Parental gender attitudes and children's mental health: Evidence from the UK household longitudinal study

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ABSTRACT

Gender role attitudes have been found to be associated with the mental health of adults and adolescents, but little is known about whether parents' gender attitudes are associated with their children's mental health. Using data from Understanding Society, the UK Household Longitudinal Study (UKHLS), a large-population representative sample, we examine the links between parental gender role attitudes and child mental health outcomes as measured by the total and five components of the strengths and difficulties questionnaire (SDQ). We construct structural equation models, separately for mothers and for fathers and for children aged 5 and 8, and adjust for key sociodemographic variables. We find that children aged 5 years exhibit fewer emotional and peer relationship problems and are more prosocial when their mothers have more egalitarian (compared to traditionalist) gender role attitudes. We also find that children are more prosocial at age 8 when their mothers have more egalitarian gender role attitudes. No statistically significant mediation effect is observed via maternal parenting behaviour. Fathers' more egalitarian gender role attitudes were associated with higher hyperactivity at age 5 and more prosocial behaviour at age 8. Further, engaging in less negative parenting behaviour completely mediates the association of fathers' more egalitarian gender attitudes with children's mental health across the majority of the SDQ scales. This suggests that parental gender attitudes may be a possible target for the prevention of mental health difficulties among children; however, future research will be required to examine the extent to which the associations we identified reflect causality.

1. Introduction

Gender norms can be defined in terms of consensus expectations, beliefs, and prescriptions about appropriate behaviours for different genders. A commonly accepted framework for gender normative attitudes classifies these along a dimension defined by traditionalist versus egalitarian poles (Davis and Greenstein, 2009). Those holding more traditionalist beliefs endorse views characterised by the idea that women's roles are as a homemaker whilst men's roles are as earner. For example, individuals with more traditionalist beliefs may endorse the view that women should not work full-time and that doing so may be harmful for her children/family. Those with more egalitarian beliefs, however, view men and women as more equal and not bound by these traditional role divisions. These, or similarly defined, gender attitudes have been found to be associated with the mental health of adults and adolescents, with more egalitarian attitudes generally associated with better mental health outcomes (King et al., 2019, 2021). It has also been

noted that from birth children are exposed to a system that embeds gender attitudes (Heise et al., 2019); however, little is known about how this is associated with the development of their mental health. Based on parents representing one of the most proximal and important influences on children's mental health development, in this study we explore the association between parents' gender role attitudes and their children's mental health development. Using data from Understanding Society, the UK Household Longitudinal Study (UKHLS), a large-population representative sample, we examine the association between parental gender role attitudes and child mental health outcomes adjusting for key sociodemographic variables. We also explore potential mediating mechanisms via parenting behaviour.

Previous research has highlighted that the gender attitudes that individuals hold are associated with their mental health, with more traditional attitudes associated with poorer mental health outcomes in a range of domains. This association has been observed for both men and women; in adolescents and adults; and across different societal contexts,

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including across countries with varying levels of gender inequality (Baird et al., 2019; Hunt et al., 2006; King et al., 2019, 2021; Sweeting et al., 2014). For example, in a study using the Household, Income and Labour Dynamics in Australia survey, King et al. (2021) found that more egalitarian gender attitudes were associated with better mental health as measured by a composite of depression, anxiety and positive mental health indices in both men and women. Baird et al. (2019) observed similar associations for adolescents in Ethiopia and Bangladesh when gender attitudes were operationalised in terms of restrictive gender attitudes. Higher levels of these attitudes were associated with poorer mental health overall, for both boys and girls and in both urban and rural settings in Ethiopia. They were also observed overall, for girls, and in urban settings in Bangladesh for mental health. In both settings restrictive gender attitudes were associated with lower self-esteem overall and in all sub-groups.

Though the mechanisms are not clear, a number of explanations for these observations have been advanced including the negative effects of the strain of meeting perceived gender expectations, subscribing to specific damaging gender attitudes (e.g., hegemonic masculinity and associated rejection of emotional expression and help-seeking), or holding increasingly counter-normative views in societies that are striving for better gender equality (e.g., King et al., 2021; King et al., 2019).

Despite these associations with mental health in adolescence and adulthood, there has been little research into the effects of exposure to parental gender attitudes on mental health in childhood. At this life stage, parents represent an important influence on children's mental health (e.g., Bornstein, 2013) and also act as a key source of exposure to gender attitudes (e.g., Morawska, 2020). Indeed, parents' gender norms could impact children's mental health via a range of pathways. For example, gender norms could affect parental mental health, which in turn has been shown to have directional relations with their children's mental health in longitudinal research (Speyer et al., 2022). Gender attitudes have also been associated with parenting behaviours. For example, men who hold more traditional (less egalitarian) gender attitudes tend to have less involvement with the care of children (Keizer, 2015; Kuo et al., 2018), while paternal involvement has been shown to have psychosocial benefits for children (e.g., Boyce et al., 2006; Flouri and Buchanan, 2003). Further, gender attitudes have been associated with gendered parenting, including greater policing of children and adolescent's gendered behaviours. This may serve to communicate parents' gender attitudes to their children (see e.g., Dittman et al., 2022).

