scores indicating more family support (Bordes, Sand, Arredondo, Kurpius, & Rayle, 2006). The PSS-Fa has been studied among minority young adults (Jay & D'Augelli, 1991), and has been found to have good internal consistency reliability (α = .90; Procidano & Heller, 1983).

2.2.5 Collective Efficacy Scale—Collective efficacy was assessed by combining the Social Cohesion and Informal Social Control subscales from the *Collective Efficacy Scale* (Sampson, Raudenbush, & Earls, 1997). Social Cohesion includes items such as: "people around here are willing to help their neighbors" and "this is a close-knit neighborhood". Informal Social Control includes items assessing likelihood (on a 5-point likert scale from very likely (5) to very unlikely (1)) their neighbors could be counted on to intervene in situations such as: children were skipping school and hanging out on a street corner, children were spray-painting graffiti on a local building, etc. (Sampson et al., 1997). Sampson, Raudenbush, & Earls (1997) found social cohesion and informal social control were closely associated across neighborhoods (r = .80, p < .001), and combined the two scales into a single *collective efficacy* score, with higher scores indicating more perceived collective efficacy. The Collective Efficacy Scale has been studied among minority young adults and found to have good internal consistency reliability (α = .87; Brady, 2006)

2.2.6 Drinking Motives Questionnaire (DMQ)—Two subscales (coping and enhancement) from the DMQ (Cooper, 1994) were used to measure emotion regulation drinking motives. Sample items include "you like the feeling" (enhancement) and "to forget about your problems" (coping) and are measured on a 5-point likert scale from almost always/always (5) to almost never/never (1) with higher scores indicating stronger emotion regulation drinking motives. The DMQ has good internal reliability (α = .84 to .88) and test-

retest reliability consistent across gender, race, and age (Cooper, 1994; Lyvers Hasking, Hani, Rhodes, & Trew, 2010).

2.2.7 Difficulties in Emotion Regulation Scale (DERS)—The DERS (Gratz & Roemer, 2004) is a 36-item measure assessing difficulties in emotion regulation that has been studied in adolescent populations (Weinberg & Klonsky, 2009). Most items begin with "When I'm upset" and participant's responses are scored 1 (almost never), 2 (sometimes) 3 (about half the time) 4 (most of the time) and 5 (almost always). For this study, the Limited Access to Emotion Regulation Strategies subscale (α =.88) was used to measure "the flexible use of situationally appropriate strategies to modulate emotional responses" (Gratz & Roemer, 2004, pg. 43) with higher scores indicating greater difficulty with emotion regulation (i.e., more limited access to emotion regulation strategies).

2.3 Data analysis

First, a frequency count was performed to identify missing data. All missing data were the result of participants failing to respond to one or more items on a scale. Specifically, there was evidence of particularly high rates of missing data for the drinking index variables, with 12 participants not responding to these questions. Next, box plot graphs for the predictor variables were created to identify potential outliers, defined as cases that have values 3 or more times above the 75th percentile. Based on this criterion, three outliers were identified, all for the drinking index variable. These outliers were altered to be one unit larger than the next most extreme score in the distribution to limit their impact on the data (Tabachnick & Fidell, 2001).

Assumptions of normality were evaluated by examining skewness and kurtosis. Skewness and kurtosis scores were standardized by converting to z-scores in order to determine whether violations of the assumption of normality for the current dataset were significant. For variables where the violation of the assumption of normality was significant ($p < .05$), logarithmic transformations were employed on the raw scores to normalize the distributions. These variables included access to emotion regulation strategies (skewness = .977, kurtosis = .078), emotion regulation drinking motives (skewness = 1.02, kurtosis = −.049), drinking index (skewness = 2.04, kurtosis 4.55), and number of alcohol-related problems (skewness = 1.65, kurtosis = 1.81). Following transformation, access to emotion regulation strategies and drinking index approximated normal distributions; however, emotion regulation drinking motives (skewness = .546, kurtosis = −1.191) and severity of alcohol-related problems (skewness = .686, kurtosis = −1.07) remained significantly positively skewed and kurtotic. However, according to Kline (1998) non-normality such as this is not problematic as long as the skewness value is less than 3 and the kurtosis value is less than 10. Thus, these log-transformed variables were used in all analyses.

