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The pathway from grandparental support with childcare in the early years to child socioemotional outcomes in middle childhood: evidence from the Millennium Cohort Study

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ABSTRACT

We examined the pathway from grandparental childcare support at age 3 to child social and emotional outcomes at age 7 through maternal mental health and mother–child relationship at age 3 in a sample of n = 1495 biological mothers and their children from the UK's Millennium Cohort Study. Structural equation modelling showed that time spent in the care of grandparents at age 3 was not associated with the child's social and emotional outcomes at age 7 via maternal psychological distress or mother–child conflict and mother–child closeness. Maternal psychological distress at age 3 was associated with poor child social and emotional outcomes at age 7 both directly and indirectly via mother–child conflict and mother–child closeness. In the early years, grandparental childcare, as primary form of childcare arrangement, may not be significantly associated with maternal mental wellbeing or parenting capacity, which are both beneficial for child socioemotional development.

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Grandparenting; social and emotional outcomes; maternal mental health and wellbeing; mother–child relationship; social support; childcare; Millennium Cohort Study

Introduction

Children as young as three can exhibit clear signs of a range of social and emotional difficulties including anxiety, attention-deficit/hyperactivity, conduct problems, depression, and posttraumatic stress disorder (Egger & Angold, 2006). Not all children grow out of their difficulties and poor mental health in early childhood shows considerable stability. Children with a clinical diagnosis in the pre-school years (<6 years), can be 2.5–5 times more likely to have a psychiatric diagnosis in the middle school years (Bufferd, Dougherty, Carlson, Rose, & Klein, 2012; Luby, Gaffrey, Tillman, April, & Belden, 2014). Poor early childhood socioemotional wellbeing predicts significant setbacks in different domains of functioning across childhood, adolescence, and early adulthood. For instance, young children with high levels of externalizing difficulties were 10 times more likely to offend, be arrested/convicted, or imprisoned and 3.8 times more likely to depend on drugs at the age of 21–25 years old (Fergusson, Horwood, Ridder, & M, 2005). Boys with a chronic trajectory of early-onset depression were at higher risk of poor academic achievement and mental health difficulties in adulthood compared to their non-depressed peers (Dekker et al., 2007). Children and young people with unmet social and emotional needs are disproportionally excluded from schools (Sadler et al., 2018). For instance, children who were permanently excluded were 10 times less

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likely than those not excluded to achieve good grades in high school (Department for Education, 2019), and at higher risk of mental health difficulties in adolescence (Tejerina-Arreal et al., 2020). Because early childhood social and emotional difficulties can put children at higher risk of long-term behavior (Gutman, Joshi, & Schoon, 2019) and emotional difficulties (Sterba, Prinstein, & Cox, 2007), and of poor academic achievement (Deighton et al., 2018), it is important to understand how we can prevent them.

Children's early experiences with significant adults, like parents, relatives, and caregivers provide the foundation for a healthy social and emotional development. In the early years, caregivers are faced with many challenges which may affect their capacity to parent (Crnic, Gaze, & Hoffman, 2005). However, poor parenting such as the application of punitive and inconsistent disciplinary practices (Clayborne et al., 2021; Pinquart, 2017; Rajyaguru, Moran, Cordero, & Pearson, 2019) or parenting that is low in sensitivity (Deans, 2020) can put children at risk of social and emotional difficulties. To manage with the challenges of raising young children many parents seek support from the grandparents. Arguably, grandparental support should come in handy, especially for maternal caregivers who often undertake the bulk of childcare (Power, 2020). Research in family stress suggests that informal types of social support are associated with better maternal wellbeing which could promote more optimal parenting and, in turn, better child outcomes (Heberle, Krill, Briggs-Gowan, & Carter, 2015; Nunes et al., 2021). Accordingly, it is plausible, that grandparental support could benefit maternal mental health which could in turn positively influence maternal capacity to parent with long lasting effects for child social and emotional development. Previous studies in this area have shown that grandparental support is associated with several benefits for children and their parents, but it is unclear which types of grandparenting are beneficial (Sadruddin et al., 2019). Moreover, previous work on the pathway from grandparental support to child social and emotional outcomes examined the mediating effect of parenting practices but has not considered the effect of the parent–child relationship. The aim of the present study was to examine the pathway from grandparental support with childcare to children's long-term social and emotional outcomes through the mediating effects of maternal mental health and the mother–child relationship.

Informal social support and children's outcomes in the context of the Family Stress Model

The Family Stress Model (FSM) points out the damaging effects of within family stressors, such as financial difficulties, which influence children's outcomes through their impact on caregiver mental health and the parenting quality (Masarik & Conger, 2017). The FSM postulates that, over time, economic pressures can wear out caregivers' emotional reserves which in turn erode their parenting capacity. Financial stressors have been historically linked to poor children's short- and long-term social and emotional outcomes through poor maternal health and poor parenting (Bøe et al., 2014; Leinonen, Solantaus, & Punamäki, 2003; Mistry, Lowe, Benner, & Chien, 2008; Roubinov & Boyce, 2017; Sobolewski & Amato, 2005).

