



Correlates of self-injurious, aggressive and destructive behaviour in children under five who are at risk of developmental delay



J.L. Petty, M. Bacarese-Hamilton, L.E. Davies, C. Oliver*

University of Birmingham, UK

ARTICLE INFO

Article history:

Received 16 December 2011
Received in revised form 18 July 2013
Accepted 15 October 2013
Available online 12 November 2013

Keywords:

Self-injury
Aggression
Children
Hyperactivity
Intellectual disability
Repetitive behaviour
Health

ABSTRACT

Aim: Several behavioural correlates of self-injury, aggression and destructive behaviour have been identified in children and young adults with intellectual disabilities. This cross-sectional study aimed to further explore these correlates in very young children with developmental delay.

Methods: Parents of 56 children (40 male) under the age of five years (mean age 2 years 10 months) completed a questionnaire about their child's behaviour and the presence of behavioural correlates, including repetitive, over-active or impulsive behaviour and more severe developmental delay.

Results: Parents reported very high prevalence of self-injurious, aggressive and destructive behaviour: 51%, 64% and 51%, respectively. A binary logistic regression revealed that a higher score on a measure of overactive and impulsive behaviour significantly predicted the presence of destructive behaviour. A multiple linear regression revealed that both repetitive behaviour and number of health problems approached significance as independent predictors of severe self-injurious behaviour.

Interpretation: Despite the very small sample, several factors emerged as potential predictors of self-injurious, aggressive and destructive behaviour. These findings support the need for further investigation in a larger sample. Confirmation in this age group could help guide the development of targeted early intervention for these behaviours by identifying behavioural risk markers.

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1. Introduction

Self-injurious, aggressive and destructive behaviours are frequently observed in children and adults with intellectual disabilities and pose a significant challenge for families and services. The long term cost of challenging behaviour to individuals and services (Knapp, Comas-Herrera, Astin, Beecham, & Pendaries, 2005) and the persistence of these behaviours once they are established in an individual's repertoire (Taylor, Oliver, & Murphy, 2011) have led to increased interest in the development of early intervention strategies (Richman, 2008). In order to implement these strategies efficiently, identification of 'high risk' populations is necessary so that services can be effectively targeted.

Previous research has provided evidence that self-injurious behaviour is observed in very young children. For example, Berkson, Tupa, and Sherman (2001) reported that 4.6% of their population of children aged below 40 months at risk of

* Corresponding author at: School of Psychology, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK. Tel.: +44 121 4144909; fax: +44 121 4144897.

E-mail address: c.oliver@bham.ac.uk (C. Oliver).

developmental delay displayed 'proto-injurious' or self-injurious behaviour. Proto-injurious behaviours were described as behaviours that were topographically similar to self-injury but as yet not of sufficient severity to cause injury. Self-injurious behaviours, such as head banging, are also reported to occur in approximately 15% of typically developing infants, though the behaviour is transient in this population, usually disappearing by the age of five years (Shentoub & Soulairac, 1961). It is clear therefore that these behaviours may be present from an early age.

The authors of a recent review of the most methodologically robust studies on age related prevalence of aggression and self-injury concluded that the prevalence of self-injury, and to a lesser extent aggression, increased with age until mid-adulthood, with some indication of a curvilinear relationship for self-injury (Davies & Oliver, 2013). Although this review only included studies with prevalence data for aggression and/or self-injury broken down by age band, these results are in line with previous findings (Borthwick-Duffy, 1994; Oliver, Murphy, & Corbett, 1987; Rojahn, Borthwick-Duffy, & Jacobson, 1993). Data for destructive behaviour reflects a less clear pattern, with some studies reporting increases in behaviour with age (e.g. Borthwick-Duffy, 1994; Jacobson, 1982) whilst others find the opposite (e.g. Ando & Yoshimura, 1978; Eyman & Call, 1977). Further longitudinal research is warranted to better understand the complex relationship between chronological age and challenging behaviour. However, the available data indicate an increasing prevalence of behaviours such as self-injury and hence the possibility of reducing future prevalence by early intervention. This strategy may be made more efficient by targeting children who are at the highest risk.

