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Valerie S. Knopik

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# ADHD and initiation of drinking and drinking to intoxication in girls: Is there an association?

Valerie S. Knopik, Pamela A.F. Madden, and  
Andrew C. Heath

Missouri Alcoholism Research Center  
Department of Psychiatry

Washington University School of Medicine, St. Louis, MO

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# Introduction

There has been limited research on the association of ADHD and early (i.e., high-school) age of onset of alcohol use. Results of previous research suggest that conduct problems at age 8 are associated with increased risk of alcohol-related problems at age 15 (Lynskey and Fergusson, 1995); however, the relationship between attention deficit behaviors and alcohol problems at age 15 was not significant. In contrast, Biederman et al. (1998) suggested that ADHD was associated with earlier age of onset of psychoactive substance use disorder relative to controls (20.6 versus 22.1 years), but their study did not focus on high-school age drinking.

## Objectives

- To explore the association of Attention-deficit Hyperactivity Disorder (ADHD) in girls with:
  - age of onset at first full drink
  - age of onset of regular drinking
  - age on onset of drinking to intoxication
  - age of onset of risky drinking

# Missouri Adolescent Female Twin Study (MOAFTS)

- Families with female like-sex twin pairs born July 1, 1975 – June 30, 1985 in the state of Missouri and identified through Missouri birth records.
- Data for the present analysis were obtained from both parental and twin pair telephone diagnostic interviews.
- Symptoms of ADHD were assessed via parent report of the children, when the children were adolescents (mean age 15.3 +/- 2.3).
- Age of onset for the four drinking measures was obtained by twin self-report, when the twins were reassessed as young adults in a follow-up survey.

# ADHD

- A persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequently displayed and more severe than is typically observed in individuals at a comparable level of development.
- Some hyperactive-impulsive or inattentive symptoms that cause impairment must have been present before age 7.
- Some impairment from the symptoms must be present in at least two settings (e.g., at home and at school).

## Inattentive symptoms

- often fails to give close attention to details or makes careless mistakes
- often has difficulty sustaining attention in tasks or play activities
- often does not seem to listen when spoken to directly
- often does not follow through on instructions and fails to finish schoolwork, chores, or duties
- often has difficulty organizing tasks and activities
- often avoids tasks that require sustained mental effort
- often loses things necessary for tasks
- is often easily distracted
- is often forgetful in daily activities

## Hyperactivity-Impulsive symptoms

- often fidgets with hands or feet or squirms in seat
- often leaves seat in classroom or in other situations in which remaining seated is expected
- often runs about or climbs excessively in situations in which it is inappropriate
- often has difficulty playing or engaging in leisure activities quietly
- is often 'on the go' or often acts as if 'driven by a motor'
- often talks excessively
- often blurts out answers before questions have been completed
- often has difficulty awaiting turn
- often interrupts or intrudes on others



## Age of onset measures

- **First:** How old were you when you had your very first drink?
- **Regular:** How old were you when you first started drinking at least one drink every week for 8 weeks in a row?
- **Drunk:** How old were you the first time you got drunk—that is, you could not talk clearly, you were unsteady on your feet, or you found it was hard to keep your balance?
- **Risky:** The younger of regular drink and drunk.

# Methods

- ADHD was divided into Hyperactive-Impulsive and Inattentive subscales based on number of symptoms:
  - 6 or more symptoms in each subscale
  - 3 – 5 symptoms in each subscale
  - 0 – 2 symptoms in each subscale
- Age of onset measures were divided into the following categories:
  - less than 15 years old
  - 15-16 years old
  - 17 years old
  - greater than 17 years old (comparison group)

## Sample Information (N=830 twins, N= 415 families)

Variable	Mean	ADHD Variables	Percent of sample
Age	22.2 +/- 2.5	Hyperactive-Imp: 6 or more symp.	2.7%
Age first drink	16.0+/-2.1	Hyperactive-Imp: 3-5 symptoms	10.1%
Age first regular drinking	18.4+/-2.3	Hyperactive-Imp: 0-2 symptoms	87.2%
Age first got drunk	16.3+/-4.4		
Age first risky drinking	17.0+/-2.2	Inattentive: 6 or more symp.	4.6%
		Inattentive: 3-5 symptoms	11.2%
		Inattentive: 0-2 symptoms	84.2%

Age of onset distributions: First use; First regular use; First time drunk; First risky drinking (N=830 twins, N= 415 families)

<b>Variable</b>	<b>Percent of sample</b>	<b>Variable</b>	<b>Percent of sample</b>
First: < 15 years	22.4%	Drunk: < 15 years	9.8%
First: 15-16 years	42.5%	Drunk: 15-16 years	30.2%
First: 17 years	13.1%	Drunk: 17 years	15.8%
First: > 17 years	21.9%	Drunk: > 17 years	44.2%
Regular: < 15 years	3.0%	Risky: < 15 years	15.4%
Regular: 15-16 years	18.2%	Risky: 15-16 years	32.3%
Regular: 17 years	15.1%	Risky: 17 years	16.5%
Regular: > 17 years	63.7%	Risky: > 17 years	35.8%

**Adolescent girls with hyperactive-impulsive symptoms are at more likely to report regular drinking onset between ages 15 and 16.**

	Hyperactive-Impulsive symptoms	Inattentive symptoms
Age of onset Variables	Relative Risk Ratio (RRR) <sup>#</sup> (95% CI)	RRR <sup>#</sup> (95% CI)
First: < 15 years	1.44 (0.85-2.46)	1.04 (0.62-1.73)
First: 15-16 years	1.04 (0.65-1.65)	1.33 (0.88-2.00)
First: 17 years	1.17 (0.64-2.15)	1.03 (0.60-1.76)
Regular: < 15 years	1.17 (0.36-3.76)	0.67 (0.17-2.66)
Regular: 15-16 years	1.70* (1.08-2.69)	0.95 (0.62-1.44)
Regular: 17 years	1.25 (0.76-2.06)	0.90 (0.55-1.48)

# Unadjusted relative risk ratios; Comparison group is age of onset >17 years old. \* p < 0.05

**Adolescent girls with ADHD symptoms are no more likely to report early onset of getting drunk or risky drinking behavior.**

	Hyperactive-Impulsive symptoms	Inattentive symptoms
Age of onset Variables	Relative Risk Ratio (RRR) <sup>#</sup> (95% CI)	RRR <sup>#</sup> (95% CI)
Drunk: < 15 years	1.22 (0.65-2.27)	1.26 (0.72-2.20)
Drunk: 15-16 years	0.98 (0.63-1.53)	1.38 (0.96-1.99)
Drunk: 17 years	1.33 (0.81-2.17)	1.10 (0.72-1.67)
Risky: < 15 years	1.25 (0.71-2.19)	1.00 (0.60-1.69)
Risky: 15-16 years	1.15 (0.74-1.80)	1.42 (0.98-2.05)
Risky: 17 years	1.29 (0.78-2.12)	1.18 (0.73-1.90)

# Unadjusted relative risk ratios; Comparison group is age of onset >17 years old. \* p < 0.05

## Conclusions

- Results suggest that ADHD symptoms in adolescent girls do not significantly predict an earlier age of onset of first drink, getting drunk, or risky drinking.
- However, there may be small, marginal effects of ADHD, specifically hyperactive-impulsive symptoms, on age of onset of regular drinking (having at least one drink every week for 8 weeks or more).

## References

- Biederman J, Wilens TE, Mick E, Faraone SV, Spencer T: Does Attention-Deficit Hyperactivity Disorder impact the developmental course of drug and alcohol abuse and dependence? *Biological Psychiatry* 1998; 44:269-273.
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