While the FSM and the empirical work that supports it both focus primarily on economic stressors, the model can be applicable to other types of environmental stressors (Masarik & Conger, 2017). Informal social support refers to the emotional (e.g. affection), informational (e.g. advice) or practical (e.g. financial assistance or help with daily tasks) support offered by close social networks of family, friends and neighbours to help an individual cope with stress (Álvarez, Byrne, & Rodrigo, 2021; Nunes et al., 2021). In the early years, parents must deal with a range of challenges involved in raising young children such as work life balance and allocation of caring responsibilities. Therefore, social support can be of significant importance for family wellbeing. Support from extended family and friends is associated with a range of positive caregiver outcomes (e.g. higher self-esteem and mental health and wellbeing, and lower parenting stress) (Luthar & Ciciolla, 2015; Parkes, Chambers, & Buston, 2021; Radey & McWey, 2021), which benefit children's social and emotional outcomes (Parkes & Sweeting, 2018). Additionally, several studies show that lack of access to support can be a direct source of poor child mental health and wellbeing in the short and long-term and indirectly via

poor parenting (Heberle et al., 2015; Leinonen et al., 2003; Parkes & Sweeting, 2018; Radey, 2018; Taylor & Conger, 2017).

Grandparenting as a form of informal social support and its impact on children's outcomes

Grandparenting is a common form of practical support for families with young children. In Europe, over 40% of grandparents provide regular childcare support (Glaser, Price, Montserrat, Di Gessa, & Tinker, 2013) while more than 50% of grandparents in England do so (Di Gessa, Zaninotto, & Glaser, 2020). According to the China Health and Retirement Longitudinal Study about 58% of urban families in China reported that the grandparents were involved in childcare (Ko & Hank, 2014). Kin support is an important determinant of successful child-rearing in industrialized populations. A systematic cross-cultural review has found that care involving grandparents is positively associated with a range of positive child outcomes (i.e. health, social and emotional wellbeing, cognitive development, educational attainment) (Sadruddin et al., 2019). However, the pathway through which grandparenting exerts its influence is constrained by the limited data we have on the *context of care* which refers to the intervening variables between grandparenting and child outcomes (Sadruddin et al., 2019). To understand the pathway better, we need an explicit conceptual framework which will generate specific hypothesis about how the pathway works to bring about change in children's outcomes and will account for influences exerted by the structural and interpersonal context that the pathway sits in (Sadruddin et al., 2019).

The pathway from grandparental support to children's social and emotional outcomes

The FSM offers a framework to examine the pathway from grandparental support to children's social and emotional outcomes. Grandparental childcare in the early years might alleviate the stresses experienced by parents and improve child outcomes through its effect on parent wellbeing which in turn influences parenting quality. Several studies have found immediate or indirect effects of grandparental support on the stresses related with the parenting role, child-rearing practices and children's outcomes. For instance, the Growing Up in Scotland population study found that less frequent grandparental contact in the early years mediated parenting role stress in mothers irrespective of education level, and in migrant mothers (Parkes, Sweeting, & Wight, 2015). Drawing data from the same study, Parkes and colleagues (2021) examined the effects of non-resident fathers and grandparental support in the early years (34 months) on children's middle childhood externalizing and internalizing difficulties in single mother headed families. Grandparental support was operationalized as support with childcare (e.g. care during the day) and financial support. After adjusting for a range of confounders, they found that high levels of grandparental support in early childhood buffered the adverse effects of weaker non-resident father support on children's outcomes in primary school. In a sample of US-based ethnic minority adolescent mothers, Poblete and Gee (2018) examined whether the relationship between partner support and change in coparenting quality (e.g. how parents collaborate with each other about raising their child) was moderated by grandparental support. They found that partner support was positively associated with changes in coparenting quality between 6 and 12 months postpartum when perceived grandparent social support was high, suggesting that grandparental support can promote coparenting quality. Craig & Churchill (2018) used data from a large household panel survey (Household, Income and Labour Dynamics in Australia), to examine the cross-sectional association of caregiver stress with the parenting role and with hours of nonparental care (i.e. care undertaken by either parent only, informal/family care only constituted of 70% grandparenting, formal care only, and mixed care) in a sample of employed parents of preschool children. They found that more informal/family-only care was the only childcare arrangement that was significantly associated with less parenting stress for both mothers and fathers, although for mothers the effect was stronger.

Despite the documented benefits of grandparental support for family and child wellbeing, to the best of our knowledge, we are aware of only one study which examined an explicit pathway from grandparental support to children's social and emotional outcomes while considering the role of some of the mediating factors implicated in the FSM. Morita, Saito, Nozaki, and Ihara (2021) used path analysis to examine the pathway from actual and potential grandparental support to child social and emotional difficulties via caregiver psychological distress (i.e., combination of parental stress with child rearing and parental depression) and parenting style (i.e. parental warmth and overprotection) in a 618 Japanese heterosexual couples of children between 2 and 6 years old. Grandparental involvement was conceptualized as the combination of parental perceived practical, emotional, and financial childcare support from children's grandparents. The findings showed that grandparental support impacted children's outcomes indirectly via maternal parenting style and not via either of the parents' psychological wellbeing. Additionally, grandparent support did not have a significant impact on paternal parenting style.

