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Research paper

Childhood social adversity and risk of depressive symptoms in adolescence in a US national sample

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ABSTRACT

Objective: Childhood social adversity has been associated with an increased risk of depression and other psychiatric disorders in adolescence and early adulthood. However, the role of timing and accumulation of adversities has not yet been established in longitudinal studies. We examined the association between childhood adversities and adolescent depressive symptoms, and the impact of timing and accumulation of adversity.
Method: Longitudinal data were obtained from the Child Development Supplement to the Panel Study of Income Dynamics (n=2223), a nationally representative survey of US families that incorporates data from parents and their children. Negative binomial regression analysis was used to estimate effects of childhood social adversity on adolescent depressive symptoms, presented as Incidence Rate Ratios with 95% confidence intervals.
Results: Children exposed to social adversity reported higher levels of adolescent depressive symptoms captured by two depression scales. Single-parent household and residential instability were particularly associated with depressive symptoms. A positive relationship was found between cumulative adversity and the risk of adolescent depression. The timing of exposure appeared to have little effect on the risk of adolescent depressive symptoms.
Limitations: The structure of the data implies that alternative causal pathways cannot be fully discounted. The self- or parent-reported data is subject to recall bias.
Conclusion: Our findings support the long-term negative impact of childhood adversity on adolescent depressive symptoms, regardless of when in childhood the adversity occurs. Policies and interventions to reduce adolescent depressive symptoms need to consider the social background of the family as an important risk or protective factor.

1. Introduction

Depression is a common and potentially debilitating disorder occurring through the life-course (Fleisher and Katz, 2001; Patel et al., 2007; Saluja et al., 2004). The first onset of depression often occurs in childhood or adolescence, although treatment typically does not occur until later in life (Birmaher et al., 1996; Costello et al., 2006; Kessler et al., 2007; Patel et al., 2007). Furthermore, depression in childhood and adolescence is a risk factor for adult depression (Dunn and Goodyer, 2006; Melvin et al., 2013; Patel et al., 2007; Pine et al., 1999). According to the National Institute of Mental Health, depression is the most common mental health disorder among adolescents in the United states, affecting around 11% of the US population aged 12–17 (National Institute of Mental Health, 2014). An even higher proportion of adolescents in the US, nearly 20%, are reported to have symptoms within the broader phenotypic spectrum of depression i.e. ranging from clinically overt depression to non-specific depressive symptoms (Saluja et al., 2004).

Most likely, depression is caused by a combination of genetic, environmental, as well as social and psychological factors (Birmaher et al., 1996; Heim and Binder, 2012; Merikangas et al., 2009; Patel et al., 2007; Schaffer and Kipp, 2014). Studies have consistently shown that depression and depressive symptoms occur more frequently among persons in socioeconomically disadvantaged groups (Gilman

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et al., 2002; Reiss, 2013; Torikka et al., 2014; Tracy et al., 2008), and that the socioeconomic gradient in depression is evident already in childhood (Gilman et al., 2002).

Accumulating evidence suggests that childhood social adversity, commonly captured by parental income, education and occupation, has a substantial influence on the occurrence of depression and depressive symptoms in childhood and adolescence (Amone-P'Olak et al., 2009; Butler, 2014; Goodyer, 2002; Hyland et al., 2016; Mossakowski, 2015).

Various pathways through which childhood social adversity influences child and youth depression have been discussed, including both psychosocial and biological mechanisms (Conger and Donnellan, 2007; Hudson, 2005; Swartz et al., 2016). Family socioeconomic factors may be particularly important for mental health in children and adolescents because of the decisive influence the family has upon children during the period they develop and unfold their personality (Amone-P'Olak et al., 2009). For example, childhood social adversity may affect children's mental health through its negative effect on parents, in terms of increase stress levels, parental marital conflict, and lower parenting quality (Conger and Donnellan, 2007). Biological explanations suggest that social adversity contributes to stress-induced brain dysfunction that in turn may lead to mental health problems (Schaffer and Kipp, 2014; Swartz et al., 2016).

Yet, few previous studies have examined a broad range of childhood adversities and their timing in relation to the risk of adolescent depression (Andersen and Teicher, 2008; Dunn et al., 2013; Heim and Binder, 2012; Kaplow and Widom, 2007). Studies examining the role of timing of adversity exposure have typically focused on childhood maltreatment, showing that, the earlier the exposure, the worse the outcome (Dunn et al., 2013; Heim and Binder, 2012; Kaplow and Widom, 2007). Studies investigating the effect of other adversities, and cumulative adversity are rare (Björkenstam et al., 2016). Furthermore, longitudinal studies with formally representative samples examining these associations are scarce (Mossakowski, 2015; Reiss, 2013). This is unfortunate since longitudinal studies offer a framework for studying long-term health effects of exposures during gestation, childhood, adolescence and later adult life, emphasizing the importance of time and timing in understanding the links between exposure and outcome (Lynch and Smith, 2005).

