

Self-reported maternal parenting style and confidence and infant temperament in a multi-ethnic community: Results from the Born in Bradford cohort

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Abstract

Ethnic minority children in the United Kingdom often experience health disadvantage. Parenting influences children's current and future health, but little is known about whether parenting behaviours and mother's perception of her infant vary by ethnicity. Using the Born in Bradford (BiB) birth cohort, which is located in an ethnically diverse and economically deprived UK city, we conducted a cross-sectional analysis of mother's self-reported parenting confidence, self-efficacy, hostility and warmth, and infant temperament at six months of age. We examined responses from women of Pakistani ($N = 554$) and White British ($N = 439$) origin. Pakistani mothers reported feeling more confident about their abilities as a parent. Significantly fewer Pakistani women adopted a hostile approach to parenting, an effect that was attenuated after adjustment

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for socioeconomic status and mental health. Overall, women with more self-efficacious, warm and less hostile parenting styles reported significantly fewer problems with their infant's temperaments. Of women with higher self-efficacy parenting styles, Pakistani mothers were significantly more likely than White British mothers to report more problematic infant temperaments, although absolute differences were small. It is unlikely that the ethnic variation seen in children's cognitive and behavioural outcomes in childhood is attributable to differences in parenting or infant characteristics reported at six months.

Keywords

Ethnic minority, infant temperament, parenting confidence, parenting self-efficacy, parenting style

Introduction

In the last available census (2001), 8% of the UK's population was from ethnic minority groups (Lupton and Power, 2004), which is projected to rise to 21% by 2051 (Wohland et al., 2010). In 2001, the largest ethnic minority groups were Indian (23% of ethnic minorities) and Pakistani (16%) (Lupton and Power, 2004). The structural nature of inequality for ethnic minority groups in the United Kingdom and the United States and its impact on health are well documented (Nazroo, 2003), and this is evident in the outcomes of even young children (Flores and The Committee on Pediatric Research, 2010). Ethnic minority children in the United Kingdom may have worse cognitive scores than white children at ages three and five (Dearden and Sibieta, 2010; Kelly et al., 2006). Parents of children of Pakistani origin also report more behavioural problems (Dearden and Sibieta, 2010), which are indicative of poor mental health (Stansfeld et al., 2011; Goodman et al., 2010), although other studies using child-reported outcomes (Maynard and Harding, 2010) and measures from parents, teachers, children and clinical raters (Meltzer et al., 2000) report less risk of mental health problems in this group. This could be explained by sampling variation and different informants contributing complementary but varying information to reports of child behaviour (Meltzer et al., 2000); however, it is not obvious why reporting might vary by ethnicity. While poorer behavioural outcomes were partly explained by the worse socio-economic and child environment experienced by UK ethnic minorities, some variation remains (Dearden and Sibieta, 2010). As parenting is known to exert a significant influence on the future capabilities of children (National Research Council, 2000), a potential source of this variation may be differences in parenting.

The effect of parenting style, the behaviours and attitudes that set the emotional climate of parent-child interactions (Siegler et al., 2006) on children's mental health and well-being are well documented. An indulgent style, characterised by low control and high warmth, is associated with impulsivity and aggressive behaviour (Baumrind, 1991; Maccoby and Martin, 1983) and authoritarian parenting (high control and low warmth) with mental health difficulties, low self-confidence and esteem, decreased emotional maturity, and inadequate behavioural inhibition and self-regulation (Baumrind et al., 2010; Berg-Nielsen et al., 2002; Bradshaw and Hazan, 2006; Coie and Dodge, 1998; Siegler et al., 2006). These behavioural difficulties mature into an increased risk of adolescent and adult depression, anxiety and antisocial psychopathologies at great personal, societal and health care costs (Cummings and Davies, 1994). Hostile parenting practices (aggression and coercive parenting) increase the risk of emotional or conduct disorder as well as relationship and school difficulties (Landy and Tam, 1998). Data from an Australian cohort indicate that three parenting dimensions of global self-efficacy, warmth and hostility independently predict

child health and physical development, social and emotional functioning, and academic competency (Australian Institute of Family Studies, 2006). Effects were visible both in the study's infant cohort (0–1 years) and in the child cohort (4–5 years). In this large population sample, somewhat subtle variations in degrees of warmth and hostility occurring within the 'normal' range of parenting behaviours were potent predictors of children's outcomes (Australian Institute of Family Studies, 2006).

Not only does the style, practice and quality of parenting make a difference to child outcomes, but children's behaviour, more specifically temperament (reactivity and self-regulation; Rothbart, 1981), can also affect how parents behave towards their children. The more 'difficult' a child is perceived to be temperamentally, the lower the degree of maternal responsiveness (Milliones, 1978). Infants described as having easy temperaments experience a different pattern of interaction with their parents than infants perceived as difficult to manage (Putnam et al., 2002; Van den Bloom et al., 1994). The reciprocity within parent–infant dyads is likely to be affected by how a child behaves and their perceived temperament and maternal self-efficacy can mediate the relationship between maternal competence and perceptions of infant difficulty (Teti and Gelfand, 1991).

Data on parenting across different ethnic groups in the United Kingdom are sparse; historically, this paucity of information, coupled with observations about poor child outcomes, has led to detrimental and damaging assumptions about parenting style (Phoenix and Hussain, 2007). Recent work has indicated that compared with a white group, Pakistani mothers of primary aged children were more likely to report following through threats of discipline (Ali and Frederickson, 2011), and ethnic minority teenagers more likely to rate their parents as displaying less care and exerting greater control over their lives (Maynard and Harding, 2010). However, we are not aware of studies that examine parental styles of very young children in the UK's South Asian population, and mothers' reports of their infants' temperament lack an ethnic minority focus (Sanson et al., 2004). Such information would enhance our understanding on the emergence of early variation in parenting and any differential in interaction between parenting style and children's temperament among ethnic minority groups.