A challenge in the investigation of the pathway from grandparental support to children's outcomes is that the conceptualization of grandparental support varies significantly across studies (e.g. contact with grandparents, support with childcare, emotional and/or financial support) and often integrates several forms of support. The great variation and broad nature of previously used definitions prevent us from understanding which dimension of grandparental support is beneficial to children and families. To help disentangle which specific aspect of grandparental support influences parent and/or child outcomes, we need studies that use a narrower conceptualization of grandparental support (Sadruddin et al., 2019). Support with childcare is arguably the most readily accessible type of grandparental support and more than 50% of grandparents across the world spent time looking after their grandchildren (Di Gessa et al., 2020; Glaser et al., 2013; Ko & Hank, 2014). Even in highly egalitarian societies, mothers undertake the balk of childcare and domestic work while often juggling non-domestic work (Roskam et al., 2022). Responding to the competing demands of childcare, household chores and often paid non-domestic work, can lead to maternal burnout with the parenting role characterized by emotional exhaustion, loss of pleasure in the parenting role and emotional distancing from children (Roskam et al., 2022). Additionally, mothers of young children who report low support in the caregiving role are at higher risk of poor mental health (Mistry, Stevens, Sareen, De Vogli, & Halfon, 2007; Tanaka & Lowry, 2013). Therefore, it is plausible that the more grandparents are available to childcare the better maternal mental health is, particularly in the early years of caregiving, when children require constant support and supervision.

As well as the mediating effect of parenting in the pathway from grandparenting to child social and emotional outcomes, the investigation of the effect of parent–child relationships is important because positive relationships are critical for child socioemotional development. For instance, children and young people in positive attachment relationships often exhibit fewer behavior problems because of their capacity to manage emotional and interpersonal relationships successfully (Boldt, Kochanska, & Jonas, 2017; Fearon, Bakermans-Kranenburg, Van IJzendoorn, Lapsley, & Roisman, 2010). Furthermore, supportive and less conflictual parent–child relationships have been associated with lower levels of depressive symptoms in middle childhood (Yan, Schoppe-Sullivan, & Feng, 2019). Positive parent–child relationships characterized by parental emotional availability and warmth provide a context of socialization which can help children acquire important skills for social interactions and can even defuse the toxicity of poor parenting (Kochanska & Kim, 2012). This is because children in positive parent–child relationships are more likely to embrace parents' socialization efforts often through the processes of internalization of parental values and rules regarding social conventions and appropriate conduct (Kochanska, Boldt, & Goffin, 2019). The internalization process can minimize the chances for conflictual parent–child interactions that prompt children and parents engage in aversive behaviors. Overtime, the ongoing conflict leads to the escalation of aggressive behaviors in parents and children and limits the child's opportunity to develop prosocial behaviors (Lunkenheimer, Lichtwarck-Aschoff, Hollenstein, Kemp, & Granic, 2016). Although they tend to be associated across different developmental stages, parenting and

the parent–child relationship are not interchangeable constructs. For instance, it has been found that the quality of the parent–child relationship can make a unique contribution to the variance of children's outcomes independently of parenting behaviors (Kallitsoglou & Repana, 2021; Scott, Briskman, Woolgar, Humayun, & O'Connor, 2011). Despite the distinctive benefits of a good parent–child relationship for child outcomes its mediating effect on the pathway from grandparental support with childcare to child social and emotional outcomes has not been considered by previous research.

Another limitation of previous research reviewed for the purposes of this study is the lack of examination of the long-term impact of the pathway on children's social and emotional outcomes. The study by Morita et al. (2021) used a cross sectional design. Preschool emotional and behavior difficulties that persist in the primary years can interfere with academic achievement (Agnafors, Barmark, & Sydsjö, 2021). The combination increases children's risk of poor outcomes including antisocial behavior and school drop-out (Fergusson et al., 2005; Jakobsen, Fergusson, & Horwood, 2012). If grandparental support in the early years can contribute to reducing children's chances of poor social and emotional adjustment in the school years, prevention and early intervention models for child social and emotional development should consider how we can leverage grandparental role in caregiving and provide them with the necessary support.

Study aims and hypothesis

The current study was designed to examine the pathway from grandparental support to child long-term social and emotional outcomes through the mediating effect of maternal mental health and the mother–child relationship. We addressed several gaps in previous literature. First, to extend past research that used broad conceptualizations of grandparenting, we focused on grandparental support with childcare, a more specific definition that could provide information on specific aspects of grandparental support that could be beneficial for maternal mental health and wellbeing. Second, to extend previous research that focused on parenting as mediator, we examined the mother–child relationship that is known to be related to child social and emotional outcomes. Third, to extend previous cross-sectional research, we examined the long-term impact of the pathway to children's outcomes. Drawing on the FSM, we hypothesized that greater access to childcare support in the early years, operationalized as amount of time grandparents spend caring for children, would be associated with higher levels of maternal mental health which, in turn, could promote a more positive mother–child relationship that can have a long-lasting effect on children's social and emotional outcomes.

