

# Suicidal Ideation and Problem Alcohol Use in Young Women: Findings From a Female Twin Sample

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## Aims

1. To evaluate the association between suicidal ideation (SI) and:
  - Onset of drinking milestones
  - Current patterns of alcohol use
2. To determine whether suicidal ideation predicts the development of alcohol dependence (AD) in young women *after accounting for familial liability to AD.*

## Participants

- Twins born between 1975 and 1985 recruited into the Missouri Adolescent Female Twin Study (MOAFTS; PI: Heath)
- Data were derived from Wave 4 of data collection, conducted from 2002-2005 (N = 3,788).
- 86% identified as Caucasian, 14% as African-American
- Participants were 18-29 years old at the time of interview (mean=21.6 years).

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## Assessment Protocol

Telephone interviews using the Semi-Structured Assessment for the Genetics of Alcoholism (Bucholz et al., 1994) assessed:

### **History of Suicidal Ideation and Suicide Attempts**

#### **Alcohol Outcomes**

##### *Lifetime:*

- Alcohol use
  - DSM-IV AD diagnosis
  - Maximum drinks in 24 hours
- Age at first drink  
Age AD criteria were met

##### *Past Year:*

- Average quantity consumed on drinking days
- Frequency of alcohol use

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## Suicidal Ideation in the Sample

- 18.4% reported having thought about taking their own lives at least once during their lifetimes.  
*(28.4% of these women also reported that they had made suicide attempts.)*
- 1<sup>st</sup> experience of suicidal ideation occurred on average at 15.8 years of age (S.D. = 3.34).

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## Timing of Suicidal Ideation and Drinking Milestones

- **First alcoholic drink**
  - 43.6% initiated alcohol use before 1<sup>st</sup> experience of SI.
  - 12.9% reported that 1<sup>st</sup> alcohol use and 1<sup>st</sup> experience of SI occurred at the same age.
  - 43.4% reported that 1<sup>st</sup> experience of SI preceded initiation of alcohol use.
- **Onset of alcohol dependence**
  - 12.2% met AD criteria before 1<sup>st</sup> experience of SI.
  - 21.7% reported AD onset and 1<sup>st</sup> experience of SI as occurring at the same age.
  - 66.1% reported that 1<sup>st</sup> experience of SI preceded AD onset.

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## Alcohol Outcomes by SI Status: Lifetime

	SI +	SI -	
<b>Ever consumed 1+ full alcoholic drinks *</b>	90.1%	84.9%	OR: 1.64 (CI <sup>a</sup> : 1.23-2.16)
<i>Age at initiation of alcohol use*</i>	15.9	16.6	t(3228) = 5.90
<b>Maximum drinks consumed in a 24-hour period*</b>	13.4	9.7	t(2884) = -9.56
<b>DSM-IV AD criteria met*</b>	18.3%	7.1%	OR: 2.94 (CI <sup>a</sup> : 2.27-3.82)
<i>Age at onset of AD</i>	18.7	18.8	t(297) = 0.50

\* p < .05

<sup>a</sup> adjusted for family clustering using Huber-White robust standard errors.

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## Alcohol Outcomes by SI Status: Past Year

	SI +	SI -	
<b>Frequency of consumption*</b>			
1-2 days/year	8.8%	7.3%	OR: 1.28 (CI <sup>a</sup> : 1.04-1.56)
3-11 days/year	21.2%	26.2%	
1-3 days/month	33.1%	35.6%	
1-2 days/week	23.7%	24.2%	
3-4 days/week	10.9%	5.8%	
daily or nearly every day	2.3%	0.9%	
<b>Average # drinks/drinking day*</b>			
1-2	39.5%	44.0%	OR: 1.21 (CI <sup>a</sup> : 1.01-1.44)
3-4	35.0%	33.0%	
5-6	14.4%	15.3%	
7-8	5.9%	4.6%	
9-11	2.9%	2.1%	
12 or more	2.3%	1.0%	

\* p < .05; <sup>a</sup> adjusted for family clustering using Huber-White robust standard errors.

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## Results: Aim 1

- Suicidal ideation was associated with elevated risk for lifetime consumption of alcohol, a higher number of maximum drinks consumed in a 24-hour period, and a substantial increase in likelihood of developing AD.
- Earlier age at 1<sup>st</sup> drink - but *not* onset of AD - was found in women who reported SI when compared to those who did not.
- Average quantity and frequency of alcohol use in the past year were higher in women who reported histories of SI vs. those who did not, but differences were modest.
- Women who had experienced SI were no more likely than those without a history of SI to report any alcohol use (OR: 1.21; CI: 1.00-1.47) or to report more frequent intoxication (OR: 1.04; CI: 0.87-1.25) in the past year.

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## Data Analytic Strategy: Aim 2

- A Cox proportional hazards model was chosen to assess the association between SI and onset of AD, to account for the fact that not all participants had passed through the period of risk for the development of AD.
- The few cases in which AD onset preceded 1<sup>st</sup> experience of SI were not included in the model.
- The proportional hazards assumption that risk remains constant over time was assessed using the Grambsch and Therneau test of the Schoenfeld residuals. No violations were found.

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## Adjustment for Familial Liability to AD

- Co-twin AD status was used to adjust for potentially confounding familial influences that may predispose to both SI and AD (e.g., parental history of depression).
- Zygosity and the interaction between zygosity and co-twin AD status were also included in the model to adjust for liability to AD.
- The interaction term provided an estimate of the degree to which familial risk may be attributed to genetic versus environmental factors.

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## Cox Proportional Hazards Model Predicting AD From History of SI

	<b>Hazard Ratio (CI<sup>a</sup>)</b>
History of suicidal ideation*	2.15 (1.61 - 1.27)
Co-twin AD status*	2.22 (1.08 - 4.56)
Zygosity	0.85 (0.63 - 1.17)
Co-twin AD status X zygosity*	2.80 (1.18 - 6.63)

\* p < .05

<sup>a</sup> adjusted for family clustering using Huber-White robust standard errors.

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## **Results: Aim 2**

- After adjusting for the contribution of familial liability to AD, suicidal ideation remained a significant predictor of alcohol dependence.
- A stronger within-pair association in AD status was found for MZ vs. DZ twins, as indicated by the significant co-twin AD status by zygosity interaction term.

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## **Conclusions**

- Results highlight the association between suicidal ideation and a range of problem drinking behaviors in young women.
- Although evident in patterns of use, distinctions between women who reported experiencing SI vs. those who did not were most pronounced with respect to age at alcohol use initiation and risk for AD.
- Most importantly, findings demonstrate that SI confers risk for AD above and beyond that which is attributable to familial influences common to SI and AD.

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