Here, using data from a recent multi-ethnic community birth cohort of infants in Bradford, UK, we examine variation between ethnic groups in mothers' reports of their parenting style, confidence in parenting and their infants' temperament.

Methods

Study sample

The data come from a subset of women recruited to the Born in Bradford (BiB) cohort, a longitudinal community study aiming to assess the impact of environmental, psychological and genetic factors on maternal and child health and well-being (Raynor and Born in Bradford Collaborative Group, 2008). Bradford is a city in the North of England with high levels of socio-economic deprivation and ethnic diversity, with 14.5% of the population and 27.6% of children aged from birth to four years reported to be of Pakistani ethnicity at the 2001 Census and 11.8% of the city's population born outside of the United Kingdom (Office for National Statistics, 2001). The full BiB cohort recruited 12,453 women comprising 13,776 pregnancies antenatally. Women who enrolled between August 2008 and March 2009 and completed the baseline questionnaire at around 26–28 weeks' gestation were approached for recruitment to a sub-study (BiB1000), for which consent was sought to repeat visits at 6, 12, 18, 24 and 36 months post-partum. Out of 1917 eligible

pregnancies, 1736 mothers agreed to take part in the BiB1000 study. This article reports on data from the 1306 mothers of singleton births seen at six months (range five to nine months) postnatally, between April 2009 and March 2010. Ethical approval for the data collection was granted by the Bradford Research Ethics Committee (Ref 07/H1302/112).

Data collection

Outcome variables. The outcome variables were self-reported at the six-month postnatal visit. Our main outcome was parenting style measured with questions used by other large cohort studies in the United States, Canada and Australia (Cohen et al., 1977; Dibble and Cohen, 1974; Sanson, 1995). These questions formed three domains of parenting: self-efficacy, parental warmth and parental hostility (Table 1). Most women rated themselves as being warm, self-efficacious and not hostile. Because of this skewed distribution, the scores for each domain were summed and the fifth with the lowest scores were classified as having lower parental self-efficacy and warmth and higher hostility (Australian Institute of Family Studies, 2006). We used exploratory factor analysis (EFA) in MPlus version 5.21 to assess the strength of fit of the parenting questionnaire data to the hypothesised structure. We treated the items as continuous and used a maximum likelihood estimator with robust standard errors to account for any non-normality. We employed commonly used parameters to indicate a good fit: comparative fit index (CFI) ≥ 0.95 , root mean square error of approximation (RMSEA) ≤ 0.08 and standardised root mean square residual (SRMR) ≤ 0.06 , specifying a two-factor model for the questions relating to parenting warmth and hostility and a single-factor model for self-efficacy. We examined the fit for each ethnic group separately, then tested for the same factor structure in each group by specifying an exploratory structural equation model (ESEM) with all factors free and then nested with factor loading constrained (Asparouhov and Muthén, 2009). We considered a change in the CFI fit parameter of <0.01 to indicate a similar factor structure in each group. An additional question asked mothers to reflect on their confidence as a parent.

The other outcome was the mothers' perception of the child's difficulties as measured by the Infant Characteristic Questionnaire (ICQ) (Bates et al., 1979), a 24-item instrument in which the mother rates her infant's temperament and behaviour on a scale of 1 to 7 in four domains: the mother's perception that the baby is fussy or difficult, unadaptable to new stimuli, less social and active and harder to predict their needs (Table 1). To reflect the infants' positive characteristics, we re-labelled the sub-scales to indicate children with easy temperaments, adaptable, social and active, and predictable. Due to non-normal distribution, the scores for each domain were summed and the fifth with the highest scores were classified as having more a problematic temperament in that domain. As for the parenting domains, classification in the quintile of highest scores may not reflect clinical problems. We used EFA and ESEM to assess the fit of the data to the child temperament measure, specifying a four-factor model and removing items that cross loaded, did not load onto any factor or did not load onto the hypothesised factor. To obtain an overall indicator of child temperament, we generated a total score summing the retained item scores and calculated Cronbach's α as a measure of item reliability.

Independent variables

Most of the demographic variables came from the baseline antenatal questionnaire. Self-defined ethnic group and cultural background were based on the UK's 2001 census and responses were

Table 1. Parenting questions and the Infant Characteristics Questionnaire.

Parenting questions	
Parental self-efficacy: each question measured on a scale from 1 'Not at all how I feel' to 10 'Exactly how I feel'	<p>I feel I am very good at keeping this child amused</p> <p>I feel that I am very good at calming this child when he/she is upset</p> <p>I feel I am very good at keeping this child busy while I am doing housework</p> <p>I feel that I am very good at routine tasks of caring for this child (feeding him/her, changing his or her nappies and giving him/her a bath)</p>
Parental warmth: each question measured on a scale from 1 'Never/almost never' to 5 'Always/almost always'	<p>How often do you express affection by hugging, kissing and holding this child?</p> <p>How often do you hug or hold this child for no particular reason?</p> <p>How often do you tell this child how happy he/she makes you feel?</p> <p>How often do you have warm, close times together with this child?</p> <p>How often do you enjoy doing things with this child?</p> <p>How often do you feel close to this child both when he/she is happy and he/she is upset?</p>
Hostile parenting: each question measured on a scale from 1 'Not at all' to 10 'All the time'	<p>I have been angry with this child</p> <p>I have raised my voice with or shouted at this child</p> <p>When this child cries, he/she gets on my nerves</p> <p>I have lost my temper with this child</p> <p>I have left this child alone in his/her bedroom when he/she was particularly upset</p>
Parental confidence: one question 'I am ...'	<p>Not very good at being a parent</p> <p>A person who has some trouble being a parent</p> <p>An average parent</p> <p>A better than average parent</p> <p>A very good parent</p>
Infant Characteristics Questionnaire	
Easy temperament (reflected fussy/difficult)	Retained
Mean score (SE)	5. How many times per day, on the average, does your baby get fussy and irritable – for either short or long periods of time?
White British 21.0 (0.34)	6. How much does your baby cry and fuss in general?
Pakistani 20.8 (0.29)	12. How easily does your infant get upset?
	13. When your baby gets upset (e.g. before feeding, during diapering, etc.), how vigorously or loudly does he/she cry and fuss?
	14. How does your baby react when you are dressing him/her?
	22. How changeable is your baby's mood?
	24. Please rate the overall degree of difficulty your baby would present for the average mother.
	Not retained
	1. How easy or difficult is it for you to calm or soothe your baby when he/she is upset?
	17. What kind of mood is your baby generally in?