Method

Dataset

The Millennium Cohort Study (MCS) is an ongoing longitudinal cohort study covering the whole of the UK. Below we provide a brief description of the study based on the information presented in Connelly and Platt (2014). Participants for the MCS were selected from the eligible recruitment pool of 9 month and eligible for child benefits children born between 1st September and 31st August 2001 in England and Wales, and children born between 24th November 2000 and 11th January 2002 for Scotland and Northern Ireland. Only a very small group of children, such as asylum seekers, were ineligible. Children living in disadvantaged areas, children of ethnic minority background and children growing up in the smaller nations of the UK were intentionally oversampled. At baseline (wave 1), 18,827 children (18,552 families) were recruited to the cohort. Around 51% of the baseline sample is male and around 82% of the cohort members are White, 2.5% are Indian, 4.8% are Pakistani, 2% are Bangladeshi, 1.3% are Black Caribbean, 2% are Black African and 3% of cohort members have a mixed ethnicity. The MCS data are freely available to

bona fide researchers under standard access conditions via the UK Data Service (http://ukdataservice.ac.uk). More details on the MCS data can be found in Connelly and Platt (2014). Freely available birth cohort studies like the MCS offer a cost-effective, sustainable, and equitable way of conducting research. They allow researchers access high quality population data which would have been very expensive and time-consuming to collect during the life cycle of a typical research project or for researchers with limited access to resources. Additionally, they improve our environmental footprint by preventing the duplication of data collection procedures and associated unnecessary use of resources. Finally, they increase public trust in the findings and facilitate rapid dissemination of research.

Sample

We used data from the second (MCS2, $N = 15,590$) and the fourth (MCS4, $N = 22,961$) waves of the MCS when children were 3 and 7 years old, respectively. First, we identified all cases of children who spent time in the care of their grandparents at least once up to the age of 3 years old ($n = 12,928$). Of these cases, we then identified those who spent time in the care of grandparents at least once in the last six or more months ($n = 2422$). Then, we removed the cases who spent time in the care of grandparents for less than six months in the last six months ($n = 14$; 0.5%) and the cases with uncertain support hours ($n = 129$, 5.3%). This left us with 14.6% ($n = 2279$) of the initial total sample ($n = 12,928$). Then, we removed the cases of uncertain respondents ($n = 49$) and where the respondent was different from the biological mother ($n = 5$). This screening process led to a sample of biological mothers ($n = 2225$) as main respondent to examine the hypothesized pathway.

Across both waves there were approximately 33% of missing maternal responses and more than 5% of the data on maternal mental health, mother–child relationship and children's social and emotional difficulties were missing. Missing data were cleaned, and where it was less than 5% of the cases it was corrected with multiple imputations. Data were considered multivariate outliers with Mahalonobis distance. Preliminary analyses revealed no violations to the assumptions of homoscedasticity, normality, or linearity.

Across both waves, the final sample was 1495 mothers ($M = 29.41$; $SD = 5.16$; age range: 17–44) and their children ($n_{girls} = 751$, 50.2%; $n_{boys} = 744$, 49.8%) who were 3 years old in wave 2 and 7 years old in wave 4. Of the children who had data on ethnicity, majority were of white- British ($n = 1090$, 88%) ethnic background, followed by Asian ($n = 86$, 7%) and Black ($n = 61$, 5%). Of the mothers with data on education, 4% (36) had some higher education (NVQ Level 4 and 5), 94% (858) had education less than higher education (NVQ Level 1, 2, 3), and 19 (2%) mothers held qualifications gained overseas. Of the mothers who knew or answered the question about joint take-home net family income, 20.6% ($n = 204$) earned between £3100 and £10,400, 46% ($n = 456$) between £10,400 and £20,800 for 28.2% ($n = 279$) between £31,200 and £52,000 and 5.2% ($n = 52$) £52,000 and above.

Measures

Grandparental support with childcare: Mothers who reported that they were using childcare support, were asked to indicate from a selection of 18 different childcare arrangements which was their main childcare arrangement. We selected the responses of the mothers who reported that their main childcare arrangement was grandparenting (i.e. 3 = *Grandparent in my home*; 5 = *Care in grandparents' home*). Then, we used maternal responses to the question about how many hours per week they used this childcare arrangement to identify the time children spend in the care of their grandparents. Children spent between 1 and 80 h in a week under their grandparents' care: 39. 3% of the children ($n = 587$) spent between 1 and 10 h, 33.7% ($n = 505$) between 11 and 20 h, and 27% ($n = 403$) above 21 h.

The 6-item *Kessler Screening Scale for Psychological Distress* (K6; Kessler et al., 2002) was used to assess maternal mental health. Items are rated on a 5- point Likert scale (1 = *all of the time* to 5 = *none of the time*). All items were reversed coded. A total score was obtained by adding all the

items, with higher scores indicating higher maternal well-being. In our sample, Cronbach's Alpha Reliability was .83.

The 15-item *Child Parent Relationship Scale* (Pianta, 1992) was used to measure maternal perceptions of mother–child relationship. It comprises two subscales, closeness and conflict, each rated on a 5-point Likert scale (1 = *definitely does not apply* to 5 = *definitely applies*). The conflict subscale consists of eight items and measures the degree to which a parent feels that his or her relationship with the child is characterized by negativity. Higher scores reflect higher mother–child conflict. The closeness scale consists of seven items measures the extent to which a parent feels that the relationship is characterized by positivity such as warmth, affection, and open communication. Higher scores reflected higher mother–child closeness/conflict. The Cronbach Alpha Reliability in our sample was .72 and .60, respectively.

