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Associations Among Parental Alcohol Problems, Trauma, and Depression in a Twin Sample

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Aims of Presentation

- Document report of parental alcohol problems among men and women with a history of depression.
- Document report of traumatic events among men and women with a history of depression.
- Examine association between parental alcohol problems and traumatic events.
- Examine contribution of parental alcohol problems to development of depression, controlling for trauma and genetic effects.

Sample

- Australian twins born 1964-1971 who completed a diagnostic interview in 1996-2000 (N=6265).
- This analysis based on 5326 twins (1156 MZ and 1507 DZ pairs) for whom there is complete data for both twins on all trauma and parental alcohol problem variables, as well as information about whether they were raised by both natural parents until age 16.
 - Respondents deleted from analyses due to missing data had a higher prevalence of depression and were also significantly higher on some trauma variables, particularly childhood neglect and abuse, as well as on parental alcohol problems. Incorporation of these respondents will be the focus of a future study.

Variables

- History of depression was ascertained by diagnostic interview based on DSM-IV criteria.
- History of alcohol problems in respondent's mother and/or father was based on self-report. Mutually exclusive categories for problems in mother only, father only, or both parents were created for this analysis.
- History of traumatic events was based on self-report during interview.

Trauma Variables

Respondent was given a list of events and asked “Did event #__ ever happen to you?” Proportions of men (M) and women (W) who have ever experienced these events are given at right.

	M	W
1. You were involved in a life-threatening accident.	26%	13%**
2. You were involved in a fire, flood, or natural disaster.	17%	12%**
3. You witnessed someone being badly injured or killed.	32%	16%**
4. You were raped (someone had sexual intercourse with you when you did not want to, by threatening you or using some degree of force).	0.4%	5%**