Descriptive statistics and correlations among demographic and major study variables were conducted, as well as bivariate correlations between main study variables and severity of alcohol consequences among participants who reported one or more consequences. Hierarchical logistic regressions were conducted to evaluate predictors of likelihood of alcohol consequences and hierarchical multiple regressions were conducted to evaluate the

relationship between predictors and number of alcohol consequences. In the hierarchical logistical regressions, dummy codes were created for geographic location (1=Pacific Northwest, 0= Midwest) and alcohol-related problems (1= presence of one or more alcohol related problems, 0=absence of any alcohol related problems). In the hierarchical logistic regressions and hierarchical multiple regressions, geographic location and the drinking index were entered at Step 1 and the social or emotional predictors were entered at Step 2 to evaluate the predictive utility of social and emotional predictors above geographic location and level of alcohol consumption. Separate analyses were conducted for modeling social and emotional predictors.

Geographic location, age, Asian American/Pacific Islander race, and European American/ White race were associated with alcohol-related problems and considered as potential covariates (see Table 1). Tabachnick and Fidell (2001) recommend only a small number of covariates should be considered, each correlated with the dependent variable (DV) and none correlated with each other. The potential covariates were correlated with the DV and also with each other, therefore, to limit the number of covariates, only geographic location was statistically controlled in the analyses to control for site differences.

3. Results

3.1 Correlations

Family support ($r = -.32$, $p < .01$) and collective efficacy ($r = -.29$, $p = .01$) were negatively correlated with reported number of alcohol consequences, and emotion regulation drinking motives ($r = .53$, $p < .001$) and limited access to emotion regulation strategies ($r = .39$, $p < .01$) were positively associated with number of alcohol consequences.

3.2 Regression Models

3.2.1 Social support and drinking behavior—The logistic and linear regression models including family support and collective efficacy were not significant, suggesting although family support and collective efficacy are correlated with alcohol consequences, these factors do not predict the presence or number of consequences over and above drinking level.

3.2.2 Emotion regulation drinking motives, emotion regulation strategies, and drinking behavior—The logistic regression model with emotion regulation drinking motives and limited access to emotion regulation strategies also was not significant. However, in the linear regression model, emotion regulation drinking motives ($\beta = .473$, $p < .01$) and limited access to emotion regulation strategies ($\beta = .231$, $p < .05$) were significantly associated with number of alcohol consequences over and above drinking level, accounting for an additional 18.2% of the variance in consequences, and significantly improved the model as seen in Table 2. Results suggest that although emotion regulation drinking motives and limited access to emotion regulation strategies do not predict likelihood of adolescents experiencing *any* alcohol consequences, they do predict *the number* of alcohol consequences experienced. Specifically, adolescents with more emotion

regulation drinking motives and limited access to emotion regulation strategies experienced more alcohol consequences even after accounting for level of alcohol consumption.

4. Discussion

Results suggest emotion regulation drinking motives and access to emotion regulation strategies are important to consider in understanding the severity of alcohol consequences among racially diverse adolescents. The importance of emotion regulation demonstrated by this study is supported by previous research that relates emotional control to lower substance use (Wills, Walker, Mendoza, & Ainette, 2006) and corroborates recommendations to increase the focus on emotion-control constructs in prevention programs for adolescents (Wills et al., 2006). Further, although family support and collective efficacy were not significant predictors of alcohol consequences after accounting for alcohol use in the present study, they were negatively correlated with alcohol consequences. This suggests these constructs may be protective factors for adolescent alcohol consequences, playing an indirect role in the development and manifestation of problematic drinking behavior. This is supported by previous research that suggests social-contextual influences on adolescent risk behavior are complex and largely interactive rather than direct (Ennett et al., 2008). Further, an indirect role of family support is supported by work suggesting parental support is a protective factor for substance use, however much of these protective effects are the result of parents influence on adolescent self-control (Wills, Resko, Ainette, & Mendoza, 2004). Likewise, research has implied that the effects of neighborhoods on adolescent health are modest relative to other factors such as family and individual factors (Rankin & Quane, 2002). This finding supports that the importance of collective efficacy may be in its relation to other variables rather than as an independent predictor. Future research, designed to examine these potential indirect relationships is important.

