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Male hubris and female humility? A cross-cultural study of ratings of self, parental, and sibling multiple intelligence in America, Britain, and Japan

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Abstract

In this study, 213 American, 229 British, and 164 Japanese students estimated their own multiple IQ scores and that of their parents (mother and father) and siblings (first and second brother and sister). A Sex × Culture ANOVA on the three factors that underlie the seven intelligence types (verbal, numerical, cultural) showed consistent culture and many sex effects, but no interactions. Male participants rated their own overall IQ and that of their fathers, but not their mothers and sisters, higher than did female participants as predicted. Male participants also rated their numerical IQ, but not verbal or cultural IQ, higher than females. There were consistent and clear culture differences. The Americans rated their multiple IQ scores higher than the Japanese (around 6–10 points) with the British intermediate between the two. All participants rated their fathers' (and brothers') numerical IQ higher, and verbal IQ lower, than their mothers' and sisters', as found previously. Overall results showed consistency in the sex differences in ratings across cultures but differences in level of estimated IQ, possibly as a result of cultural demands for modesty.

Keywords: Multiple intelligence; Self-estimates; Cross-cultural; Parents; Siblings

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1. Introduction

The topic of intelligence always generates controversy in psychology (Brand, 1996; Flynn, 1987; Halpern, 1997; Herrnstein & Murray, 1994; Howe, 1997, Lynn, 1982, 1994; Lynn & Mulhern, 1991; Lynn & Pagliari, 1994; Mackintosh, 1998; Sternberg, 1997). Popular debate over technical issues of IQ measurement led 50 of the world's experts on intelligence to write to the *Wall Street Journal* on 15th December 1994 (published Furnham, 1996). Debating the measurement of intelligence so frequently and in so much detail may well change public understanding over time. A number of studies published this decade have examined self-estimates of IQ, which may well have been informed by the public debate. This study focuses on cultural differences in self-estimated IQ, as well as sex and cultural differences in estimates of parents' and siblings' IQ.

There is a body of research literature on sex differences in estimated ability that demonstrates a consistent self-enhancing bias in men and a self-degrading bias in women (Beyer, 1990, 1998, 1999). A number of studies have specifically examined sex differences in the overall estimate (g) of one's own IQ (Beloff, 1992; Bennett, 1996, 1997, 2000; Byrd & Stacey, 1993; Furnham & Rawles, 1995; Hogan, 1978) (see Table 1). With few exceptions, the results confirmed early observations that there is a consistent significant sex difference, with males estimating their (general) intelligence higher than do females. Various studies also showed males and females rated their fathers as being more intelligent than their mother (Beloff, 1992; Byrd & Stacey 1993; Furnham & Rawles, 1995), and their grandfathers as more intelligent than their grandmothers (Furnham & Rawles, 1995). It is interesting to note that ratings of overall IQ (g) decline by about half a standard deviation for each generation back that was estimated. More recently, Furnham and Gasson (1998) found that parents estimated their male children as more intelligent than their female children (Table 1).

Other studies have looked at estimates of multiple intelligence rather than g (Bennett, 1996; 1997; 2000) based on the theory of Gardner (1983). It should be pointed out that none of these studies set out to test Gardner's (1983, 1998) original or updated theory for which there still remains little supportive evidence. Indeed, all the factor analytic work on ratings of the various intelligence types show that they do not reproduce the structure of the theory. Therefore, it could be argued that the theory has neither explicit nor implicit validity. Nevertheless, it provided a useful way to explore lay people's understanding of intelligence, which no doubt accounts for its popularity among nonscientists (Gardner, 1998).

Furnham, Clark, and Bailey (1999) asked male and female participants to rate each of the seven intelligence types set out by Gardner (1983). They found a sex difference only on the mathematical (logical) factor, but the seven intelligence types factored into three clear interpretable factors. Furnham, Fong, and Martin (1999) repeated this study on a bigger sample and found three significant differences: females rated themselves lower on mathematical, (logical) spatial and body-kinesthetic intelligence. More recently, Furnham (2000), in a study of parents' estimates of their own and their children's multiple intelligence types, found mothers gave lower estimates than fathers on their own mathematical (logical) and

