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1 Korani, M., Rea, D. M., King, P. F., & Brown, A. E. (2018). Maternal eating behaviour
2 differs between ethnic groups in the UK: important considerations for research and
3 practice. *Maternal and Child Nutrition*

4

5

6 **Abstract**

7

8 Background: Maternal eating behaviours such as cognitive restraint, uncontrolled,
9 and emotional eating styles can have important implications for both maternal own
10 weight, and the weight and eating behaviour of her children. Maternal eating style
11 can affect her feeding interactions with her child, which in turn can influence their
12 weight and eating behaviour. However, despite a body of research examining these
13 relationships, research examining differences in maternal eating behaviour between
14 ethnic groups is sparse with much of the research, particularly in the UK, conducted
15 with White British samples. The aim of the current research was therefore to explore
16 how maternal eating behaviour may differ between ethnic groups in the UK.

17

18 Methods: 659 UK mothers with a child aged 5 – 11 years old completed a self-report
19 questionnaire. Items included ethnicity, demographic data and the three-factor
20 eating questionnaire to measure maternal cognitive restraint, uncontrolled and
21 emotional eating.

22

23 Results: Mothers from Chinese backgrounds were significantly higher in cognitive
24 restraint and lower in emotional and uncontrolled eating compared to all groups.
25 Conversely mothers from South Asian backgrounds were the highest in emotional
26 and uncontrolled eating and lower in cognitive restraint than all other groups. Black
27 mothers were also higher in uncontrolled eating compared to White British and
28 Chinese mothers.

29

30 Conclusions: Variations in maternal eating behaviours vary between ethnic groups.
31 Understanding how cultural factors may influence these variations is important, as
32 maternal eating behaviours can influence her own and her child's weight. Maternal
33 eating behaviour may therefore be a contributor to higher levels of overweight
34 amongst South Asian and Black children living in the UK.

35

36 **Key words:** Maternal eating behaviour; Cognitive restraint; Emotional eating;
37 Uncontrolled eating; Ethnicity; South Asian; Chinese

38 **Key messages**

39

40 Maternal eating behaviour differs between ethnic groups in the UK and therefore
41 eating behaviour research should routinely collect ethnicity data and ensure
42 diversity in samples.

43

44 Mothers from South Asian backgrounds have significantly higher levels of emotional
45 eating and lower levels of restrained eating than Chinese, White British, and Black
46 Afro Caribbean groups. The opposite pattern is seen for Chinese mothers.

47

48 Public health interventions aiming to improve weight and eating behaviour should
49 ensure that they are culturally relevant for different ethnic groups.

50

51

52 **Background**

53

54 The variability and influence of maternal eating behaviour is a growing field of
55 research. Maternal eating behaviour, and the perceptions that go with it, can
56 influence both her and her children's weight (Ventura & Birch, 2008). Understanding
57 influences on how and why mothers eat, especially in the absence of hunger, is
58 therefore important for supporting and protecting wider family health. However, in
59 the UK there is a dearth of maternal eating behaviour research that is diverse in its
60 sampling, or compares outcomes, between ethnic groups. This is a gap for both
61 research and practice, which needs to be explored to ensure that research is
62 accurate, generalizable and culturally sensitive for all.

63

64 Humans eat for many reasons, many of which are not related to simple hunger
65 (Ogden, 2011). Eating behaviour is typically measured along three broad aspects:
66 how restrained an individual is e.g. dieting, restricting intake of food, how
67 uncontrolled they are e.g. eating in response to smelling or seeing food, and finally
68 whether they eat for emotional reasons e.g. eating in response to sadness, boredom,
69 or happiness (Stunkard & Messick, 1986). Eating for reasons not associated with

70 hunger or trying to restrict intake of food can affect weight and therefore physical
71 and emotional health (Wyert, Winters & Dubbert, 2006), but understanding the link
72 between eating and weight is not always straightforward.

73

74 In terms of restrained eating, individuals who are overweight are more likely to
75 report they are high in constraint (Johnson & Wardle, 2005). However, they often
76 become stuck in a cycle where too much restraint leads to uncontrolled eating, and
77 thus more weight gain (Woods, Racine & Klump, 2010). Emotional eating is also
78 associated with an increased risk of overweight due to an excess intake of calories
79 (Snoek, Van Strien, Janssens & Engels, 2007). Eating in response to emotional
80 reactions, can lead to eating in the absence of hunger, and thus overweight (Macht,
81 2008).

