

Development and Prediction of Hyperactive Behaviour from 2 to 7 Years in a National Population Sample

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Study Objectives

- To model the early development of hyperactive behaviour in a national population sample of children from ages 2 to 7 years
- To examine early predictors of high-level hyperactive behaviour

Sample

- Four data collection cycles (1994, 1996, 1998, 2000) from the National Longitudinal Survey of Children and Youth (NLSCY)
- Inclusion criteria
 - (1) Children aged newborn to 23 months at cycle 1
 - (2) Complete data on hyperactive behaviour for at least two of the data cycles
- N = 2,946

Sample Description at the First NLSCY Data Collection Cycle in 1994

	<u>%</u>
<u>Age of child (months)</u>	
0 - 11	47.3
12 - 23	52.7
<u>Sex of child</u>	
Female	49.0
Male	51.0
<u>Age group of mother at birth of first child</u>	
14 - 19 years	11.2
20 - 25 years	35.1
26 + years	53.7
<u>Mother high school education</u>	
Yes	79.3
No	20.7
<u>Father/Partner high school education</u>	
Yes	77.5
No	22.5

Sample Description at the First NLSCY Data Collection Cycle in 1994 (cont'd)

	<u>%</u>
<u>Mother employed outside the home</u>	
Yes	78.9
No	21.1
<u>Father/Partner employed outside the home</u>	
Yes	91.7
No	8.3
<u>Family status at time of interview</u>	
Two parents	88.8
One parent	11.2
<u>Number of siblings in the home</u>	
None	41.3
One or more	58.7
<u>Ratio of household income to low-income cutoff</u>	
< 1	16.6
1 +	83.4

Predictor Variables

- Socioeconomic and family background information
 - Age at birth of first child, family status, education, employment, income
- Maternal depression
 - Twelve items from the Center for Epidemiological Studies Depression Scale
- Pregnancy information
 - Tobacco and alcohol use, birth weight
- Parenting practices
 - Seven items from the Parent Practices Scale (positive interaction, hostility)
- Family dysfunction
 - Twelve items from the McMaster Family Assessment Device
- Child temperament
 - Seven items from the Infant Characteristics Questionnaire