Despite these possibilities, there has been little research into the association between parental gender attitudes and children's mental health. One recent study found that more equitable parental gender attitudes were associated with lower levels of internalising problems among adolescent girls in the eastern Democratic Republic of Congo (Corley et al., 2022). Qualitative analyses suggested that this may be attributable to more equitable parental attitudes being associated with households in which adolescent girls experience less psychological control and witness less conflict and violence between caregivers. However, whether and how parental gender attitudes are associated with the mental health of younger children in and across different country contexts is yet to be established.

Given the importance of the early prevention of mental health issues and the potential malleability of gender attitudes and parenting behaviours as intervention targets (Dhar et al., 2022; Ward et al., 2020) it is valuable to explore whether parental gender attitudes are associated with children's mental health. The world is currently facing high levels of children's mental health issues. One recent meta-analysis in high-income countries found that prior to COVID-19 the prevalence of the most common child mental health issues were anxiety (5.2 %), attention deficit hyperactivity disorder (ADHD; 3.7 %), oppositional defiant disorder (3.3 %), substance use (2.3 %), conduct disorder (1.3 %) and depression (1.3 %); however, less than half (44.2 %) received any

services for these conditions (Barican et al., 2022). It is as yet unclear whether the COVID-19 pandemic may have further exacerbated the mental health of children in the long term (Ford et al., 2021); however, early evidence suggests at least a short-term deterioration in children's mental health following the pandemic (Newlove-Delgado et al., 2023).

There are, however, challenges in assessing the role of parental gender attitudes in children's mental health. In the absence of available interventional data, arguably foremost among these is that the association between parental gender attitudes and children's mental health may be vulnerable to confounding by a range of factors that impact both. These might include child's sex/gender and parental age, marital status, employment status, ethnicity, and education. The purpose of the current study was, therefore, to explore the association between parental gender attitudes and their children's mental health whilst, within the limitations of data availability, adjusting for potential sociodemographic confounders. Our goal was to provide preliminary evidence on whether more egalitarian attitudes among parents are associated with better mental health for their children.

2. Methods

2.1. Data

We use *Understanding Society*, the UK Household Longitudinal Study (UKHLS) (University of Essex, 2022; 2023); a stratified clustered sample of approximately 30,000 UK households in 2009, with additional ethnic minority boost samples. It builds on and incorporates its predecessor the British Household Panel Survey (BHPS), which began in 1991 (ISER, 2022). UKHLS collects a wide range of social, economic, health and behavioural information. Sample members aged 10 or older are surveyed annually. For children in the household who are up to age 10 the parents or responsible adults answer questions about them (ISER, 2023). UKHLS has a sequential mixed mode design, such that most participants are invited web-first, but if they do not respond, an interviewer contacts them so they can complete an in-person interview. All key outcome variables in this paper are part of the self-complete module which minimises mode effects between those who complete on the web and those who answer the general survey in person.

2.2. Measures

2.2.1. Outcome variables

Children's mental health was measured by the Strengths and Difficulties Questionnaire (SDQ). The SDQ is a screening questionnaire used to assess positive and negative behaviours in children and adolescents (Goodman, 1997), and widely used to conduct child mental health research (Vostanis, 2006). It includes five subscales measuring emotional symptoms, conduct problems, hyperactivity, peer relationship problems and prosocial behaviour. The first four subscale scores can also be used to create an SDQ Total Difficulties Score. Several studies have established its reliability and validity on a global scale (Bourdon et al., 2005; Croft et al., 2015; Goodman, 2001). Its factorial, convergent and discriminant validity, as well as its invariance across gender and informant, have been tested with satisfactory findings (Ferreira et al., 2021; Karlsson et al., 2022; Mieloo et al., 2012; Murray et al., 2021a, 2021b; Stone et al., 2010). In UKHLS, parents or responsible adults are asked to complete these questions for each child in the household aged 5 or 8. Given the timing of interviews a few children are 4 or 9 years when their parent answer these questions. The scale started to be collected in wave 3 and for the purpose of this study we have pooled together data from waves 3 to 11 (2011–2021). Estimations are provided separately using the SDQ Total Difficulties Score as well as each of the five individual subscales as the dependent variable. To avoid potential bias from different lengths of time living with adoptive, step or foster parents, we focused the analysis on children and their biological parents who live with them.

2.2.2. Predictor variables

In the mid-1980s, the British Social Attitudes Survey started collecting information on Gender Role Attitudes (GRA) (Scott et al., 1996), which has become a widely accepted measure of perceptions about gender roles (Scott and Clery, 2013). A variation of the GRA scale was included in the BHPS and since then a wealth of research has been conducted utilizing this scale (Carmichael and Ercolani, 2016; Grinza et al., 2022; Sweeting et al., 2014; Wang et al., 2022). In UKHLS, a smaller set of questions on GRA were collected in waves 2, 4 and 10 and were measured through the following five statements: 1) A pre-school child is likely to suffer if his or her mother works; 2) All in all, family life suffers when the woman has a full-time job; 3) Both the husband and wife should contribute to the household income; 4) A husband's job is to earn money, a wife's job is to look after the home and family; 5) Employers should make special arrangements to help mothers combine jobs and childcare. All adult household members were asked to rate these questions on a 5-point Likert-type scale with options from "strongly agree" to "strongly disagree". To ensure the alignment of all scoring items, those that were originally scored with less egalitarian views given high values (questions 3 and 5) were reverse scored. We then created a GRA predictor variable composite score by summation of the individual items, to measure overall gender role attitudes ranging from 0 to 20, with higher scores indicating more egalitarian attitudes.