82

83 Maternal eating behaviour is also associated with her feeding attitudes and
84 interactions with her child. Mothers who are high in restraint are more likely to
85 restrict their child's intake of food (Rodgers et al, 2013), often out of a belief that
86 they will protect their child from becoming overweight like themselves (Benton,
87 2004). Unfortunately, this can often have the opposite effect. Although not all
88 research is conclusive, mothers who use high levels of controlling feeding practices
89 with their child are more likely to have a child who is overweight, because restricting
90 a food increases desire (Webber, Hill, Cooke, Carnell & Wardle, 2010; Clark, Goyder,
91 Bissell, Blank & Peters, 2007; Shloim, Edleson, Martin & Hetherington, 2015).
92 Children whose mother is high in restriction are therefore more likely to eat in the
93 absence of hunger when given free access to restricted foods (Kral & Rauh, 2010),
94 thus being at greater risk of overweight (Faith & Kerns, 2005).

95

96 Mothers who are emotional eaters are more likely to use emotional feeding styles
97 with their children, giving food in response to their child's emotions (Wardle,
98 Sanderson, Guthrie, Rapoport & Plomin, 2002). Mothers apply the same logic that
99 they use to eat to their children e.g. trying to deal with sadness through eating
100 palatable foods (Tan & Holub, 2015). Children of mothers who are high in emotional
101 eaters are more likely to emotionally eat themselves (Lauzon-Guillain, Romon,

102 Musher-Eizenman, Heude, Basdevant, & Charles, 2009) and also are more likely to
103 be overweight, due to an excess intake of energy (Hajna, Leblanc & Faught, 2014).

104

105 Understanding factors that are associated with eating behaviour is important in
106 supporting individuals to adopt healthier eating patterns. Factors such as body
107 image (Tiggemann & Lynch, 2001) and cultural pressure (Braun, Park & Gorin, 2016)
108 are well documented in affecting maternal restraint (and often uncontrolled eating).
109 Stress is also associated with both uncontrolled eating (particularly in those high in
110 restraint) and emotional eating (Zellner et al, 2006).

111

112 Variations have been associated with demographic background. For example,
113 individuals on a lower income are more likely to be high in emotional eating (Reagan
114 & Hersch, 2005). However, although research has examined how differences in body
115 image differ broadly between ethnic groups, with South Asian (Cachelin, Rebeck,
116 Chung & Pelayo, 2002) and African American (Wardle & Marsland, 1990) women
117 typically having more positive body images than White American women, evidence
118 is sparse in considering how ethnicity may affect eating behaviour. The aim of the
119 current study was therefore to explore how maternal eating behaviour may differ
120 between the largest ethnic groups in the UK: White British, South Asian, Black and
121 Chinese.

122

123 **Method**

124 ***Participants***

125 Ethical approval was granted by a University research ethics committee and all
126 participants gave informed consent before involving in the study research. All
127 aspects of the Declaration of Helsinki were followed.

128 Participants included mothers living in the UK with at least one child aged 5 – 11,
129 which encompassed primary school age children. Exclusion criteria included
130 identification in an ethnic group outside of the four large groups chosen for the
131 study (White British, South Asian, Chinese and Black), and also maternal inability to

132 consent, maternal age younger than eighteen years, and significant child health
133 issues that would impact on feeding interactions.
134

135 ***Measures***

136 Participants completed a questionnaire which collected demographic background
137 (maternal age, education, occupation, household income), Ethnicity data, and the
138 Three Factor Eating Questionnaire [TFEQ-R18] (Karlsson, Persson, Sjöström & Sullivan,
139 2000)

140

141 Ethnicity data was collected via tick box using the ethnic classifications specified in the
142 UK census 2011 (White British, Gypsy/traveller/Irish traveller/ Asian or Asian British
143 [Indian, Pakistani, Bangladeshi, Chinese, other], Black or Black British, and other]
144 (ONS,2011). A number of further questions identified degree of acculturation.
145 Mothers identified whether they were born in the UK [yes/no], the number of years
146 they had lived in the UK, and the language they spoke at home [English/mixed/home
147 language e.g. Urdu]. In order to examine diversity of home neighbourhood,
148 participants also gave postcode which was used to extract neighbourhood level data
149 regarding the percentage of the local population who were White British (NSLP, 2011).
150 Neighbourhood deprivation data was also extracted using this database.