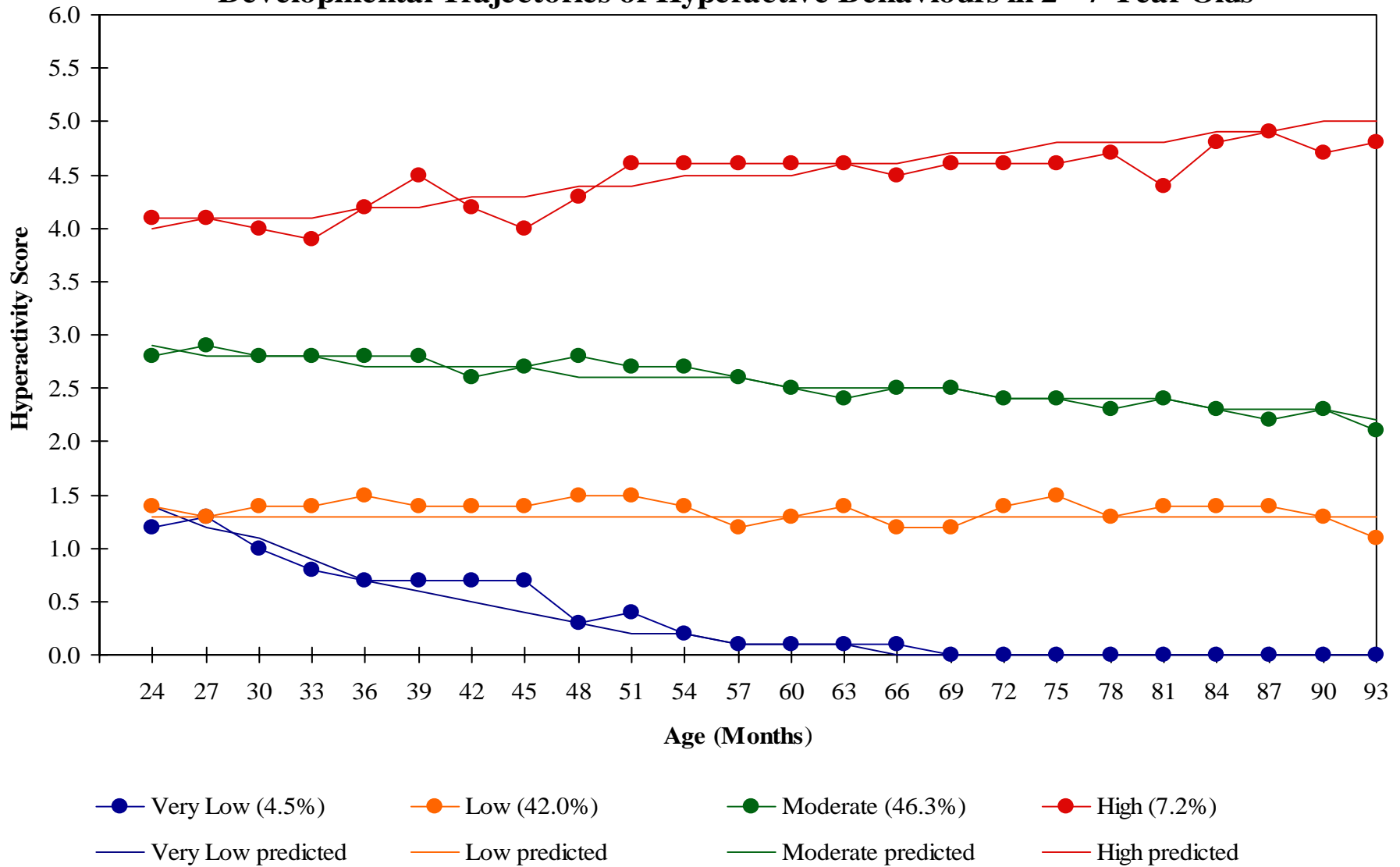
Child Outcome Variable

- Hyperactive behaviours: Items adapted from the Child Behavior Checklist that include
 - (1) Can't sit still, is restless, or hyperactive
 - (2) Has difficulty awaiting turn in games or groups
 - (3) Cannot settle to anything for more than a few moments
- Mothers rated hyperactive behaviours along a 3-point scale from 0 (never or not true) to 2 (often or very true)
- Assessments began at 24 months of age (cycle 2 to cycle 4)

Statistical Analyses

- To meet the first study objective, trajectories of children's hyperactive behaviour over time were estimated using a semi-parametric group mixture model
- To meet the second study objective, logistic regressions were conducted to identify predictors of children in the high hyperactivity group compared to those who did not exhibit high levels of hyperactive behaviour
- The first regression model focused on variables present before or at the birth of the child and the second added postnatal parenting and family functioning variables

Developmental Trajectories of Hyperactive Behaviours in 2 - 7 Year Olds



Frequencies of Predictor Variables from the First NLSCY Data Collection Cycle in 1994

	<u>%</u>
<u>Maternal depression</u>	
No	85.4
Yes	14.6
<u>Maternal prenatal smoking</u>	
No	77.3
Yes	22.7
<u>Maternal prenatal drinking</u>	
No	82.3
Yes	17.7
<u>Positive interaction parenting practice</u>	
Low	13.9
Not low	86.1
<u>Hostile parenting practice</u>	
Not high	85.7
High	14.3
<u>Family dysfunction</u>	
Not high	82.3
High	17.7
<u>Child birth weight</u>	
Low (< 2,500 grams)	6.2
Not low (\geq 2,500 grams)	93.8
<u>Child temperament</u>	
Not difficult	87.2
Difficult	12.8

Logistic Regression Model of Predictors of High Hyperactive Behavior Trajectory

	<u>Model 1</u>		<u>Model 2</u>	
	<u>OR</u>	<u>95% CI</u>	<u>OR</u>	<u>95% CI</u>
Child's age (months)				
6 - 11	1.10	0.55-2.22	1.05	0.52-2.12
12 - 17	1.50	0.75-3.01	1.27	0.62-2.62
18 - 23	1.14	0.58-2.24	0.77	0.37-1.62
Child's sex	2.20	1.37-3.53	2.62	1.59-4.31
Child's birth weight	1.10	0.46-2.62	0.96	0.36-2.50
Child's temperament	1.60	0.90-2.84	1.33	0.71-2.48
Maternal age at birth of first child (years)				
14 - 19	1.03	0.31-3.39	0.93	0.28-3.09
20 - 25	1.34	0.74-2.44	1.39	0.75-2.58
Mother high school education	1.23	0.62-2.43	1.35	0.68-2.70
Father high school education	0.70	0.38-1.28	0.72	0.38-1.35
Mother employed outside the home	1.30	0.75-2.23	1.38	0.79-2.40
Father employed outside the home	0.89	0.36-2.18	0.93	0.38-2.31
Number of siblings in the home	0.71	0.44-1.16	0.80	0.48-1.32
Ratio of household income to low-income cutoff	0.74	0.20-2.70	0.74	0.20-2.73
Maternal prenatal smoking	2.81	1.70-4.64	2.75	1.63-4.64
Maternal prenatal drinking	1.56	0.93-2.62	1.70	1.00-2.89
Maternal depression	2.28	1.31-3.98	2.15	1.18-3.92
Family dysfunction			0.98	0.51-1.89
Positive interaction parenting practice			1.09	0.48-2.47
Hostile parenting practice			2.07	1.17-3.69

Note. OR = odds ratio

Conclusions

- For the majority of children, the frequency of hyperactive behaviours decreased or remained low from 2 to 7 years
- Approximately 7 children in 100 were classified as having high initial levels of hyperactive symptoms that persisted over time
- There were three significant predictors of high-level and persistent hyperactivity: Maternal prenatal smoking; maternal depression; and maternal hostile parenting
- Smoking during pregnancy increased children's risk by over 2 ½ times, after having controlled for a number of other possible risk factors
- Children with a depressed mother were over 2 times more likely to have high and persistent levels of hyperactive behaviours than children with a non-depressed mother, after having controlled for a number of other potential risk factors
- Mothers' hostile parenting significantly increased children's risk for hyperactivity by approximately 2 times, after having controlled for a number of other potential risk factors

