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The impact of childhood symptoms of conduct disorder on driver aggression in adulthood

Christine M. Wickens [a,b,*], Evelyn Vingilis [c], Robert E. Mann [a,b], Patricia Erickson [d,e], Maggie E. Toplak [f], Nathan J. Kolla [a,g], Jane Seeley [c], Anca R. Ialomiteanu [a], Gina Stoduto [a], Gabriela Ilie [a,h]

[a] Centre for Addiction and Mental Health, Toronto, Ontario, Canada
[b] Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario, Canada
[c] Schulich School of Medicine and Dentistry, the University of Western Ontario, London, Ontario, Canada
[d] Centre for Criminology and Sociolegal Studies, University of Toronto, Toronto, Ontario, Canada
[e] Department of Sociology, University of Toronto, Toronto, Ontario, Canada
[f] Department of Psychology, York University, Toronto, Ontario, Canada
[g] Department of Psychiatry, University of Toronto, Toronto, Ontario, Canada
[h] St. Michael's Hospital, Toronto, Ontario, Canada

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ABSTRACT

Background: Despite limited empirical investigation, existing scientific literature suggests that individuals with a history or current diagnosis of conduct disorder (CD) may be more likely to demonstrate reckless and aggressive driving. Much of the limited research in this field examines the impact of childhood CD on driver behaviour and collision risk in young adults. Few if any, studies assess the impact of this disorder on driver behaviour beyond age 21 years. The current research is a population-based study of the impact of CD symptoms during childhood on the risk of engaging in driver aggression during adulthood.

Methods: Data are based on telephone interviews with 5230 respondents who reported having driven in the past year. Data are derived from the 2011–2013 cycles of the CAMH Monitor, an ongoing cross-sectional survey of adults in Ontario, Canada aged 18 years and older. A binary logistic regression analysis of self-reported driver aggression in the previous 12 months was conducted, consisting of measures of demographic characteristics, driving exposure, problem substance use, alcohol- and drug-impaired driving, symptoms of attention deficit hyperactivity disorder, and childhood (before age 15) symptoms of CD.

Results: When entered with demographic characteristics, driving exposure, and other potential confounders, childhood symptoms of CD increased the odds of reporting driver aggression more than two-fold (adjusted OR = 2.12). Exploratory analyses of the interaction between childhood symptoms of CD and age was not a significant predictor of driver aggression.

Conclusions: Results suggest that symptoms of CD during childhood are associated with significantly increased odds of self-reported driver aggression during adulthood. Limitations and future directions of the research are discussed.

1. Introduction

Driver aggression, including more serious forms such as road rage, has been identified as a significant traffic safety concern internationally (Hemenway et al., 2006; Mann et al., 2007; Sagar et al., 2013; Smart and Mann, 2002a; Wells-Parker et al., 2002; Wickens et al., 2013b). Nearly half of drivers in Ontario, Canada, report being victims of driver aggression in the past year, and about 1 in 10 report being victims of driver aggression serious enough to warrant a criminal charge (Smart et al., 2003b). In addition to creating a stressful environment for road users, driver aggression increases collision risk and can result in injury and death (Mann et al., 2007; Smart and Mann, 2002b; Wells-Parker et al., 2002).

* Corresponding author at: Centre for Addiction and Mental Health, Social and Epidemiological Research Department, 33 Russell Street, T417, Toronto, Ontario M5S 2S1, Canada. Tel.: +1 416 535 8501x34711; fax: +1 416 595 6899.
E-mail address: Christine.Wickens@camh.ca (C.M. Wickens).

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Research has identified several individual and situational factors that increase the likelihood of driver aggression (Wickens et al., 2013a). Younger drivers, those with higher incomes, those who report more driving and driving high performance vehicles, those who live in denser urban environments, those who report more driving-related anger and negative cognitions, and those who themselves have been victims are more likely to report perpetrating driver aggression (Asbridge et al., 2003; Nesbit and Conger, 2012; Nesbit et al., 2007; Smart et al., 2003b, 2004; Wickens et al., 2011). Driver aggression is also associated with risky driving behaviour and experiencing negative or adverse driving events (Deffenbacher et al., 2001, 2003; Hennessy and Wiesenthal, 2002, 2004). Both males and females report similar levels of driver aggression after controlling for demographic factors (Hennessy and Wiesenthal, 2002; Hennessy et al., 2004; Wickens et al., 2012), while those who report more problematic use of alcohol and other drugs are more likely to report perpetration (Butters et al., 2005, 2006; Fierro et al., 2011; Mann et al., 2004; Yu et al., 2004).

Clinical and epidemiological studies have found that rates of psychiatric morbidity are higher in individuals who report involvement in driver aggression, including both the victims and perpetrators of these aggressive roadway events (Wickens et al., 2014a, in press). Attention deficit hyperactivity disorder (ADHD; Malta et al., 2005; Richards et al., 2006), alcohol and drug problems (Butters et al., 2005, 2006; Yu et al., 2004), and anxiety and mood disorders (Butters et al., 2006; Galovski et al., 2006; Smart et al., 2003a) have all been associated with increased risk of driver aggression. Individuals who report perpetration of driver aggression are more likely to report carrying weapons in their vehicles, suggesting a predisposition to violence (Hemenway et al., 2006). Disorders related to aggression and violence have also been assessed in aggressive drivers. Although few in number, these studies have identified an association between roadway aggression and disorders such as intermittent explosive disorder (Galovski et al., 2006), borderline personality disorder, and antisocial personality disorder (Galovski et al., 2006; Malta et al., 2005; Sansone et al., 2010; Sansone and Sansone, 2010; Vaughn et al., 2011), which is unsurprising given that these conditions present high anger, interpersonal aggression, and impulsivity.