2.2.3. Covariates

The child's sex and parental socio-demographic characteristics were included in all the model specifications described below. Parents' educational attainment (no qualification, lower secondary (GCSE), upper secondary (A-level), degree or other higher degree and other qualification); age (as a continuous variable), marital status (married or living with partner = 1), employment status (employed = 1); and ethnicity (white = 1) have been identified in the literature to be associated with children's mental health.

2.2.4. Mediator

To explore the role parenting behaviour plays as an intermediary between parental gender attitudes and children's mental health, we used nine questions available in the module "parents and children", collected in waves 3, 5, 7, 9 and 11. We created a parenting behaviour index combining the questions: 1) How often do you allow your child to help set rules? 2) How often do you praise your child? 3) How often do you spank or slap your child? 4) How often do you hug or cuddle your child? 5) How often do you shout at your kid? 6) How often do you quarrel with your child? 7) How often does your child talk to you about things that matter to them? 8) In the past 7 days, how many times have you eaten an evening meal together with your child and other family members who live with you? 9) How often do you and your child spend time together on leisure activities or outings outside the home such as going to the park or zoo, going to the movies, sports or to have a picnic? For questions 1 to 5, parents were asked to rate their responses on a 4-point Likert-type scale with options from "never" (0) to "very often" (3). Similarly, parents were asked to rate questions 6 and 7 on a 4-point Likert-type scale with options from "most days" to "hardly ever". In question 8 parents are given four different options to respond, from "none" to "6–7 times". Question 9 differs from the others as parents were asked to rate it on a 6-point Likert-type scale with options "never", "once a month", "several times a month", "about once a week", "several times a week" and "almost every day". To create a comparable four category variable, we have grouped options "never" and "once a month" in one category and "several times a week" and "almost every day" in another category. Each question therefore has a maximum of 3-point score for the most positive parenting behaviour and a 0-point score for the least positive parenting behaviour. To ensure consistency in scoring positive and negative behaviours, some questions were reversed coded where applicable. The parenting behaviour index ranged from 0 to 27, with higher scores indicating a more positive parenting behaviour. A detailed

description of the scoring for the parenting behaviour index is provided in Table S1 in the supplementary information section.

Table 1 provides a consolidated overview of all the measures described above, presenting the specific variables associated with each measure, the waves used, and details about the respondents.

2.3. Analysis

To examine the association between parental gender attitudes and children's mental health, adjusting for confounders and including mediators, structural equation models were constructed separately for children aged 5 and children aged 8. Maximum likelihood estimation was used with bootstrapping (1,000 replications) for standard errors estimation. Standard errors were clustered at the parent level to account for households where parents have reported SDQ measures for more than one child. Models were run separately for mothers and fathers. All analyses were conducted in Stata 16.1. In the event of an item/value missing in any of the variables, the record was dropped.

Fig. 1 shows the conceptual structural equation model of the association between parental gender attitudes and children's mental health. The latter is regressed on the former with parenting behaviour as mediator and a number of socio-demographic controls. The control variables were adjusted for by regressing the dependent variable on them.

Alongside the mediator parenting behaviour and the parental socio-demographic characteristics earlier described, wave control dummies were included in all the specifications to account for potential changes in children's mental health across time. SDQ scales, gender attitudes and parenting behaviour scores, were standardized to have mean 0 and standard deviation 1 to enable comparisons. For parents with measures of gender attitudes and parenting behaviour, collected in more than one wave, we used the measure most proximal to the wave when the child's SDQ was reported. For example, if the SDQ measure was collected in wave 4, we used the parental GRA collected in wave 4. If the SDQ measure was collected in wave 3, we used the parental GRA collected in wave 2.

2.4. Participants

A total of 7,589 children were included in the analysis, representing 92 % of all children with SDQ data available in UKHLS (8,238 children). There are four different model specifications: "Fathers' Gender Attitudes and SDQ of Children aged 5" including 3,210 children, "Fathers' Gender Attitudes and SDQ of Children aged 8" including 3,191 children, "Mothers' Gender Attitudes and SDQ of Children aged 5" including 4,754 children, and "Mothers' Gender Attitudes and SDQ of Children aged 8" including 5,040 children. The cumulative count of children across these four model specifications is 16,195 children, but as some children appear in more than one model, when considering only unique children the total is 7,589. In Fig. 2 we present the final sample size for each model specification after data processing.

