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The Contribution of Parent, Sibling and Friend Behaviors to Regular Smoking and Nicotine Dependence

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BACKGROUND

- Genetic and environmental factors contribute to smoking initiation, regular smoking and nicotine dependence (ND)

- Parents, siblings and friends influence smoking in young adults

OBJECTIVE

- Determine risk for young adult smoking behaviors as a function of parent-child relationships, parent substance use, sibling substance use and peer alcohol, smoking and illicit drug use in a design that accounts for the genetic risk imparted from parental nicotine dependence

METHODS

Sample and data derived from Twins as Parents (TAP) and Children of Alcoholics (COA) study (1999-present)

- Fathers
  - 1,107 twin fathers sampled from the Vietnam Era Twin Registry
  - Twin pairs either concordant or discordant for ND. Controls were non-ND twin pairs
- Mothers
  - 1,023 biological and/or rearing mothers
- Offspring
  - 1,919 offspring between 12-32 years of age

Predictor variables

- Twin 4 group design variable
- Maternal and paternal substance use history
- Offspring report of:
  - mother – child / father-child closeness
  - Sibling alcohol and drug use
  - Friend smoking, alcohol and drug use
  - Sociodemographics

4 group design variable

GRP 1: Monozygotic (MZ) and Dizygotic (DZ) twins with ND	High genetic-high environmental risk (HG-HE)
GRP 2: Non-ND MZ twins with ND co-twins	High genetic-low environmental risk (HG-LE)
GRP 3: Non-ND DZ twins with ND co-twins	Medium genetic-low environmental risk (MG-HE)
GRP 1: non-ND MZ and DZ twins	Low genetic-low environmental risk (LG-LE)

Outcome Measures

- Regular smoking: 21 cigarettes per day, smoking 3 or more times per week for a minimum of 3 weeks
- Fagerstrom Test for Nicotine Dependence (FTND)

Analytic Approach

- Chi-square tests for univariate analyses
- Logistic Regression of significant univariate variables
- SAS SURVEYLOGISTIC used to account for clustered data when computing 95% confidence intervals

RESULTS

Table 1. Smoking variables for all offspring respondents (n=1,919)	
Ever try cigarettes	67.3%
Regular smoker	32.5%
FTND (among regular smokers)	40.0%

Table 2. Logistic regression modeling results showing association [Odds Ratios (95% CI)] between parental nicotine dependence (ND), parent, sibling and peer behaviors and offspring smoking and offspring FTND.

	Offspring smoking variables	
	regular smoker	FTND
ND GRP1 (HG-HE)*	**1.77 (1.25-2.52)**	**2.00 (1.21-3.30)**
ND GRP2 (HG-LE)	1.63 (0.98-2.69)	1.44 (0.71-2.92)
ND GRP3 (MG-LE)	1.26 (0.73-2.17)	1.62 (0.77-3.45)
ND GRP 4 (LG-LE)	1.0	1.0
Maternal Heavy Smoking Index (HSI):		
Lifetime non-smoker	1.0	1.0
Low HSI	1.32 (0.96-1.82)	0.92 (0.57-1.48)
High HSI	1.31 (0.93-1.86)	**1.61 (1.03-2.52)**
Age	**1.10 (1.06-1.13)**	1.02 (0.97-1.08)
White race	0.61(0.33-1.10)	0.50 (0.17-1.41)
Parent’s not married	1.16 (0.85-1.58)	**1.60 (1.07-2.39)**

Mom problem/excessive drinker	1.82 (1.17-2.82)	1.84 (1.02-3.32)
Father problem/excessive drinker	1.04 (0.77-1.41)	--
Very close to mother	1.0	
Somewhat close to mother	1.18 (0.87-1.59)	--
Not very/not at all close to mother	1.09 (0.62-1.90)	
Very close to father	1.0	
Somewhat close to father	1.05 (0.79-1.39)	--
Not very/not at all close to father	**1.61 (1.10-2.34)**	
Sibling drug use:		
None	1.0	
Cannabis only	1.30 (0.95-1.78)	--
Cannabis and or other illicit drugs	**1.51 (1.11-2.07)**	

Current friends smoking:		
none	1.0	1.0
a few	**2.30 (1.65-3.20)**	1.38 (0.78-2.43)
a quarter or more	**7.41 (5.05-10.88)**	**3.49 (2.01-6.07)**
Current friends drink at least 1/week:		
none	1.0	1.0
a few	0.93 (0.64-1.35)	0.43 (0.23-0.79)
quarter or more	0.73 (0.50-1.09)	0.66 (0.38-1.15)
Current friends use drugs:		
none	1.0	--
a few	**2.01 (1.40-2.88)**	
quarter or more	**2.90 (1.90-4.42)**	

* 4-group design: Group 1 - Offspring at high genetic (HG) and high environmental (HE) risk because fathers are MZ and DZ twins with DSM-III-R nicotine dependence (ND), Group 2- Offspring at high genetic (HG) and low environmental (LE) risk because fathers are unaffected MZ twins with DSM-III-R ND, Group 3- Offspring at medium genetic (MG) and LE risk because fathers are unaffected DZ with DSM-III-R ND, Group 4- offspring at low genetic (LG) and LE because fathers are unaffected MZ and DZ

CONCLUSIONS

- Paternal ND is significantly associated with offspring being regular smokers and FTND.
- Heavy maternal smoking index associated with offspring FTND
- In multivariate logistic regression age, closeness to father sibling drug use and friend smoking and drug use were significantly associated with offspring regular smoking.
- Parental divorce and friends smoking associated with offspring FTND
- Evidence for larger spectrum of environmental covariates contributing to regular smoking vs. FTND