151

152 To measure eating behaviour mothers completed all three scales of the TFEQ-R18
153 were completed. The TFEQ-R18 is a revised, shorter version of the original longer TFEQ
154 (Stunkard & Messick, 1985) and was designed to enhance validity of the scales (De
155 Lauzon, Romon, Deschamps, Lafay & Borys, 2004). It consists of 18 items which are
156 scored to give three factors of Cognitive restraint (6 items), uncontrolled eating (9
157 items) and emotional eating (3 items) (Stunkard & Messick, 1985).

158

159 The TFEQ is a widely used measure of eating behaviour that shows good internal
160 consistency and prediction of weight for both normal and obese individuals. It has
161 been translated and used within diverse samples, although typically to assess college
162 student or general population behaviour (e.g. Quick & Byrd-Bredbenner, 2014; Dodd,

163 Long, Boswell, & Rogers, 2016; Chong et al 2016; Chearskul, Pummong Vongsaiyat,
164 Janyachailert, & Phattharayuttawat, 2010; Loffler et al, 2015).

165

166 ***Procedure:***

167 A primary aim of the research was to ensure as diverse a sample as possible. Therefore
168 data collection was concentrated on increasing participation of Non-white mothers.
169 Study information highlighted this need, emphasizing the importance of conducting
170 research with diverse groups that would have greater generalisability.

171

172 The questionnaire was hosted online with SurveyMonkey, although paper copies were
173 available upon request (although no participant requested a paper copy). Adverts for
174 the data were circulated firstly via online parenting forums (specifically those who
175 have dedicated research request boards), via paper posters in local community and
176 religious centres in South Wales (particularly those with diverse membership) and via
177 schools based in regions in the UK with high levels of diversity (including for example
178 Birmingham, Leicester, Leeds, Bradford and London). Social media was also used to
179 share the advert. In all cases the relevant gatekeeper was approached for permission
180 e.g. the forum or social media group moderator, community centre staff, and for
181 schools the head teacher who then circulated information via school newsletter. The
182 aim was to over sample those in ethnic minority groups as a proportion of the sample
183 compared to population statistics in order to enable statistical comparison.

184

185 In all cases study information directed the potential participant to online information
186 about the study. Participants could read full study background information and only if
187 they agreed with consent questions would the full questionnaire load. Researcher
188 details were available to request further information or a paper copy of the
189 questionnaire. At the end of the questionnaire a debrief was loaded with information
190 about the study and repeated details of how to contact the researcher if required.

191

192

193 **Data analysis**

194 Data were analysed using IBM SPSS statistics (version 22.0). Ethnic groups were
195 classified according to UK census (Office of National Statistics, 2011). Four major
196 groups were identified includes; White British, South Asian, Black and Chinese. Those
197 identifying as mixed or other (n = 11) were excluded from the analysis to allow
198 comparison of the four larger groups.

199

200 The TFEQ was scored according to instructions to give the factors of cognitive
201 restraint, uncontrolled eating and emotional eating. The three eating behaviour
202 factors were tested for normality using the Kolmogorov-Smirnov Test and found to
203 be normally distributed.

204

205

206

207 The association between maternal demographic factors and ethnicity was examined
208 using chi square, Pearson's correlations and MANOVA, and significant associations
209 used as covariates in further analyses. MANCOVA were then used to explore
210 differences in the TFEQ between ethnic groups, using covariates identified in the
211 results. Post hoc bonferonni tests were used to explore significant differences
212 between groups.

213

214 Finally, the association between acculturation factors and eating behaviour were
215 examined. T tests were used to explore differences in the TFEQ scores between
216 mothers born in the UK or not. MANOVA were used to examine differences in TFEQ
217 scores between home language group. For those not born in the UK, Pearson's
218 correlations were used to explore the association between the length of time lived in
219 the UK and maternal eating style. For the sample as a whole, Pearson's correlations
220 used to explore associations neighborhood diversity, neighbourhood deprivation, and
221 eating behaviour.

222

223 **Results**

224 Six hundred and fifty-nine responses were included in the sample. The mean age of
225 respondents was 35.74 (SD: 6.17), with a range from 23 to 54 years old. Three hundred

226 and ninety (59.2%) were White British, 145 (22.0%) South Asian, 84 (12.7%) Chinese
227 and 40 (8.1%) Black or Black British. Further details of the sample are shown in table
228 one.