3. Results

The estimation results using structural equation modelling for all the different specifications are presented in Tables 2–5. Effects of parental gender attitudes are decomposed into direct and indirect effects. Models are constructed using the SDQ Total Difficulties Score and each of the five SDQ subscales – emotional symptoms, conduct problems, hyperactivity, peer relationship problems and prosocial behaviour – as outcome variables. The results suggested that the associations between gender role attitudes and children's mental health outcomes were specific to particular SDQ subscales (discussed in detail below). The association with the total difficulties score, which combines the scores from individual subscales and reflects an aggregate of the individual subscale results, was not significant. This suggests that the association between

Table 1
Consolidated overview of measures.

Measure	Associated variables		Waves	Respondent
	Variable	Label		
Strengths and Difficulties Questionnaire (SDQ)	**chsdqtd_dv**	Total Difficulties Score	3, 4, 5, 6, 7, 8, 9, 10, 11	Child's biological parent
	chsdqes_dv	Emotional Symptoms		
	chsdqcp_dv	Conduct Problems		
	chsdqha_dv	Hyperactivity/ Inattention		
	chsdqpp_dv	Peer Relationship Problems		
	chsdqps_dv	Prosocial		
Parental Gender Role Attitudes (GRA)	Scopfama	Pre-school child suffers if mother works	2, 4, 10	Child's biological mother and Child's biological father
	scopfamb	Family suffers if mother works full-time		
	scopfamd	Husband and wife should contribute to household income		Note: Each parent responds individually these set of questions as part of their adult interview.
	scopfamf	Husband should earn, wife should stay at home		
	scopfamh	Employers should help mothers combine jobs and childcare		
Parenting behaviour index	**Ruleskid**	how often involve kid in setting rules	3, 5, 7, 9, 11	Child's biological mother and Child's biological father
	praisekid	How often praise child		
	slapkid	How often spank or slap child		
	cuddlekid	How often hug or cuddle child		Note: Each parent responds individually these set of questions as part of their adult interview.
	yellkid	How often shout at kid		
	quarrel	How often quarrel with children		
	talkmatter	How often talk about important matters with children		
	dinner	Frequency of eating dinner with kids		
	socialkid	Frequency of leisure with child		
Child's sex	**sex_dv**	Sex	3, 4, 5, 6, 7, 8, 9, 10, 11	Child's biological mother and
Parental education	**hiqual_dv**	Highest qualification	3, 4, 5, 6, 7, 8, 9, 10, 11	Child's biological father
Parental age	**dvage**	Age from date of birth	3, 4, 5, 6, 7, 8, 9, 10, 11	Note: Each parent responds individually these set of questions as part of their adult interview.
Parental marital status	**mastat_dv**	De facto marital status	3, 4, 5, 6, 7, 8, 9, 10, 11	

Table 1 (*continued*)

Measure	Associated variables		Waves	Respondent
	Variable	Label		
Parental employment status	**jbstat**	Current labour force status	3, 4, 5, 6, 7, 8, 9, 10, 11	
Parental ethnicity	**racel_dv**	Ethnic group	3, 4, 5, 6, 7, 8, 9, 10, 11	

parental gender role attitudes and children's mental health is not a generalised association but one that is limited to certain outcome domains.

3.1. Maternal gender attitudes

Children exhibit less emotional symptoms, have fewer peer relationship problems and are more prosocial when mothers have more egalitarian gender values at age 5. In Table 2 every standard deviation (SD) unit increase on maternal egalitarian gender attitudes predicts a 0.05 SD direct decrease in emotional symptoms, a 0.04 SD direct decrease in peer relationship problems and a 0.07 SD direct increase in prosocial behaviour at age 5. At age 8 it is also observed that children are more prosocial when mothers have more egalitarian gender values than when mothers are more traditional. No statistically significant mediation effect is observed passing through maternal parenting behaviour.

3.2. Paternal gender attitudes

A direct effect of fathers' gender attitudes on hyperactivity at age 5 and a total and direct effect on prosocial behaviour at age 8 is observed in Tables 4 and 5, respectively. The presence of statistically significant indirect effects (the pathway through the mediator) in all the scales and the absence of statistically significant direct effects (the pathway without considering the mediator) in most of the SDQ scales, confirms that the parenting behaviour index completely mediates the association between fathers' gender attitudes and children's mental health across the majority of the SDQ scales.

3.3. Additional results

It is also observed that children have fewer emotional symptoms, conduct problems, peer relationships problems and less hyperactivity/ inattention if parents are older. Less peer relationship problems are also observed when parents have higher educational attainment (upper secondary and degree) and if parents are white. In addition, children have lower hyperactivity levels if mothers are married/live with partner or fathers are employed. In all the specifications, girls present less conduct problems, less hyperactivity/inattention, less peer relationship problems and were more prosocial, than boys (detailed in Supplementary Tables S2–S5).