(continued)

Table 1. (continued)

Infant Characteristics Questionnaire	
Adaptable (reflected unadaptable)	Retained
Mean score (SE)	9. How does your baby typically respond to a new person?
White British 9.7 (0.21)	10. How does your baby typically respond to being in a new place?
Pakistani 10.5 (0.21)	11. How well does your baby adapt to things (such as in items 7–10) eventually?
	20. How does your baby respond to disruptions and changes in everyday routine, such as when you go to church or a meeting, on trips, etc.?
	Not retained
	7. How did your baby respond to his/her first bath?
Predictable (reflected unpredictable)	Retained
Mean score (SE)	2. How easy or difficult is it for you to predict when your baby will go to sleep and wake up?
White British 7.3 (0.15)	3. How easy or difficult is it for you to predict when your baby will become hungry?
Pakistani 7.2 (0.14)	4. How easy or difficult is it for you to know what's bothering your baby when he/she cries or fusses?
	Not retained
	8. How did your baby respond to his/her first solid food?
	19. How much does your baby want to be held?
	21. How easy is it for you to predict when your baby will need a diaper change?
Social and active (reflected dull)	15. How active is your baby in general?
Not retained – trivial factor	16. How much does your baby smile and make happy sounds?
	18. How much does your baby enjoy playing little games with you?
	23. How excited does your baby become when people play with or talk to him/her?

SE: standard error.

classified into the two most numerous groups of White British and Pakistani; all other responses formed a heterogeneous group ($N = 177$), which we did not analyse. We noted the country of birth and categorised the mother's age at recruitment as young (<20 years), average childbearing age (20–34 years) and older (35+ years). Parity was classified from 0 to 3 or more. We categorised the mother's highest educational qualification, equivalising to the United Kingdom in cases where education was obtained abroad. Over 35% of the South Asian women did not know or did not report the amount of household income, so we used the response to a question on financial security: 'How well would you say you or you and your husband/partner are managing financially these days?' We categorised those who reported 'living comfortably' or 'doing alright' as financially secure and those who responded 'just about getting by', 'finding it quite- or very difficult' as struggling financially. The few cases ($N = 5$) of non-response we classified as financially secure. Finally, the sex of the baby was gathered from the electronic maternity record system.

Marital status and the mental health variable were collected at the six-month postnatal visit. We classified relationship status at six months as married, cohabiting, not living with

Table 2. Population characteristics by ethnicity.

Variable	Category	White British N = 439	Pakistani N = 554	Total N = 993
Baby's sex	Male	215 (49.0)	272 (49.1)	487 (49.0)
	Female	224 (51.0)	282 (50.9)	506 (51.0)
Mother's education	<5 GCSE equivalent	83 (18.9)	130 (23.5)	213 (21.5)
	5 GCSE equivalent	151 (34.4)	175 (31.6)	326 (32.8)
	A-level equivalent	73 (16.6)	68 (12.3)	141 (14.2)
	>A-level equivalent	97 (22.1)	155 (28.0)	252 (25.4)
	Other	32 (7.3)	16 (2.9)	48 (4.8)
Mother's age (at recruitment)	Don't know	3 (0.7)	10 (1.8)	13 (1.3)
	<20 years	42 (9.6)	14 (2.5)	56 (5.6)
	20–34 years	336 (76.5)	480 (86.6)	816 (82.2)
Parity	35+ years	61 (13.9)	60 (10.8)	121 (12.2)
	0	214 (48.8)	185 (33.4)	399 (40.2)
	1	135 (30.8)	163 (29.4)	298 (30.0)
	2	50 (11.4)	94 (17.0)	144 (14.5)
Financial security	3+	40 (9.1)	112 (20.0)	152 (15.3)
	Financially secure	303 (69.0)	387 (69.9)	690 (69.5)
	Not financially secure	136 (31.0)	316 (30.1)	303 (30.5)
Relationship status at 6 month visit	Married	170 (38.2)	523 (94.4)	693 (69.8)
	Cohabiting	180 (41.0)	1 (0.2)	181 (18.2)
	Lone parent in a relationship	45 (10.3)	14 (2.5)	59 (5.9)
	Lone parent not in a relationship	44 (10.0)	16 (2.9)	60 (6.0)
Mother's mental health	Not distressed	378 (86.1)	430 (77.6)	808 (81.4)
	Distressed	61 (13.9)	124 (22.4)	185 (18.6)
Mother's country of birth*	Born in the United Kingdom	439 (100)	238 (43.0)	664 (66.9)
	Born overseas	0	124 (57.0)	329 (33.1)
Language of 6-month questionnaire*	English	434 (98.9)	373 (67.3)	807 (81.3)
	Non-English	1 (0.2)	177 (31.9)	178 (17.9)
	Missing	4 (0.9)	4 (0.7)	8 (0.8)

Note: Percentages may not total to 100 due to rounding.

