Washington University School of Medicine
Digital Commons@Becker

2003

Effects of childhood exposure to paternal alcoholism on substance use disorders in adolescents and young adults

A. E. Duncan

Q. Fu

Kathleen K. Bucholz

J. F. Scherrer

T. Jacob

See next page for additional authors

Follow this and additional works at: http://digitalcommons.wustl.edu/guzeposter2003

Part of the Medicine and Health Sciences Commons

Authors

A. E. Duncan, Q. Fu, Kathleen K. Bucholz, J. F. Scherrer, T. Jacob, and W. R. True

EFFECTS OF CHILDHOOD EXPOSURE TO PATERNAL ALCOHOLISM ON SUBSTANCE USE DISORDERS IN ADOLESCENTS AND YOUNG ADULTS

A.E. Duncan, Q. Fu, K.K. Bucholz, J.F. Scherrer, T. Jacob, and W.R. True

SAINT LOUIS UNIVERSITY 1991 · SCHOOL OF PUBLIC HEALTH · ...the leaves are for the healing of the nations Revelation 22

Washington
WASHINGTON UNIVERSITY IN ST. LOUIS
School of Medicine

ALCOHOLISM MISSOURI RESEARCH CENTER

OBJECTIVE

To determine whether exposure to paternal alcoholism in the first 12 years of life is related to the development of substance use disorders

METHODS

COA Study

- Fathers
  - 1464 twin fathers sampled from the Vietnam Era Twin Registry
  - All had at least 1 child 12-26 yrs old in 2000
  - Twin pairs either concordant or discordant for alcohol dependence. Controls were non-alcoholic twin pairs

- Mothers
  - 1,000 biological and/or rearing (i.e. lived regularly with child between ages 6 and 13) mother identified, 864 interviewed
  - Mothers asked to give permission to interview offspring

- Offspring
  - Mothers identified and gave permission for 1487 offspring to be interviewed. 1,270 offspring of 730 fathers were interviewed.

Assessment Domains

- Twin fathers' alcohol lifetime Dx and zygosity obtained from '92 data (Tsuang and Lyons).

- 1,464 twin fathers sampled with 84% response rate (n=1176). Updated lifetime drinking history (LDH) collected from twin fathers by telephone interview.

- Mothers and offspring were interviewed by telephone and completed a questionnaire by mail to provide:
  - Telephone interview: Alcohol abuse, dependence, lifetime drinking history (offspring only), substance use/abuse, psychopathology (depression, anxiety, conduct disorder, oppositional defiant disorder, attention deficit/hyperactivity disorder)
  - Mail questionnaire: psychosocial variables (family & relationship quality, peers, school attendance, work environment, personality, drinking expectancies, etc.)

Data Analysis

- Latent class analysis was done using LCAP (http://hardy.wustl.edu) to group children of alcoholics by pattern of exposure to paternal alcoholism

- STATA was used to develop Cox Proportional Hazards models for risk of developing alcohol abuse/dependence, marijuana abuse/dependence and nicotine dependence and adjust for confounding variables and familial clustering