The parent report of the 25-item *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 2001) was used to assess child ratings of emotional or behavioural difficulties. The SDQ comprises five subscales (i.e. emotional problems, conduct problems, inattention/hyperactivity, peer problems, and prosocial behavior) of 5 items each scored on a 3-point scale (1 = *not true* to 3 = *certainly true*). Higher scores reflected an elevated level of difficulty across all subscales. In our sample, the Cronbach's Alpha Reliability of the subscales was .47, .64, .69, .46, .63, respectively.

Covariates

The analysis was statistically controlled for the effects of child gender and maternal age. The high level of missing values for maternal education and child ethnicity did not allow for inclusion into the analysis.

Results

Descriptive analyses

Means, standard deviations and bivariate correlations between the study variables are presented in Table 1. Children had spent between 1 and 80 h in a week in the care of their grandparents. Descriptive analysis was conducted to examine the association of the pathway's variables (i.e. grandparental childcare, maternal mental health, mother–child relationship, and child's socio-emotional difficulties) with child gender, maternal age and education. We did not find statistically significant gender differences in time spent in the care of grandparents ($t_{(1493)} = .344$, $p > .05$), maternal psychological distress ($t_{(1493)} = -.247$, $p > .05$), mother–child closeness ($t_{(1493)} = .230$, $p > .05$) and mother–child conflict ($t_{(1493)} = 1.772$, $p > .05$). There were no statistically significant gender differences in children's' prosocial behavior ($t_{(1493)} = .122$, $p > .05$), inattention/hyperactivity ($t_{(1493)} = 1.940$, $p > .05$), emotional problems ($t_{(1493)} = .849$, $p > .05$), peer problems ($t_{(1493)} = -.402$, $p > .05$), maternal psychological distress ($t_{(1493)} = .247$, $p > .05$), parent–child closeness ($t_{(1493)} = -1.200$, $p > .05$), and parent–child conflict ($t_{(1493)} = 1.722$, $p > .05$). Boys were more likely to have conduct problems ($t_{(1493)} = 2.686$, $p < .05$; $x^2_{\text{girls}} = 6.09$, $SD = 1.31$, $x^2_{\text{boys}} = 6.28$, $SD = 1.38$). Maternal age was significantly associated with maternal psychological distress ($r = .13$, $p < .05$), mother–child conflict ($r = -.12$, $p < .05$), mother–child closeness ($r = .10$, $p < .05$), inattention/hyperactivity ($r = -.17$, $p < .05$), emotional problems ($r = -.09$, $p < .05$), conduct problems ($r = -.09$, $p < .05$), peer problems of child ($r = -.13$, $p < .05$), and family income ($r = -.06$, $p < .05$). Maternal education was associated with child inattention/hyperactivity ($r = .07$, $p < .05$), and conduct problems ($r = .11$, $p < .05$)

Measurement model

We carried out structural equation modelling (SEM) using the JASP open-source software (https://jasp-stats.org/) to test the hypothesized model of the pathway from grandparenting support in

Table 1. Correlations between study variables.

	1	2	3	4	5	6	7	8	9	10	11	12	*M*	*SD*
1. Time spent in the care of grandparents	–												16.08	11.30
2. Maternal psychological distress	.05*	–											8.75	3.16
3. Mother–child conflict	-.03	-.26***	–										23.85	7.60
4. Mother–child closeness	.03	.15***	-.22***	–									33.78	1.99
5. Prosocial behavior	.03	.10***	-.18***	.21***	–								13.73	1.51
6. Inattention/Hyperactivity	.00	-.18***	.25***	-.19***	-.36***	–							8.17	2.40
7. Emotional problems	-.01	-.20***	.14***	-.08***	-.13***	.30***	–						6.37	1.63
8. Conduct problems	-.01	-.17***	.26***	-.15***	-.38***	.52***	.32***	–					6.18	1.35
9. Peer problems	.02	-.19***	.19***	-.15***	-.23***	.30***	.40***	.29***	–				5.96	1.43
10. Mother age	.03	.13**	-.12***	.10***	-.01	-.17***	-.09***	-.16***	-.13***	-			29.41	5.16
11. Mother education	-.06	-.03	.05	-.05	-.00	.07*	.06	.11**	.03	-.02	-		—-	—-
12. Child gender	-.01	.01	-.05	.03	-.00	-.05*	-.02	-.07**	.01	-.00	-.02	-	—-	—-

*$p < .05$, **$p < .01$, ***$p < .001$.

early years to child social and emotional outcomes in primary school years. Model fit was assessed using several standardized fit indices: the ratio of chi-square to degrees of freedom (x^2/df), the Comparative Fit Index (CFI), the Tucker–Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). Values of x^2/df less than 5 indicate a satisfactory fit, and values less than 3 an ideal fit (Ullman, 2013). A non-significant chi-square value, CFI and TLI values of .90 or higher and a RMSEA value below .06 are considered indicators of good fit (Hu & Bentler, 1999). Measurement of the indices suggested a good fit of the data ($x^2(702) = 1939.902$, $p < .001$; CFI = .97; TLI = 97; RMSEA = .02, SRMR = .07). Factor loadings had acceptable values and ranged from .59 to .91 for maternal psychological distress, from .35 to .75 for mother-child conflict, from .51 to .75 for mother–child closeness, from .57 to .86 for prosocial behavior, from .56 to .83 for inattention/hyperactivity, from .43 to .81 for emotional problems, from .60 to .77 for conduct problems, and from .52 to .82 for peer relationships (Table 2).

