

The Impact of Childhood Symptoms of Conduct Disorder on Driver Aggression Across the Lifespan

Christine M. Wickens, Evelyn Vingilis, Robert E. Mann, Pat Erickson, Maggie E. Toplak, Umesh R. Jain, Nathan Kolla, Jane Seeley, Anca Ialomiteanu, Gina Stoduto, and Gabriela Ilie

Conduct Disorder (CD)

- Characterized by extreme externalizing behaviour
- Diagnosed based on a prolonged pattern of antisocial behaviour that involves the violation of the basic rights of others or major age-appropriate societal norms and rules
- Typically emerges early in childhood/adolescence



Conduct Disorder (CD)

- Can be associated with 4 types of antisocial behaviour:
 - Aggressive conduct that causes or threatens physical harm to other people or animals
 - Nonaggressive conduct that causes property loss or damage
 - Deceitfulness or theft
 - Serious violations of rules
- Prevalence ranges from 2% to more than 10%, with a median estimate of 4%



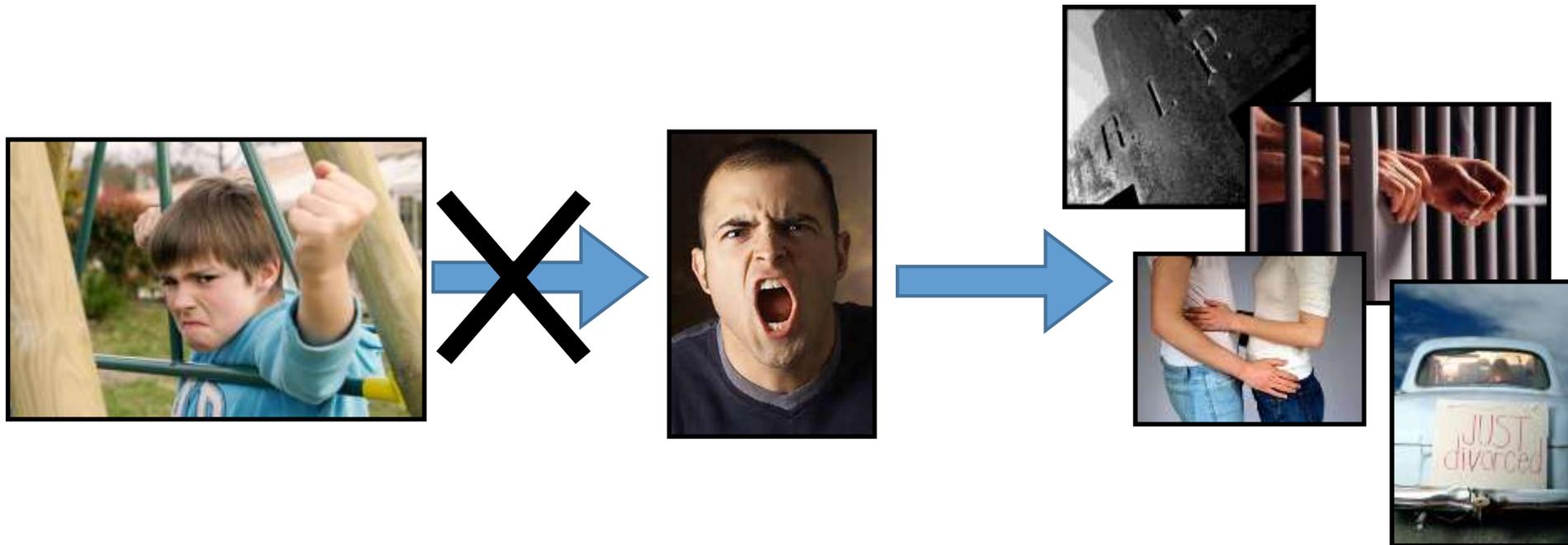
Conduct Disorder (CD)

- Associated with:
 - Earlier mortality
 - Lower educational attainment
 - Greater unemployment or financial difficulty
 - Greater involvement with criminal activity
 - Increased sexual risk-taking
 - Increased risk of separation/divorce
 - Lower levels of peer support, life satisfaction, coping skills, and global functioning



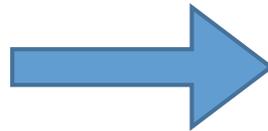
Conduct Disorder (CD)

- Relationship between CD and these outcomes is mediated by adult antisocial behaviour
 - Highlights importance of reducing the progression from conduct problems in adolescence to antisocial behaviour in adulthood as a means of improving psychosocial outcomes



CD and Aggressive Driving

- Speculation that those with a history or current diagnosis of CD are more likely to demonstrate reckless/aggressive driving.
- A handful of studies have examined this issue.