In addition, of all the primary constructs examined in the current study, only emotion regulation drinking motives was significantly correlated with alcohol use; in contrast, all constructs were significantly correlated with alcohol consequences. This supports that risk and protective factors may be differentially associated with alcohol use and alcohol consequences, and studying each outcome independently is warranted.

Regarding limitations, as self-report measures were utilized, it is possible that alcohol use and related problems were underreported (though previous research suggests this is not often the case in studies where confidentiality is guaranteed [Darke, 1998]). While this study included a sample of racially diverse adolescents from two distinct geographic areas, there are limitations due to recruitment from only 1 urban school in each area. It is thus not possible to disentangle geographic from school-level differences. An additional limitation is the missing alcohol use data. Finally, data in this study are cross-sectional and causal relationships cannot be determined.

5. Conclusions

Results suggest the Social Stress Model of Substance Abuse provides a useful framework in identifying potential risk and protective factors for alcohol consequences among racially

diverse adolescents. Findings suggest adolescents' stress response competencies in the form of drinking coping motives and emotion regulation strategies are particularly important to consider in examinations of adolescent alcohol consequences. Further, neighborhood and family support of positive youth development may be important to consider, particularly in how these social supports influence adolescents' emotional health and regulation abilities. Future research examining interactions between social and emotional factors using comprehensive modeling techniques (e.g., structural equation modeling) and longitudinal studies are important, as effects of the social variables in the current study may not be direct or independent.

The current study suggests alcohol prevention and intervention programs for adolescents should include a specific focus on alcohol-related problems and factors that influence the presence and severity of these consequences. In particular, including an emphasis on emotion and emotion regulation may be important. Currently widely implemented alcohol prevention programs for adolescents emphasize psychoeducation and skills. In particular, effective programs target knowledge and perceptions (e.g., actual rates of alcohol use to correct inaccurate perceptions of the social acceptability of adolescent alcohol use; awareness of social influences on alcohol use) and skills development (e.g., assertiveness and resistance skills, self-regulation, problem-solving, decision-making, coping skills to manage stress) (Griffin & Botvin, 2010). Continuing with these effective programs and ensuring an emphasis on emotional health and emotion regulation is supported by the current study.

Acknowledgments

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Table 1

Sample Characteristics and Descriptive Information on Demographic and Predictor Variables

	M (*SD*)	*N* (%)	Correlations with RAPI (*r*)	Correlations with DI (*r*)
Age [d]	15.72 (0.99)		.31[a]	.15
Gender (male)		80 (53.3%)	.11	.12
Race				
European American		55 (36.7%)	.16[c]	.24[b]
African American		38 (25.3%)	.07	.01
Asian American		29 (19.3%)	−.24[b]	−.18[c]
Biracial/Multiracial		19 (12.7%)	−.04	−.07
Other		9 (6.0%)	−.00	−.12
Location (Seattle)		109 (72.7%)	.33[a]	.08
Free/Reduced Lunch (No)		83 (55.3%)	−.09	.16
Drinking Index	−.28 (1.59)		.68[a]	
Alcohol Consequences	3.47 (5.33)			.68[a]
Family Support	11.99 (5.63)		−.22[b]	−.11
Collective Efficacy	32.80 (8.46)		−.16	−.12
ER Motives	17.89 (9.58)		.68[b]	.76[b]
Limited Access to ER Strategies	16.26 (7.05)		.26[b]	.12

Note. DI = Drinking Index.

[a]*p* < .001;

[b]*p* < .01;

[c]*p* < .05;

[d]Range 14–19.

Table 2

Hierarchical Linear Regression of Emotion Regulation Drinking Motives and Access to Emotion Regulation Strategies

	F	*R²*	β	*t*
Block 1	7.056[**]	.190		
Geographic Location			.291	2.468[*]
Drinking Level			.381	3.229[**]
Block 2	8.585[***]	.181		
ER Drinking Motives			.473	3.119[**]
Limited Access to ER Strategies			.231	2.180[*]

Note. $n = 63$. ER = Emotion Regulation.

[*]
$p < .05$

[**]
$p < .01$

[***]
$p < .001$

CI = confidence interval.