*Variable not used in the analysis; GCSE: General Certificate of Secondary Education.

a partner but in a relationship, and not living with a partner and not in a relationship. We noted the language in which the questionnaire was completed. As a measure of mental health, we took four questions from the general health questionnaire (GHQ)-28 (Goldberg and Hillier, 1979), each scored from 0 to 3 to with 0 indicating no symptom endorsement. We selected these four questions because they appeared to be measuring the same underlying concept of severe depression in both the White and Pakistani populations (Prady et al., 2011). We categorised women who did not endorse any of the four items as non-distressed and endorsement of at least one item as distressed, using these terms as indicating psychological distress, not psychiatric diagnoses.

Overall, one-third of the included mothers reported struggling financially (Table 2). In all, 33% of Pakistani mothers were nulliparous and 5.4% not living with a partner, compared with 49% and 20.3% of White British mothers, respectively. In all, 58% of the Pakistani mothers had migrated to the United Kingdom and 33% elected to complete the six-month questionnaire in a language other than English.

Missing values

We excluded cases with missing ethnicity data ($N = 2$), where any of the responses to the questions in each parenting domain or each child temperament domain were missing ($N = 75$) or where other covariates were missing (a further 59 cases). This led to the exclusion of 8.9% of the White British cases and 14.1% of the Pakistani cases, leaving 439 White British and 554 Pakistani women in the analysis.

Statistical methods

We compared basic characteristics of included versus excluded women using chi-square tests. For the parental confidence question, we tabulated the categories endorsed by each ethnic group. For each parenting domain, the indicators for 'lower parental confidence', 'lower parental warmth' or 'higher parental hostility' were used as binary outcomes in logistic regression models to investigate the relationship between parenting and ethnicity. We ran four models: (1) unadjusted, (2) also adjusted for psychological distress, (3) also adjusted for total child difficulty score and (4) also adjusted for socio-demographic variables (baby sex, mother's education, mother's age as a continuous variable, parity, financial security, marital status). For the infant temperament analyses, we used the indicators for 'easy temperament', 'adaptable' and 'predictable' as binary outcomes in logistic regression, with ethnicity as the independent variable. As for the parenting models, we also adjusted for mental health and socio-demographic variables. We compared the mean overall child temperament score from women with higher and lower parenting practices both overall (t test) and between ethnic groups using one-way analysis of variance.

To explore how self-reported parenting factors and child temperament might vary with less experience of child-rearing (Fisher and Stifter, 1993; Mebert and Kalimowski, 1986), we ran sensitivity analyses using data only from the nulliparous women. We used Stata 11 (StataCorp LP, Texas) for the analysis and considered probabilities below $\alpha < 0.05$ to indicate statistical significance.

Results

Assessment of generalizability

Comparing included and excluded cases, there was little evidence that those excluded due to missing a parenting or child temperament outcome differed from those included by ethnic group, $\chi^2(1) = 2.2$, $p = 0.14$, financial well-being, $\chi^2(1) = 0.96$, $p = 0.33$ or language of questionnaire administration (English vs. non-English, $\chi^2(1) = 1.02$, $p = 0.31$). The ratio of included White British to Pakistani women (1:1.26) is similar to the whole cohort (1:1.14), which is in turn broadly reflective of Bradford's maternal population (Wright et al., 2012).

Parental confidence

The Pakistani women reported feeling more confident in their abilities as mothers (Table 3). The category the White British women endorsed the most was that of an 'average parent' (39.7%), whereas Pakistani women endorsed the category of being a 'very good parent' most often (49.1%).

Table 3. Ethnic differences in parental confidence.

	White British	Pakistani	Total
Not very good at being a parent	3 (0.7)	3 (0.6)	6 (0.6)
Some trouble being a parent	11 (2.5)	7 (1.3)	18 (1.8)
An average parent	173 (39.7)	151 (27.6)	324 (32.9)
A better than average parent	102 (23.4)	118 (21.5)	220 (22.4)
A very good parent	147 (33.7)	269 (49.1)	416 (42.3)

Note: Column percentages, 9 cases missing (3 White British and 6 Pakistani).

Table 4. Parenting and infant temperament scores by ethnicity.

	White British	Pakistani	Total
Parental self-efficacy – range 4 (least) to 40 (most self-efficacious)	35 (31, 38)	36 (30, 40)	35 (30, 39)
Parental warmth – range 5 (least) to 30 (most warm)	28 (26, 30)	28 (26, 30)	28 (26, 30)
Hostile parenting – range 5 (least) to 50 (most hostile)	6 (5, 9)	5 (5, 8)	6 (5, 8)
Infant characteristics			
Easy temperament – range 7 (most) to 49 (least easy)	21 (16, 26)	21 (16, 25)	21 (16, 25)
Adaptable – range 4 (most) to 28 (least adaptable)	9 (6, 13)	10 (7, 14)	10 (7, 13)
Predictable – range 3 (most) to 21 (least predictable)	7 (5, 9)	6 (4, 9)	7 (4, 9)

Note: Numbers are median (interquartile range).

Psychometric analysis

Fit of the data to the parenting measures for both groups was good on two of the fit statistics for the warmth and hostility composite and all three for the self-efficacy factor. The majority of items loaded between 0.5 and 0.8, with no non-loading (<0.3) or cross-loading items. There was no appreciable change in fit when the factor loadings were constrained (Δ CFI = 0.002 for self-efficacy, 0.007 for warmth and hostility), indicating a similar factor structure for both ethnic groups.