4. Discussion

The goal of the present study was to examine whether there is an association between parental gender attitudes and their children's mental health (conduct problems, emotional problems, peer problems, hyperactivity and prosociality). We also explored whether any associations identified may be mediated by parenting behaviour (e.g., parents' use of praise, parent-child conflict, parenting involvement). As regards maternal gender attitudes, we found that mothers with more egalitarian attitudes had children with lower levels of peer problems at age 5 and lower levels of emotional problems and higher levels of prosociality at
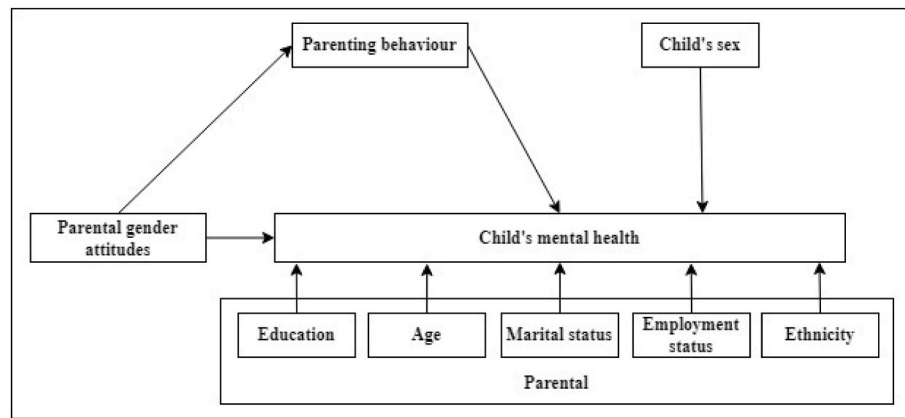
Fig. 1. Conceptual model of parental gender attitudes on children's mental health.

both age 5 and 8 than mothers with traditional attitudes. However, these associations were not mediated by maternal parenting behaviour. More egalitarian, compared to traditional, paternal gender attitudes were directly associated with children's higher hyperactivity (at age 5) and higher prosociality (at age 8). A mediation effect by paternal parenting behaviour was consistently observed across all SDQ dimensions at both ages. No other associations between parental gender attitudes and mental health outcomes, including with the total difficulties scores (which aggregates the specific subdimensions) were significant. Overall, these results suggest that the association between parental gender role attitudes and children's mental health is not a generalised association but one that is relevant to specific dimensions of children's mental health.

Our study builds on earlier work that has shown associations between adolescent gender attitudes and mental health (e.g., King et al., 2019). However, our analyses are among the first to explore how the gender role attitudes of parents may affect the mental health of their children. Our findings are consistent with one previous study in the eastern Democratic Republic of Congo, that found that more equitable caregiver gender attitudes were associated with better mental health among adolescent girls (Corley et al., 2022). However, that study concerned a conflict-affected context where there are high levels of violence and gender inequality. Our findings add new evidence that the potential association between parental gender attitudes and mental health may generalise to contexts such as the UK.

Given the lack of previous research in this area it is difficult to be sure why the associations between parental gender attitudes and child mental health were specific to certain dimensions of the strengths and difficulties questionnaire (aggregating to an overall no effect on SDQ total scores) and in some cases to specific ages. Prosociality (which is not included in the total difficulties score) was the dimension most consistently associated with parental gender attitudes and it also tended to have the largest standardised coefficients. This may indicate that parents of both male and female gender with more egalitarian gender attitudes model more behaviours characterised by empathy and helping and that this is beneficial across the stages of childhood examined in the present study. The associations for every other dimension were specific to a single parent (emotional problems and peer problems with mothers' attitudes and ADHD with fathers' attitudes) and/or age (ADHD and peer problems associations were specific to age 5), or were not significantly related to gender role attitudes at all (conduct problems). The age specificity of some associations may reflect the presence of critical periods of development. For example, ADHD and peer problems may be particularly noticeable following the transition to school; however, if successfully identified at this stage, the provision of interventions could mitigate them such that parental gender attitude influences are no longer detectable by age 8. The differences by informant could reflect that male parents are particularly influential in some domains and female parents in others. This is consistent with the fact that the difference across parents to some degree tracked established sex/gender differences in psychiatric constructs (Booth and Murray, 2018; Rutter et al., 2003), with male parental attitudes influencing children's ADHD and female parental attitudes influencing children's emotional problems. However, further research will be needed to develop our understanding of the reasons underlying the specificities in the patterns of identified associations.

We additionally explored parenting behaviours as a potential mediating mechanism linking parental gender attitudes to child mental health. Here we found that while parenting behaviours mediated the association for fathers in most of the SDQ dimensions, there were no significant mediating effects for mothers. This suggests that different mechanisms could account for the links between gender attitudes and child mental health depending on the gender of the parent. Future research will be required to further explore these differences; however, it is consistent with previous research that has identified possible differences in the associations of male and female parents' characteristics with child mental health (Speyer et al., 2022; Zhu et al., 2023). For example, some previous research has suggested that mothers' mental health may be more closely associated with their children's mental health than their fathers (Zhu et al., 2023). Parental mental health, could, therefore, be a relatively more important mediating mechanism in the association between gender attitudes and mental health for mothers. Future research could also examine whether this interacts with child's gender as there is also some evidence for differentiation in male and female parental mental health by child gender (Speyer et al., 2022). For example, previous research on adolescent health in UKHLS showed both parents' mental health was associated with the mental health of daughters but not sons (Webb et al., 2017).

