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Associations of Trauma with Motives for Drinking and Smoking in a Female Twin Sample

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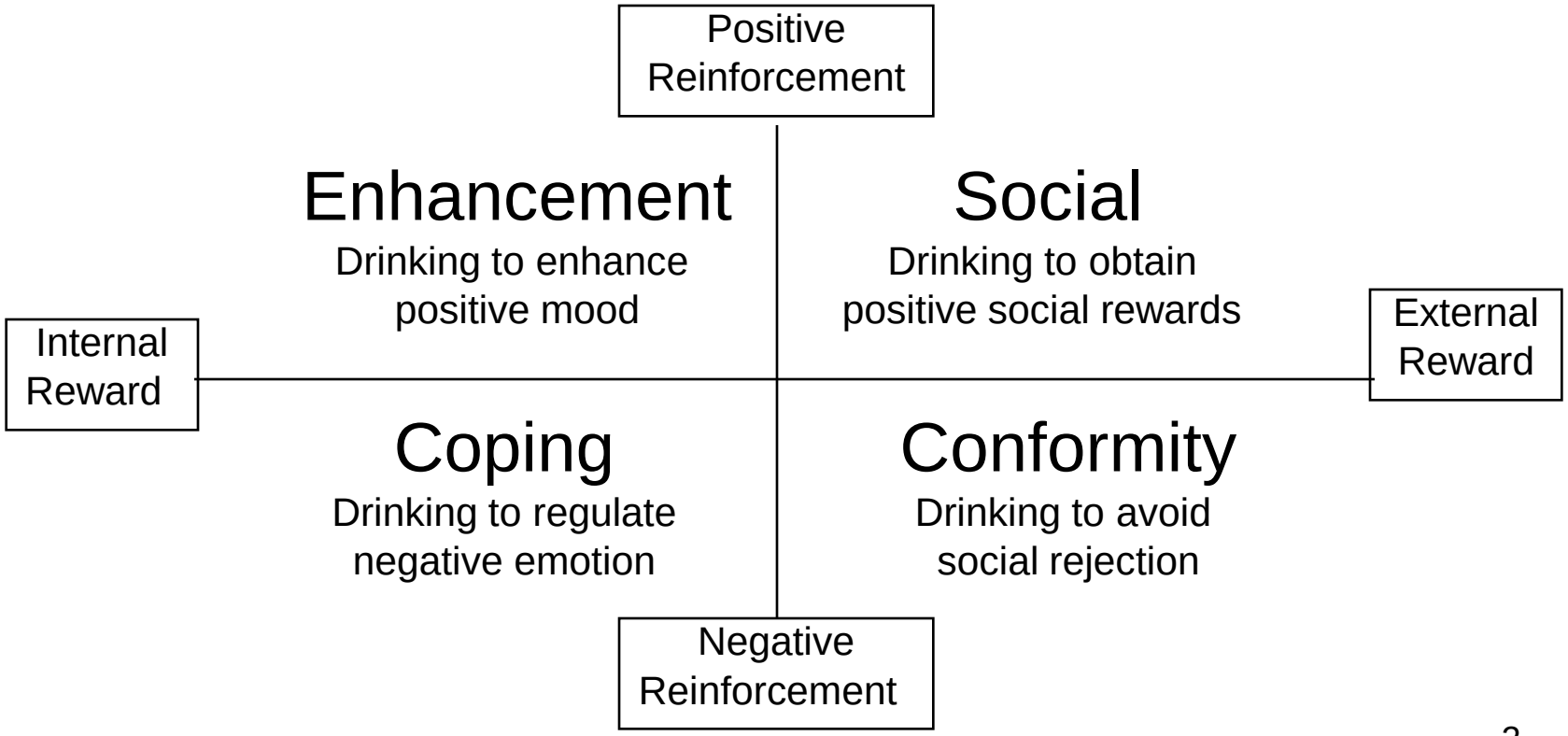
Introduction

The motivational model of alcohol use posits that the anticipated action of alcohol on a person's affect is key in their decision to drink or not to drink (Cox & Klinger, 1988). Four motives defined by an individual's expectancies about reinforcement (positive or negative) and source of reward (internal or external) from alcohol inform decisions to drink (Cooper, 1994).