Dunedin Multidisciplinary Health and Development Study (DMHDS)

- Followed the health, behaviour, and development of a cohort of children born April 1, 1972 - March 31, 1975 at a hospital in Dunedin, New Zealand.
- Nada-Raja et al. (1997) divided the cohort into those who did and did not meet DSM-III criteria for conduct or oppositional disorder.
- Driver offences committed between ages 15 and 18 years were assessed through self-report and examination of official driving records.
- Results suggested that adolescents with a history of conduct problems are more likely to commit traffic offences:
 - Driving without a licence
 - Offences related to the GDLS
 - Alcohol-related offences



Christchurch Health and Development Study (CHDS)

- Followed a sample of children born in Christchurch, New Zealand over a 4-month period in 1977.
- Woodward et al. (2000) focused on the impact of attentional difficulties at age 13 years on driving-related outcomes at age 21 years.
- Conduct problems at age 13 years contributed to negative driving-related outcomes
 - Presence of conduct problems was a significant covariate in the prediction of:
 - Drink-driving arrests
 - Number of police contacts for driving offences
 - Traffic violations



CD in High vs Low Aggressive Drivers

- Malta et al. (2005) compared the prevalence of psychiatric diagnoses in two groups of undergraduate students: those self-reporting as high vs. low in driver aggression.
- Groups were matched according to age and gender.
- Several lifetime and current psychiatric disorders were more prevalent among aggressive drivers, including a lifetime prevalence of CD.



CD More Frequent among MVC Victims

- Redelmeier et al. (2010) conducted a population-based case-control study
- Examined male youth aged 16-19 years hospitalized for road trauma or appendicitis in Ontario between April 1, 2002 – March 31, 2009.
- Using universal health care databases, the researchers searched for prior psychiatric diagnoses in the 10-year period preceding hospitalization.
- A history of disruptive behaviour disorders (CD or ODD) was more frequent among road trauma than appendicitis cases
 - Was associated with a one-third increase in the relative risk of serious road trauma.

Purpose of the Current Study

- Existing research suggests that there may be an impact of CD in childhood and adolescence on driving-related outcomes in adulthood.
- But research to date is limited to outcomes up to age 21 years.
- Purpose of the current study was to assess the impact of CD symptoms during childhood on the risk of engaging in minor driver aggression among young, middle-aged, and older adults.



Sample: CAMH Monitor

- 2011-2012 cycles of CAMH Monitor
- A repeated cross-sectional telephone survey of Ontario adults aged 18 years and older
- Uses regional stratification and consists of independent monthly samples of approximately 200 completions each
- The response rate was 51%
- Sample includes responses from 3445 respondents who reported having driven a vehicle in the past year



Variables

- Outcome Variable:
 - Minor Driver Aggression: “During the past 12 months, either as a driver or a passenger, how many times have you shouted, cursed, or made rude gestures at a driver or passenger in another vehicle?” (coded no/yes)
- Other Predictor Variables:
 - Demographics (gender, age, marital status, income, region of residence)
 - Weekly driving distance



Variables - CD Symptoms

- Symptoms of CD were assessed with 5 items taken from the DSM-IV-TR assessment for antisocial personality disorder (APD)
 - A diagnosis of APD requires evidence of CD with onset before age 15 years.
- “Before you were 15 years old, did you:
 - (1) repeatedly skip school or run away from home overnight?
 - (2) repeatedly lie, cheat, or steal?
 - (3) start fights or bully, threaten, or intimidate others?
 - (4) deliberately destroy things or start fires?
 - (5) deliberately hurt animals or people?
- Participants who responded ‘yes’ to at least 2 questions were classified as likely having had CD as a child.

Analyses

- The weighted sample size was used when reporting percentages
 - The estimates are representative of the population surveyed.
- Item missing data (i.e., “don’t know” responses and refusals) were excluded listwise from all analyses.
- All analyses were conducted using SPSS 20.0 software.