Table 2. Parameter estimates of the measurement model.

	Unstandardized parameter estimates			Standardized parameter estimates
	b	SE	CR	
Maternal psychological distress →Item 1	1.000	0.000		0.85
Maternal psychological distress →Item 2	1.067	0.023	45.438	0.91
Maternal psychological distress →Item 3	0.773	0.029	26.664	0.65
Maternal psychological distress →Item 4	0.794	0.028	27.952	0.67
Maternal psychological distress →Item 5	1.030	0.025	41.045	0.87
Maternal psychological distress →Item 6	0.702	0.035	20.216	0.59
Mother–child conflict →Item 1	1.000	0.000		0.64
Mother–child conflict →Item 2	0.839	0.106	7.884	0.54
Mother–child conflict →Item 3	0.554	0.060	9.168	0.35
Mother–child conflict →Item 4	0.659	0.061	10.852	0.42
Mother–child conflict →Item 5	0.735	0.063	11.611	0.47
Mother–child conflict →Item 6	0.877	0.066	13.329	0.56
Mother–child conflict →Item 7	1.157	0.071	16.286	0.75
Mother–child conflict →Item 8	1.116	0.070	15.905	0.72
Mother–child closeness →Item 1	1.000	0.000		0.66
Mother–child closeness →Item 2	0.781	0.117	6.684	0.51
Mother–child closeness →Item 3	0.999	0.119	8.415	0.66
Mother–child closeness →Item 4	0.821	0.109	7.549	0.54
Mother–child closeness →Item 5	0.972	0.104	9.370	0.64
Mother–child closeness →Item 6	1.144	0.116	9.836	0.75
Mother–child closeness →Item 7	1.141	0.119	9.606	0.75
Prosocial behavior →Item 1	1.000	0.000		0.86
Prosocial behavior →Item 2	0.800	0.046	17.407	0.68
Prosocial behavior →Item 3	0.757	0.050	15.207	0.65
Prosocial behavior →Item 4	0.787	0.053	14.751	0.67
Prosocial behavior →Item 5	0.665	0.046	14.512	0.57
Inattention/Hyperactivity →Item 1	1.000	0.000		0.82
Inattention/Hyperactivity →Item 2	0.947	0.029	32.126	0.77
Inattention/Hyperactivity →Item 3	0.996	0.029	34.856	0.81
Inattention/Hyperactivity →Item 4	0.691	0.040	17.340	0.56
Inattention/Hyperactivity →Item 5	0.980	0.029	33.368	0.80
Emotional problems →Item 1	1.000	0.000		0.43
Emotional problems →Item 2	1.809	0.201	8.993	0.78
Emotional problems →Item 3	1.763	0.191	9.243	0.76
Emotional problems →Item 4	1.258	0.149	8.462	0.54
Emotional problems →Item 5	1.869	0.205	9.102	0.81
Conduct problems →Item 1	1.000	0.000		0.70
Conduct problems →Item 2	1.081	0.051	21.256	0.75
Conduct problems →Item 3	1.100	0.082	13.479	0.77
Conduct problems →Item 4	0.890	0.058	15.365	0.62
Conduct problems →Item 5	0.865	0.094	9.206	0.60
Peer problems →Item 1	1.000	0.000		0.52
Peer problems →Item 2	1.267	0.130	9.774	0.66
Peer problems →Item 3	1.571	0.143	10.998	0.82
Peer problems →Item 4	1.170	0.120	9.731	0.61
Peer problems →Item 5	1.182	0.107	11.072	0.61

Structural equation modelling results

We tested the factor loadings for each latent factor of the measurement model (Table 2). All factor loadings were significant and loaded in the expected direction. Following that, a structural model was developed. Results of the structural model provide acceptable fit of the data ($x^2(1092) = 2690.813$, $p < .001$; CFI = .96; TLI = 96; RMSEA = .03, SRMR = .07)

Direct and indirect effects

The final model is presented in Figure 1. At age three, time spent in the care of grandparents was not significantly linked with maternal psychological distress, mother–child conflict, and mother–child closeness. Conversely, maternal psychological distress was linked directly with more mother–child conflict ($\beta = -.40$, $p < .001$) and less mother–child closeness ($\beta = .38$, $p < .001$). Maternal psychological distress was associated with higher level of emotional problems ($\beta = -.22$, $p < .001$), conduct problems ($\beta = -.08$, $p < .05$) and peer problems ($\beta = -.13$, $p < .01$) at age seven. Both mother–child conflict and mother–child closeness were linked directly with age seven child social and emotional difficulties. Specifically, more mother–child conflict at age three was associated with fewer prosocial behaviors ($\beta = -.19$, $p < .001$), and higher levels of inattention/hyperactivity ($\beta = .25$, $p < .001$), emotional problems ($\beta = .22$, $p < .001$), peer problems ($\beta = .29$, $p < .001$) and conduct problems ($\beta = .30$, $p < .001$) at age seven. Lower mother–child closeness at age three was associated with fewer prosocial behaviors ($\beta = .32$, $p < .001$), and higher inattention/hyperactivity ($\beta = -.26$, $p < .001$), emotional problems ($\beta = -.22$, $p < .001$), peer problems ($\beta = -.32$, $p < .001$), and conduct problems ($\beta = -.24$, $p < .001$) at age seven.