Introduction, cont'd.

- Drinking motives have been found to differentially predict alcohol use and abuse. For example, drinking for social reasons is associated with moderate alcohol use, and drinking to cope with alcohol problems (Kuntsche et al., 2005).
- Experience of trauma, particularly events such as rape or childhood sexual abuse (CSA), is associated with drinking to cope (Ullman et al., 2005). Less is known about associations between trauma and drinking for enhancement, social, or conformity reasons.
- Alcohol and tobacco use are associated (Jackson et al., 2002), and tobacco use is hypothesized to be a method of regulating negative emotions arising from exposure to early trauma (Felitti et al., 1998).
- Based on this evidence, this study investigates the associations of trauma with each of the four drinking motives and with coping reasons for smoking using a female twin sample.

Aims

- To investigate associations of trauma history, including nonassaultive, assaultive, and childhood events, with each of four drinking motives:
  1. Enhance (enhance positive mood)
  2. Cope (regulate negative emotion)
  3. Conform (avoid social rejection)
  4. Social (obtain positive social rewards)
- To investigate associations of trauma history with coping reasons for smoking.

Sample

- Twins born between 1975 and 1987 ascertained using Missouri State birth records and recruited into the Missouri Adolescent Female Twin Study (MOAFTS, Heath et al., 1999).
- Data for this analysis are derived from Wave 4 interview and Wave 6 questionnaire (2002).
- Responses from 2238 twins who reported having drunk alcohol and who had complete data on trauma and drinking motive items are used in this analysis.
  - Ages at data collection ranged from 18 to 29

Measures: Drinking Motives

- Drinking motives are based on factor-analysis of 20 questions about reasons for drinking, which clustered into the same four drinking motives tested by Cooper (1994). Each question was scored on a scale of 0 to 5 (“Never” to “Almost Always”). Each drinking motive comprises the sum of scores for five questions.
- Smoking motives: Four items scored on a 4-point scale were summed to create a “Cope” variable for smoking. These items are similar to the items which clustered into the “Cope” factor for drinking, and are:
  - When I’m angry, a cigarette can calm me down.
  - When I’m upset with someone, a cigarette helps me cope
  - When I’m feeling down, a cigarette can really make me feel good.
  - Smoking a cigarette calms me down when I feel nervous.

Measures

- Trauma: History of trauma is based on self-report during the interview
- Ethnicity: Denoted by Black / White
- Regular drinking: Defined as at least one drink every month for six months in a row
- Depression: From diagnostic interview, based on DSM-IV criteria