The fit of the infant temperament scale was also good. Several items were indiscriminate in both groups: item 1 cross loaded (>0.3); items 15, 17 and 19 did not load onto the hypothesised factor (along with item 21 in the Pakistani group only) and items 7 and 8 did not load onto any factor (<0.3). After the removal of these items, post-rotation eigenvalues revealed the three remaining items in the 'social and active' factor to be trivial in both groups (<1). This factor was removed, leaving 14 items comprising three factors (Table 1), with the easy temperament factor accounting for the most variance in each group. There was no appreciable change in fit when the factor loadings were constrained for this reduced item set (Δ CFI = 0.005). Item consistency was high for the 14 retained items summed as the total score of the ICQ (Cronbach's α = 0.80). Summary outcome data are presented in Table 4.

Parenting style

There was little evidence that parenting style differed between ethnic groups (Table 5). There was some evidence that Pakistani women were less likely to be classified as having a more hostile parenting style (odds ratio (OR) 0.71; 95% confidence interval (CI) 0.53, 0.95). This difference

Table 5. Logistic regression of parenting practices by ethnicity.

	Model 1 unadjusted OR (95% CI)	Model 2 adjusted OR (95% CI)	Model 3 adjusted OR (95% CI)	Model 4 adjusted OR (95% CI)
Low self-efficacy				
White British	1 -	1 -	1 -	1 -
Pakistani	1.12 (0.82, 1.52)	1.06 (0.78, 1.44)	1.06 (0.76, 1.47)	1.08 (0.70, 1.67)
Low parental warmth				
White British	1 -	1 -	1 -	1 -
Pakistani	1.13 (0.83, 1.54)	1.15 (0.84, 1.56)	1.14 (0.84, 1.56)	1.16 (0.76, 1.77)
Hostile parenting				
White British	1 -	1 -	1 -	1 -
Pakistani	0.71 (0.53, 0.95)*	0.68 (0.51, 0.92)*	0.66 (0.49, 0.90)**	0.69 (0.47, 1.03)

OR: odds ratio; CI: confidence interval.

Note: An OR above 1 indicates more problems in that domain, below 1 indicates fewer problems. Model 2 adjusted for psychological distress; model 3 also adjusted for total child difficulty score. model 4 also adjusted for baby sex, mother's education, mother's age, parity, financial security and marital status; statistically significant estimates are in boldface.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

persisted after adjusting for mental health and total child difficulty score, but was no longer statistically significant after adjusting for socio-demographic characteristics.

Infant temperament

There was little evidence of differences in infant characteristics by ethnic group (Table 6). Across ethnic groups, those with more positive parenting practices (high self-efficacy, high warmth, low hostility) reported less problematic infant temperament scores (Table 7). White British women with higher and lower self-efficacy reported that their infants, on average, had easier and more difficult temperaments, respectively, compared to Pakistani women with similar parenting practices. The absolute difference in infant temperament was 1.6% for higher and 4.6% for lower self-efficacy.

Sensitivity analysis

We conducted a sensitivity analysis to explore how experience with child-rearing might have affected our estimates. There was some limited evidence to suggest that nulliparous White British women might be more confident and have less hostile parenting than their multiparous counterparts.

Discussion

The aim of our research was to describe any differences in early parenting behaviours and infant temperament between ethnic groups as a link to markers of children's future health and well-being in an economically deprived city-based sample. To our knowledge, no such data have been reported previously for UK-resident women. We found that women of Pakistani origin reported having more confidence in their parenting than the other mothers. They also reported less hostile parenting. There was little evidence of any differences in the report of infant temperament except

Table 6. Logistic regression of child temperament by ethnicity.

	Model 1 unadjusted OR (95% CI)	Model 2 adjusted OR (95% CI)	Model 3 adjusted OR (95% CI)
Easy temperament			
White British	1 -	1 -	1 -
Pakistani	0.93 (0.68, 1.27)	0.88 (0.64, 1.21)	0.83 (0.55, 1.26)
Adaptable			
White British	1 -	1 -	1 -
Pakistani	1.30 (0.96, 1.75)	1.27 (0.94, 1.72)	1.19 (0.79, 1.77)
Predictable			
White British	1 -	1 -	1 -
Pakistani	0.99 (0.74, 1.33)	0.96 (0.71, 1.29)	0.95 (0.64, 1.40)

OR: odds ratio; CI: confidence interval.

Note: An OR above 1 indicates more problems in that domain, below 1 indicates fewer problems. Model 2 adjusted for psychological distress. Model 3 also adjusted for baby sex, mother's education, mother's age, parity, financial security and marital status.

Table 7. Ethnic differences in reporting child temperament by parenting style.

	Self-efficacy		Parental warmth		Hostile parenting	
	Higher	Lower	Higher	Lower	Lower	Higher
White British	35.4 (0.54)	48.1 (1.16)	37.0 (0.60)	42.0 (1.22)	35.7 (0.60)	44.1 (1.05)
Pakistani	37.0 (0.53)	43.6 (0.95)	37.7 (0.54)	41.0 (0.97)	37.2 (0.53)	43.2 (0.98)
Total	36.3 (0.38)	45.5 (0.74)	37.4 (0.40)	41.4 (0.76)	36.6 (0.40)	43.6 (0.72)
Difference between total high/low	$d = -9.23, t = -11.2, p < 0.001$		$d = -3.98, t = -4.6, p < 0.001$		$d = -7.09, t = -8.7, p < 0.001$	
White British cf Pakistani*	$d = -1.6$ $f(1, 777) = 4.3$ $p = 0.04$	$d = 4.5$ $f(1, 212) = 9.4$ $p = 0.003$	$d = -0.7$ $f(1, 778) = 0.79$ $p = 0.38$	$d = 1.0$ $f(1, 211) = 0.40$ $p = 0.53$	$d = -1.5$ $f(1, 752) = 3.5$ $p = 0.06$	$d = 0.9$ $f(1, 237) = 0.44$ $p = 0.51$

Note: Unless otherwise noted, estimates are mean (standard error) of the total child temperament questionnaire.

