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## Adolescent peer aggression and its association with mental health and substance use in an Australian cohort



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### A B S T R A C T

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Prospective longitudinal birth cohort data was used to examine the association between peer aggression at 14 years and mental health and substance use at 17 years. A sample of 1590 participants from the Western Australian Pregnancy Cohort (Raine) study were divided into mutually exclusive categories (victims, perpetrators, victim-perpetrators and uninvolved). Involvement in any type of peer aggression as a victim (10.1%), perpetrator (21.4%), or a victim-perpetrator (8.7%) was reported by 40.2% of participants. After adjusting for confounding factors, those who were a victim of peer aggression had increased odds of later depression and internalising symptoms whilst perpetrators of peer aggression were found to be at increased risk of depression and harmful alcohol use. Victim-perpetrators of peer aggression were more likely to have externalising behaviours at 17 years. These results show an independent temporal relationship between peer aggression and later mental health and substance use problems in adolescence.

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Peer aggression is a common sub-type of aggression in children and adolescents (Ybrandt & Armelius, 2010), most prevalent between the ages of 9 and 14 (Cross et al., 2009; Due, Holstein, & Soc, 2008). There are three main groups of participants in peer aggression; the victim, the perpetrator and a third group who are both the victim and the perpetrator (victim-perpetrator) (Austin & Joseph, 1996; Haynie et al., 2001; Veenstra et al., 2005). The estimated prevalence of peer aggression (victim or perpetrator) ranges from 5% to 35% with lower prevalence (3%–13%) for those in the victim-perpetrator group (Copeland, Wolke, Angold, & Costello, 2013; Craig et al., 2009; Cross et al., 2009; Due et al., 2008; Jansen et al., 2012; Solberg & Olweus, 2003; Sourander, Jensen, Rönning, Niemelä, et al., 2007). The variation in prevalence has been linked to

*Abbreviations:* Raine study, Western Australian Pregnancy Cohort (Raine) study; CBCL, child behaviour checklist; BDI-Y, Beck Depression Inventory for Youth; YSR, Youth Self Report; OR, odds ratio; CI, confidence interval.

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methodological differences in definition and measurement (Griffin & Gross, 2004; Shaw, Dooley, Cross, Zubrick, & Waters, 2013) with recent studies now incorporating cyber-aggression. Irrespective of this, it is clear that a large number of children and adolescents are involved in peer aggression.

Victims of peer aggression are more likely to have fewer close friends, and are at increased risk of mental health problems, particularly internalising symptoms which are characterised by an over control of emotion expressed through behaviours such as excessive worrying and social withdrawal (Achenbach & Edelbrock, 1978; Arseneault et al., 2006; Boulton & Underwood, 1992; Nansel et al., 2001; Zeman, Cassano, Perry-Parrish, & Stegall, 2006). It has been further demonstrated that victims of peer aggression are likely to display sub-assertive behaviour which may increase their likelihood of becoming victims of peer aggression, as perpetrators of peer aggression perceive them as easy targets that are less likely to retaliate (Fekkes, Pijpers, Fredriks, Vogels, & Verloove-Vanhorick, 2006). Longitudinal studies have consistently found strong links between victims of peer aggression as a child or adolescent and later mental health problems including depression, anxiety, suicide ideation and suicide attempts (Copeland et al., 2013; Heikkilä et al., 2013; Hemphill et al., 2011; Klomek et al., 2008; Sourander, Jensen, Rønning, Niemelä, et al., 2007; Ybrandt & Armelius, 2010). The association between being a victim of peer aggression and later substance abuse problems is less clear with some studies reporting that victims of peer aggression are less likely to drink alcohol later in life (Nansel et al., 2001) whereas others suggest that being a victim of peer aggression is associated with an increased risk of later harmful alcohol use (Goebert, Else, Matsu, Chung-Do, & Chang, 2011; Tharp-Taylor, Haviland, & D'Amico, 2009). Similarly some studies have shown an association between being a victim of peer aggression and later illicit drug and tobacco use (Goebert et al., 2011; Niemela et al., 2011; Tharp-Taylor et al., 2009), whereas others have found no association at all (Copeland et al., 2013; Hemphill et al., 2011; Sourander, Jensen, Rønning, Niemelä, et al., 2007).