Methods

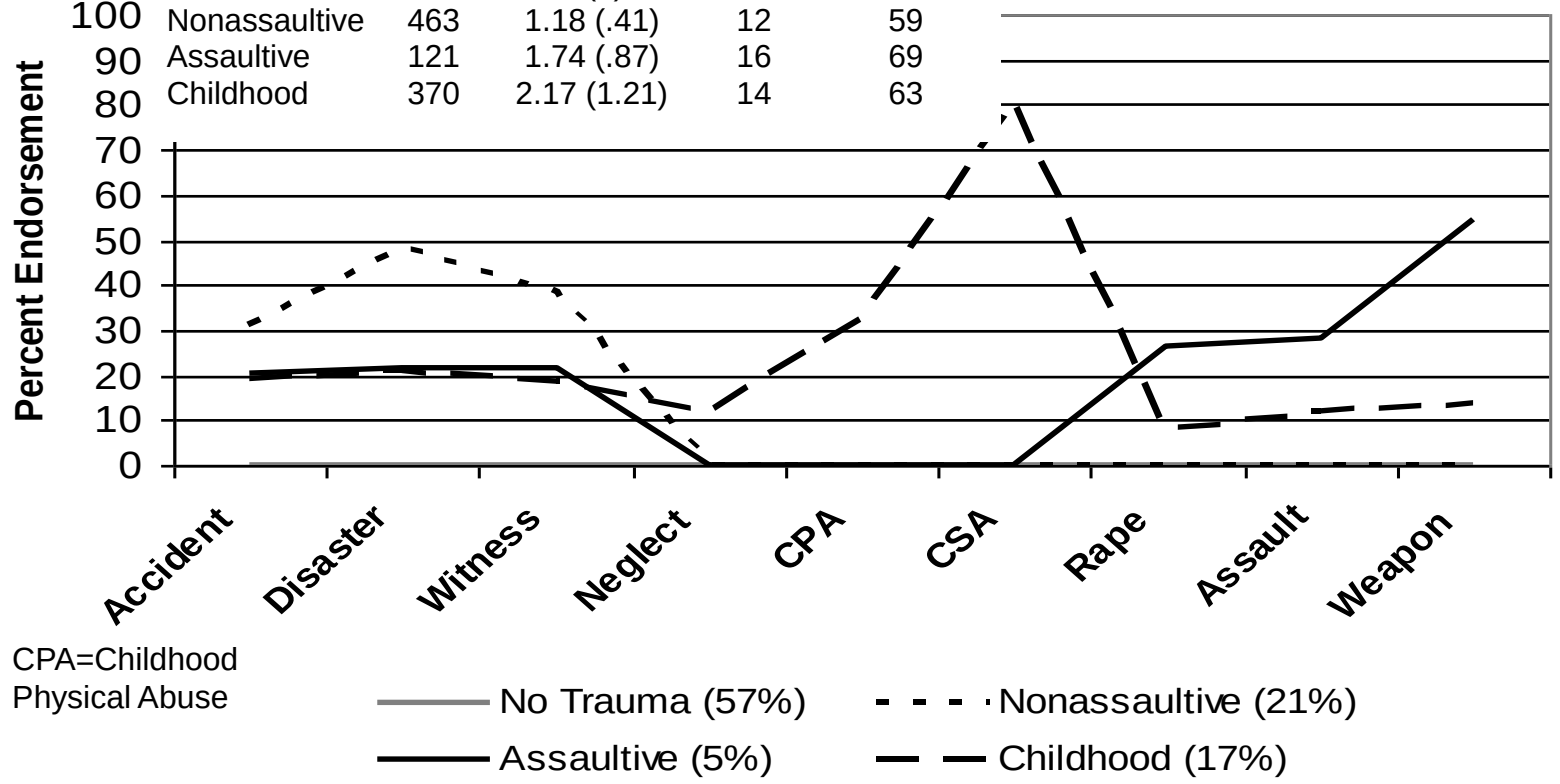
- Trauma items are grouped in two ways, variable-centered and person-centered. A priori categories are variable-centered and trauma classes are person-centered groupings of trauma history.
  - A Priori Categories
    1. No Trauma
    2. Childhood trauma (neglect, physical or sexual abuse)
    3. Assaultive trauma with **NO** childhood trauma (adult rape >= age 18; serious physical assault; being threatened with a weapon, held captive or kidnapped)
    4. Nonassaultive trauma **ONLY** (life-threatening accident; fire, flood, or natural disaster; witnessing someone being badly injured or killed)
  - Trauma classes based on a latent class analysis of trauma items. Two through five class models were tested. The four class model was chosen for this analysis based on its fit to the data and suitability to the aims of this analysis.