*One-way analysis of variance; statistically significant estimates are in boldface.

that self-efficacious Pakistani women reported more problems with their infant's temperament than White British women (unadjusted analysis), and those with lower self-efficacy reported fewer problems. Although statistically significant, however, differences in temperament scores were low (<5 percentage points) and may have little 'real world' relevance to actual infant behaviour.

One explanation of why Pakistani mothers may be more critical of their infant's temperament is that they hold higher expectations for their child's behaviour. This could be a function of community-facing *Izzat* (pride) that needs to be upheld by the whole family, including children (Stewart et al., 1999). Indeed, this raises the hypothesis that some of the excess in parentally reported child behaviour problems for Pakistani children in the Millennium Cohort Study (Dearden and Sibiet, 2010) might be due to mothers being systematically overcritical of their children's behaviour compared to other groups (Prady and Kiernan, 2012). Not against this idea are the results from a national survey that used independent interviewers and multi-informants (parents, teachers and children), which indicated that Pakistani children had a *lower* risk of mental health problems compared to the majority of the white population (Meltzer et al., 2000).

Women brought up in Pakistan might have greater exposure to a parenting style influenced by different circumstances than those in the United Kingdom, which could result in adoption of a more traditional style that incorporates higher hostility or similar dimensions (e.g. Ali and Frederickson, 2011; Maynard and Harding, 2010) but more assured and confident parenting. As nearly one-half of the Pakistani women in this analysis were born in the United Kingdom, it is possible that acculturation processes that widen social and support networks over time for migrants (Samad, 2010) reduced any variation in parenting resulting from generational status.

Across this sample, women with warmer, more efficacious and less hostile practices reported fewer problems with their infants' temperament. In this article, we analysed subjectively reported perception of parenting style and infant characteristics which assess the infant in the context of the stimulation provided in the home (Rothbart, 1982). In addition to individual variation in this home environment, more problematic infant characteristics scores can be influenced by maternal depression (Meredith and Noller, 2003) and parental distress (Mantymaa et al., 2006), but we did not find attenuation after adjustment for the worse mental health reported by Pakistani women.

We did find that the association between less hostile parenting in the Pakistani group attenuated after full adjustment, indicating that *other things being equal*, Pakistani mothers do not report practicing less hostile parenting. However, in the United Kingdom, 'things' are not equal, and South Asian groups can suffer lower socio-economic status (SES) and more mental health problems due to racism and discrimination (Hussain and Cochrane, 2004; Nazroo, 2003). The implication being that despite increased adversity that would seemingly put them at risk for less benevolent parenting practices, Pakistani mothers might adopt a parenting style that minimises hostility, which might serve to buffer the negative effect of low SES on the healthy development of the increasing number of children of South Asian origin growing up in the United Kingdom. Adoption of such enhanced parenting practices under adversity has been noted elsewhere (Armistead et al., 2002). However, as differences in other parenting dimensions such as care, control and discipline have been noted in other UK samples of South Asian parents of older children (Ali and Frederickson, 2011; Maynard and Harding, 2010), we suggest further verification work is needed across a wider age range of children and across their life course.

Responses to the parental confidence question were in line with those found in an Australian infant cohort (Weston et al., 2006), with ~98% of mothers rating themselves as being an average parent or better. Looking at the more positive reports of confidence, in our sample 34% of the White British mothers considered themselves to be very good parents, less than the Australian sample of 42%, but 49% of Pakistani mothers rated themselves this highly. This higher confidence reported by Pakistani women merits further exploration.

Strengths and limitations

We took a rigorous approach to assessing whether the concepts relating to infant temperament and parenting measures were similar between the ethnic groups, finding them broadly equivalent. This increases our confidence that we can compare these concepts between groups, although there may be residual measurement error due to differences in the way women of different ethnicities respond to items, which may have interfered with our findings. It remains a possibility that ethnic groups have different cultural norms around classification of parenting behaviour and infant temperament (Chao, 1994; Stewart and Bond, 2002) and differences in home environment that contextualise behaviour (Rothbart, 1982). However, as we saw few differences, it is possible they are either

attenuated by possible measurement error or so small as to be negligible in effect. We summed the total score of the infant temperament measurement as a gross measure of total difficulties; and although we found item reliability to be high, we acknowledge this is not a previously validated use of the instrument.

Our ethnic categorisation included culturally heterogeneous groups, with a third of the Pakistani group choosing not to complete the questionnaire in English and over one-half being born outside of the United Kingdom. Such ethnicity-based classifications are unsatisfactory (Sheldon and Parker, 1992), and this variation might explain why we did not find associations between ethnicity and parenting or infant temperament. The strength of BiB is that it is drawn from a community of women in a single geographical area, and, compared with nationally representative birth cohorts, there would not be as large a variation in environmental and social factors. However, generalizability of our findings to other established communities of migrant Pakistani families needs verification.

The data we present, as with much research in this area, are limited by its cross-sectional and self-reported nature. If the development of parenting practice in reaction to infant temperament, and vice-versa, differs between ethnic groups, then this is a potential limitation of our analysis.