** p < .001
(difference between M/W)

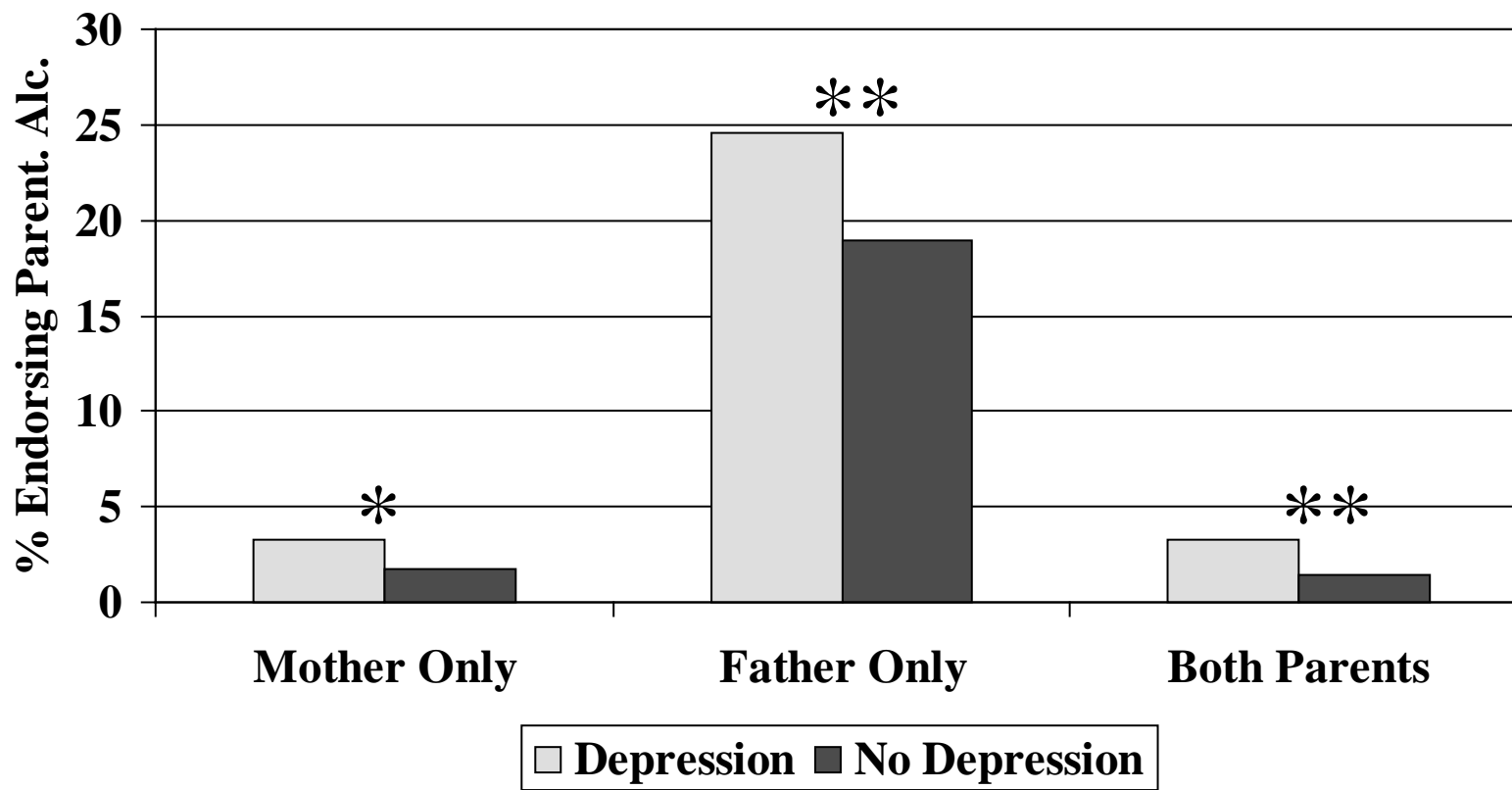
Trauma Variables

	M	W
5. You were sexually molested (someone touched or felt your genitals when you did not want them to).	0.9%	2%*
6. You were seriously physically attacked or assaulted.	15%	6%**
7. You were physically abused as a child.	2%	4%*
8. You were seriously neglected as a child.	0.9%	2%*
9. You were threatened with a weapon, held captive, or kidnapped.	11%	5%**
10. Childhood sexual abuse (CSA) is a composite variable incorporating information about early sexual experience both inside and outside family, age 16 or younger. Sexual traumas at age 17 or later are coded as rape and/or sexual molestation.	5%	15%**

* p < .05
** p < .001
(difference between M/W)

Depression Is Associated With Parental Alcohol Problems

Men and Women With and Without History of Depression Reporting Mother, Father, or both Parents had Problems with Alcohol