Discussion

The study used the FSM (Masarik & Conger, 2017) as an analytical framework to examine the pathway whereby grandparental childcare in the early years can influence children's social and emotional outcomes in middle childhood in a large sample of biological mothers from the UK Millennium Cohort Study. Contrary to our hypothesis, grandparental support in the form of time spent in the care of grandparents at age three was not significantly associated with children's social and emotional

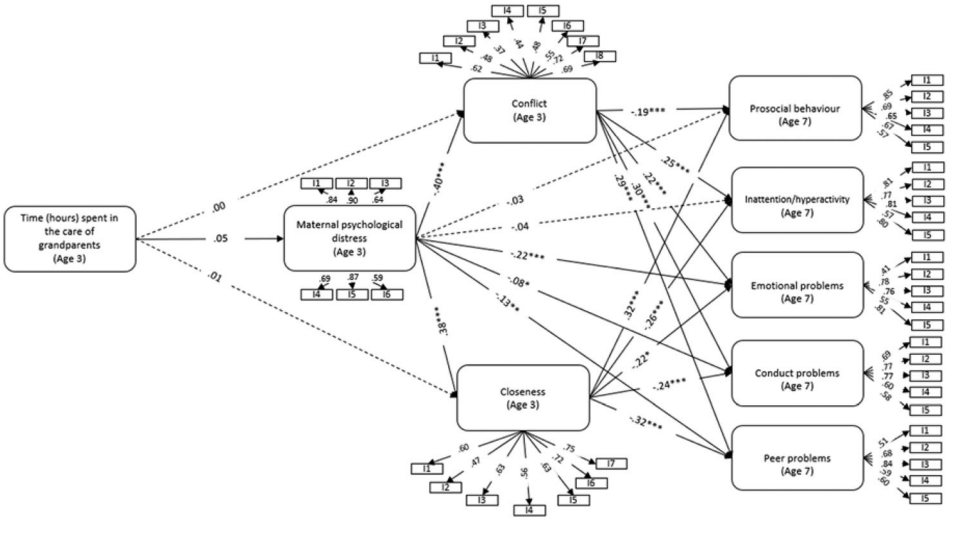

Figure 1. Structural model of the association between time spent in the care of grandparents in the early years and children's social and emotional difficulties in primary school and findings; *p < .05, **p < .01, ***p < .001.

outcomes at age seven via maternal mental health and mother–child relationship at age three. This finding mirrors the findings by Morita et al. (2021) who found no association between a combination of varying types of grandparental support and maternal depression in a sample of Japanese couples, and the findings by Crettenden, Lam, & Denson (2018) who did not find associations between grandparental practical support and psychological distress in a sample of Australian mothers of children with disabilities. Collectively, the findings do not support a direct relationship between grandparental childcare and maternal mental health. The findings from our study are not aligned with the findings from studies which showed that grandparental support was beneficial in reducing stress with the parenting role in mothers and across different educational levels (e.g. Craig & Churchill, 2018; Parkes et al., 2015). Stress with the parenting role is not synonymous to parental mental health, as the former refers to *an aversive psychological reaction to the demands of being a parent* (Deater-Deckard, 1998, p. 315) whereas the latter reflects the psychological or biological processes that support mental functioning (Martin, Papadopoulos, Chellew, Rinehart, & Sciberras, 2019). Additionally, perceived social support, in the form of support relationships, than practical support with childcare has been found to be more strongly associated with maternal mental health (Taylor & Conger, 2017). Hence, while an extra pair of hands may impact maternal outcomes such as stress with child upbringing it may not potentially be enough to alleviate more distal parenting outcomes such as maternal psychological distress. Additionally, grandparental support in the form of childcare may have different implications for maternal mental health for families who may have access to fewer resources of support, for instance single mothers, across different ethnic groups or for mothers in full-time employment. Future research should consider the mediating role of more proximal parenting outcomes (e.g. self-efficacy, work-family balance) in the relationship between grandparental childcare and maternal mental wellbeing and examine the impact of grandparental childcare across a wide range of maternal sociodemographic characteristics.

We did not find any evidence to suggest that grandparental childcare operationalized as time spent in the care of grandparents during the week was associated with the mother–child relationship. Our findings differ from the study by Morita et al. (2021) who found that grandparental support measured as level of availability of practical, emotional and financial childcare support influenced children's outcomes via its effect on maternal parenting practices. The methodological differences between the two studies could explain the different findings. Our study examined maternal perceptions of the quality of their relationship with their child instead of parenting practices. Parenting practices may not necessarily reflect the quality of the relationship and vice versa. For instance, research which found that the quality of the attachment relationship is uniquely associated with child behavior irrespective of parenting (Kallitsoglou & Repana, 2021; Scott et al., 2011) emphasize the distinctive role of the quality of the mother–child relationship for child adjustment. Additionally, in non-clinical, community samples it is plausible that the mother–child relationship is less distressed because children experience less severe difficulties and family stress is often low (Leijten et al., 2018). Accordingly, the mother–child relationship in our sample may have not been significantly distressed to allow any benefits from grandparental support to be revealed. An important extension of this research is to replicate the study by examining the association with parenting style as well as parent–child relationship and across community and clinical samples. Finally, it could be argued that cultural differences between the studies could influence the findings. It has been found that maternal adherence to the values of collectivism, such as family connectedness, could cultivate maternal expectations for enhanced grandparental support which could inadvertently prompt mothers to report a high level of perceived support and low level of parenting stress (Sun & Mulvaney, 2021). The study by Morita et al. (2021) was conducted in Japan, where adherence to collectivistic values is still prominent (Ogihara, 2017). Our study focused on mothers living in the UK, a country of the industrialized West where the individualist values are more prevalent (Hofstede, Hofstede, & Minkov, 2005). Accordingly, there is a possibility that loose adherence to collectivist values in the UK sample could explain the lack of a direct effect of grandparental support on maternal mental wellbeing and maternal-child relationship. Finally, our study measured