We address these limitations using a nationally representative panel survey of the US population. We examine five different childhood social adversities (single-parent household, poverty, household receiving public assistance, long-term parental unemployment, and residential instability) and their association with adolescent depressive symptoms. The adversities chosen were based on prior research that has shown them to have significant adverse health or social implications (Duncan and Brooks-Gunn, 1997; Gilman et al., 2003; Najman et al., 2010; Wadsworth and Butterworth, 2006; Weitoft et al., 2003). Our research questions were:

1. Is there an association between a range of childhood social adversities and adolescent depressive symptoms?
2. Does the association between adversities and adolescent depressive symptoms differ by age at exposure to childhood social adversity?
3. Does cumulative exposure to childhood social adversity increase the risk for adolescent depressive symptoms?

2. Methods

2.1. Study population

We used data from the three waves of the Child Development Supplement (CDS-I through CDS-III) survey in years 1997, 2002 and 2007, respectively, which have been part of the Panel Study of Income Dynamics (PSID) in the US. The PSID is a longitudinal study that began in 1968 with a nationally representative sample of about 5000 families in the US, with an oversample of African American and low-income families (McGonagle et al., 2012). The household heads (defined by PSID as the person, at least 16 years old, with the most financial responsibility in the household) were re-interviewed annually from 1969 to 1997 and every other year thereafter.

In 1997, the PSID began collecting additional data on families that had children under the age of 13, known as the CDS survey. All PSID families with a child aged 0–12 in calendar year 1997 were invited to participate and up to two children were chosen at random from each eligible family. Data were collected for 3563 children residing in 2380 households that constitute our study population (CDS-I). Study participants and their families were re-interviewed in 2002–2003 (CDS-II) and 2007–2008 (CDS-III), until they reached the age of 18 years. Parental reports were collected from the child's primary caregiver, who had to have been living with the child. In over 90% of cases, this is the child's biological mother. The children were interviewed from age 3.

Of the 3563 children included in CDS in 1997, we excluded those born after 1995 (n=588), as they were too young to be eligible to respond to the adolescent depression measures at follow-up. In addition we excluded those for whom we did not have information about adolescent depressive symptoms (n=752). Thus, our final analytical sample included 2223 children born between 1985 and 1995. Of these individuals, 96% were re-interviewed during 2002–2003 (CDS-II), and 58% during 2007–2008 (CDS-III).

2.2. Measures

2.2.1. Childhood social adversity

Information on childhood social adversity when the children were between the ages of 0 and 12 years was obtained from the original PSID studies. Five adversities chosen because of their association with poor mental health in prior research (Duncan and Brooks-Gunn, 1997; Gilman et al., 2003; Najman et al., 2010; Wadsworth and Butterworth, 2006; Weitoft et al., 2003) were included in the analyses. Based on the child developmental stage theories (Schaffer and Kipp, 2014), and given the size of the sample, we chose two exposure periods: 0–6.9 years (infancy and early childhood), and 7–12 years (middle childhood).

2.2.1.1. Single-parent household. In each PSID wave, the family head was asked whether or not she/he lived with a partner. If the respondent was a primary caregiver with no husband/wife/cohabiter, this indicator was coded as 1.

2.2.1.2. Poverty. The PSID consistently collects data on all income sources. A common practice to capture poverty is to use a size-adjusted measure of family income, typically the “income-to-needs-ratio”. This measure is obtained by dividing total household income by the official US poverty threshold corresponding to the size of the given household (Duncan and Brooks-Gunn, 1997; Institute for Research on Poverty, 2016). The conventional income-to-needs ratio is based only on wages and salaries and therefore a ratio of 1.00 in PSID can result in an underestimate of the number of poor households (Stevens, 1994). Therefore we used a higher poverty threshold of 1.25 and below to indicate a household in poverty.

2.2.1.3. Long-term household public assistance recipiency. A child was classified as a recipient if her/his family had received public assistance, including food stamps, AFDC/TANF, Supplementary Security Income (SSI), Social Security Income or other welfare for at least 6 months in the preceding year.