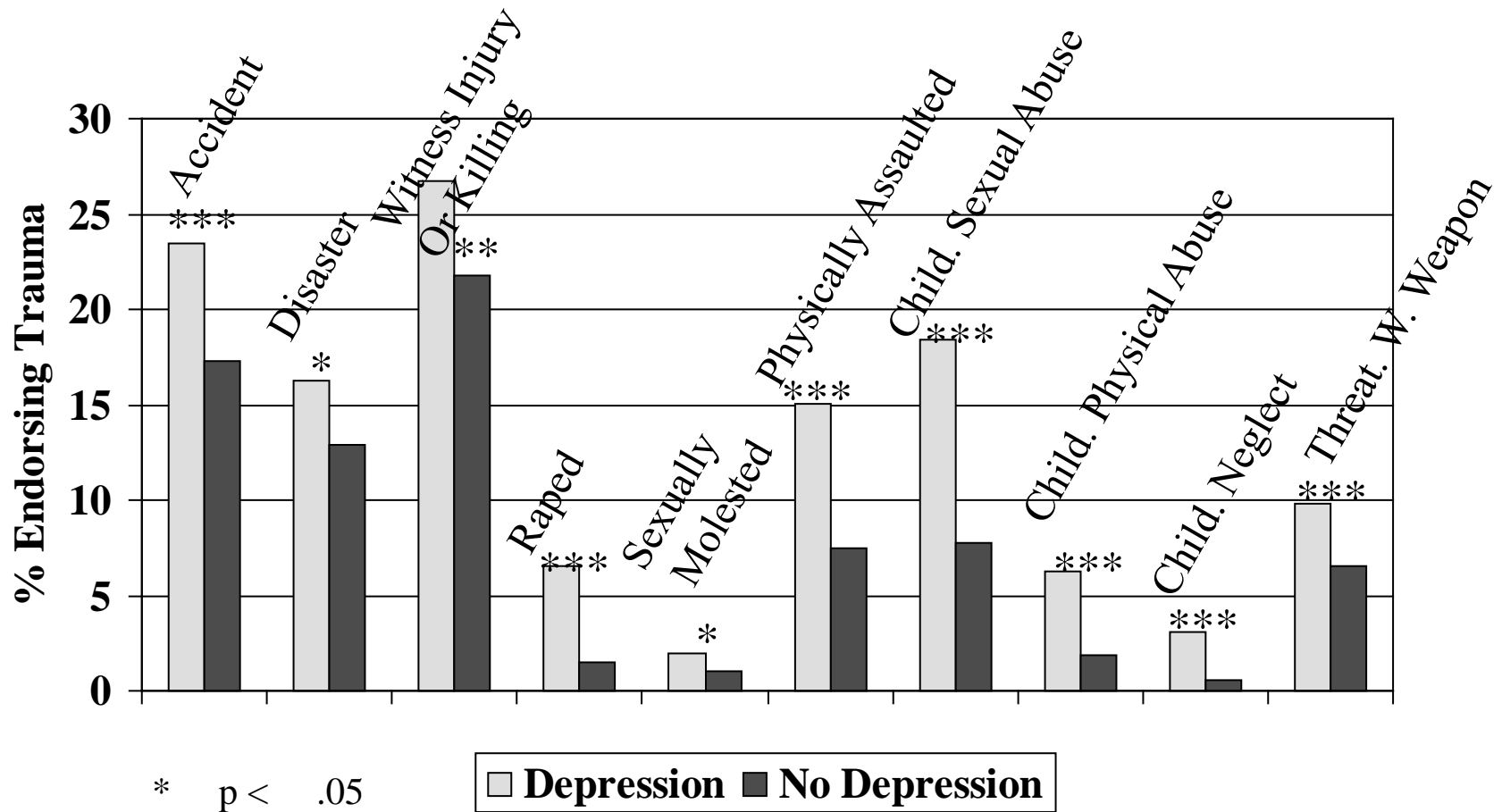
* $p < .001$

** $p < .0001$

Depression Is Associated With Traumatic Events

Men and Women With and Without History of Depression

Reporting Experience of Traumatic Events

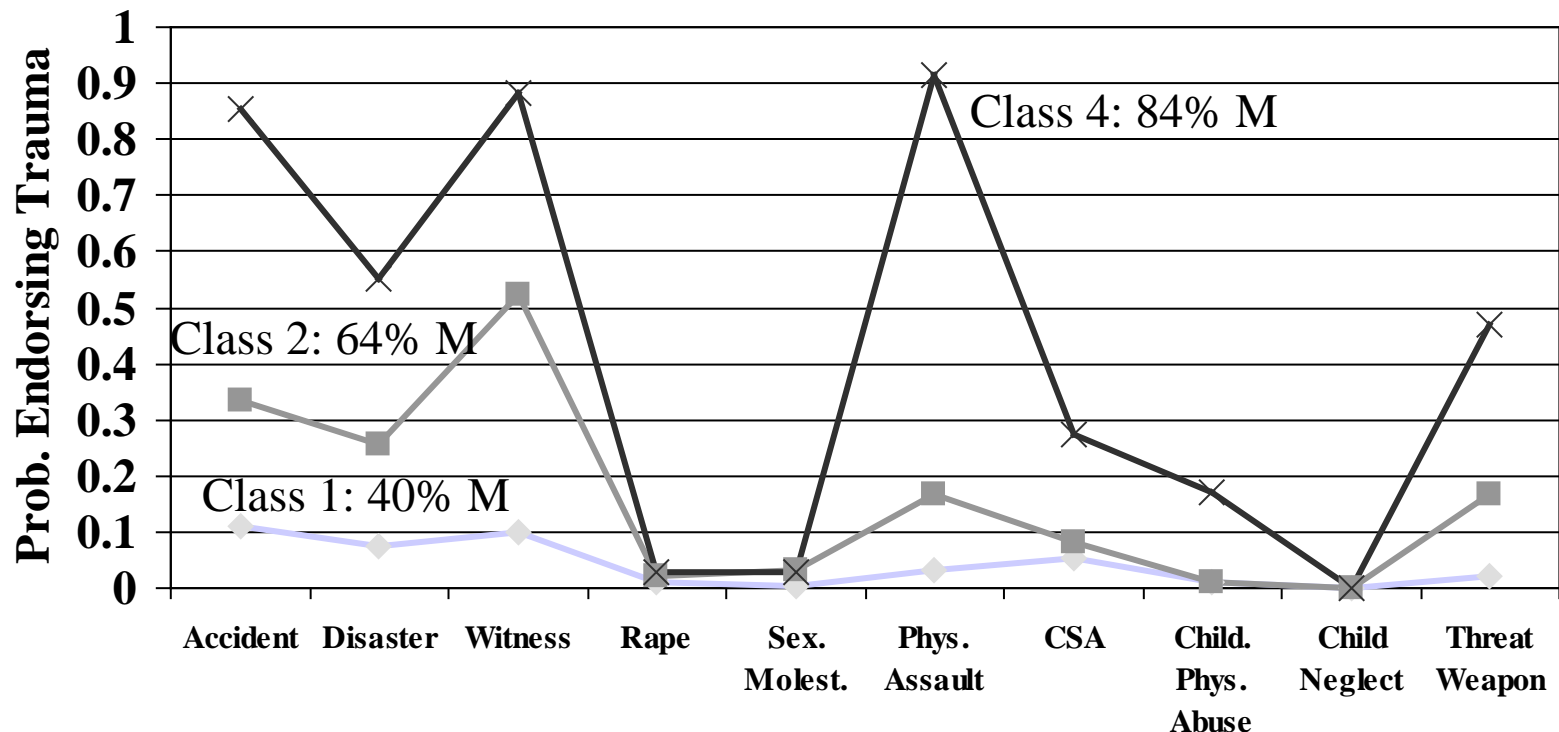


Latent Class Analysis

- Similar to factor analysis, except assumes *categorical* latent variables
- Computes models that estimate different numbers of mutually-exclusive latent categories, or “classes”
- In this case:
 - Is there evidence for clustering of trauma?
 - Can we estimate classes of trauma that differ in the strength of their association with parental alcohol problems?
 - Do these trauma classes differ in their risk for depression?

Latent class analysis was used to classify respondents with different types and frequencies of trauma. Five distinct classes were defined.

Class 1 (n=4154) has low trauma prevalence. Classes 2 (n=868) and 4 (n=74) are predominantly male with similar types but different rates of trauma.