Perpetrators of peer aggression have been consistently found to be at increased risk of mental health problems particularly externalising behaviours which are characterised by an under control of emotions and are displayed through acts such as impulsivity, defiance, swearing and aggression towards others (Achenbach & Edelbrock, 1978; Kim, Leventhal, Koh, Hubbard, & Boyce, 2006; Sourander et al., 2010; Van der Wal, De Wit, & Hirasing, 2003; Veenstra et al., 2005). Most longitudinal studies show perpetrators of peer aggression in early adolescence to be at an increased risk of later alcohol dependence and other substance abuse problems as well as increased risk of later criminal and violent behaviour (Farrington & Ttofi, 2011; Hemphill et al., 2011; Niemela et al., 2011; Sourander, Jensen, Ronning, Elonheimo, et al., 2007; Sourander, Jensen, Rønning, Niemelä, et al., 2007). Some studies suggest that being a perpetrator of peer aggression in childhood or adolescence increases the risk of later depression, however this is seen predominately in males (Kaltiala-Heino, Fröjd, & Marttunen, 2010; Klomek et al., 2008). Furthermore longitudinal evidence suggests that perpetrators of peer aggression are more likely at risk of anti-social personality disorder (Copeland et al., 2013; Sourander, Jensen, Rønning, Niemelä, et al., 2007).

Compared to studies of victims and perpetrators of peer aggression, there is less research examining the concurrent and later mental health problems of victim-perpetrators of peer aggression. This group are more likely to display externalising behaviours similar to perpetrators of peer aggression, but also have internalising behaviours similar to victims (Ivarsson, Broberg, Arvidsson, & Gillberg, 2005). Victim-perpetrators of peer aggression have the highest risk of later psychiatric problems (Copeland et al., 2013; Kumpulainen & Räsänen, 2000; Sourander, Jensen, Rønning, Niemelä, et al., 2007) and the poorest psychosocial functioning out of the three groups (Haynie et al., 2001; Veenstra et al., 2005). They have an increased risk of wide ranging adverse outcomes including anxiety, depression, suicidal ideation, substance use disorders and criminal behaviour (Copeland et al., 2013; Kim, Koh, & Leventhal, 2005; Klomek et al., 2008; Sourander, Jensen, Ronning, Elonheimo, et al., 2007; Sourander, Jensen, Rønning, Niemelä, et al., 2007; Winsper, Lereya, Zanarini, & Wolke, 2012).

General strain theory is a framework that explains the underlying process in which peer aggression affects mental health and substance use (Agnew, 1992, 2001). This argues that those who are exposed to strain or strenuous events (i.e. peer aggression) often develop negative emotions as a result. These negative emotions such as depression, anxiety, and anger can then lead to the individual trying to escape the strain through acts such as substance use, self-harm or suicide (Hay, Meldrum, & Mann, 2010). Although this provides a rationale for why victims or victim-perpetrators of peer aggression develop mental health and substance use problems it does not explain why perpetrators of peer aggression are at increased risk of adverse outcomes. Keeping this theoretical framework in mind it is possible that adolescents become perpetrators of peer aggression to escape strain or a strenuous event in their life. However, perpetrating peer aggression may alienate these adolescents from their peers and teachers, further exacerbating existing strain, causing these perpetrators like victims, to be at increased risk of mental health and substance use problems.

An alternative explanation for the increased risk of mental health and substance use problems after involvement in peer aggression is that early adverse experiences (i.e. peer aggression) that occur during vulnerable developmental periods can cause neurobiological changes (Anda et al., 2006; Shonkoff, Boyce, & McEwen, 2009) expressed as illnesses such as depression in later years (Shonkoff et al., 2009).

Currently there are some limitations to the existing studies examining the mental health problems of children and adolescents involved in peer aggression. Initially many studies were cross sectional (Fekkes, Pijpers, & Verloove-Vanhorick, 2004; Kaltiala-Heino, Rimpela, Rantanen, & Rimpela, 2000; Nansel, Craig, Overpeck, Saluja, & Ruan, 2004; Nansel et al., 2001; Van der Wal et al., 2003) which prevents the determination of the direction of causality (Reichenheim & Coutinho, 2010). The advantage of more recent longitudinal studies is that they may permit the direction of causality between peer aggression and mental health problems to be inferred. However, the majority of longitudinal studies have only adjusted for mental health problems at the time peer aggression was measured and not for pre-existing mental health problems prior to

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