Methods

- Regressions of each of the drinking motives and of smoking to cope on the trauma categories and trauma classes were performed. Each regression included control variables for regular drinking, depression, and ethnicity. Correction for the non-independence of observations in twin data was achieved using the Huber-White robust variance estimator.
- Interactions tested in each model:
  - Ethnicity and regular drinking
  - Ethnicity and trauma categories and classes
  - Regular drinking and trauma categories and classes

A Priori Trauma Categories

	N	# Events (mean, sd)	% Black	% Regular Drinkers
No Trauma	1284	0 (0)	8	54
Nonassaultive	463	1.18 (.41)	12	59
Assaultive	121	1.74 (.87)	16	69
Childhood	370	2.17 (1.21)	14	63



CPA=Childhood Physical Abuse

Women in the Childhood and Assaultive Categories, compared to women who endorsed no trauma, were more likely to be regular drinkers (HR=1.54 (1.22-1.95)). Black women were more likely to endorse nonassaultive, assaultive, or childhood trauma than no trauma (HR=1.87 (1.37-2.56)).

Prevalence of Depression (%) and Means of Drinking Motives in A Priori Trauma Categories

	No Trauma (n=1284)	Non-assaultive (n=463)	Assaultive (n=121)	Childhood (n=370)
Depression, %	**13.5**	**20.5**	**31.4**	**44.3**
Drinking Motives, mean(sd) (Drinking Motives scale ranges from 0-25)				
Enhance	**8.5 (6.2)**	**8.8 (6.3)**	**8.7 (6.6)**	**8.5 (6.8)**
Cope	**3.9 (4.7)**	**4.1 (4.5)**	**4.6 (5.3)**	**5.4 (5.9)**
Conform	**1.8 (3.1)**	**2.0 (3.3)**	**1.5 (3.0)**	**1.9 (3.7)**
Social	**8.6 (5.8)**	**8.8 (6.4)**	**8.7 (5.7)**	**8.4 (6.3)**

Assaultive and Childhood categories have higher means on drinking to cope than The Nonassaultive and No Trauma categories, but there is little differentiation between trauma categories on other drinking motives.

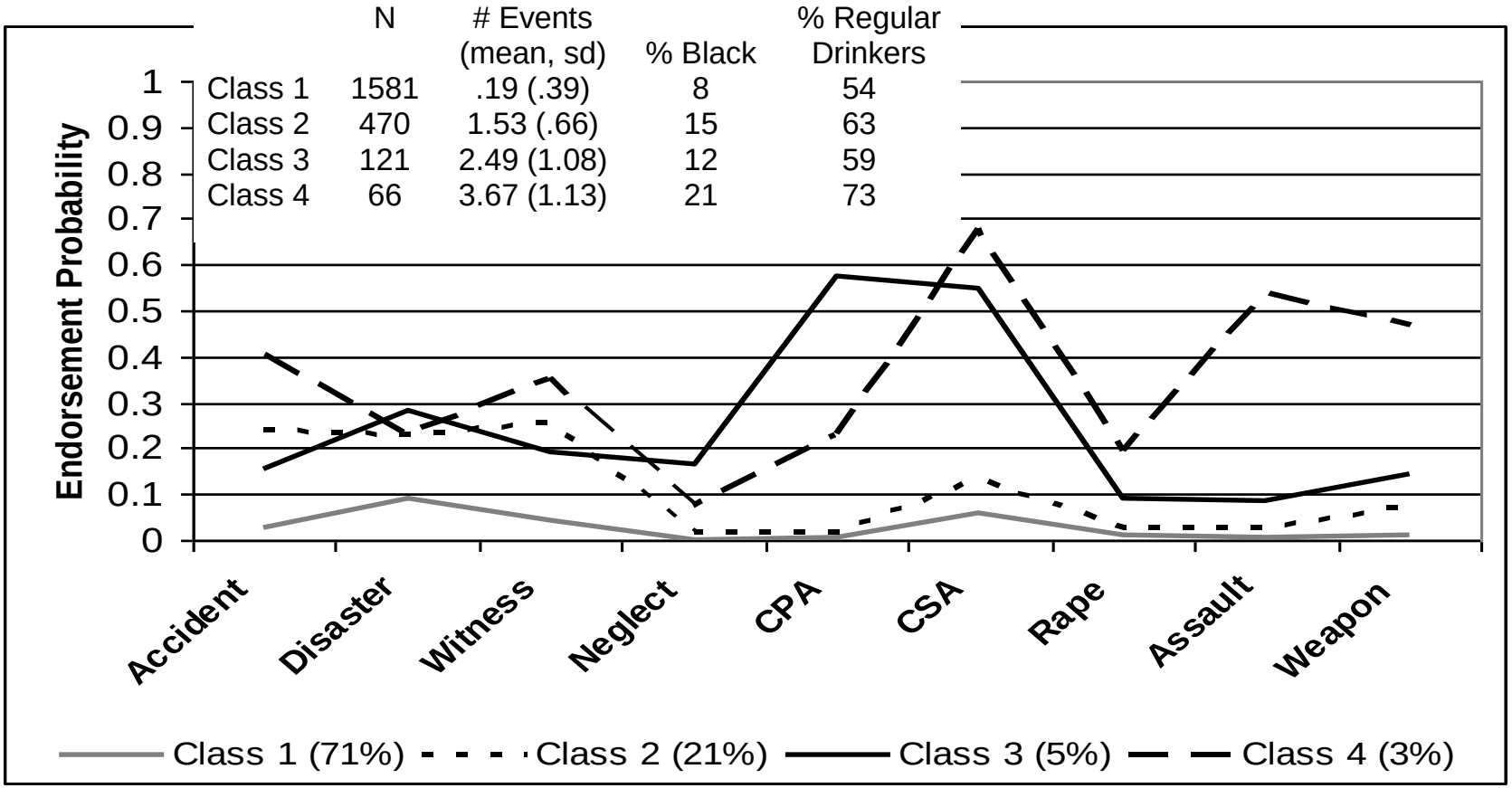
Drinking to Cope Is the Only Drinking Motive Associated with A Priori Trauma Categories