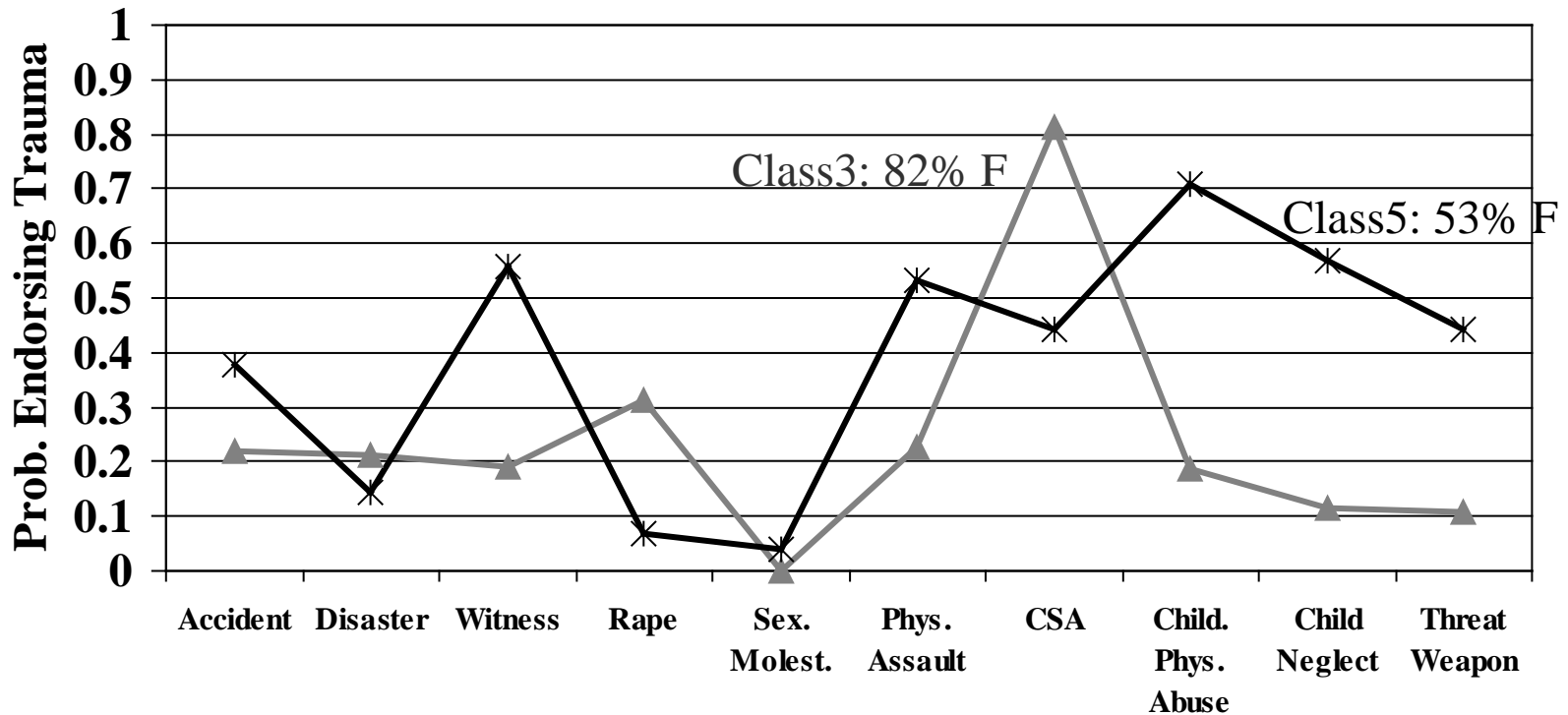


Within classes 1 and 2 there were significant male/female differences in experience of trauma type. These differences in class 4 were insignificant, except for rape.



Class 3 (n=175): Mostly female. High rate of childhood sexual abuse.

Class 5 (n=55): Similar to classes 2 and 4 in rates of witnessing injury, physical assault, and being threatened with a weapon. Also characterized by high rates of childhood sexual and physical abuse and neglect.



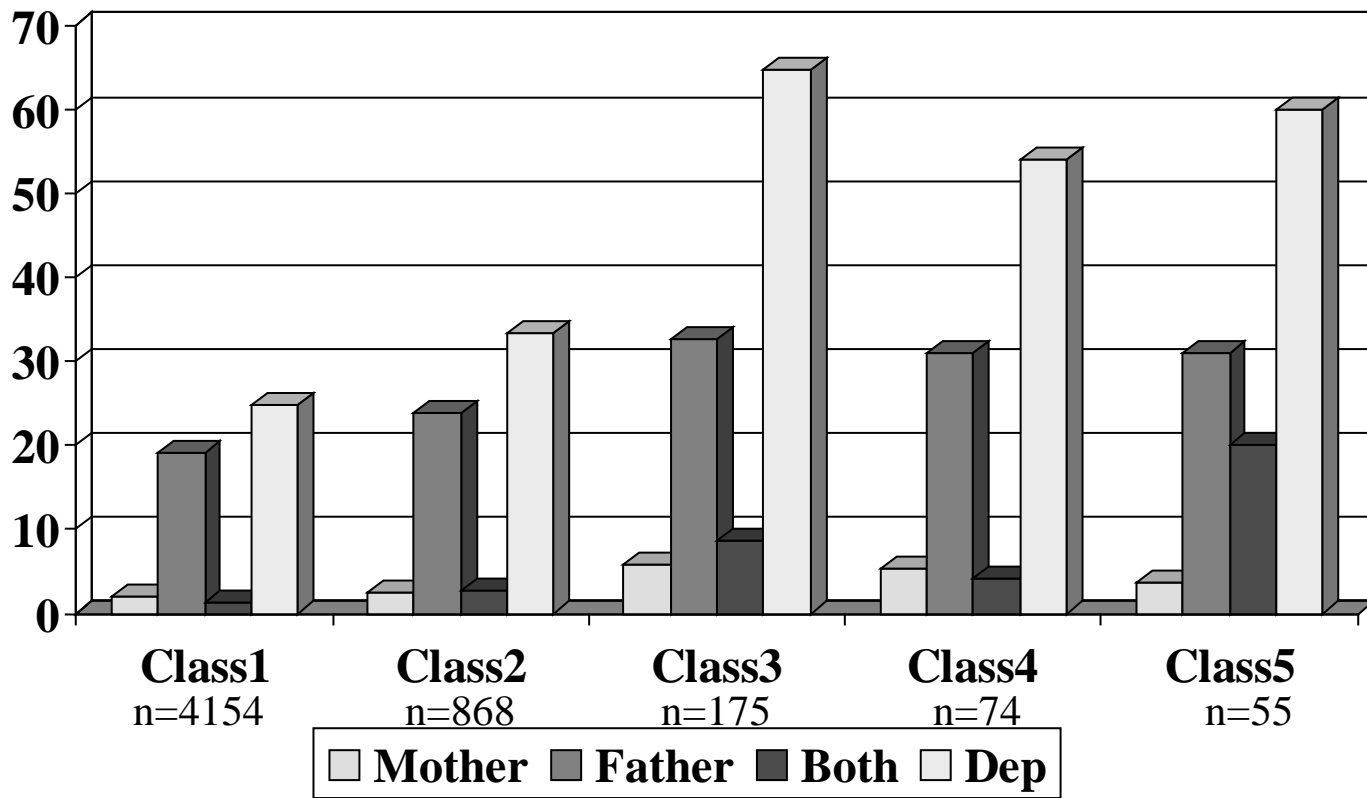
Within class 3 the only male/female differences in experience of trauma type were for rape or being threatened with a weapon.

