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FIRST REACTIONS TO CIGARETTES AND ALCOHOL

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Introduction

Previous work has shown a genetic association between alcohol dependence and different aspects of cigarette smoking, including nicotine dependence, in adult and adolescent twins. Retrospective ratings of dizziness after first cigarettes have been found to correlate with regular smoking and progression to dependence on nicotine, and to show moderately high heritability in twin data. Here we examined the question of whether recalled dizziness after first cigarettes is associated with problems with alcohol, using telephone interview data on measures of DSM-IV dependence on alcohol and nicotine and the use of these substances in over 3,300 female adolescent twins, 13-20 years of age, recruited using Missouri state birth records. Controlling for age and regular smoking, there remained a significant association between the experience of dizziness with first cigarettes and alcohol problems (in both cases, odds-ratio = 1.49, 95% CI: 1.5-2.6). Dizziness in cotwin was significantly associated with alcohol problems in the other twin (odds-ratio = 6.75, 95% CI 2.70-6.07). Our results suggest that initial reactions to cigarettes may be a heritable trait associated with increased vulnerability to dependence on both nicotine and alcohol.

Sample

Using a prospective Cohort sequential design, population-based Cohorts of like-sex female twin pairs 13, 15, 17 and 19 years of age were ascertained through Missouri birth records over a 2-year period. New Cohorts of 13-year old pairs continued to be recruited over the 6-year period of the project. 97% of pairs of twins were successfully located. In those cases where the family was successfully contacted, a diagnostic telephone interview was completed with at least one twin from 85% (N=1794) of families, and in 80%, interviews with both twins were completed. The sample for this poster included girls 13-20 years of age (3346 individual twins.)

Research Questions

1. Do reactions to first cigarettes run in families?
2. Are reactions to first cigarettes associated with tobacco use and nicotine dependence?
3. Are reactions to first cigarettes associated with alcohol use and problems related to alcohol?

IF SO...

4. Do reactions to first cigarettes run in families together with cigarette and alcohol use and related problems?

Lifetime Cigarette Use & Dependence

	Ages 13-17 (N=2165) %	Ages 18-20 (N=1181) %
Ever tried a cigarette	34	63
Regular smoking		
<i>weekly</i>	9	33
<i>daily</i>	6	28
Heavy smoking (> 15 cigs/day)	2	13
DSM-IV Nicotine Dependence	6	24

Among those who had tried cigarettes...

Regular smoking		
<i>weekly</i>	26	52
<i>daily</i>	18	45
Heavy smoking (> 15 cigs/day)	7	21
DSM-IV Nicotine Dependence	18	39

Lifetime Alcohol Use & Problems

	Ages 13-17 (N=2159) %	Ages 18-20 (N=1175) %
Ever Tried	28	75
Regular Drinking <i>(once a week for at least 8 weeks)</i>	2	15
Alcohol Problems <i>(2 or more DSM-IV symptoms)</i>	5	26

Among these who tried cigarettes...

Enjoyment of First Cigarettes and Subjective Reactions

	Did NOT Enjoy at All (N=897) %	Enjoyed at Least Some (N=584) %	P-Value
Coughing	78	55	0.001
Nauseated	24	11	0.001
Headache	33	18	0.001
Heart racing	23	20	NS
Dizziness	46	51	0.04
Liked Taste	4	36	0.001

...As many as 61% responded not enjoying their first cigarettes at all.

... Are cigarette use and dependence due to genetic factors in adolescent girls?

	<u>Adaptive Genetics</u> % (95% CI)	<u>Shared Environment</u> % (95% CI)	<u>Non-Shared Environment</u> % (95% CI)
Experimentation with cigarettes	25 (10-43)	64 (48-77)	11 (8-15)
Regular smoking (i.e., weekly)	58 (17-85)	19 (0-54)	23 (15-35)
DSM-IV Nicotine Dependence	62 (17-82)	10 (0-49)	28 (18-41)

... and what about self-reported reactions to first cigarettes?

Dizziness	55 (22-64)	0 (0-24)	48 (36-63)
Coughing	40 (3-55)	0 (0-30)	60 (45-77)
Nauseated	43 (0-61)	0 (0-43)	67 (51-83)
Liked Taste	51 (0-48)	0 (0-46)	49 (32-68)
Heart Racing	0 (0-48)	33 (0-48)	67 (50-83)
Headache	0 (0-47)	31 (0-45)	69 (0-84)

Among these who tried cigarettes...

