Maternal depressive symptoms and adolescent academic attainment: Testing pathways via parenting and self-control

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A B S T R A C T

Maternal depression is associated with reduced academic attainment in children, however, it is not clear how this association comes about. Depressive symptoms are associated with impairment in social roles including parenting. Children's self-control is an important contributor to academic attainment and is influenced by parenting. We therefore hypothesised that impaired parenting and children's self-control may mediate links between maternal depression and children's academic attainment. Data were from a brief longitudinal study (3 waves) of UK children aged 11–12 years and their mothers. Higher maternal depressive symptoms at baseline were associated with lower academic attainment in children assessed one year later. There was evidence to support an indirect effect of maternal depressive symptoms on children's academic attainment through the mother-child and the father-child relationship which, in turn, reduced children's self-control. These influences were independent of socio-economic deprivation. A direct effect of maternal depression on children's academic attainment was also observed.

Depressive disorder and depressive symptoms are common and associated with impaired functioning in close interpersonal relationships such as those with romantic partners and offspring (Backenstrass et al., 2006; Burke, 2003; Kessler et al., 2005; Lerner & Henke, 2008; Weissman, Paykel, Siegel, & Klerman, 1971). The children of depressed mothers are at increased risk of maladaptive developmental outcomes including mental health problems and lower educational attainment (Goodman & Gotlib, 1999; Rice, Harold, & Thapar, 2002; Shen et al., 2016). While many studies have assessed the link between maternal depression and children's mental health problems, there has been less work exploring how maternal depression may affect children's educational outcomes (Goodman et al., 2011).

Maternal depression has been shown to increase the likelihood of poor educational outcomes in children. Thus, compared to healthy controls or those reporting low levels of depressive symptoms, the children of mothers with depression have lower grade-point averages and test performance (Hammen et al., 1987; Tannenbaum & Forehand, 1994). Maternal depression has also been linked with lower child IQ which is an important contributor to educational attainment (Hay, Pawlby, Waters, & Sharp, 2008; Milgrom, Westley, & Gemmill, 2004). Most recently, in a sample of one million Swedish children, maternal depressive disorder at any point from birth to late adolescence was associated with lower grades in offspring at the end of compulsory education (Shen et al., 2016). That study found that girls' academic performance was affected more when offspring had a depressed mother (Shen et al.,...
This finding contrasted with earlier literature based on smaller samples which found that boys tended to be more negatively affected by maternal depression (Ensminger, Hanson, Riley, & Juon, 2003; Hay et al., 2008; Milgrom et al., 2004; Murray et al., 2006).

It remains unclear how maternal depression increases the likelihood of poor educational outcomes in children. One possible contributory factor is the parent-child relationship. Depressed mothers may have difficulties establishing good quality relationships with their children and adequately responding to their children's social and emotional needs (Beardslee, Versage, & Gladstone, 1998). Indeed, depressed mothers' interactions with their children tend to be less positive, warm and responsive and more negative and hostile (Lovejoy, Graczyk, O'Hare, & Neuman, 2000). Mothers experiencing depression and depressive symptoms are also more likely to use negative or unconstructive methods of control (e.g., Cummings, Keller, & Davies, 2005) and remission of maternal depression following effective antidepressant treatment is associated with greater warmth and acceptance exhibited towards children (Foster et al., 2008; Weissman et al., 2015). Positive parent-child relationships in general, and warm-responsive parenting styles in particular, have been linked to higher academic attainment in children (e.g., Estrada, Arsenio, Hess, & Holloway, 1987; Hirsh-Pasek & Burchinal, 2006) and therefore impaired parenting may explain the negative effects of maternal depression on children's educational outcomes.

There is evidence that current maternal depression results in lower quality support and less cognitive stimulation during joint parent-child tasks, such as homework, and that this may contribute to children's lower academic achievement (Murray et al., 2006, 2010). It seems likely therefore that the effect of maternal depression on children's cognitive ability arises, in part, due to disruptions to the social interactions between the mother and child that normally facilitate cognitive development including interactions that display and promote problem-solving and attentional control (Hay & Kumar, 1995; Jensen, Dumontheil, & Barker, 2014). For instance, children's self-control is related to the quality of the parent-child relationship and to children's academic success (e.g., Duckworth & Seligman, 2005; Moilanen, Rasmussen, & Padilla-Walker, 2014; Ng-Knight et al., 2016). Warm-responsive parenting is thought to facilitate self-control by providing a stable emotional base from which children can engage with difficult and challenging tasks, while also supporting the learning of socially desirable behaviours by facilitating communication between parent and child (Alessandri & Lewis, 1996; Estrada et al., 1987). Conversely, hostile parents provide poor role-models for exercising self-control and hostility arouses negative emotions in children which interfere with the cognitive processes underlying self-control (Bandura, 1977; Moilanen et al., 2014; Pessoa, 2009). We set out to test the hypothesis that maternal depression influenced adolescent educational attainment through effects on the child's self-regulatory abilities which come about, at least partly, due to disruptions to the parent-child relationship, extending previous work by examining both mother-child and father-child relationships.

Research on maternal depression has largely focused on maternal parenting, but it is important to acknowledge that the mother-child relationship does not occur in isolation. A systems theory perspective suggests that the impaired interpersonal style associated with maternal depression will not only affect interactions with children, but also interactions among other family members (Cox & Paley, 1997). A significant component of the family system that is often overlooked in research into maternal depression is the father (e.g., Goodman & Gotlib, 1999). This is likely to be important because supportive parenting from fathers exerts effects independent of maternal parenting on children's cognitive development and academic achievement (Flouri & Buchanan, 2004). Studies of young children also show positive father-child relationships predicting higher self-control (Kochanska, Aksan, Prisco, & Adams, 2008) pointing to the need to clarify if such associations exist in older samples. As such, while it has been established that features of the depressed mother's relationship with her partner, such as levels of conflict and support, will influence her own parenting (e.g., Shelton & Harold, 2008), here, we turn attention to how maternal depressive symptoms might affect the father's parenting ability.

Whilst fathers make an important contribution to children's cognitive and educational outcomes (Flouri & Buchanan, 2004; Kim & Hill, 2015) the limited literature available to date has yielded mixed results on how mothers' depression influences fathers' parenting. Some research has found that children's interactions with their fathers may not be adversely affected by maternal depression (Hossain et al., 1994) and that fathers may even play a compensatory role by being more caring towards children when mothers are depressed (Hops et al., 1987). Other research has found that if one parent is depressed there are negative implications for the non-depressed parents' relationship with their child (Jacob & Johnson, 1997; Paulson, Dauber, & Leiferman, 2006). In sum, there is good reason to believe that maternal depression impairs mothers' parenting but further evidence is required to establish if there are negative effects on fathers' parenting of young adolescents.

1. The present study

This study aimed to expand understanding of the association between maternal depressive symptoms and children's academic attainment in adolescence, by examining whether parenting and children's self-control act as mediating processes. We first tested the magnitude of the effect between maternal depressive symptoms and children's academic attainment and then tested two explanatory hypotheses:

1) The association between maternal depressive symptoms and children's academic attainment is partially mediated through maternal parenting and children's self-control (see conceptual model shown in Fig. 1).

2) The association between maternal depressive symptoms and children's academic attainment is partially mediated through paternal parenting and children's self-control.

We additionally examined the effect of: (i) socio-economic disadvantage, (ii) child sex, and (iii) whether fathers were resident in the family home. We ran additional models which controlled for the potential confounding influence of socio-economic disadvantage.
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