Within class 5 the only male/female difference was for CSA.

▲ Class 3 * Class 5

Rates of Parental Alcohol Problems and Depression by Trauma Class

High rates of depression in classes 3, 4, and 5, but also increased rates of paternal alcohol problems and (especially in class 5) alcohol problems in both parents.



Multinomial Logistic Regression was used to Investigate the Association between Parental Alcohol Problems and Trauma Class Membership.

Classes 3 & 4 were combined because there were no significant differences between them in effect of parental alcohol problems. This combined class was the only class where being raised or not being raised by both natural parents had a differential effect, and this was true for alcohol problems in father only.

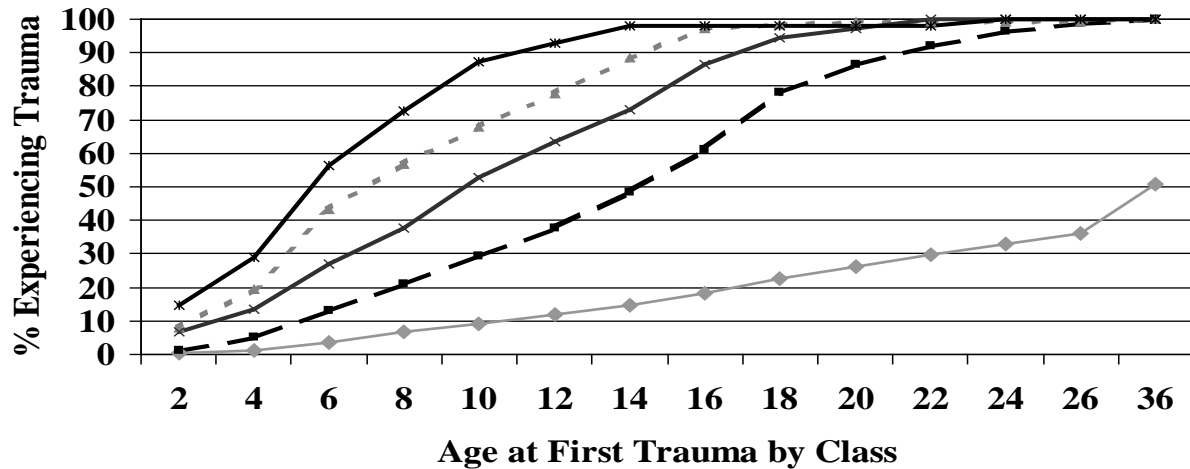
	Mother		Father		Both	
	OR	95% CI	OR	95% CI	OR	95% CI
Class 1	1.00		1.00		1.00	
Class 2	ns a,b		1.38*a,b	1.15-1.66	2.28*a,b	1.36-3.80
Classes 3 & 4	4.12**a,b	2.30-7.39	1.73* a 4.28**b	1.19-2.53 2.77-6.61	8.02**a,b	4.36-14.73
Class 5	ns a,b		2.79*a,b	1.50-5.18	26.83**a,b	11.70-61.52

