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Are the measured environmental risks for nicotine dependence the same for alcohol dependence? Evidence from an offspring of twins design

Jeffrey F. Scherrer

Washington University School of Medicine in St. Louis

Hong Xian

Washington University School of Medicine in St. Louis

Andrew C. Heath

Washington University School of Medicine in St. Louis

Theodore Jacob

William R. True

Saint Louis University

See next page for additional authors

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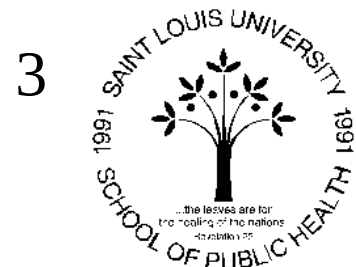
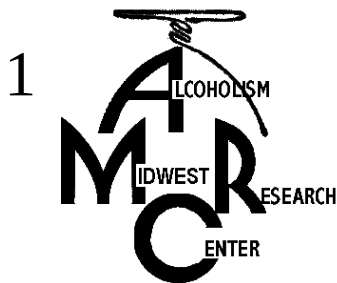
Authors

Jeffrey F. Scherrer, Hong Xian, Andrew C. Heath, Theodore Jacob, William R. True, and Kathleen K. Bucholz

Are the Measured Environmental Risks for Nicotine Dependence the same for Alcohol Dependence?

Evidence from an Offspring of Twins Design

Jeffrey F. Scherrer (1,2); Hong Xian (2); Andrew C. Heath (1,2); Theodore Jacob (1); William R. True (1,3), Kathleen K. Bucholz (1,2)



BACKGROUND

- Genetic contribution to nicotine (ND) and alcohol dependence (AD) is correlated
- Family environmental contribution to offspring ND and AD:
 - Parenting
 - Parent-child relationships
 - Sibling relationships
 - Sibling substance use
- Unique environmental contributions to offspring ND and AD
 - Peer smoking, alcohol and drug use

OBJECTIVE

- Determine if genetic, socio-demographic, parenting, sibling substance use, sibling support and peer substance use contribute to offspring ND and offspring AD

METHODS

Sample derived from Children of Alcoholics study (1999-present)

- Fathers
 - 1464 twin fathers sampled from the Vietnam Era Twin Registry
 - All had at least 1 child 12-26 yrs old in 1999
 - Twin pairs either concordant or discordant for alcohol dependence. Controls were non-alcoholic twin pairs
 - 1,213 (83%) fathers responded to diagnostic telephone interview
- Mothers
 - 1,064 biological and/or rearing mothers were eligible
 - 862 (81%) eligible mothers responded to diagnostic telephone interview
- Offspring
 - 1,327 (85%) eligible offspring responded to diagnostic telephone interview

Measurements

- Twin father report
 - lifetime DSM-IV nicotine dependence
 - lifetime DSM-IV alcohol dependence
- Mother report
 - ND = Time to 1st morning cigarette
 - lifetime DSM-IV alcohol dependence
- Socio-demographics
 - age
 - Gender
 - Parent education

- Offspring report on:
 - Closeness to parents (very/somewhat vs. not very/not at all)
 - Parents more strict than other parents (a lot/little more/same vs. little less/lot less)
 - Sibling(s) understand offspring feelings (a lot/some vs. A little/not at all)
 - Sibling(s) are excessive drinker (yes/no)
 - % school peers who smoke, use alcohol, use drugs including marijuana (none, a few-quarter, one-half or more)
 - lifetime DSM-IV nicotine dependence
 - lifetime DSM-IV alcohol dependence

Analytic Approach

- Independent variables:
 - Parent, sibling and peer variables and sociodemographics
- Dependent variables:
 - DSM-IV ND, DSM-IV AD
- Analyses
 - Separate logistic regression models for ND and AD
 - stepwise selection

Twin 4 group ND risk design

- Grp 1: MZ and DZ twins with ND, high genetic/ high environmental risk
- Grp 2: MZ with no-ND, co-twin with ND, high genetic/ low environment
- Grp 3: DZ with no-ND, co-twin with ND, medium genetic/ low environment
- Grp 4: MZ and DZ twins with no ND, low genetic/ low environment

Twin 4 group AD risk design

- Grp 1: MZ and DZ twins with AD, high genetic/ high environmental risk
- Grp 2: MZ with no-AD, co-twin with AD, high genetic/ low environment
- Grp 3: DZ with no-AD, co-twin with AD, medium genetic/ low environment
- Grp 4: MZ and DZ twins with no AD, low genetic/ low environment

RESULTS

TABLE 1. Offspring ND by AD

Row% Column%	No-AD	AD
No-ND	91% 92%	8% 64%
ND	60% 8%	40% 36%

TABLE 2. Reduced Offspring ND model

	Odds ratio (95% Confidence Intervals)
Grp 1 ND	3.1 (1.2-8.0)
Grp 2 ND	3.5 (0.999-12.3)
Grp 3 ND	1.7 (0.5-5.5)
Grp 1 AD	0.5 (0.2-1.0)
Grp 2 AD	0.4 (0.1-1.0)
Grp 3 AD	0.9 (0.3-2.4)
Mother ND	0.9 (0.7-1.2)
Mother AD	1.3 (0.5-3.3)
Close to father	0.4 (0.2-0.9)
Sibling excess drnk	2.6 (1.3-2.7)
Sibling drug use	1.8 (1.3-2.7)
school peer use drgs	2.1 (1.2-3.7)
≥ 18 years of age	2.2 (1.1-4.6)

TABLE 3. Reduced Offspring AD model

	Odds ratio (95% Confidence Intervals)
Grp 1 ND	1.02 (0.4-2.1)
Grp 2 ND	0.5 (0.1-1.1)
Grp 3 ND	1.2 (0.4-3.0)
Grp 1 AD	1.4 (0.6-2.9)
Grp 2 AD	1.2 (0.4-3.3)
Grp 3 AD	0.8 (0.2-2.4)
Mother ND	0.9 (0.7-1.2)
Mother AD	1.0 (0.4-2.7)
Mother educ.	1.8 (1.1-3.1)
Sibling drug use	1.6 (1.2-2.3)
school peer smoke	2.9 (1.6-5.3)
≥ 18 years of age	5.0 (2.2-11.4)

CONCLUSIONS

- Environmental factors associated with both ND and AD include age, sibling drug use
- Risk factors specific for ND include high genetic and high environmental ND risk, sibling excessive drinking and school peer drug use
- Risk factors specific for AD include mother education and school peer smoking
- Father – child closeness was protective for offspring smoking behaviors.
- These preliminary analyses suggest specificity in the risk factors for ND and AD