229

230 ***Ethnicity and demographic background***

231 A number of demographic factors were related to ethnicity (See table one for
232 breakdown between groups). A significant difference in family size was found
233 between ethnic groups [$F(3, 655) = 15.353, p < .001$], whilst significant associations
234 were found between ethnic group and household income group [$\chi^2 = 64.09, p =$
235 $< .001$], education [$\chi^2 = 60.55, p < .001$], maternal employment [$\chi^2 = 84.05, p = < .001$]
236 and occupation [$\chi^2 = 62.822, p = < .001$]. Mothers from South Asian and Black
237 backgrounds had more children and lower education than White British and Chinese
238 mothers. Mothers from White and Black backgrounds were more likely to be
239 employed and mothers from White background were more likely to have a
240 professional or managerial occupation. Mothers from White and Chinese backgrounds
241 had higher incomes than those in Black and South Asian. No significant association
242 was found for area diversity or deprivation between ethnic groups. Further analyses
243 therefore controlled for household income, occupation, employment, family size and
244 education.

245

246 However, no significant relationships were found between maternal demographic
247 background and maternal eating behaviour, apart from a significant positive
248 correlation between degree of neighbourhood deprivation and uncontrolled eating
249 (Pearson's $r = -.112, p = .005$).

250

251 ***Differences in maternal eating behaviour between ethnic groups***

252 Differences in each of the three eating behaviour factors between ethnic groups were
253 then examined (Table 2). Significant differences between ethnic groups were found
254 for all three eating behaviour factors. Post hoc Bonferroni tests showed that for
255 cognitive restraint, Chinese mothers were significantly higher in restraint than both
256 south Asian ($p = .010$) and Black ($p = .022$) mothers. White British mothers were

257 significantly higher than south Asian ($p = .007$) and Black ($p = .045$) mothers. No further
258 significant differences were found.

259

260 For uncontrolled eating, Chinese mothers were significantly lower in uncontrolled
261 eating than the White British ($p = <.001$), South Asian ($p = .003$) and Black ($p = .020$)
262 mothers. No further significant differences were found.

263

264 For emotional eating, the Chinese group were significantly lower in emotional eating
265 than the White British ($p = .013$), South Asian ($p = <.001$) and Black ($p = .004$) mothers.
266 White mothers were significantly lower than both South Asian ($p = .043$) and Black
267 mothers ($p = .041$).

268

269 ***Does acculturation affect eating behaviour?***

270 The longer an individual lived in the UK, the significantly lower their uncontrolled
271 (Pearson's $r = .296$, $p = <.001$) and emotional eating (Pearson's $r = .242$, $p = .015$). No
272 further significant associations were found.

273

274 A multivariate ANOVA was used to explore the difference in maternal eating style
275 between those who spoke English alone at home, a mixture of English and another
276 language at home and those who spoke a non-English language only at home. No
277 significant differences were found.

278

279 No significant associations were found between maternal eating behaviour and the
280 percentage of neighbourhood population that was white.

281

282

283 **Discussion**

284 The aim of this study was to explore how maternal eating behaviour might differ
285 between ethnic groups in the UK. Although research has explored maternal eating
286 behaviour and its influence upon child eating behaviour and weight, research in the
287 UK is often conducted predominantly with White British samples with sparse research
288 examining how behaviours might differ between ethnic groups. The results showed

289 that eating behaviour did vary between ethnic groups, and as the first study of its type
290 to examine this concept in the UK, further research is needed to understand the
291 associations that have emerged and how they might be relevant to those supporting
292 families in practice.

293

294 Overall, Chinese mothers were considerably higher in cognitive restraint than other
295 groups whilst South Asian and Black mothers had the highest scores for both
296 emotional eating. Conversely, levels of emotional and uncontrolled eating were
297 lowest amongst Chinese mothers, whilst South Asian and Black mothers had the
298 lowest levels of cognitive restraint. Maternal eating behaviour was also associated
299 with degree of acculturation; the longer a mother had lived in the UK, the higher their
300 uncontrolled and emotional eating behaviour. Potentially South Asian and Black
301 mothers – who were the highest in emotional eating (with a non-significant trend in
302 the means also showing higher uncontrolled eating) - start to adapt to the higher
303 levels of restraint present in the UK, associated with higher levels of body image
304 dissatisfaction amongst White British women. In turn that may cause an increase in
305 uncontrolled eating. In Australia, the longer female immigrants lived in Australia, the
306 more their eating behaviour matched typical Western values of dieting and
307 dissatisfaction (Yang, 2006). Potentially however, something about their experience is
308 increasing their risk of emotional eating.