Characteristics such as more severe intellectual disability, a deficit in communication and the presence of autism spectrum disorders have been identified as possible risk markers for some behaviours due to their frequently reported association with self-injury and aggression for example (Baghdadli, Pascal, Grisis, & Aussilloux, 2003; Bhaumik, Branford, McGrother, & Thorp, 1997; Chadwick, Piroth, Walker, Bernard, & Taylor, 2000; Chadwick, Kusel, & Cuddy, 2008; Holden & Gitlesen, 2006; Matson & Rivet, 2008). In this context the term risk markers refers to characteristics that are associated with a higher probability of the future occurrence of a behaviour of interest. McClintock, Hall, and Oliver (2003) conducted a meta-analysis of 22 prevalence and cohort studies to examine the role of these characteristics as potential risk markers for self-injurious, aggressive and destructive behaviour in individuals with intellectual disabilities. McClintock et al. reported that individuals with more severe intellectual disability or deficits in expressive communication were significantly more likely to show self-injurious behaviour than those with moderate intellectual disability or no communicative deficits. They also found that individuals with a diagnosis of autism were significantly more likely to show self-injurious, aggressive and destructive behaviours than those without autism.

Several studies have found an increased prevalence of aggressive behaviour in males (e.g. Hardan & Sahl, 1997; Sigafos, Elkins, Kerr, & Attwood, 1994) and this relationship was confirmed in McClintock et al's (2003) meta-analysis. The picture regarding self-injurious behaviour is more complex, with some studies (e.g. Deb, Thomas, & Bright, 2001) finding a higher prevalence in females but the McClintock et al. (2003) meta-analysis did not reveal a clear difference between males and females. Data regarding the influence of gender on the prevalence of destructive behaviour have yet to be reported.

More recent work (Arron, Oliver, Moss, Berg, & Burbidge, 2011) has documented an increased probability of self-injurious and aggressive behaviour in some genetic disorders. Lesch–Nyhan syndrome (Hall, Oliver, & Murphy, 2001) and Cornelia de Lange syndrome (Sloneem, Hall, Arron, & Oliver, 2009) for example have been found to be associated with an increased prevalence of self-injurious behaviour whilst Smith Magenis (Taylor & Oliver, 2008), Angelman (Strachan et al., 2009) and Prader–Willi (Woodcock, Oliver, & Humphreys, 2009) syndromes have been found to show increased levels of multiple challenging behaviours including self-injury and aggression. Aggressive and self-injurious behaviours have also been found to be associated with overactivity, impulsivity and repetitive behaviours within some genetic syndromes. To illustrate, Sloneem, Oliver, Udwin, and Woodcock (2011) found an association between impulsivity and aggression in Smith-Magenis syndrome. This finding was further extended to overactivity and a range of syndromes by Arron et al. (2011), who reported a significant association between aggression and both impulsivity and overactivity in individuals with Angelman, Cornelia de Lange, Cri du Chat, Fragile X, Lowe, Prader–Willi and Smith Magenis syndromes. Arron et al. also reported significantly higher rates of repetitive behaviour in children with Cornelia de Lange, Fragile X, Prader–Willi and Lowe syndromes who self-injured.

Guess and Carr (1991) described a model for the possible development of repetitive and self-injurious behaviours in individuals with intellectual disabilities. The first stage describes the behaviours as internally regulated and part of typical development, a theory supported by the presence of such behaviours during the development of typically developing infants (Thelen, 1979). In the later stages of the model, behaviours begin to become sensitive to the environment and may function to maintain the homeostasis of sensory input (Hutt & Hutt, 1965). Finally, behaviours are maintained through operant learning as they become susceptible to social reinforcement from others (Oliver, 1995). Tangential evidence for this model is demonstrated by the observed co-occurrence of repetitive, self-injurious and communicative behaviours in 10 s epochs in young children with intellectual disability (Petty, Allen, & Oliver, 2009). A review of the data pertaining to the development of stereotyped and self-injurious behaviour in typically developing children and those at risk of developmental delay indicates a delayed onset of stereotyped behaviour in the at risk group, although the developmental course appeared to be similar across groups (Symons, Sperry, Dropik, & Bodfish, 2005).

Several authors have also suggested that the emergence of self-injury may be associated with pain. Research in typically developing children has reported significantly more frequent self-injurious behaviours in children who are teething (Kravitz, Rosentahl, Teplitz, Murphy, & Lesser, 1960) or have painful ear infections (De Lissovoy, 1963). Research in older individuals with intellectual disabilities has also confirmed an association between pain and self-injury. O'Reilly (1997) reported that

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