Associations between First Reactions to Cigarettes and Regular Smoking, Controlling for Age

	UNIVARIATE	MULTIVARIATE
Dizziness	2.53 (2.02-3.17)	2.79 (2.15-3.63)
Coughing	0.69 (0.54-0.87)	0.70 (0.53-0.92)
Nauseated	NS	NS
Headache	NS	NS
Heart Racing	1.59 (1.22-2.07)	NS
Liked Taste	5.39 (3.91-7.44)	5.27 (3.76-7.39)

... Multivariate analyses suggest that experiences of dizziness and liking the taste of the cigarette increases risk for regular smoking, while coughing is protective.

Among these who tried cigarettes...

Associations between First Reactions to Cigarettes and DSM-IV Nicotine Dependence, Controlling for Age

	UNIVARIATE	MULTIVARIATE
Dizziness	2.49 (1.94-3.20)	2.39 (1.81-3.16)
Coughing	NS	NS
Nauseated	1.36 (1.01-1.82)	NS
Headache	NS	NS
Heart Racing	1.63 (1.24-2.16)	NS
Liked Taste	3.34 (2.47-4.51)	3.31 (3.41-4.56)

... and the experience of dizziness and liking the taste of the cigarette also increases the risk of nicotine dependence in adolescent girls.

Among these who tried cigarettes...

Associations between First Reactions to Cigarettes and DSM-IV Nicotine Dependence, Controlling for Regular Smoking and Age

MULTIVARIATE	
Dizziness	NS
Coughing	NS
Nauseated	NS
Headache	NS
Heart Racing	NS
Liked Taste	NS

... however, when we controlled for regular smoking, we found no evidence of an important association between any reaction and nicotine dependence – suggesting that their association with nicotine dependence is entirely due to progression to regular smoking.

Among these who tried cigarettes...

Associations between First Reactions to Cigarettes and Problems with Alcohol, Controlling for Age

	UNIVARIATE	MULTIVARIATE
Dizziness	1.83 (1.42-2.37)	2.00 (1.51-2.64)
Coughing	NS	NS
Nauseated	NS	NS
Headache	NS	0.62 (0.45-0.86)
Heart Racing	1.36 (1.02-1.83)	NS
Liked Taste	NS	NS

... the experience of dizziness is also associated with an increased risk for alcohol problems, with a protective effect from headaches.

Among these who tried cigarettes...

Associations between First Reactions to Cigarettes, Controlling for Regular Smoking and Age

ALCOHOL PROBLEMS	
Dizziness	1.49 (1.11-2.00)
Coughing	NS
Nauseated	NS
Headache	0.62 (0.43-0.85)
Heart Racing	NS
Liked Taste	0.56 (0.39-0.81)

... and this association held when we controlled for regular smoking.

... But can dizziness with first cigarettes account, at least in part, for the familial association between risk for alcohol problems and nicotine dependence?

Respondent Risk for Alcohol Problems and Cotwin Status on DSM-IV Nicotine Dependence

	UNADJUSTED for DIZZINESS	
	OR	95% CI
Cotwin Nicotine Dep	4.13	(2.60–6.55)
Zyg x Cotwin Nic Dep	1.40	(0.76-2.57)
	ADJUSTED for DIZZINESS	
	OR	95% CI
Cotwin Nicotine Dep	4.69	(1.91-4.85)
Zyg x Cotwin Nic Dep	1.31	(0.70-2.43)

... there is no significant change in OR observed when we adjust for dizziness with cigarettes, suggesting that dizziness does not account for the familial association observed between nicotine dependence and problems with alcohol in these girls.

Respondent Risk for Alcohol Problems and Cotwin Status on Dizziness with First Cigarettes

	UNADJUSTED for REGULAR SMOKING	
	OR	95% CI
Cotwin Dizzy	4.04	(2.70–6.07)
Zyg x Cotwin Dizzy	0.60	(0.35-1.04)
	ADJUSTED for REGULAR SMOKING	
	OR	95% CI
Cotwin Dizzy	2.53	(1.64-3.90)
Zyg x Cotwin Dizzy	0.49	(0.27-0.89)

... The significant OR in the row entitled 'COTWIN DIZZY' indicates that the relationship between dizziness with first cigarettes and alcohol problems is familial, the result is the same when we adjust for a history of regular smoking, or for DSM-IV nicotine dependence.

Conclusions

- 1) **Reactions to first cigarettes runs in families, and this is in part due to genetic factors, especially for the experiences of dizziness and coughing.**
- 2) **The experience of dizziness with first cigarettes is associated with a history of regular smoking, and problems with both nicotine and alcohol.**
- 3) **The familial association between problems with alcohol and regular smoking and nicotine dependence is not accounted for by familial factors associated with dizziness with first cigarettes.**
- 4) **Results suggest that dizziness with first cigarettes and problems with alcohol run together in families, even when controlling for a history of regular smoking or DSM-IV nicotine dependence.**

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