There are a number of possible mechanisms for the links between parental gender attitudes and their children's mental health that could be explored in future research. This could include the effects of intergenerational transmission of gender attitudes to children, or other parenting variables not captured by the measures available in UKHLS. It is possible, for example, that parents who hold more traditionalist gender role attitudes also hold more traditionalist beliefs about parenting, driving a preference for a more authoritarian or harsh parenting style. That is, gender role attitudes may be correlated with the true causal factor "traditionalist parenting beliefs" rather than acting as a causal factor in itself. While the measure used in UKHLS captures behaviours that may be driven by traditionalist parenting beliefs, with its focus on concrete parenting behaviours, it does not measure these beliefs directly.

The measure used in UKHLS also only briefly assesses harsh parenting, which may be a particularly key parenting-related mediating mechanism in the association between parental gender attitudes and children's mental health. One recent study found that women's
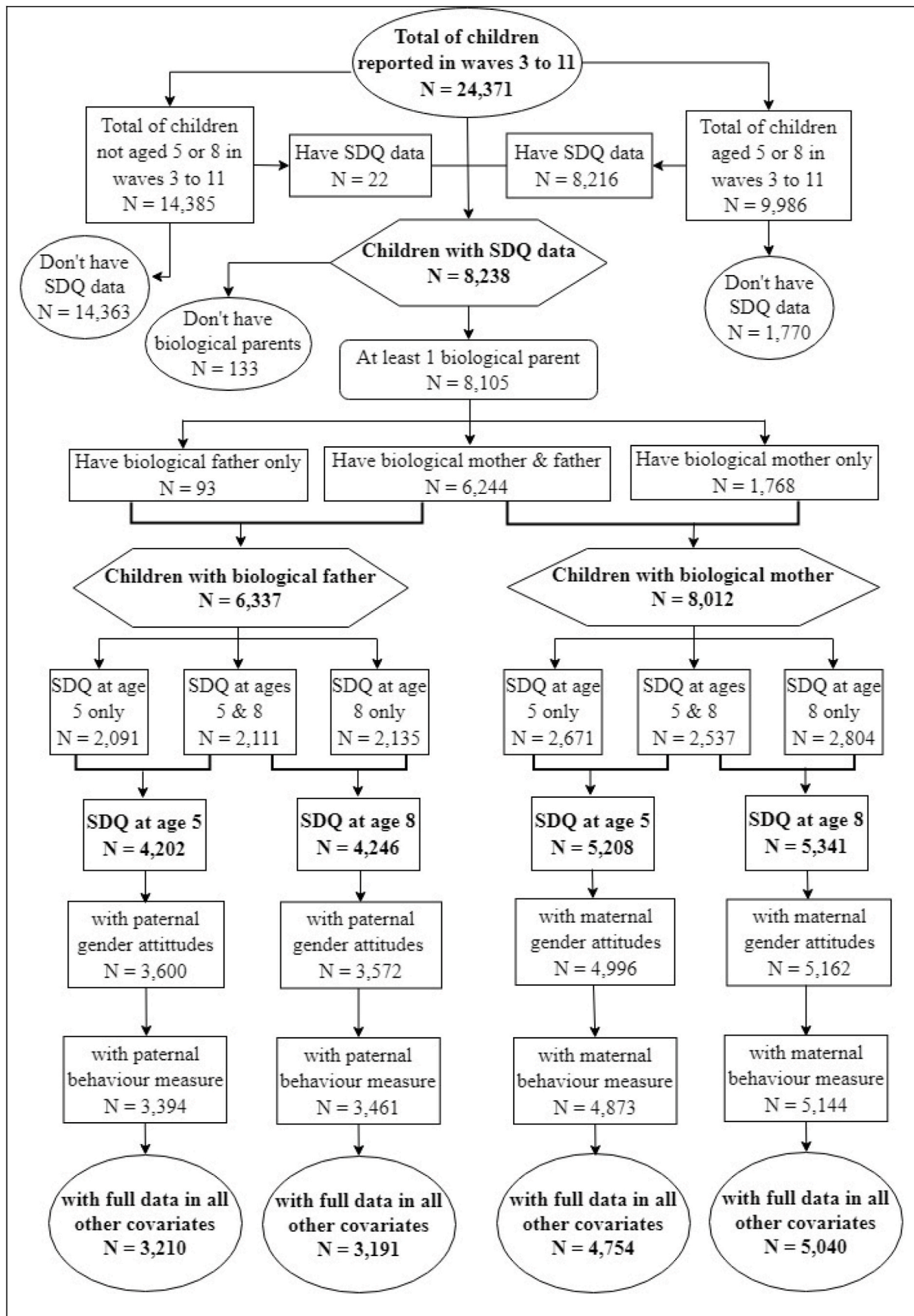
Fig. 2. Sample size in each model specification.

Table 2
SEM models for Mothers' Gender Attitudes and SDQ of Children aged 5.