Latent Class Analysis

- Statistical method for uncovering patterns or structure in multivariate categorical data (like factor analysis for categorical data)
- Defines "clusters" or "classes" of cases that share similar characteristics
- Cases placed in clusters based upon membership probabilities
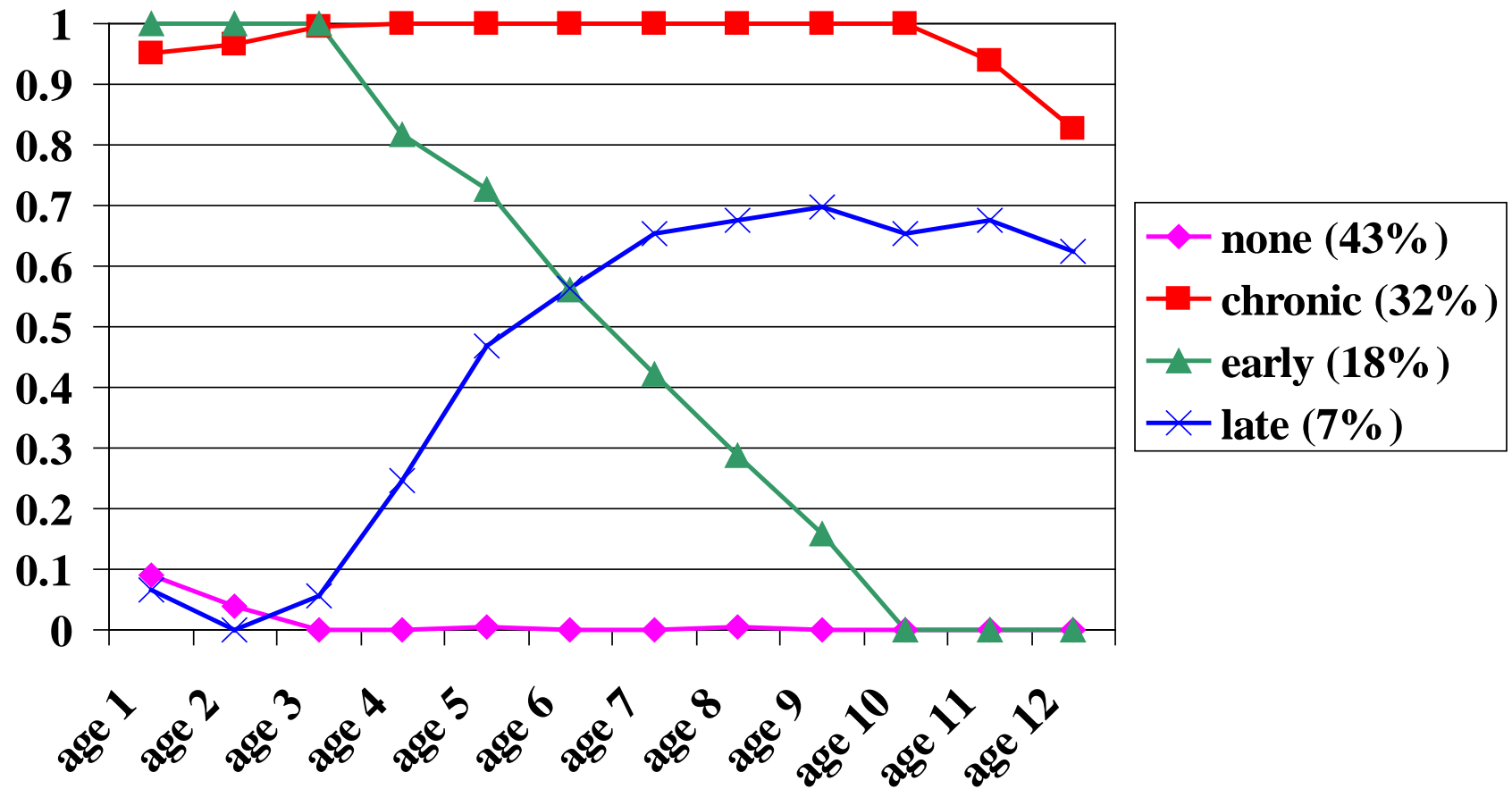
Cox Proportional Hazards Models

- Survival analysis – accounts for the possibility that some subjects have not yet had time to develop the outcome
- Assumption that risk remains constant over time
- Hazard ratios can be thought of like odds ratios

LCA for child exposure to paternal alcoholism

- COA's only (n=618)
- Father's lifetime drinking history (LDH) matched to child's lifetime
- Binary variables created indicating whether or not father met criteria for alcohol abuse or dependence during each of the first 12 years of the child's life
- 4 class solution was selected

Child exposure to paternal alcoholism LCA – 4 class solution

Legend:
- none (43%)
- chronic (32%)
- early (18%)
- late (7%)

X-axis: age 1, age 2, age 3, age 4, age 5, age 6, age 7, age 8, age 9, age 10, age 11, age 12

Characteristics of the sample

	Latent class for exposure to paternal alcoholism				
	Non-alcoholic	None	Chronic	Early	Late
N (%)	652 (51.3)	264 (20.8)	195 (15.4)	114 (9.0)	45 (3.5)
% Male	47.70	52.65	46.15	42.11	60.00
Age:					
12-16 yrs	28.22	38.65	18.46	29.82	20.00
17-21 yrs	37.88	35.98	34.87	38.60	31.11
22-28 yrs	33.90	25.38	46.67	31.58	48.89

Proportion of offspring with fathers with lifetime psychiatric and drug use disorders

DSM-III-R Disorder	Non-alcoholic	Latent class for exposure to paternal alcoholism			
		None	Chronic	Early	Late
N (%)	652 (51.3)	264 (20.8)	195 (15.4)	114 (9.0)	45 (3.5)
Drug abuse or dependence	6.6	22.4	18.0	16. 7	13.3
ASPD	6.2	11.0	13.3	16.7	15.6
Depression	4.8	11.7	13.9	10.5	22.2

Offspring substance use disorders and other psychopathology

	Latent class for exposure to paternal alcoholism				
	Father not alcoholic	None	Chronic	Early	Late
N (%)	652 (51.3)	264 (20.8)	195 (15.4)	114 (9.0)	45 (3.5)
Alcohol abuse/ dependence	25.27	22.35	38.86	35.96	40.00
Marijuana abuse/ dependence	12.27	13.64	13.33	17.54	11.11
Nicotine Dependence	9.23	10.61	11.92	15.04	8.89
Conduct Disorder	10.68	14.50	12.95	12.73	16.67
ODD	15.36	18.18	15.46	18.42	28.29
Depression	17.64	21.97	16.92	24.56	26.67
Social Phobia	8.44	8.71	7.18	12.28	15.56

Cox proportional hazards models for alcohol abuse/dependence – adjusting for gender, age cohort, and clustering