Univariate Results

- Prevalence of probable CD before age 15 years: 7.1%
- Prevalence of driver aggression: 43.9%

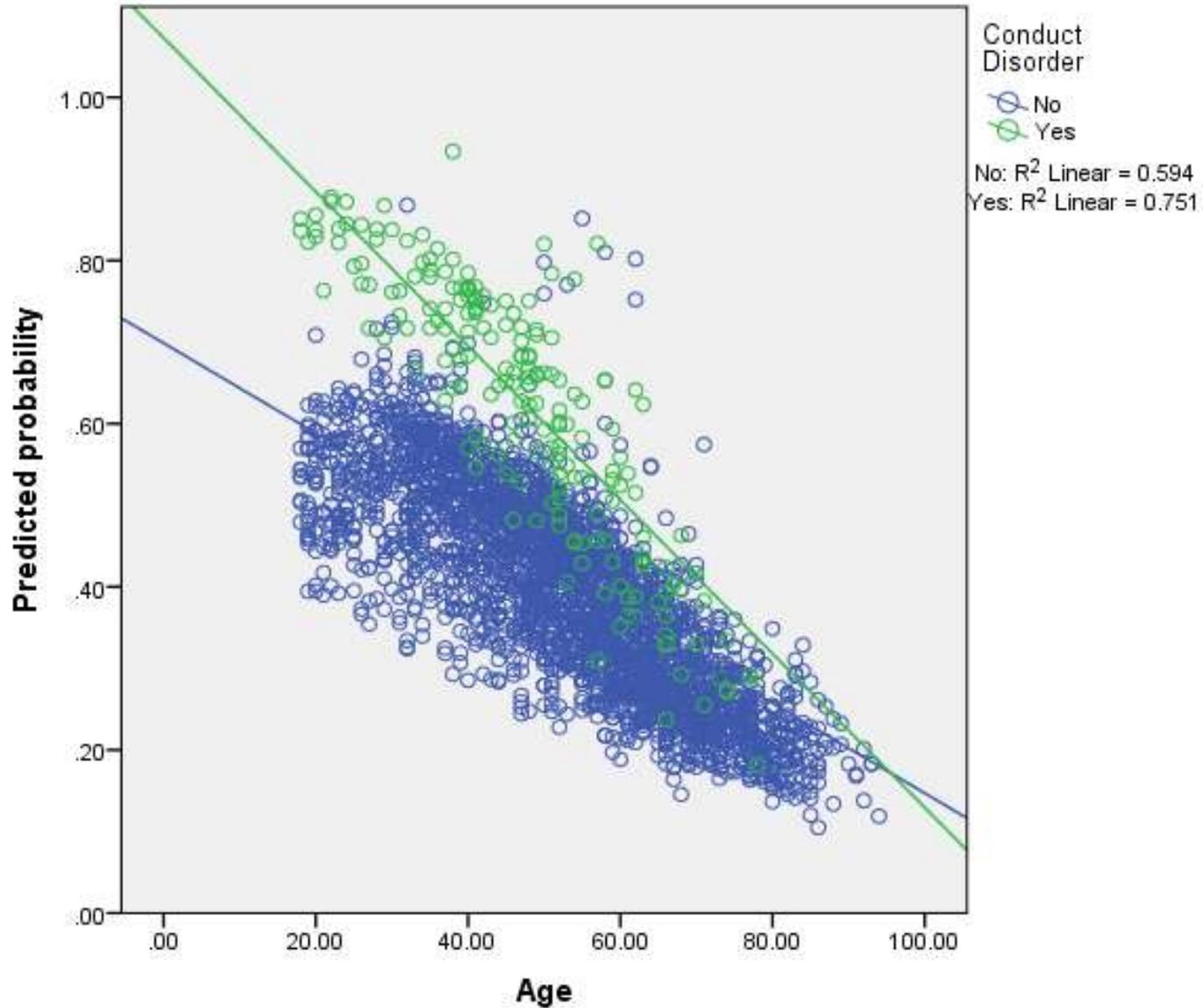
	<i>n</i>	Driver Aggression %Yes
PROBABLE CD:		***
No (< 2 symptoms)	3179	42.3
Yes (2+ symptoms)	226	63.9

Multivariate Results

	Driver Aggression (<i>n</i> =2948)	
	OR	95% CIs
BLOCK 1		
Probable CD before age 15 years (ref=no)	2.38***	1.76, 3.22
Constant	1.54	
Hosmer & Lemeshow Test	11.46 _(8df) <i>p</i> =.18	
BLOCK 2		
Probable CD before age 15 years (ref=no)	7.71***	2.71, 21.96
Probable CD x Age Interaction	.97*	.953, .996
Constant	.56**	
Hosmer & Lemeshow Test	13.81 _(8df) <i>p</i> =.09	

NOTE: Results for other predictor variables available in conference paper.

Figure 1. Predicted probability of driver aggression as a function of age and probable CD before age 15 years: Ontario CAMH Monitor, January, 2011 – December, 2012.