Outcome variable		Gender attitudes		
		(1)	(2)	(3)
		Total effect	Direct effect	Indirect effect
Total difficulties score	Coefficient	−0.0271	−0.0232	−0.0038
	p-value	0.081	0.127	0.256
Emotional symptoms	Coefficient	*−0.0522*	*−0.0504*	−0.0018
	p-value	*0.001*	*0.002*	0.262
Conduct problems	Coefficient	−0.0088	−0.0039	−0.0048
	p-value	0.578	0.794	0.254
Hyperactivity	Coefficient	0.0119	0.0151	−0.0032
	p-value	0.449	0.329	0.258
Peer relationship problems	Coefficient	*−0.0436*	*−0.0423*	−0.0013
	p-value	*0.004*	*0.005*	0.275
Prosocial behaviour	Coefficient	*0.0733*	*0.0699*	0.0034
	p-value	*0.000*	*0.000*	0.259
Observations		4,754	4,754	4,754

All models include child's sex, maternal socio-demographic characteristics and wave control dummies. Bootstrapped standard errors (1,000 replications) clustered at the mother level. Bold and italic: Statistically significant at the 99% confidence level; bold: Statistically significant at the 95% confidence level.

Table 3
SEM models for Mothers' Gender Attitudes and SDQ of Children aged 8.

Outcome variable		Gender attitudes		
		(1)	(2)	(3)
		Total effect	Direct effect	Indirect effect
Total difficulties score	Coefficient	−0.0167	−0.0146	−0.0021
	p-value	0.265	0.319	0.552
Emotional symptoms	Coefficient	**−0.0323**	−0.0311	−0.0011
	p-value	**0.045**	0.052	0.553
Conduct problems	Coefficient	−0.0032	−0.0005	−0.0026
	p-value	0.831	0.971	0.553
Hyperactivity	Coefficient	0.0016	0.0033	−0.0017
	p-value	0.911	0.812	0.552
Peer relationship problems	Coefficient	−0.0196	−0.0187	−0.0009
	p-value	0.185	0.208	0.553
Prosocial behaviour	Coefficient	*0.0558*	*0.0542*	0.0016
	p-value	*0.000*	*0.000*	0.554
Observations		5,040	5,040	5,040

All models include child's sex, maternal socio-demographic characteristics and wave control dummies. Bootstrapped standard errors (1,000 replications) clustered at the mother level. Bold and italic: Statistically significant at the 99% confidence level; bold: Statistically significant at the 95% confidence level.

Table 4
SEM models for Fathers' Gender Attitudes and SDQ of Children aged 5.

Outcome variable		Gender attitudes		
		(1)	(2)	(3)
		Total effect	Direct effect	Indirect effect
Total difficulties score	Coefficient	−0.0078	0.0046	*−0.0124*
	p-value	0.678	0.804	*0.000*
Emotional symptoms	Coefficient	−0.0302	−0.0243	*−0.0058*
	p-value	0.105	0.189	*0.006*
Conduct problems	Coefficient	−0.0043	0.0091	*−0.0135*
	p-value	0.813	0.614	*0.000*
Hyperactivity	Coefficient	0.0299	**0.0402**	*−0.0102*
	p-value	0.116	**0.032**	*0.001*
Peer relationship problems	Coefficient	−0.0343	−0.0279	*−0.0064*
	p-value	0.059	0.126	*0.005*
Prosocial behaviour	Coefficient	0.0156	0.0046	*0.0110*
	p-value	0.396	0.798	*0.001*
Observations		3,210	3,210	3,210

All models include child's sex, paternal socio-demographic characteristics and wave control dummies. Bootstrapped standard errors (1,000 replications) clustered at the father level. Bold and italic: Statistically significant at the 99% confidence level; bold: Statistically significant at the 95% confidence level.

Table 5
SEM models for Fathers' Gender Attitudes and SDQ of Children aged 8.

Outcome variable		Gender attitudes		
		(1)	(2)	(3)
		Total effect	Direct effect	Indirect effect
Total difficulties score	Coefficient	0.0027	0.0132	*−0.0105*
	p-value	0.884	0.475	*0.005*
Emotional symptoms	Coefficient	−0.0052	−0.0004	**−0.0047**
	p-value	0.779	0.980	**0.018**
Conduct problems	Coefficient	0.0067	0.0197	*−0.0129*
	p-value	0.722	0.288	*0.005*
Hyperactivity	Coefficient	0.0147	0.0234	*−0.0087*
	p-value	0.409	0.183	*0.006*
Peer relationship problems	Coefficient	−0.0136	−0.0087	**−0.0048**
	p-value	0.468	0.639	**0.015**
Prosocial behaviour	Coefficient	*0.0537*	**0.0440**	*0.0096*
	p-value	*0.004*	**0.018**	*0.005*
Observations		3,191	3,191	3,191

All models include child's sex, paternal socio-demographic characteristics and wave control dummies. Bootstrapped standard errors (1,000 replications) clustered at the father level. Bold and italic: Statistically significant at the 99% confidence level; bold: Statistically significant at the 95% confidence level.

inequitable gender attitudes were associated with harsh parenting practices in data from the UN multi-country study (Fulu et al., 2017). Research also suggests that a positive parenting approach that includes refraining from harsh parenting is optimal for children's mental health (Tabak and Zawadzka, 2017). More comprehensive measures of harsh parenting behaviours may better capture any mediating effects.