Conduct disorder (CD) represents another form of psychiatric morbidity for which there is at least some evidence suggesting a link to driver aggression. CD is characterized by extreme externalizing behaviour and is 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 or rules (American Psychiatric Association, 2013). CD typically emerges early in childhood/adolescence (Moffitt, 1993), and is associated with aggressive conduct toward others, property destruction, deceitfulness or theft, and serious violation of rules (American Psychiatric Association, 2013). The prevalence of CD ranges from 2% to more than 10%, with a median estimate of 4% (American Psychiatric Association, 2013; Costello et al., 2005). Longitudinal studies have found that CD is associated with earlier mortality (Laub and Vaillant, 2000); lower educational attainment (Fergusson and Horwood, 1998; Fergusson et al., 2005); greater unemployment or financial difficulty (Colman et al., 2009; Fergusson and Horwood, 1998; Fergusson et al., 2005); greater involvement with criminal activity (Fergusson et al., 2005); increased sexual risk-taking behaviour (Bardone et al., 1998; Fergusson et al., 2005); increased risk of separation/divorce (Colman et al., 2009; Olino et al., 2010); and lower levels of peer support, life satisfaction, coping skills, and global functioning (Colman et al., 2009; Olino et al., 2010).

In many cases, the relationship between CD in youth and negative outcome variables in adulthood is partially or fully mediated by adult antisocial behaviour (Olino et al., 2010), which highlights the importance of reducing the progression from conduct problems in adolescence to antisocial behaviour in adulthood as a means of improving psychosocial outcomes. The presence of callous-unemotional (CU) traits in conjunction with conduct problems is currently being studied as a possible explanation for the heterogeneity in progression from CD in childhood to adult antisocial behaviour. This research has produced mixed results, demonstrating both increases and decreases in deviant social cognition (e.g. prosocial thinking, empathy, hostile attributions) in children with both conduct problems and CU traits (Waschbusch et al., 2007). Nonetheless, impaired social cognition represents a potential mechanism by which CD may increase risk of driver aggression.

A series of cohort studies conducted in New Zealand provided evidence to suggest that those with a history or current diagnosis of CD are also more likely to demonstrate reckless and aggressive driving. Nada-Raja et al. (1997) examined the association between various psychiatric disorders and driver offences using data from the Dunedin Multidisciplinary Health and Development Study (DMHDS). This study followed the health, behaviour, and development of a cohort of children who were born between April 1, 1972 and March 31, 1975 at a hospital in Dunedin, New Zealand. Nada-Raja et al. (1997) divided the cohort based on responses to the Diagnostic Interview Schedule for Children (Costello et al., 1982) and a self-report delinquency scale (Moffitt and Silva, 1988), which was administered to cohort members at age 15 years. One group of cohort members consisted of those who met Diagnostic and Statistical Manual of Mental Disorders (DSM)-III criteria for conduct or oppositional disorder. Driver offences committed between ages 15 and 18 years were assessed through both self-report and examination of participants' official driving records. When examining official records, relative to non-conduct-disordered male drivers, males with CD at age 15 years reported more offences related to the graduated driver licensing system (GDLS), more licence offences unrelated to the GDLS (e.g. driving without a licence), and more alcohol-related driving offences. They were also more likely to report having been charged with one or more offences. Female drivers with CD at age 15 years were more likely than female drivers without CD to have committed more licence offences unrelated to the GDLS, but this result was based on a very small sample size, limiting the conclusions that could be drawn from the results. When examining self-reported driver offences, males with CD at age 15 years were more likely to drive without a licence, to not wear a seatbelt, and to break conditions of their learner's permit; however, they were no more likely to drive within 2 h of consuming alcohol and no more likely to be involved in a crash than other male drivers. Female drivers with CD at age 15 years were more likely to drive without a licence, but were otherwise similar to other female drivers. Among their conclusions, the authors suggested that adolescents with a history of conduct problems are significantly more likely than their peers to commit traffic offences.

Also based on the DMHDS cohort, Begg et al. (1999) examined self-reported crash and injury data between ages 18 and 21 years. Results from this study were not as straightforward as those of Nada-Raja et al. (1997). Although both male and female drivers with CD at age 18 years were more likely to experience a serious injury unrelated to driving, they were no more likely to be involved in a motor vehicle collision. Female drivers with CD at age 15 years were more than twice as likely as other female drivers to be involved in a crash, whereas male drivers with CD at age 15 years were less likely to be involved in a crash. According to the authors, subsequent analyses suggested that collinearity between CD and attention deficit disorder in the male sample may have accounted for this inconsistency.