grandparental childcare support as actual time spent in the care of grandparents and not maternal perception of level of support. It is plausible that the quantity of childcare support is not related to children's outcomes across cultures. To verify this speculation, replication of the model in a collectivist context is required.

In line with our hypothesis, poor maternal mental wellbeing in the early years predicted poor child social and emotional outcomes in the primary school years indirectly via poor mother–child relationships as well as directly. Our findings provide further support to the link between maternal mental health difficulties having an adverse impact on the quality of the mother–child relationship which in turn can kick start a poor social and emotional developmental trajectory (e.g. Wolford, Cooper, & McWey, 2019). Moreover, they emphasize the importance of understanding better the factors that can bolster maternal mental health to help design successful interventions for maternal wellbeing (Taylor & Conger, 2017). Considering the importance of maternal wellbeing for effective parenting and child adjustment, the findings suggest that the role of maternal mental health needs to be given more attention in the field of early childhood social and emotional outcomes. While there is range of interventions to support parenting and the parent-infant relationship, there is limited attention to the needs of its users as parents by adult mental health services (Barlow et al., 2010). Our findings emphasize calls to improve maternal mental health through access to mental health services or by integrating them into maternal and child health programmes (Rahman, Surkan, Cayetano, Rwagatare, & Dickson, 2013).

Conclusion

To conclude, a notable outcome of the present study is that grandparental support with childcare at age 3, as a primary form of childcare and conceptualized as time spent in the care of grandparents, did not influence the pathway to child social and emotional outcomes at age 7 via maternal mental health or the mother–child relationship in a population sample of biological mothers living in the UK. This finding is contrary to earlier studies which suggest that grandparental support is associated with reduced stress with the parenting role and with more optimal parenting style (e.g. Craig & Churchill, 2018; Morita et al., 2021; Parkes et al., 2015). The difference in the findings could be because maternal mental wellbeing, although partially related to stress in the parenting role, is altogether a different multifaceted psychological construct which is heavily influenced by the presence of emotional support in a mother's everyday life (Luthar & Ciciolla, 2015). Additionally, poor parenting does not necessarily reflect a poor mother–child relationship. Parenting acts independently of the relationship which provides the context that parenting gets implemented in (Kochanska & Kim, 2012). Finally, it is plausible that the amount of grandparental childcare support (i.e., time spent with grandparents) may not be impactful enough to influence maternal mental wellbeing and/or the mother–child relationship.

Limitations and suggestions for future research

The study has certain methodological limitations. We did not include mothers who do not use grandparental support. It would be useful to examine grandparental support as a dimensional as well as categorical variable to elucidate the benefits of access (grandparental childcare/no grandparental childcare) versus intensity of support (more ours spent in the care of grandparents) on children's outcomes. Additionally, we did not include mothers who used additional means of childcare support. Future research should examine the impact of grandparental childcare in conjunction with other forms of childcare support. We examined the impact of the quantity of childcare support provided by grandparents, so we cannot extrapolate on the impacts of other types of grandparental support. To identify which dimension of grandparental childcare support is beneficial for children and families, future research should contrast quantity to quality of support or other forms of support which may benefit family and maternal wellbeing such as emotional support (Nunes et al., 2021).

We did not examine the pathway amongst fathers. However, as partnered mothers take the lion's share in childcare and household management (Power, 2020) the findings are of significance for maternal wellbeing. Future research should examine how grandparental childcare promotes children's outcomes via maternal mental health and parenting in conjunction with paternal support. We did not examine whether the pathway varies according to maternal education. Previous research has shown that grandparental involvement was crucial for different levels of maternal education (e.g. Parkes & Sweeting, 2018). However, in the absence of research on the variation of the pathway from grandparental childcare support to children's outcomes by maternal education, further research is warranted. Our study included primarily white mothers based in the UK; therefore, the findings should not be generalized to ethnically diverse or non-Western populations. Examination of variation of the pathway by additional structural moderators including caregiver ethnic minority status, teenage or lone motherhood, grandparental sociodemographic characteristics (e.g. age, health, education), and coresidential multigeneration versus nuclear families is an important extension of this research.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Contribution statement

Nevra Atış Akyol: Data curation; Methodology; Software; Formal analysis; Visualization; Writing - first draft of methodology and results section.

Derya Atalan Ergin: Data curation; Methodology; Software; Formal analysis; Visualization; Writing - first draft of methodology and results section.

Angeliki Kallitsoglou: Conceptualization; Methodology; Writing - original draft, review and editing.

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