Overall, our findings suggest that parental gender attitudes – of both mothers and fathers – could be a potential target for intervention to support some aspects of children's mental health development. Previous research has shown that gender attitudes may be amenable to intervention (Gupta et al., 2013; Heymann et al., 2019; Kim et al., 2007). For example, in the violence against women and girls field where gender attitudes are known to be a risk factor for intimate partner violence, participation in interventions aimed at reducing intimate partner violence has been associated with more progressive gender norms among participants (Gupta et al., 2013; Kim et al., 2007). Components targeting gender attitudes are also beginning to be incorporated into parenting interventions. Our findings support this development in

parenting interventions and as evidence from their evaluations emerges, further insights may be gained into the role of parental gender role attitudes in child mental health, as well as their potential value as an intervention target.

Over time and accelerated by the inclusion of gender equality as part of the UN's 2030 Sustainable Development Goals (SDG5), there is increasing recognition of the potential benefits of improving gender norms for a wide range of individual and societal outcomes (Gupta et al., 2019). However, there has been relatively little discussion of the potential value for children's mental health. Our findings point to the potential of, for example, including children's mental health as an outcome in the monitoring and evaluation frameworks for efforts to improve gender attitudes in both adults and children. This could help further illuminate an additional potential outcome of any progressive shifts in gender norms produced as a result of these actions.

Our findings also point to several future directions for research. First, given the global variation in gender norm attitudes, it will be valuable to explore the extent to which findings generalise to other country

contexts. Further, given that the present study focused on a single mediating mechanism, it would be valuable to explore additional potential mediators of the parental gender attitudes and child mental health associations discussed above. Finally, it will be valuable in future research to investigate the impact of interventions to alter parental gender attitudes on children's mental health.

5. Limitations

It is important to consider the limitations of the present study. First, despite UKHLS being a large-scale UK-wide study, due to the complexity of deriving design and attrition weights for the present child-parent sample, we used unweighted analyses. This means that we cannot be sure that the findings would generalise to the underlying UK population. Second, although the data are longitudinal, we could not be sure of temporal ordering of effects since we did not have repeated measures of all concepts available to conduct longitudinal mediation analysis. This also limited our ability to implement any fixed-effects type models that could help adjust for time-stable confounding and leaves open alternative interpretations of our findings. For example, it is known that cross-sectional mediation models cannot distinguish true mediation (where mediator M transmits the effects of predictor X to outcome variable Y; X→M→Y) from situations where M is the common cause of X and Y. Based on a theory that parental behaviours are a confounder rather than a mediator, an alternative interpretation of the findings could be that there are no effects of parental gender attitudes after adjusting for parental behaviour. More generally, it is important to highlight that our findings are correlational and while we can conclude that gender attitudes of parents are predictive of child mental health, we cannot be sure based on the present analyses that the effects are causal.

As regards specific confounding variables, although we adjusted for a range of potential covariates, we were limited to the variables available in UKHLS and there may be some remaining unmeasured confounders. Future analyses using repeated measures and a fixed effects modelling approach, or an experimental/interventional approach will be helpful to test whether the associations and mediating effects we identified reflect causal relationships. Counterfactual analysis (e.g., propensity, coarsened exact, or cardinality matching or propensity weighting) in observational data with suitable measures of confounding variables can also be helpful in evaluation of whether parents' gender attitudes have (direct and indirect) causal effects on their children's mental health. Finally, based on data availability within UKHLS, our mediation analyses were limited in scope. As noted above, other mediators may be relevant for the association between parental gender attitudes and child mental health and could be explored in future research.

6. Conclusion

Parental gender attitudes in both mothers and fathers are associated with specific dimensions of their children's mental health at ages 5 and 8. This suggests that parental gender attitudes could be investigated as a possible target for intervention in the prevention of mental health difficulties among children. Parenting behaviour (e.g., praise, involvement and conflict) mediated the association in fathers across the majority of the subscales but not in mothers, suggesting that there may be different mechanisms linking gender attitudes to children's mental health depending on the gender of the parent.

Availability of data

Data from the Understanding Society Waves 1–12, 2009–2021 and Harmonised BHPS: Waves 1–18, 1991–2009, used for this study are available for download from the SN: 6614, http://doi.org/10.5255 /UKDA-SN-6614-18. The cross-wave children's file Understanding Society: Pregnancy and Early Childhood (PEACH), 2009–2021 is also available at UK Data Service: SN: 9075, http://doi.org/10.5255/UKDA-

SN-9075-2.

CRediT authorship contribution statement

Edith Aguirre: Writing – original draft. **Michaela Benzeval:** Writing – original draft. **Aja Murray:** Writing – original draft.

Declaration of competing interest

The authors declare that they have no competing interests.

Data availability

The links to download the data used have been shared in the manuscript.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.socscimed.2024.116632.

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