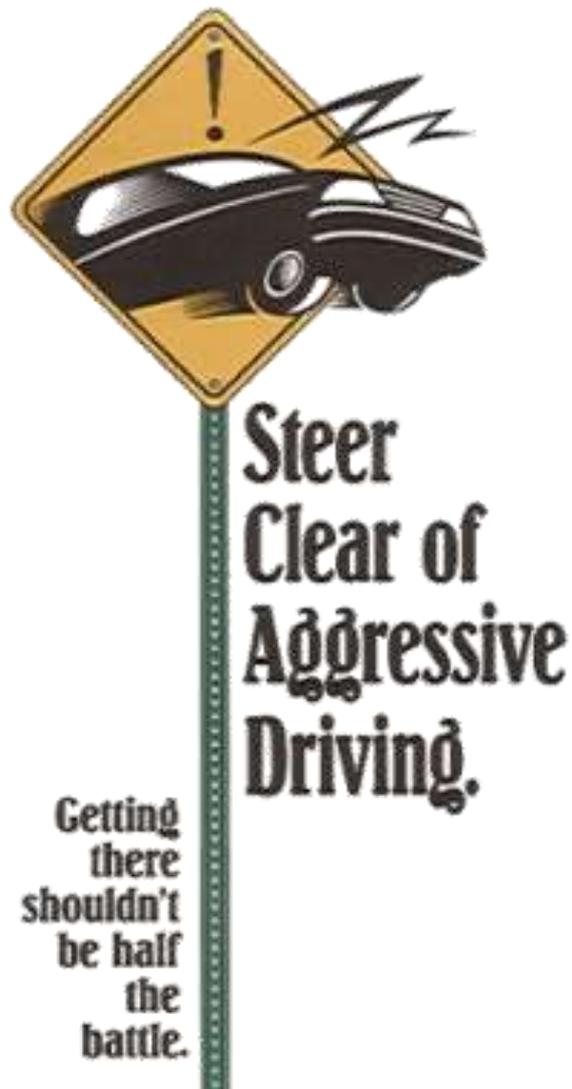
Multivariate Results

- Given the exploratory nature of the analyses, the sample was divided into three age categories to determine the impact of probable CD on driver aggression across the lifespan.
- Separate logistic regression analyses were conducted for each age group.

	Driver Aggression		
	Age 18-34 (N=418)	Age 35-54 (N=1147)	Age 55+ (N=1383)
Probable CD before age 15 years (ref=no)	4.31***	2.34***	1.58
Constant	.51	.46*	.21***
Hosmer & Lemeshow Test	13.26 _(8df) $p = .10$	6.67 _(8df) $p = .57$	7.65 _(8df) $p = .47$

NOTE: Results for other predictor variables available in conference paper.

Discussion



- These results could suggest that the driving-related effects of CD dissipate over the lifespan.
- BUT, it is more likely that the results reflect a declining prevalence of CD over the lifespan.
 - Not all types of CD persist into adulthood.
- Still, the current results clearly identify a disturbing relationship between conduct problems in early adolescence and roadway aggression in adulthood.

Limitations & Future Directions

- **Sample Size:**
 - Although the sample size appears large, the division of the sample according to age group significantly reduced the sample size on which the final analyses were based.
 - Analyses should be conducted again when additional cycles of data are available.
- **Driver Aggression Question:**
 - Asks about aggression experienced as either a driver or a passenger.
 - Nonetheless, aggression by passengers still represents a threat to roadway safety – passenger aggression can elicit retaliatory aggression.



Limitations & Future Directions

- Self-Report Telephone Interviews
 - May have introduced bias (e.g., underreporting of driver aggression due to socially desirable responding)
 - Participants may have had difficulty recalling incidents of conduct problems prior to age 15 years, particularly for respondents in the 55+ year old group.
- Did not control for other comorbid disorders (e.g., ADHD).
 - Vaa (2014) suggested that the relative risk of a collision for drivers with ADHD was 1.23, but was much higher for drivers with both ADHD and comorbid ODD and/or CD.



- Although Vaa suggested that it was ODD and CD that were most related to collision risk, future analyses should control for ADHD and other related mental health issues.

Implications

- Treatment for CD
 - Can take many forms (e.g., various types of therapy, home, school, and community-based programs, residential and hospital treatment, social services)
 - Given the impact that probable CD can have on driver aggression, and the demonstrated relationship between CD and collision risk, special attention within any selected treatment should be paid to aggression and outbursts behind the wheel of a vehicle.



Implications

- Prevention/Remedial Program to Reduce Driver Aggression
 - May be beneficial to screen for CD symptoms in any prevention or remedial program designed to reduce driver aggression.
 - A more focused/specialized curriculum may prove more effective for participants with a history of CD symptoms.



CHOOSE YOUR BATTLES

Do you really have to be told not to tailgate this guy?