	_b	95 % CI
Nonassaultive	**.01**	**-.47, .50**
Assaultive	**.14**	**-.78, 1.06**
Childhood	**.93****	**.23, 1.62**
Regular Drinking		
Black	**4.39****	**2.86, 5.92**
White	**2.67****	**2.23, 3.09**
Depression	**.96****	**.38, 1.53**
Black	**-.99****	**-1.60, -.39**

* $p < .05$
** $p < .01$

Women in the childhood trauma category were more likely to endorse drinking to cope than women with no trauma.
Black women who drank regularly were more likely to endorse drinking to cope than were white women who drank regularly, although overall black women were less likely to endorse coping motives for drinking.

LCA Trauma Classes: 4-Class Solution



Women in Classes 2 and 4, compared to women in Class 1, were more likely to be regular drinkers (HR=1.52 (1.23-1.88)), and Black women were disproportionately assigned to Classes 2 and 4 (HR=2.17 (1.57-2.99))

Prevalence of Depression (%) and Drinking Motive Means in LCA Trauma Classes

	Class 1 (n=1581)	Class 2 (n=470)	Class 3 (n=121)	Class 4 (n=66)
Depression, %	**15.0**	**29.8**	**43.8**	**60.6**
Drinking Motives, mean(sd)				
Enhance	**8.5 (6.2)**	**8.9 (6.4)**	**8.0 (6.8)**	**9.7 (7.3)**
Cope	**3.9 (4.7)**	**4.5 (4.9)**	**5.5 (6.1)**	**7.2 (6.8)**
Conform	**1.9 (3.2)**	**1.9 (3.4)**	**1.7 (3.4)**	**2.1 (4.1)**
Social	**8.7 (5.9)**	**8.8 (6.3)**	**7.3 (6.2)**	**9.4 (6.3)**

Overall, the trauma classes have more differentiation on drinking motive scores than the a priori trauma categories.