* $p < .01$

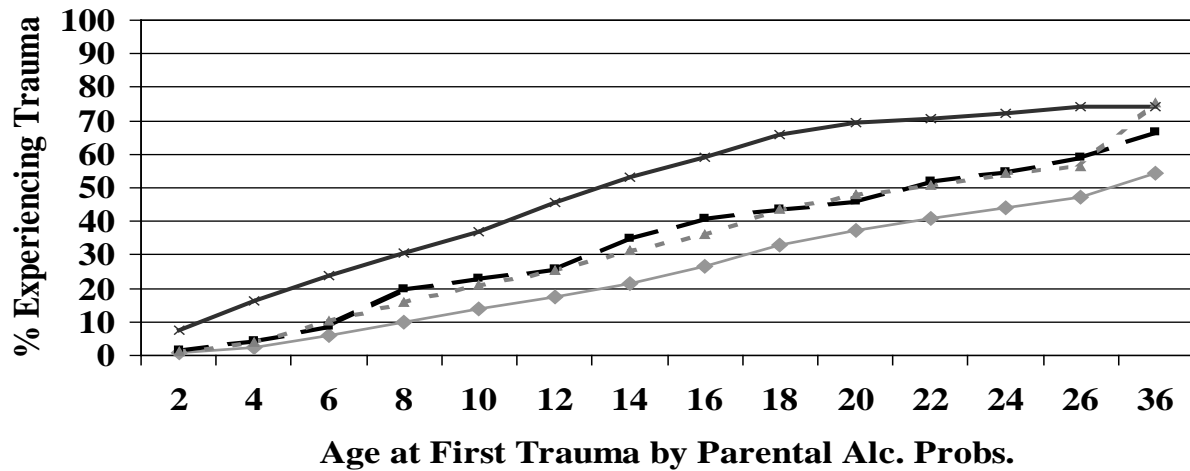
** $p < .001$

a: if raised by both natural parents

b: if not raised by both natural parents



—◆— Class 1 -■- Class 2 -▲- Class 3 -×- Class 4 -*— Class 5



—◆— Neither -■- Mother -▲- Father -×- Both

Age at first trauma varied by class, with rate of cumulative trauma differing significantly for each class (log rank $X^2(4) 3486.15$, $p < .0001$).

Age at first trauma varied by parental alcohol problems (log rank $X^2(3) 95.79$, $p < .0001$). There was no significant difference between people whose mothers vs. fathers had alcohol problems (log rank $X^2(1) 0.49$, $p = 0.48$).

Effect of Parental Alcohol Problems and of Trauma Class on Development of Depression Were Examined Separately Using Logistic Regression. Both Were Significant Predictors.

	OR	95% CI
Neither	1.00	
Mother	2.94* ^a ns ^b	1.86-4.65
Father	1.28* ^a 2.06** ^b	1.08-1.52 1.59-2.67
Both	2.51** ^{a,b}	1.68-3.74

	OR	95% CI
Class 1	1.00	
Class 2	1.51**	1.29-1.77
Class 3	5.51**	3.97-7.66
Class 4	3.56**	2.25-5.65
Class 5	4.54**	2.56-8.03