Implications

Our study indicates few differences in self-reported parenting by ethnicity, which implies universal monitoring and intervention for problematic parenting. Although infants classified as having ‘problematic’ temperaments may not automatically be at risk for developmental problems (Rothbart, 1982), longitudinal work has implicated problems in early parenting and infant temperament to be predictive of behavioural problems in four- to five-year-olds (Christensen et al., 2011). Accordingly, in the future we plan to follow the health, behaviour and educational attainment of these children to examine the association between early parenting and later childhood well-being such as the association of parenting and infant temperament on child growth (Botton et al., 2008; Hubbs-Tait et al., 2008; McCarthy et al., 2007).

In conclusion, we found some evidence of differences between self-reported parenting between White British and Pakistani women living in an economically deprived UK city, which were mostly explained by variation in economic and demographic status characteristics. It would seem unlikely that the ethnic variation seen in children’s cognitive and behavioural outcomes in early childhood (Dearden and Sibieta, 2010) is attributable to differences in parenting practices or infant characteristics reported at six months. The finding that Pakistani mothers report being more confident in their parenting abilities and adopt a less hostile style merits verification and further investigation in terms of possible mediators of child outcomes.

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References

- Ali S and Frederickson N (2011) The parenting dimensions of British Pakistani and White mothers of primary school children. *Infant and Child Development* 20: 313–329.
- Armistead L, Forehand R, Brody G, et al. (2002) Parenting and child psychosocial adjustment in single-parent African American families: Is community context important? *Behavior Therapy* 33: 361–375.
- Asparouhov T and Muthén B (2009) Exploratory structural equation modeling. *Structural Equation Modeling* 16: 397–438.
- Australian Institute of Family Studies (2006) *Growing Up in Australia: The Longitudinal Study of Australian Children: 2005–06 Annual Report*. Melbourne, Australia: Australian Institute of Family Studies, pp. 1–44.
- Bates JE, Freeland CA and Lounsbury ML (1979) Measurement of infant difficultness. *Child Development* 50: 794–803.
- Baumrind D (1991) The influence of parenting style on adolescent competence and substance use. *Journal of Early Adolescence* 11: 56–95.
- Baumrind D, Larzelere RE and Owens EB (2010) Effects of preschool parents' power assertive patterns and practices on adolescent development. *Parenting* 10: 157–201.
- Berg-Nielsen TS, Vikan A and Dahl AA (2002) Parenting related to child and parental psychopathology: A descriptive review of the literature. *Clinical Child Psychology and Psychiatry* 7: 529–552.
- Botton J, Heude B, Maccario J, et al. (2008) Postnatal weight and height growth velocities at different ages between birth and 5 years and body composition in adolescent boys and girls. *American Journal of Clinical Nutrition* 87: 1760–1768.
- Bradshaw CP and Hazan C (2006) Examining views of self in relation to views of others: Implications for research on aggression and self-esteem. *Journal of Research in Personality* 40: 1209–1218.
- Chao RK (1994) Beyond parental control and authoritarian parenting style: Understanding Chinese parenting through the cultural notion of training. *Child Development* 65: 1111–1119.
- Christensen D, Lawrence D, Mitrou F, et al. (2011) Child temperament, parenting style and emotional and behavioural problems in early childhood findings from the longitudinal study of Australian children. In: *LSAC-LSIC Conference 2012*. Melbourne. (Unpublished).
- Cohen DJ, Dibble E and Grawe JM (1977) Parental style: Mothers' and fathers' perceptions of their relations with twin children. *Archives of General Psychiatry* 34: 445–451.
- Coie JD and Dodge KA (1998) Aggression and antisocial behavior. In: Damon W and Eisenberg N (eds) *Handbook of Child Psychology: Social, Emotional, and Personality Development*. New York, NY: Wiley, pp. 779–862.
- Cummings EM and Davies PT (1994) Maternal depression and child development. *Journal of Child Psychology and Psychiatry* 35: 73–112.
- Dearden L and Sibieta L (2010) Ethnic inequalities in child outcomes. In: Hansen K, Joshi H and Dex S (eds) *Children of the 21st Century: The First Five Years*. Bristol, UK: The Policy Press.
- Dibble E and Cohen DJ (1974) Companion instruments for measuring children's competence and parental style. *Archives of General Psychiatry* 30: 805–815.
- Fisher M and Stifter CA (1993) Mother parity as a main and moderating influence on early mother–infant interaction. *Journal of Applied Developmental Psychology* 14: 557–572.