Associations of Drinking to Enhance Positive Mood with Trauma Classes

	_b	95 % CI
Class 2	**.04**	**-.57, .64**
Class 3		
Reg. Drinkers	**.29**	**-1.27, 1.85**
Not Reg. Drinkers	**-1.95****	**-3.3, -.62**
Class 4	**.55**	**-1.28, 2.39**
Regular Drinking	**5.20****	**4.68, 5.72**
Depression	**-.00**	**-.67, .67**
Black	**-2.13****	**-2.92, -1.34**

* $p < .05$
** $p < .01$

Women assigned to Class 3 who were not regular drinkers were LESS likely to endorse drinking to enhance positive mood than women assigned to Class 1. Other trauma classes have no association with drinking to enhance mood.

Associations of Drinking to Cope (to Regulate Negative Emotion) with Trauma Classes

	_b	95 % CI
Class 2	**.17**	**-.32, .66**
Class 3	**1.16***	**.03, 2.30**
Class 4	**2.30****	**.63, 3.97**
Regular Drinking		
Black	**4.29****	**2.79, 5.79**
White	**2.66****	**2.25, 3.07**
Depression	**.91****	**.34, 1.48**
Black	**-1.01****	**-1.60, -.41**

* $p < .05$
** $p < .01$

Women assigned to Classes 3 and 4, which have in common a high probability of childhood trauma endorsement, were more likely to endorse drinking to cope than were women in Class 1. Class 2, characterized by Nonassaultive events, has no association with drinking to cope.

Drinking to Obtain Positive Social Rewards and Trauma Classes

	_b	95 % CI
Class 2		
Black	**-1.51***	**-2.74, -.27**
White	**.04**	**-.61, .69**
Class 3	**-1.48****	**-2.46, -.50**
Class 4	**.03**	**-1.55, 1.62**
Regular Drinking	**5.01****	**4.53, 5.49**
Depression	**-.06**	**-.67, .55**
Black	**-1.08***	**-2.03, -.12**

* $p < .05$
** $p < .01$

Women in Class 3, characterized primarily by childhood trauma, and Black women in Class 2, characterized by nonassaultive trauma, were LESS likely to endorse drinking for social reasons than were women in Class 1.

Smoking to Cope Means and Associations with Trauma Categories and Classes

Smoking to Cope, mean(sd) (range 0-16)				
	No Trauma	Non-assaultive	Assaultive	Childhood
A Priori Trauma Categories	9.8 (2.9)	10.5 (2.7)	10.5 (2.7)	10.9 (2.8)
	Class 1	Class 2	Class 3	Class 4
LCA Trauma Classes	10.0 (2.9)	10.6 (2.7)	10.6 (2.8)	10.9 (3.2)

A Priori Trauma Categories

	_b	95 % CI
Nonassaultive	.64**	.17, 1.11
Assaultive	.69*	.04, 1.35
Childhood	1.04**	.59, 1.49
Regular Drinking	.48*	.07, .89
Depression	.62**	.21, 1.03
Black	-1.22*	-2.22, -.22

LCA Trauma Classes

	_b	95 % CI
Class 2	.55*	.14, .97
Class 3		
Black	-3.22**	-4.92, -1.52
White	.79*	.18, 1.40
Class 4	.72	-.20, 1.63
Regular Drinking	.47*	.06, .88
Depression	.71**	.29, 1.13
Black	-.80	-1.79, .18

* $p < .05$
** $p < .01$

Smoking to cope is associated with all trauma categories and classes except Class 4.

Conclusions

- Drinking to cope is the only drinking motive that has a positive association with a history of trauma.
  - Women belonging to trauma categories and classes characterized by childhood trauma are more likely to drink to cope with negative emotion than are women with no or less severe trauma histories.
  - Women who endorse primarily childhood trauma, but not other assaultive events (Class 3), are less likely to drink for Enhancement and Social motives than women in Class 1.
- Smoking to cope has a more consistent association with different types of trauma than does drinking to cope.
- The person-centered analysis based on each woman's individual trauma history (trauma classes) displays greater power to detect differences in drinking motives than the variable-centered approach.

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