* p < .01

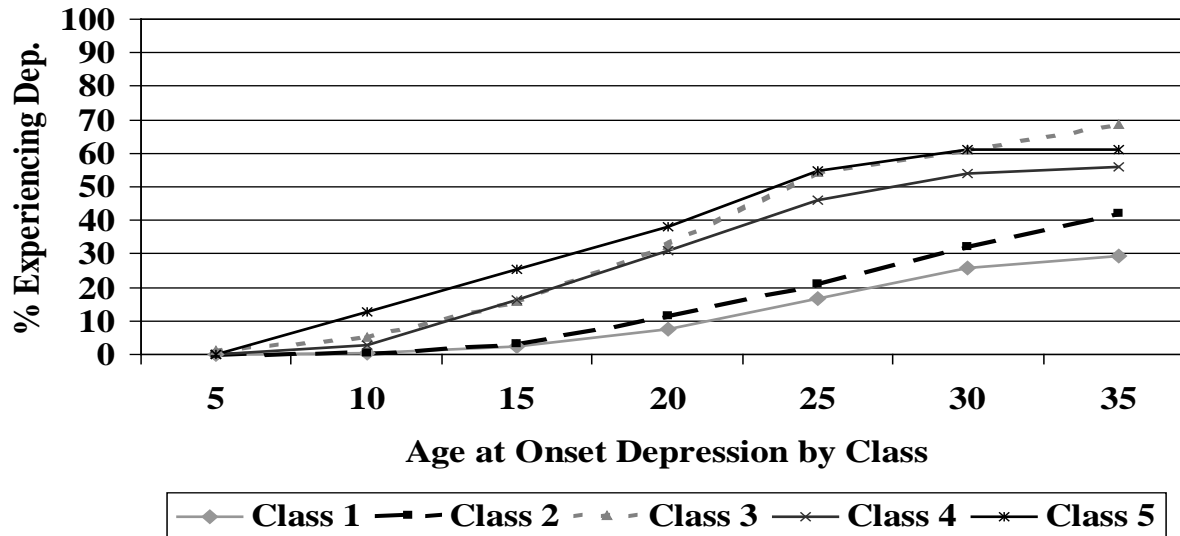
** p < .001

a: if raised by both natural parents

b: if not raised by both natural parents

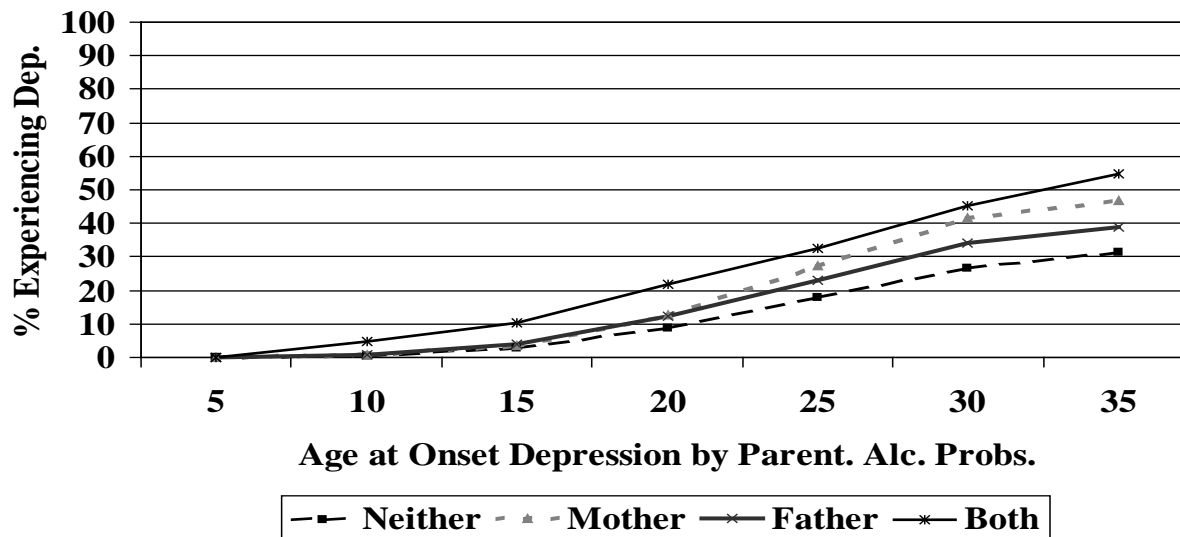
Classes 3, 4, and 5 not significantly different (Wald X² (2) 2.37, p=0.31).

They were pooled for further analyses



Age at onset of depression varied by class (log rank X^2 (4) 291.42, $p < .0001$).

There were no significant differences between classes 3, 4, and 5 (log rank X^2 (2) 1.62, $p = 0.44$).



Age at onset of depression varied by parental alcohol problems (log rank X^2 (3) 58.83, $p < .0001$).

There was no significant difference between people whose mothers vs. fathers had alcohol problems (log rank X^2 (1) 3.00, $p = 0.08$).

Controlling for Trauma Class Membership and Genetic Liability to Depression, Parental Alcohol Problems Remained a Significant Predictor of Depression.

	OR	95% CI
Mother	2.72** a ns b	1.77-4.17
Father	1.21* a 1.71** b	1.02-1.42 1.33-2.18
Both	1.67* a,b	1.13-2.47
Class 2	1.43**	1.22-1.68
Classes 3,4,5	3.87**	3.03-4.96
Genetic effect	2.11** c	1.46-3.07

* p < .05

** p < .001

a: if raised by both natural parents

b: if not raised by both natural parents

c: modeled as interaction between twin pair zygosity and cotwin status on depression

Conclusions

- Parental alcohol problems are associated with trauma.
 - There are elevated rates parental alcohol problems in more severe trauma classes (3,4,5).
 - There is no differential effect of parental alcohol problems on predominantly female (class 3) vs. predominantly male (class 4) classes.
 - People whose mothers had problems with alcohol were 4 times as likely to experience high rates of CSA (class 3) or of accidents, witnessing injury/killing, and physical assault (class 4) as people whose mothers did not have alcohol problems. Maternal alcohol problems were not associated with lower rates of accident and witness to injury/killing (class 2) or with high rates of child physical abuse and neglect (class 5).
 - People whose fathers only or both parents had alcohol problems were significantly more likely to experience any of the traumas investigated here than people whose fathers or both parents did not have alcohol problems.

Conclusions

- Trauma is associated with depression.
 - Beyond a trauma threshold as indicated by membership in class 3, 4, or 5, differential experience of trauma by type or frequency does not translate into differential liability to depression.
 - Experience of trauma remains a significant predictor of depression even after controlling for parental alcohol problems and genetic liability to depression.
- Parental alcohol problems are associated with depression.
 - There are elevated rates of depression and parental alcohol problems in more severe trauma classes (3,4,5).
 - Parental alcohol problems are significant predictors of depression in children and adult children, above and beyond their association with a child's experience of traumatic events. This significance remains even after controlling for familial liability to depression.
 - Maternal-only alcohol problems have a stronger effect on development of depression than paternal-only or both, even though maternal alcohol problems are less prevalent.