309

310 South Asian and Black mothers had higher levels of Emotional eating. Although
311 emotional eating is tied to body weight due to an excess intake of calories (Snoek et
312 al, 2007), it is not a direct attempt to gain weight, instead caused by a reaction to
313 external events (Macht, 2008). Understanding why mothers from South Asian and
314 Black backgrounds are at an increased risk of emotional eating is therefore important.
315 Emotional and binge eating are associated with financial difficulties, most likely as a
316 coping mechanism (Koupil et al, 2016; Reagan & Hersch, 2005) and mothers from
317 South Asian and Black backgrounds in the UK are more likely to have a lower income.
318 Emotional eating is also a response to stress (Zellner et al, 2006) and depression (van
319 Strien, Konttinen, Homberg, Engels & Winkens, 2016). South Asian and Black mothers

320 are at a higher risk of depression compared to White British mothers, particularly if
321 they are immigrants to the UK (Nilaweera, Doran & Fisher, 2014).

322

323 As noted in the introduction, maternal eating behaviour is an important concept to
324 understand as it can affect not only her own weight and body image but her feeding
325 interactions with her child, increasing their risk of overweight or own eating
326 behaviour (Wardle et al. 2002; Lauzon-Guillain et al. 2009; Morrison et al. 2013;
327 Rodgers et al, 2013). It is possible that maternal eating behaviour therefore has an
328 impact upon child weight and may contribute to increased levels of overweight
329 found in South Asian and Black children in the UK (NHS, 2017). Although of course
330 ethnicity and weight is complex, and affected by factors such as genetics (Cecil,
331 Dalton, Finlayson, Blundell, Hetherington & Palmer, 2012), diet (Gatineau &
332 Mathrani, 2011) and activity (Owen, Nightingale, Rudnicka, Cook, Ekelund, &
333 Whincup, 2009), this relationship is an important element to consider.

334

335 Understanding why these patterns emerge is therefore critical, and further research
336 should be conducted in exploring the origins of eating behaviour between different
337 ethnic groups. Food of course is heavily tied to culture, being part of how identity is
338 formed and maintained (Kumanyika, 2008). Food and family are both highly valued
339 and intertwined in South Asian culture (Maiter & George, 2003) and preparing,
340 cooking and eating traditional foods with family and friends is central to South Asian
341 culture (Pallan, Parry & Adab, 2012). Thus lower levels of restraint and higher levels of
342 emotional eating may be embedded within culture and tradition. Traditional South
343 Asian foods and cooking methods can however lead to a high fat content (Chowdhury
344 et al., 2000) and if eaten to excess could exacerbate weight gain.

345

346 The opposite is also true, in that culture is tied to eating behaviour, and eating
347 behaviour is not always a positive event. As noted above, emotional eating may also
348 be a coping response to higher levels of stress and depression experienced by South
349 Asian and Black women. The potential increased stress of immigration, loss of
350 community, racism and poverty can affect both body image and eating behaviour as
351 a coping mechanism (Sahi & Haslam, 2003; Reddy & Crowther, 2007).

352

353 Chinese mothers were more likely to report a feeding style high in restraint and low
354 in uncontrolled eating. Although research amongst Chinese mothers in the UK and
355 body image is sparse, research examining their feeding interactions with children
356 highlights a tendency for restrictive practices, based on the concept of a 'duty
357 response' to protect children from unhealthy Western eating habits. Potentially
358 similar beliefs are influencing maternal own eating behaviour (Wehrly, Bonilla, Perez,
359 & Liew, 2014).

360

361 Limitations to the study include the self-selected sample, with a trend towards older
362 and more educated participants. Potentially this may be linked to English language
363 completion of the questionnaire and further research may wish to include translated
364 or interviews. However, this is a common pattern in much of public health and social
365 science research due to a tendency to only more interested volunteers taking part.
366 Further research may also wish to take clinical measures of weight and consider
367 whether these relate to maternal eating behaviour.

368

369 Recruitment also relied on online data collection, which has been criticized in the past
370 for attracting only more educated or affluence participants (Azar 2000). However with
371 the rise of smart phones and internet accessibility, the approach is proving a common
372 and popular approach in health and social science data collection due to the ability to
373 recruit more diverse participants more effectively (e.g. Ferguson & Hansen, 2012;
374 Plantin & Danebeck, 2009; Brown, 2016).