Table 1
A comparison of previous studies of IQ estimates

Study	Women	Men	Difference
Beloff, 1992 (Scotland)	(*N*=502)	(*N*=265)	
Self	120.5	126.9	6.4
Mother	119.9	118.7	−1.2
Father	127.7	125.2	−2.5
Byrd & Stacey, 1993 (New Zealand)	(*N*=105)	(*N*=112)	
Self	121.9	121.5	−0.4
Mother	114.5	106.5	−9.0
Father	127.9	122.3	−5.6
Sister	118.2	110.5	−7.7
Brother	114.1	116.0	1.9
Bennett, 1996 (Scotland)	(*N*=96)	(*N*=48)	
Self	109.4	117.1	7.7
Reilly & Mulhern, 1995 (Ireland)	(*N*=80)	(*N*=45)	
Self	105.3	113.9	8.6
Measured	106.9	106.1	−0.8
Furnham & Rawles, 1995 (England)	(*N*=161)	(*N*=84)	
Self	123.31	118.48	6.17
Mother	108.7	109.42	0.72
Father	114.18	116.09	1.91
Furnham & Gasson, 1998 (England)	(*N*=112)	(*N*=72)	
Self	103.84	107.99	4.15
Children	(*N*=97)	(*N*=59)	
Male children	107.69	109.70	2.01
Female children	102.57	102.36	−0.21
Furnham & Rawles, 1999 (England)	(*N*=140)	(*N*=53)	
Self	116.64	120.50	3.9
Measured	4.47	6.94	

spatial intelligence. Both parents rated sons as having greater mathematical, spatial, and intrapersonal intelligence than daughters. Thus, the results seem to show consistent sex differences with respect primarily to mathematical and spatial IQ. Reviews of the intelligence literature suggest that these estimates may be accurate. Halpern (1997) wrote: "Males, on average, score higher on tasks that require transformations in visual–spatial working memory, motor skills involved in aiming, spatio-temporal responding, and fluid reasoning, especially in abstract mathematical and scientific domains" (p. 101). Indeed, it maybe that the more specific the ability the more accurate people are in the self-estimates (Table 2).

A few studies have examined the relationship between estimated and psychometrically measured IQ (De Nisi & Shaw, 1997; Furnham & Fong, 2000; Furnham & Rawles, 1999;

Table 2
A comparison of previous studies of estimates of multiple intelligences

Self-estimate studies showing scores for each of the seven categories										
Author	Participants		*N*	V 1	MA 2	S 3	MU 4	BK 5	IE 6	IA 7
Furnham, 1999	British adults	M	46	113.9	110.5[a]	111.8[a]	93.8	100.4	112.8	110.2
		F	66	109.1	102.6	104.8	98.3	102.7	112.4	109.8
Furnham & Baguma, 1999	African students	M	51	107.6	104.2[a]	118.6[a]	92.9	100.0	124.8	122.8
		F	55	107.7	96.1	111.1	98.7	105.2	121.9	122.3
	American students	M	31	118.1	110.7	119.1	102.6	111.2	119.4	114.8
		F	50	113.7	111.5	112.3	106.8	110.8	121.9	118.4
	British students	M	35	109.6	110.7	113.7	106.3	106.7	117.3	114.4
		F	62	108.8	103.3	107.1	102.7	104.3	116.3	113.8
Furnham, Fong, & Martin, 1999	American students	M	26	105.6	115.0[a]	105.8[a]	90.1	108.5[a]	107.1	108.1
		F	27	103.5	107.2	100.7	96.1	100.0	109.4	108.3
	British students	M	94	110.6	112.4	113.0	102.9	104.9	117.3	113.4
		F	133	110.6	105.2	106.7	101.8	104.1	115.4	112.6
	Singaporean students	M	37	107.2	112.5	111.2	98.6	106.5	111.8	107.0
		F	51	106.6	106.3	104.5	102.9	101.1	110.5	109.1
Furnham, Clark & Bailey, 1999	British adults	M	89	109.2	112.1[a]	110.5	99.2	104.6	112.0	111.9
		F	91	109.9	104.0	107.9	100.7	107.8	114.2	112.4

V = Verbal.
MA = Mathematical.
S = Spatial.
MC = Musical.
BK = Body Kinesthetic.
IE = Interpersonal.
IA = Intrapersonal.
[a] This indicates a significant difference between sexes in that cell.

Reilly & Mulhern, 1995), and each has reported positive and significant correlation in the range $r = .13–.30$, suggesting a weak but positive relationship. Some evidence suggests that outliers often repress these correlational coefficients, which may be as high as $r = .40$ (Furnham & Fong, 2000). Certainly, it does seem that overall IQ estimates may be a realistic measure of a person's psychometric IQ. Borkenau and Liebler (1993) found the correlation between self-rated and psychometrically measured intelligence to be $r = .32$ ($N = 100$), which dropped to $r = .29$ when sex and age were partialled out. Acquaintance ratings correlated very similarly to self-ratings with measured IQ ($r = .29$ or $r = .31$ when partialling took place).

More recently, Paulus, Lysy, and Yik (1998) noted correlations between single-item self-reports of intelligence and measured IQ scores in the range $r = .20–.25$ (among students). However, when data were aggregated, items weighted, and indirect questions addressed, the correlation rose to about $r = .30$. They thus argued that simple self-report measures are not particularly useful as proxies for IQ tests because they do not seem to reach the minimal standard of $r = .55$ and above. They conclude: "Both direct and indirect self-report measures of intelligence can reliably predict IQ scores. Because of the restricted range of abilities in competitive college samples, however, the validity limit appears to be 0.30" (p. 551).