- Flores G and The Committee on Pediatric Research (2010) Technical report – racial and ethnic disparities in the health and health care of children. *Pediatrics* 125: e979–e1020.
- Goldberg DP and Hillier VF (1979) A scaled version of the general health questionnaire. *Psychological Medicine* 9: 139–145.
- Goodman A, Lamping DL and Ploubidis GB (2010) When to use broader internalising and externalising subscales instead of the hypothesised five subscales on the strengths and difficulties questionnaire (SDQ): Data from British parents, teachers and children. *Journal of Abnormal Child Psychology* 38: 1179–1191.
- Hubbs-Tait L, Kennedy TS, Page MC, et al. (2008) Parental feeding practices predict authoritative, authoritarian, and permissive parenting styles. *Journal of the American Dietetic Association* 108: 1154–1161.
- Hussain F and Cochrane R (2004) Depression in South Asian women living in the UK: A review of the literature with implications for service provision. *Transcultural Psychiatry* 41: 253–270.
- Kelly Y, Sacker A, Schoon I, et al. (2006) Ethnic differences in achievement of developmental milestones by 9 months of age: The Millennium Cohort Study. *Developmental Medicine and Child Neurology* 48: 825–830.
- Landy S and Tam KK (1998) *Understanding the Contribution of Multiple Risk Factors on Child Development at Various Ages*. Canada: Applied Research Branch, Strategic Policy, Human Resources Development.
- Lupton R and Power A (2004) *Minority Ethnic Groups in Britain. CASE-Brookings Census Briefs No. 2*. London, UK: London School of Economics.
- McCarthy A, Hughes R, Tilling K, et al. (2007) Birth weight, post-natal, infant and childhood growth and obesity in young adulthood: Evidence from the Barry Caerphilly Growth (BCG) study. *American Journal of Clinical Nutrition* 86: 907–913.
- Maccoby EE and Martin JA (1983) Socialization in the context of the family: Parent–child interaction. In: Hetherington EM (ed.) *Handbook of Child Psychology, Vol. 4: Socialization, Personality, and Social Development*, 4 edn. New York, NY: Wiley, pp. 1–101.
- Mantymaa M, Puura K, Luoma I, et al. (2006) Mother’s early perception of her infant’s difficult temperament, parenting stress and early mother–infant interaction. *Nordic Journal of Psychiatry* 60: 379–386.
- Maynard MJ and Harding S (2010) Perceived parenting and psychological well-being in UK ethnic minority adolescents. *Child: Care, Health and Development* 36: 630–638.
- Mebert CJ and Kalimowski MF (1986) Parents’ expectations and perceptions of infant temperament: “pregnancy status” differences. *Infant Behavior and Development* 9: 321–334.
- Meltzer H, Gatwood R, Goodman R, et al. (2000) *Mental Health of Children and Adolescents in Great Britain*. London, UK: Office of National Statistics.
- Meredith P and Noller P (2003) Attachment and infant difficulty in postnatal depression. *Journal of Family Issues* 24: 668–686.
- Milliones J (1978) Relationship between perceived child temperament and maternal behaviours. *Child Development* 49: 1255–1257.
- National Research Council (2000) *Nurturing Relationships. From Neurons to Neighborhoods: The Science of Early Childhood Development*. Washington, DC: National Academy Press, pp. 225–266.
- Nazroo JY (2003) The structuring of ethnic inequalities in health: Economic position, racial discrimination, and racism. *American Journal of Public Health* 93: 277–284.
- Office for National Statistics (2001) Neighbourhood Statistics: Tables UV08, UV09 and nomis table S101. 2001 census. London, UK: Office for National Statistics
- Phoenix A and Hussain F (2007) *Parenting and Ethnicity*. York, UK: Joseph Rowntree Foundation.
- Prady SL and Kiernan KE (2012) The effect of post-natal mental distress amongst Indian and Pakistani mothers living in England on children’s behavioural outcomes. *Child: Care, Health and Development*. Epub ahead of print 29 August 2012. DOI: 10.1111/j.1365-2214.2012.01426.x.

- Prady SL, Miles JNV, Pickett KE, Fairley L, Bloor K, et al. (2013) The psychometric properties of the subscales of the GHQ-28 in a multi-ethnic maternal sample: results from the Born in Bradford cohort. *BMC Psychiatry* 13: doi:10.1186/1471-1244X-1113-1155.
- Putnam SP, Sanson AV and Rothbart MK (2002) Child temperament and parenting. In: Bornstein MH (ed.) *Children and Parenting*. Routledge.
- Raynor P and Born in Bradford Collaborative Group (2008) Born in Bradford, a cohort study of babies born in Bradford, and their parents: Protocol for the recruitment phase. *BMC Public Health* 8: 327.
- Rothbart MK (1981) Measurement of temperament in infancy. *Child Development* 52: 569–578.
- Rothbart MK (1982) The concept of difficult temperament: A critical analysis of Thomas, Chess and Korn. *Merrill-Palmer Quarterly* 28: 35–39.
- Samad Y (2010) *Muslims and Community Cohesion in Bradford*. York, UK: Joseph Rowntree Foundation.
- Sanson AV (1995) *Childrearing Questionnaire*. Unpublished scale. University of Melbourne, Australia.
- Sanson AV, Hemphill SA and Smart D (2004) Connections between temperament and social development: A review. *Social Development* 13: 142–170.
- Sheldon TA and Parker H (1992) Race and ethnicity in health research. *Journal of Public Health Medicine* 14: 104–110.
- Siegler R, Deloache J and Eisenberg N (2006) *An Introduction to Child Development*. New York, NY: Worth Publishers.
- Stansfeld SA, Clark C, Rodgers B, et al. (2011) Repeated exposure to socioeconomic disadvantage and health selection as life course pathways to mid-life depressive and anxiety disorders. *Social Psychiatry and Psychiatric Epidemiology* 46: 549–558.
- Stewart SM and Bond MH (2002) A critical look at parenting research from the mainstream: Problems uncovered while adapting western research to non-western cultures. *British Journal of Developmental Psychology* 20: 379–392.
- Stewart SM, Bond MH, Zaman R, et al. (1999) Functional parenting in Pakistan. *International Journal of Behavioural Development* 23: 747–770.
- Teti DM and Gelfand DM (1991) Behavioral competence among mothers of infants in the first year: The mediational role of maternal self-efficacy. *Child Development* 62: 918–929.
- van den Bloom DC, Dymphna C and Hoeksma JB (1994) The effect of infant irritability on mother–infant interaction: A growth-curve analysis. *Developmental Psychology* 30: 581–590.
- Weston R, Soriano G and Qu L (2006) Starting early, starting late: Socio-demographic characteristics and parenting of new mothers of different ages. *Family Matters*: 52–59.
- Wohland P, Rees P, Norman P, et al. (2010) *Ethnic Population Projections for the UK and Local Areas, 2001–2051*. Leeds, UK: University of Leeds, Department of Geography, pp. 1–185.
- Wright J, Small N, Raynor P, et al. (2012) Cohort profile: The Born in Bradford multi-ethnic family cohort study. *International Journal of Epidemiology*. Epub ahead of print 12 October 2012. DOI:10.1093/ije/dys1112.