375

376 Finally, consideration must be given to the limitations of classifying individuals into
377 strict ethnic groups. Although this standardized classification is useful for research
378 purposes, and is a widely used approach, care must be taken not to over generalize or
379 indeed stigmatise groups based such broad groupings (Bhopal, 2007). Further
380 research may also wish to explore intra group differences e.g. whether differences
381 arise between Bangladeshi and Pakistani groups for instance. It is also difficult to draw
382 direct comparisons with research examining ethnic differences in other countries such
383 as the USA as ethnic diversity follows a different pattern in the USA compared to the

384 UK, with a lower proportion of the USA from White backgrounds and differences in
385 the largest non-White groups [e.g. African American versus South Asian] (United
386 States Census Bureau, 2000; ONS, 2016).

387

388 In conclusion, this study adds an interesting element to existing maternal eating
389 behaviour research in the UK, highlighting the need for researchers to be mindful in
390 measuring ethnic background and collecting diverse samples. It also raises awareness
391 that dietary and weight interventions around families and healthy eating should be
392 mindful of ethnic differences and cultural influences when providing public health
393 advice.

394

395

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640 **Table 1: Participant demographic background**

Demographic	Group	Whole		White		South Asian		Chinese		Black	
		N	%	N	%	N	%	N	%	N	%
Education	GCSE	72	10.9	35	9.0	21	14.5	7	8.3	9	10.9
	A level	131	19.9	66	16.9	25	17.2	22	26.2	18	45
	Degree	227	34.4	138	35.4	52	35.9	30	35.7	7	17.5
	Vocational	90	13.7	45	11.5	26	17.9	19	22.6	0	0
	Postgrad	138	20.9	106	27.2	21	14.5	6	7.1	6	15.0
Marital status	Married	397	60.2	214	54.9	95	65.5	62	73.8	26	65.0
	Cohabiting	149	22.6	96	24.6	29	20.0	12	14.3	12	30.0
	Partner	39	5.9	25	6.4	11	7.6	3	3.6	0	0
	Single	65	10.6	49	12.6	8	5.5	7	8.3	1	2.5
	Divorced	9	0.5	6	1.5	2	1.4	0	0	1	2.5
Employment	Full time	321	48.8	66	45.5	26	31.0	28	70.0	66	45.5
	Part time	229	34.7	57	39.3	22	26.2	9	22.5	57	39.3
	None	109	16.5	22	15.2	36	42.9	3	7.5	22	15.2
Occupation	Higher professional /managerial	152	21.5	106	27.1	26	17.9	11	13.0	9	22.5
	Lower professional /managerial	183	28.7	126	32.3	29	20.0	20	23.8	8	20.0
	Skilled	145	20.2	88	22.6	39	26.8	8	9.5	10	25.0
	Routine occupations	90	11.2	42	10.8	29	20.0	9	10.7	10	25.0
	Unemployed/ Stay at home	89	2.7	28	7.1	22	15.2	36	42.9	3	7.5
Household Income group	Less than £1000	27	4.1	16	4.5	8	5.7	1	1.2	2	5.1
	£1001-1700	76	11.5	31	8.7	24	17.0	15	18.5	17	43.6
	£1701-2700	156	23.7	82	23.1	46	32.6	10	12.3	2	5.1
	£2701-4200	202	30.7	128	36.1	32	22.7	31	38.3	15	38.5
	£4201	176	26.7	98	27.6	31	22	24	29.6	3	7.7
	Rather not say	22	3.3	13	0.59	5	0.22	2	0.09	2	0.09

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643 **Table 2: Differences in maternal eating behaviour between ethnic groups (showing**
 644 **means and standard deviations)**
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	White British	South Asian	Chinese	Black	Significance without covariates	Significance with covariates
Cognitive restraint	2.48 (.44)	2.31 (.65)	2.49 (.46)	2.24 (.45)	F (3, 655) = 6.381, p = <.001	F (3, 595) = 5.068, p = .002
Uncontrolled eating	2.69 (.63)	2.67 (.66)	2.30 (.74)	2.72 (.69)	F (3, 655) = 6.322, p = <.001	F (3, 595) = 4.578, p = .004
Emotional eating	2.46 (.76)	2.64 (.85)	2.16 (.81)	2.67 (.64)	F (3, 655) = 6.836, p = <.001	F (3, 595) = 6.714, p = <.001

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