	Hazard Ratios (95% CI) *			
	None	Chronic	Early	Late
All	1.10 (0.81, 1.51)	**1.44 (1.09, 1.90)**	**1.93 (1.31, 2.84)**	**1.57 (1.00, 2.46)**
Male	1.20 (0.81, 1.79)	**1.46 (1.01, 2.09)**	1.45 (0.84, 2.51)	**1.80 (1.06, 3.05)**
Female	1.03 (0.64, 1.66)	1.46 (0.95, 2.24)	**2.35 (1.39, 3.98)**	1.19 (0.46, 3.09)

*Comparison group: children of non-alcoholics

Cox proportional hazards models for marijuana abuse/dependence – adjusting for gender, age cohort, and clustering

| | Hazard Ratios (95% CI)* | | | |
	None	Chronic	Early	Late
All	1.21 (0.79, 1.84)	1.06 (0.65, 1.72)	1.62 (0.94, 2.82)	0.65 (0.24, 1.75)
Males	1.63 (0.99, 2.66)	0.99 (0.54, 1.80)	1.17 (0.50, 2.71)	0.70 (0.22, 2.22)
Females	0.69 (0.31, 1.52)	1.19 (0.59, 2.40)	2.03 (0.96, 4.31)	0.54 (0.07, 4.00)

*Comparison group: children of non-alcoholics

Cox proportional hazards models for nicotine dependence – adjusting for gender, age cohort, and clustering

	Hazard Ratios (95% CI)*			
	None	Chronic	Early	Late
All	1.34 (0.68, 1.21)	1.15 (0.82, 2.17)	**1.90 (1.07, 3.38)**	0.86 (0.30, 2.49)
Male	1.22 (0.62, 2.39)	1.20 (0.61, 2.36)	2.07 (0.42, 2.72)	0.34 (0.04, 5.79)
Female	1.49 (0.75, 2.96)	1.12 (0.53, 2.37)	**2.79 (1.31, 5.94)**	1.66 (0.48, 5.79)

*Comparison group: children of non-alcoholics

Cox proportional hazards models for alcohol abuse/dependence before and after adjusting for father psychopathology*

	Hazard Ratios (95% CI)**			
	None	Chronic	Early	Late
Males				
Before	1.20 (0.81, 1.79)	**1.46 (1.01, 2.09)**	1.45 (0.84, 2.51)	**1.80 (1.06, 3.05)**
After	1.24 (0.82, 1.87)	1.45 (0.99, 2.11)	1.46 (0.84, 2.55)	1.71 (0.95, 3.07)
Females				
Before	1.03 (0.64, 1.66)	1.46 (0.95, 2.24)	**2.35 (1.39, 3.98)**	1.19 (0.46, 3.09)
After	0.96 (0.59, 1.57)	1.39 (0.90, 2.14)	**2.26 (1.32, 3.87)**	1.14 (0.44, 2.96)

*drug abuse/dependence, major depression and ASPD
** Comparison group: children of non-alcoholics

Cox proportional hazards models for marijuana abuse/dependence before and after adjusting for father psychopathology*

| | Hazard Ratios (95% CI) | | | |
	None	Chronic	Early	Late
Males				
Before	1.63 (0.99, 2.66)	0.99 (0.54, 1.80)	1.17 (0.50, 2.71)	0.70 (0.22, 2.22)
After	1.39 (0.82, 2.36)	0.87 (0.48, 1.60)	0.92 (0.39, 2.16)	0.59 (0.19, 1.37)
Females				
Before	0.69 (0.31, 1.52)	1.19 (0.59, 2.40)	2.03 (0.96, 4.31)	0.54 (0.07, 4.00)
After	0.62 (0.28, 1.38)	1.15 (0.56, 2.34)	2.01 (0.92, 4.36)	0.45 (0.06, 3.28)

*drug abuse/dependence, major depression and ASPD
** Comparison group: children of non-alcoholics

Cox proportional hazards models for nicotine dependence before and after adjusting for father psychopathology*

	Hazard Ratios (95% CI)			
	None	Chronic	Early	Late
Males				
Before	1.22 (0.62, 2.39)	1.20 (0.61, 2.36)	2.07 (0.42, 2.72)	0.34 (0.04, 5.79)
After	1.15 (0.60, 2.22)	1.02 (0.53, 1.98)	0.95 (0.35, 2.52)	0.26 (0.03, 2.19)
Females				
Before	1.49 (0.75, 2.96)	1.12 (0.53, 2.37)	**2.79 (1.31, 5.94)**	1.66 (0.48, 5.79)
After	1.30 (0.65, 2.62)	0.99 (0.47, 2.07)	**2.55 (1.15, 5.66)**	1.68 (0.49, 5.78)

*drug abuse/dependence, major depression and ASPD
** Comparison group: children of non-alcoholics

CONCLUSIONS

- After adjusting for age cohort and father drug abuse/dependence, depression, and ASPD, exposure to paternal alcoholism in the first 12 years of life is associated with over a 2-fold risk of alcohol abuse/ dependence and nicotine dependence in females, when exposure to paternal alcoholism is early in the first 12 years of life.

Future analyses

- Explore the role of maternal alcoholism, depression, and ASPD symptoms
- Consider the role of paternal alcoholism severity
- Devise a variable for child contact with father and use as a covariate
- Examine the role of exposure during the teen years

We would like to acknowledge: