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Parents' relationship quality, mother-child relations and children's behaviour problems: evidence from the UK Millennium Cohort Study

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Abstract

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Introduction

In the UK, longer standing family policies have been concerned with improving family incomes and assisting parents to balance work and family life but from the late 1990's family policy also came to focus on parenting as a vehicle for enhancing children's well-being (Klett-Davies, 2012). For example, Sure Start Centres ran parenting programmes with the aim of improving the quality of parenting and parent-child relations. Meanwhile other countries, such as the United States and Norway developed policies to promote partners' relationship quality in order to reduce the number of children experiencing parental divorce and conflict in order to increase children's well-being (Helskong, 2009; Hawkins, 2009) whereas it was not until late 2000s that relationship support policies moved on to the political agenda in the UK (Klett-Davies, 2012)

A possible explanation for the difference in focus of family policies to promote children's well-being in the UK compared to the US (Cowan and Cowan, 2008) was that a large body of American research had shown a clear association between parents' relationship quality and child adjustment problems (see Buehler et al, 1997; Cummings and Davies, 2010) whereas there were very few British or European studies that had examined this link (e.g. Harold et al, 2004; Baviskar, 2010)

An important focus of the US literature was on whether partners' relationship quality had a direct effect on children's adjustment or whether its effect was explained by parenting behaviour. There are various theories and frameworks, which suggest that marital conflict and marital quality can influence children's adjustment not only indirectly, through parent-child interactions, but also directly. So, for example, according to the cognitive-contextual model proposed by Gryck & Fincham, (1990), one of the important direct mechanisms of the effect of parental conflict on children's behaviour is modelling. Children whose parents resolve their problems through aggressive behaviour learn that aggression is an acceptable way of dealing with

disagreements and may act aggressively when interacting with their peers (Gryck & Fincham 1990). Alternatively, emotional security theory (Davies & Cumming 1994) suggests that parental conflict undermines children's emotional security, which in turn affects children's adjustment. Children's emotional security can be influenced not only by the quality of the parent-child relationship, but also by the quality of the parents' relationship, since children may view their attachment to their parents as secure, but may be insecure about their parents' relationship (Davies & Cumming 1994). The degree of emotional security felt by children can affect the regulation of their own emotions and different patterns of emotional regulation can predict differences in, for example, children's aggressiveness (e.g. Cummings 1987; El-Sheikh *et al.* 1989).

To date there is mixed evidence in the empirical literature on the direct and indirect effects of parents' relationship quality on children's behaviour. Some studies find that parent-child interactions fully mediate the effect of parents' relationship quality on children's adjustment (e.g. Gerard *et al.*, 2006), whilst others (e.g. Buehler and Gerard, 2002) show that it only explains part of the effect. Furthermore, much of what is known about the relations between parents' relationship quality, parent-child interactions and children's adjustment is based on cross-sectional studies, and the few extant longitudinal studies are based on small samples, which can affect the power of the statistical analysis (Gerard *et al.*, 2006; Shek, 2000). Additionally, much of the literature has focused on marital conflict as an indicator of marital quality. However, as Shek (2000) points out, marital conflict may be important from a clinical perspective, but it may not be a sensitive indicator for most marriages, where there is relatively little marital conflict.

It has also been suggested that positive parent-child interactions can protect children from the effect of their parents' relationship quality, and negative parent-child interactions can exacerbate this effect (Buehler *et al.*, 1994). A large body of research has examined the mediating role of parent-child interactions, but few studies have analysed whether the quality of parent-child interactions alters the relationship between parents' relationship quality and children's adjustment, and the findings have been mixed. Most studies that focus on the moderating role of parent-child conflict conclude that hostile parent-child interactions increase the risk of behavior problems associated with marital conflict (e.g. Buehler and Gerard, 2002; El-Sheikh and Elmore-Staton, 2004; Frosch & Mangelsdorf, 2001) whilst studies that analyse the moderating role of other dimensions of parenting do not find consistent evidence. For example, Frosch and Mangelsdorf (2001) and Formoso *et al.*, (2000) showed that positive parent-child interactions did not alter the association between parents' relationship quality and children's externalizing problems whereas Schoppe-Sullivan *et al.*, (2007) did not find evidence in favour of the moderating role of parental warmth. From a policy standpoint, it is useful to know to what extent parent-child interactions mediate or moderate the effect of partners' relationship quality on children's behaviour problems, in order to ascertain "whether intervention should be geared toward problems in the marital subsystem or tailored more specifically to aspects of the parent-child relationship that are vulnerable to ongoing marital hostility" (Gerard *et al.*, 2006; p. 953).

Little is also known about the associations between parents' relationship quality and children's well being beyond mainly white middle class married families on which most studies have been based. For example, research has rarely examined whether the effect of parents' relationship quality on children's adjustment differs by ethnicity. The very

few studies that have analysed the moderating effect of ethnicity have mainly focused on White, Black and Hispanic American children (e.g. Buehler et al, 1997; Bradford et al, 2008) and the findings have been inconsistent. Some studies show that the effect of marital conflict on well-being is similar across these three groups (e.g. Buehler et al, 1997; Bradford et al, 2008; El-Sheikh et al, 2008) whereas others find that it is stronger for White American children (e.g. Nievar and Luster, 2006).

A large body of research has shown that poverty and low socioeconomic status can affect children's behavior adjustment and parents' relationship quality (see Conger et al, 2010 for a review). However, whether family socioeconomic background moderates the effect of parents' relationship quality on children's well-being is less well established. Some studies have shown that the effect of parents' relationship quality is stronger in families with low socioeconomic status than in families with high socioeconomic status (e.g. Jouriles et al, 1991; Buehler et al, 1997; Buehler et al, 1998) whilst others show little difference by family socioeconomic characteristics (e.g. Gerard and Buehler, 1999; Bradford et al, 2008). A possible explanation for these mixed findings is that most of this research is based on non-representative small samples of mainly middle class parents.

There is also inconsistent evidence as to whether the effect of partners' relationship quality varies with a child's gender (for a review see Heinrichs et al, 2010). Prior research has also mainly focused on families composed of married natural parents. However, the number of children living in cohabiting two-parent families has increased dramatically in recent decades in Western countries (Kiernan, 2004) and studies of whether the association between parents' relationship quality and children's adjustment differs between married and cohabiting families are rare. But, there may be differences as there is evidence that cohabiting and marital unions may differ in terms of the degree of commitment between partners (Brown and Booth, 1996, Brown, 2000) which may impinge on relationship quality.

Much of the research in this area to date has largely been based on small, non representative, cross-sectional samples, and typically has only controlled for a limited number of potential confounders, and rarely have prior child behaviour problems been taken into account (Schoppe-Sullivan et al, 2007). In this study we use data from the UK Millennium Cohort Study (MCS), a nationally representative sample of children from different ethnic and socio-demographic backgrounds to examine: firstly the extent to which partners' relationship quality affects children's externalizing problems; secondly whether the quality of the mother-child relationship mediates and or moderates this effect; and thirdly whether the effect of partners' relationship quality differs according to the sex of the child, parent's marital status, household income and mother's education level and ethnic background.

Methods

Data

This study uses data from the first three waves of the Millennium Cohort Study (MCS). The first sweep (MCS1) was carried out in 2001-2, and contained information on 18,819 babies aged between 9 and 11 months old in 18,533 families. The families were followed up when the children were aged 3 and 5 years old. The response rates achieved for the second and third waves were 78 and 79 per cent respectively of the target sample

and 13,234 families (69 per cent of the total) responded at all three waves (Ketende, 2010).

The MCS sample design allowed for over-representation of families living in areas with high rates of child poverty or high proportions of ethnic minorities, which increased the power of the study to describe effects for these groups of families. The study was weighted to take into account the initial sampling design, adjusting for non-response in the recruitment of the original sample and sample attrition during the follow-up period to age 5. The study results are broadly representative for the United Kingdom (Plewis, 2007). For our analyses, we restricted the sample to married and cohabiting couples present at all three waves, which provided a working sample of 9649 children.

Outcome Variable: Externalising Behaviour

At the age 3 and age 5 interviews the main carer of the children (the vast majority were the child's mother) completed the 25-item Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997). The SDQ covers 5 different dimensions of children's behaviour: conduct problems, hyperactivity-inattention problems, emotional symptoms, peer problems, and prosocial behaviour. In this study, we focus on children's externalizing problems, derived from combining the conduct problems and hyperactivity-inattention scales. The items included at age 3 were: often fights, often has temper/tantrums, generally obedient, is restless/overactive, constantly fidgeting, easily distracted, can stop and think out before acting and sees tasks through to end, argumentative with adults, can be spiteful to others. At age 5, the final two items were replaced by often lies or cheats and steals from home, school or elsewhere. Each item was rated using a scale from 0 to 2 (not true, somewhat true, and certainly true) and the coding was reversed for the positive attributes. The responses were added together to provide a total score for externalizing problems. Only children with complete answers for all items were included in our analysis. The age 3 measure had a mean of 5.89 a Standard Deviation of 3.49 and a range from a minimum of 0 to a maximum of 19 and the age 5 measure had a mean of 4.07 a SD of 3.05 and minimum of 0 and a maximum of 20.

Focal variable: relationship quality

Relationship quality was derived from responses to the Golombok Rust Inventory of Marital State (GRIMS) (Rust et al, 1990) which is a psychometric instrument for the assessment of marital discord and the overall quality of a couple's relationship. The age 3 survey included four items from the GRIMS to which the mothers responded namely: my partner is usually sensitive to and aware of my needs; my partner doesn't seem to listen to me; sometimes I feel lonely even when I am with my partner; I suspect we may be on the brink of separation. There were several possible answers: 0) strongly agree; 1) agree; 2) neither agree nor disagree; 3) disagree; 4) strongly disagree and 5) can't say. "Can't say" responses were put to missing. We reversed the answers to the question item "my partner is usually sensitive to and aware of my needs". The answers to the four items were summed creating a scale with a minimum of 0 and a maximum of 16 and a meanⁱ of 3.52 and a SD of 2.89.

Mediating variables: maternal relations with the child

At the 3 year old survey, the main respondent (mainly the mother) was asked a series of questions about their relationship with their child based on the Pianta child parent relationship scale (Pianta, 1995). Seven items described the level of warmth in the relationship and seven described the level of conflict. The warmth items were: I share an affectionate, warm relationship with the Child; Child will seek comfort from me; Child values his/her relationship with me; When praised Child beams with pride; Child spontaneously shares information about himself/herself; It is easy to be in tune with what the Child is feeling; Child shares his/her feelings and experiences with me.

The conflict items were: Child and I always seem to be struggling with each other; Child easily becomes angry with me; Child remains angry or is resistant after being disciplined; Dealing with the Child drains my energy; When the Child wakes up in a bad mood, I know we're in for a long and difficult day; The Child's feelings towards me can be unpredictable or can change suddenly; The Child is sneaky or manipulative with me. Each item was scored as 1 definitely does not apply, 2 not really, 3 neutral, 4 applies sometimes, or 5 definitely applies. Can't say responses were considered as missing information. Scores were summed for mothers who had completed all the warmth items, which had a minimum of 0 and a maximum of 27. We created several categories of maternal warmth: lowest warmth (10.5 per cent per cent , values 0 to 23); low warmth (6.6 per cent, value 24); medium warmth (11.2 per cent, value 25); high warmth 18.9 per cent value 26); highest warmth (52.9 per cent , value 27)ⁱⁱ and missing cases on maternal warmth (3 per cent). Scores were also summed for parents who had completed all the conflict items, which had a minimum of 0 and a maximum of 28. Our categories of maternal conflict were: lowest conflict (19.8 per cent, values 0 to 3); low conflict (20.6 per cent, 4 to 6); medium conflict (30.5 per cent 7 to 11); high conflict (16.5 per cent, values 12 to 15); highest conflict (12.5 per cent values 15 to 28) and missing cases (1.6 per cent). We also, tested other categories of maternal warmth and conflict in our analyses but our findings pertained. We used categorical variables for these variables as the value 27 for maternal warmth, the highest maternal warmth score, had over half the cases. Additionally the use of categorical variables allowed the inclusion of a category for missing cases.

Covariates

To reduce potential sources of spurious correlation in our models, we controlled for a number of demographic, socioeconomic and family variables that have been found to be associated with parents' relationship quality (Amato et al, 2003; Amato et al, 1995) and children's externalizing problems (Kiernan and Huerta, 2008).

The covariates measured at the first survey when the child was 9 months old, included the sex of the cohort member (male (48.9 per cent) and female (51.1 per cent)); the mother's ethnicity (White (94.9 per cent), Pakistani or Bangladeshi (1.6 per cent), Indian (1.3 per cent), Black (1.04 per cent), Mixed (0.48 per cent), Other (0.67 per cent) and missing cases (0.3 per cent)); mother's educational qualifications (no qualifications (4.4 per cent); NVQ level 1 (6.0 per cent); NVQ level 2 (28.9 per cent); NVQ level 3 (15.5 per cent), NVQ level 4 or 5 (45.2 per cent)) and missing cases (0.08 per cent). Data on household income came from the age 3 survey. Our measure is a poverty ratio for the household which compares a household's equivalized income relative to the income it would need to be above the poverty line. It was calculated by dividing the equivalized household income by the appropriate equivalized poverty threshold for a household of a given type. Thus a household living exactly on the poverty line would have a poverty ratio of one and a household with half the income

required to be on the poverty line would have poverty ratio of 0.5. For this analysis we defined poverty as having less than 60 per cent of the national median equivalized household income. Poverty thresholds were taken from the Households Below Average Income report published annually by the UK government (DWP 2009). This measure had a mean of 2.26 a SD of 1.32 and minimum value of 0.08 and maximum of 6.81. Parents marital status included the following categories: married at both the 9 month old and age 3 survey (77 per cent); cohabiting at the 9-month old survey but married by the time of the age 3 survey (7 per cent); cohabiting at the time of both these two surveys (16 per cent), and missing cases (0.6 per cent). We also included a measure of whether or not the mother had experienced parental separation or divorce during her own childhood; 26 per cent had done so.

Analysis Plan and Sample Characteristics.

First we investigated whether parents' relationship quality was significantly related to children's externalizing problems from both a cross-sectional and longitudinal perspective. To this end we carried out a series of regression analyses to test whether the effect of parents' relationship quality at age 3 on externalizing problems at age 3 (the cross-sectional effect) and at age 5 (the longitudinal effect) was significant when socioeconomic characteristics of the family were taken into account. Additionally we performed a stricter test of the longitudinal effect of parents' relationship quality at age 3 on children's externalizing problems age 5 by taking into account children's externalizing problems at age 3.

To preview, having demonstrated that parents' relationship quality has a significant cross-sectional and longitudinal effect on children's externalizing problems, our aim was to test for mediation by constructing a series of regression equations predicting children's externalizing problems at ages 3 and 5 years from parents' relationship quality and mother-child relations at age 3. If after controlling for the effects of maternal warmth and conflict, parents' relationship quality still explained a significant part of the variance in children's externalizing problems this would imply that parents' relationship quality has a significant direct effect on children's well-being which is independent of mother-child relationship quality. We also tested whether maternal warmth and conflict at age 3 moderated the effect of parents' relationship quality on children's externalizing problems at ages 3 and at age 5 years. For children's externalizing problems at age 3 and at age 5 we created two models in which we introduced the main effects of maternal warmth and parents' relationship quality and the interaction term between them. We carried out a similar analysis for maternal conflict.

Finally, we examined whether the effect of partners' relationship quality differed by the sex of the child, the parents' marital status, family poverty and the mother's experience of parental divorce, her educational attainment and ethnic background.

We restricted the sample to married or cohabiting couples who were present at all three waves, the 9 month and ages 3 and 5 surveys, which gave a working sample of 9649 children. For the cross-sectional analyses, our sample was reduced to 6169 cases arising from missing cases on the continuous variables; externalizing problems at age 3, the family poverty ratio and parents' relationship quality. For the longitudinal analyses our sample was 6763 cases after excluding missing cases on the continuous variables; externalizing problems at age 5, family poverty ratio and parents' relationship quality. When externalizing measures at age 3 were included in the longitudinal models, the sample size further reduced to 5820. Additional analyses of the missing cases (available

upon request) showed that there were few differences on the focal variables between children with some missing values and those included in the analysis samples.

Results

What is the association between parents' relationship quality and children's externalizing problems

From Table 1, Model 1 we see that there is a positive and significant association between parents' relationship quality at age 3 and children's externalizing problems at this age. After taking into account the family and child characteristics, shown in Model 2, the effect of relationship quality is only reduced by around 12 per cent, and remains significant. Thus, our set of control variables explain only a small part of the effect.

TABLE 1 ABOUT HERE

Similar findings were seen for the longitudinal analyses. From Model 3 we see that the effect of parents' relationship quality at age 3 on children's externalizing problems at age 5 is positive and significant and this effect is only slightly reduced when the set of control variables are taken into account in Model 4. In Model 5 a stricter test of the effect of parents' relationship quality at age 3 on children's externalizing problems at age 5 takes into account children's previous externalising behaviour scores. Model 5 shows that the coefficient of parents' relationship quality at age 3 falls sharply, by around 65 per cent, when children's externalizing problems at age 3 are also taken into account, but it still remains positive and significant. A reduction is to be seen in the number of cases when externalizing problems at age 3 is introduced in Model 5, but additional analyses (available upon request) show that the decline in the effect of parents' relationship quality was not due to the decrease in sample size.

Taking children's earlier emotional state into account reduces the possibility that pre-existing differences between families with respect to relationship problems explains the association between parental relationship quality at age 3 and children's externalizing problems at age 5. Nevertheless, it is important to note that in model 5, the effect of parents relationship quality at age 3 is the direct effect of this variable, and it is reasonable to assume that children's externalizing problems at age 3 also mediates part of the effect of parents' relationship quality on children's externalizing problems at age 5. Similarly, the coefficients for most of the socio-demographic background variables such as, the poverty ratio, and mother's educational level are also substantially reduced when children's previous externalising behaviour scores are considered. Thus, externalizing problems at age 3 may also explain part of the effects of socio-demographic variables on externalizing problems at age 5.

FIGURE 1 ABOUT HERE

It is clear from both our cross-sectional and longitudinal analyses that children whose parents have poorer relationship quality have more externalizing problems than children whose parents have better relationship quality. Figure I illustrates this and shows clear differences in children's externalizing problems depending on the level of parents' relationship quality. Children with the lowest level of parents' relationship quality have 3.52 points more behaviour problems at age 3 and 2.72 more at age 5 than children that have the highest level.

Does the quality of mother-child relations mediate the effect of parents' relationship quality on children's externalising behaviour?

Parents' relationship quality has a significant effect on the quality of the mother-child relationshipⁱⁱⁱ and the models in Table 2 show that maternal warmth and conflict have significant effects on children's externalizing behaviour. These findings suggest that mother-child relations have the potential to mediate the effect of parents' relationship quality on children's externalizing problems. The question then arises as to what extent maternal warmth and conflict mediate the effect of parents' relationship quality.

For children's externalizing problems at age 3, the effect of parents' relationship quality decreases by around 18 per cent and 64 per cent when the degree of maternal warmth and conflict are included in Models 2 and 3 respectively. When both mediating variables are taken into account in Model 4, they explain a substantial part of the effect of parents' relationship quality (around 68 per cent), but a cross-sectional direct effect at age 3 remains significant.

TABLE 2 ABOUT HERE

Similar findings were obtained for children's externalizing problems at age 5. Models 6 and 7 in Table 2 show a decline in the effect of parents' relationship quality of around 18 per cent when maternal warmth is considered and around 47 per cent when maternal conflict is taken into account. Model 8 shows that both these factors mediate around 53 per cent of the effect of parents' relationship quality at age 3 on externalizing problems at age 5, but a longitudinal direct effect also remains significant. In addition, Model 9 shows that this effect is still positive and significant even after taking into account maternal relations and children's earlier emotional well-being. Overall our findings show that maternal conflict mediates a greater proportion of the effects of parents' relationship quality than maternal warmth; and though both of these mediating factors explain a substantial part of the effects of parents' relationship quality, cross-sectional and longitudinal direct effects of parents' relationship quality remain significant.

Does the quality of the mother-child relationship moderate the detrimental effects of parents' relationship quality?

To test whether maternal warmth and conflict moderate the effect of parents' relationship quality on children's externalising problems, we included the main effects for maternal warmth and conflict and the interaction between maternal warmth and conflict and parents' relationship quality in our models. Table 3 shows that for externalizing problems at ages 3 and 5, there is no significant interaction between parents' relationship quality and maternal warmth (Models 1 and 3). This indicates that both parental relationship quality and maternal warmth have significant independent effects on children's externalizing problems and that they work additively, i.e. having difficulties in both is worse than having them in only one. It would appear from this analysis that having a mother who exhibits more warmth towards her child does not reduce the detrimental effects of parents' relationship problems on children's behaviour.

TABLE 3 ABOUT HERE

With regard to whether maternal conflict exacerbates the effect of parents' relationship problems we see from Models 2 and 4 in Table 3 that the interaction between the highest level of maternal conflict and parents' relationship quality is significant and positive for children's externalizing problems at ages 3 and 5 years but the interactions between parents' relationship quality and the other categories of maternal conflict are not significant in any of the models. In addition we see that the interaction between parents' relationship quality and the highest level of conflict remains significant when earlier externalizing problems are included (Model 5). The coefficient of parents' relationship quality on externalizing problems at age 5 (Model 4) is $b = 0.16^{iv}$ (significant at the 1 per cent level) when there is the highest level of maternal conflict and $b = 0.04$ (significant at the 10 per cent level) when it is at the lowest level^v. Thus the harmful effects of parents' relationship problems are stronger for children when there is a high level of conflict in the mother-child relationship.

FIGURE 2 ABOUT HERE

Figure 2 illustrates this. Among children with the highest level of maternal conflict, we see that those with the lowest level of parents' relationship quality have 2.56 points more behaviour problems at age 5 than those with the highest level. In contrast, among children with the lowest level of maternal conflict, the difference between those that have the lowest and the highest level of parents' relationship quality is only 0.64 points.

Figure 2 also shows that there are fewer differences in externalizing problems between children with the highest and the lowest level of maternal conflict where parents have a good relationship quality. Among children with the highest level of parents' relationship quality, those that have the highest level of maternal conflict have 3 points more behaviour problems at age 5 than children with the lowest level, whilst amongst children with the lowest level of parents' relationship quality there is a difference of 4.9 points. This suggests that the quality of the parents' relationship may be a protective factor for children's well-being when there is high-level conflict in the mother-child relationship.

Is the effect of parents' relationship quality at age 3 moderated by background characteristics?

Our analyses included controls for a range of background factors known to be related to partnership quality and parenting. In the next stage of our analysis we tested for interactions between parents' relationship quality and our set of control variables. Most interactions (not displayed) between parents' relationship quality and family characteristics including mother's education, her ethnicity and the type of marital union, mother's experience of parental divorce and child's gender, were not significant in any of the models^{vi}. This suggests that parent's relationship quality is an important determinant of well-being for children with different family backgrounds.

In contrast, the interaction between parents' relationship quality and family poverty was negative and significant in all the models. For children's externalizing problems at age 3 (Model 1 in Table 4) the effect of parents' relationship quality was 0.22 for children with a medium level on the poverty ratio and 0.25 and 0.18 for poorer and richer children respectively. For children's externalizing problems at age 5, the interaction was also significant (Model 4 in Table 4) and similar values are to be seen: 0.16 for children with a medium level on the poverty ratio, 0.19 for poor children and 0.14 for

richer children^{vii}. When children's externalizing problems at age 3 are taken into account (Model 5), the interaction is significant, but at the 10 per cent level. The thrust of these results is that the effect of parents' relationship quality is more important for poorer children than for richer children.

TABLE 4 ABOUT HERE

Figure 3 further illustrates this showing that among poor children there are more differences on externalizing problems at age 5 depending on the degree of parents' relationship quality than there is among richer children. Poor children with the lowest level of parents' relationship quality have an externalizing score of 7.21 while poor children with the highest level have a score of 4.16; a 3 point difference. In contrast, among rich children, those with the lowest level of parents' relationship quality have an externalizing score of 6.16 and those with the highest level have a score of 4.01; a difference of 2.15 points.

FIGURE 3 ABOUT HERE

Figure 3 also shows that poor and richer children have similar levels of externalizing problems if their parents have good relationship quality. Among children with parents with the highest level of relationship quality, there is only a difference of 0.15 points on externalizing problems between rich and poor children while among children with the lowest level of parents' relationship quality this difference is around one point. Overall these results suggest that good relationship quality is a protective factor for children in a context of family poverty and that the harmful effects of poor relationship quality are exacerbated by family poverty.

Discussion

Most research on parents' relationship quality has been carried out on US families, and the few European studies that exist are largely based on cross-sectional and non-nationally representative samples of the population. This study expands on previous research in using a nationally representative longitudinal survey, the UK Millennium Cohort Study, to examine the interrelations between parents' relationship quality and the quality of mother-child relations with regard to young children's externalizing problems at both ages 3 and 5 years. We found evidence of a clear association between parents' relationship quality and children's externalizing problems, even after controlling for prior behaviour problems and other potentially confounding factors. We found that the effect of parents' relationship quality on the emotional well-being of young children was not fully explained by the quality of the mother-child relationship, and a direct effect for parental relationship quality remained significant. However, contrary to what might have been expected the detrimental effect of parents' relationship problems was not reduced if the mother reported a warm relationship with her child. This finding is consistent with that of Schoppe-Sullivan et al, (2007) but differs from that of Frosch and Mangelsdorf (2001). Our results with respect to maternal conflict are in accordance with the evidence that parent-child conflict and negative parenting behaviours can increase the risk of children's behaviour problems associated with parents' relationship problems (e.g. Frosch & Mangelsdorf, 2001; El-Sheikh and Elmore-Staton, 2004; Buelher and Gerard, 2002). Additionally, we also showed that positive relationship quality can be a protective factor when there is a high-level conflict

in the mother-child relationship. Our findings also suggest that both types of relationship problems partner and mother-child ones are important and related, and a policy that only focuses on one to the exclusion of the other is likely to be less effective in improving children's well-being.

Unlike most previous research, we also tested whether associations differed by socio-demographic characteristics. We found that the effect of parents' relationship quality was similar for children whose mothers had different levels of educational attainment, and in line with some earlier studies did not find evidence that this association differed by mother's ethnic background (Buelher et al, 1997; Buehler and Gerard, 2002; Bradford et al, 2003, 2008) or the gender of the child (Buelher and Gerard, 2002; Davies and Lindsay, 2001). Our study also included a high proportion of children living in cohabiting families and our results indicated that the association between parents' relationship quality and children's externalizing problems was similar for married and cohabiting families. Previous research on the potential moderating role of family income and poverty obtained inconsistent results but had several limitations, such as being based on small samples or only including middle class families (e.g. Bradford et al, 2008). In this study we were able to analyse the interactions between family poverty and parents' relationship quality for a large national sample, which included a high proportion of children from disadvantaged families. In line with Juries, et al, (1991) Buehler et al, (1997) we found evidence that the effect of parents' relationship quality was greater for poorer children than for children living in wealthier families. Thus, having parents with good relationship quality was particularly protective for children living in poverty.

Although the current study addressed several weakness of past research, it also has limitations. We only explored the mediating and moderating role of one dimension of parenting, i.e. the quality of the mother-child relationship. Our research design did not take into account the possible reciprocal effects between children's behaviour and parents' relationship quality as some studies suggest that children's behaviour has an impact on couple's functioning (see Heinrichs et al, (2010) for a review). Further research would benefit from including other parenting dimensions in order to provide a fuller picture of the interrelations between parenting, parents' relationship quality and children's adjustment and from considering potential reciprocal rather than only bidirectional influences from parents to children (Heinrichs et al, 2010). Other limitations relate to our measure of partners' relationship quality. This measure, due to interview time constraints, only included four items from the twenty-eight in the Golombok Rust Inventory of Marital State (Rust et al, 1990) and we only examined maternal responses, which may be insufficient to capture the level of parent's relationship quality, since important gender differences in the reporting of marital quality have been found (Amato and Rogers, 1997). A more comprehensive measure of partners' relationship quality, based on answers by both parents and which included information on the duration of any relationship problems would have enhanced our study. We should also bear in mind that the measures of parents' relationship quality, mother child relations and children's externalizing problems were all based on mother's report, and it is possible that mothers who have problems in their relationship with their partners may report more negatively on their relations with their child and on the extent of their children's behaviour problems. As with most longitudinal studies sample attrition is a problem and families of children with more disadvantaged backgrounds tend to be over-represented amongst the missing cases, which may introduce biases. However, our main finding that parents' relationship quality has an important

longitudinal and cross-sectional effect on children's externalizing problems is probably not overestimated since our results show that the effect of parents' relationship is similar for children from different socioeconomic backgrounds and is even stronger for poor children who are the most likely to be lost from the study.

In conclusion, the results from this study suggest that the recent policy focus on parental relationships is an important step forward for enhancing children's emotional well being and that programmes that enhance parental relationships are likely to be beneficial for children from different socio-economic backgrounds and especially for poor children. Positive parental relations can be protective in a context of family poverty and need to be taken into account in anti-poverty strategies through integrated services focused on both family poverty and family relations such as the quality of parents' relationship and the quality of parent-child relations.

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ⁱ Means, standard deviations and percentages presented in this section are computed with the sample used for the longitudinal analyses (N=6763) (see the section “Analyses plan and sample characteristics” below). The descriptive results computed with the sample used for the cross-sectional analyses (6169) were very similar.

ⁱⁱPercentages for categorical variables are computed excluding missing cases.

ⁱⁱⁱAdditional logistic regression analyses showed that the effect of parents' relationship quality on highest maternal warmth was $b=-0.9$ ($p=0.001$) and the effect of parents' relationship quality on highest maternal conflict was $b=0.16$ ($p=0.001$).

^{iv}The interaction effect of partners' relationship quality and highest level of maternal conflict is $b=0.12$. The main effect of parents' relationship is $b=0.04$ which is the effect of parents' relationship quality for the reference category (lowest level of maternal conflict). In order to obtain the effect of parents' relationship quality for children with the highest level of maternal conflict, we sum the main effect of parents relationship quality, $b=0.04$ and the interaction effect, $b=0.12$ to give $b=0.16$.

^vAt age 3, the effect of parents' relationship quality is 0.14 ($p < 0.001$) and 0.05 ($p < 0.05$) for children with the lowest and highest level of maternal conflict.

^{vi}At age 3, the interaction between parents' relationship quality and having a mother in the other ethnic background category was significant, but negative. ($b=-0.32$, $p=0.02$). It is difficult to interpret this interaction due to the heterogeneity of ethnic backgrounds included in this "other" category.

^{vii}The mean of the poverty ratio was 2.29 at age 3 and 2.26 at age 5 and the standard deviation was 1.32 at both ages. We take children that have a medium level on the poverty ratio as the mean value, poor children have one standard deviation below the mean ($2.29 - 1.32 = 0.97$) and the richer children one standard deviation above the mean ($2.29 + 1.32 = 3.61$). The interaction effect of partners' relationship quality and the family poverty ratio was -0.03 . The effect of parents' relationship quality was calculated as follows: for children with the medium level of poverty we multiplied the interaction effect of -0.03 by 2.29 and added the effect of partners' relationship quality ($b=0.28$); for poor children, we multiplied the effect of -0.03 by 0.97, and added the effect of partners' relationship quality ($b=0.28$); for the richer children, we multiplied the effect of -0.03 by 3.61, and added the effect of partners' relationship quality ($b=0.28$).