Finally, a number of studies have attempted crosscultural comparisons of sex differences and self-estimated IQ. Furnham, Fong, and Martin (1999) found culture differences in their study of British (University of London), residents of the state of Hawaii (University of Hawaii), and Singaporean (University of Singapore) students who estimated their own score. The British gave overall higher self-estimates than either of the other groups and they confirmed a sex difference across cultures with males giving an average of 3 IQ points higher score to themselves. Furnham and Baguma (1999) compared similar groups of African, American, and British students and found fairly consistent sex and culture differences. Overall, American students estimated their own scores the highest (113.67) and the British their own scores the lowest (109.16), but there were significant differences as a function of the particular intelligence estimated.

This study focused on sex and culture differences in students from America (USA), Asia (Japan), and Europe (Britain) though it may well be argued that Japan is not typical of Asian countries, and, likewise, Britain is rather different from continental Europe. A number of hypotheses were developed based on previous studies. First, it was anticipated that both within (Great Britain) and combined cultural analysis would show that the seven intelligence types (described by Gardner, 1993) would factor into three clear factors: verbal, numerical and cultural (Furnham, Clark, et al., 1999; Furnham, Fong, et al., 1999). Second, it was anticipated that there would be a universal sex difference in the rating of own IQ, with males giving higher overall self-rating than females; and that males would rate their numerical, but not verbal or cultural, IQ factors higher than females (Furnham, 1999; Furnham & Gasson, 1998). This is because it is possible that the lay conception of general intelligence is male normative. It is those abilities (mathematical and spatial) that males are considered (and often demonstrated) best at that most people consider to the essence of intelligence. In other words, people conflate numerical and general intelligence so explaining that consistent sex difference results in previous studies. Third, it was anticipated that male participants would rate their fathers' overall IQ higher, and mothers' overall IQ lower than would female participants (Furnham, 2000). Fourth, it was predicted that there would be consistent culture differences in the estimates of all aspects of IQ due to American concerns with socializing self-esteem (and possibly hubris) and Japanese concerns with the valuing of humility (Furnham & Baguma, 1999; Seligman, 1990; Smith & Bond, 1998). Finally, it was predicted that there would also be sex and cultural differences in attitudes towards and beliefs about IQ tests, with Americans being most sceptical and egalitarian and the Japanese least so.

2. Method

2.1. Participants

In all, 229 British (133 female), 213 American (111 female), and 164 Japanese (102 female) students took part. The mean age of the British participants was 23.1, the Americans 21.3, and the Japanese 22.4. There was no significant difference in the age of the three groups [$F(2,606) = 1.14$]. British students were from various colleges of London University and the

University of Middlesex; the American students from three American universities (Emory, Middle Tennessee, and Tulsa) and the Japanese students from Iwate Prefecture University and the University of Tokyo. In all, 94% of the British group were ethnically "white"; in the American group, 88% were ethnically "white"; while in Japan, 100% were ethnically Japanese. Inevitably, this nonrandom sampling may affect results partly because within and between each country universities have well known intelligence-related entry criteria.

2.2. Questionnaire

All participants completed a simple one-page questionnaire based on that developed by Furnham and Gasson (1998). The questionnaire showed a normal distribution with means, standard deviations, and titles against each score. Thus, 85 was labelled "low average" and 130 "superior." Thereafter, they were given a grid with the seven intelligence types labelled and described in rows and seven columns to rate self, father, mother, brothers 1 and 2, and sisters 1 and 2. The seven intelligence types were taken from Gardner (1983) (Verbal, Mathematical, Spatial, Musical, Body-Kinesthetic, Interpersonal, and Intrapersonal). They were also asked six questions about intelligence testing using simple yes/no answers, which had been used by Furnham, Clark, et al. (1999) and Furnham, Fong, et al. (1999). The questions were:

1. Have you ever taken an intelligence test?
2. Do you believe that they measure intelligence?
3. Do you believe that males, on average, are more intelligent than females?
4. Do you believe that intelligence is primarily inherited?
5. Do you believe that IQ tests are useful in educational settings?
6. Do you believe that some races are more intelligent than others?

Participants were also required to indicate their age, sex, and highest educational qualification.

2.3. Procedure

The questionnaires were administered to participants in their classrooms by their tutors. The English language questionnaire was translated into Japanese by the bilingual second author and appropriately back translated by a second bilingual speaker. The task of completing the questionnaire took about 20 min. The participants were fully debriefed after the rating.

3. Results

3.1. Preliminary analysis

Various studies have factor analysed self-ratings of the seven Gardner (1983) multiple intelligence types (Furnham, 2000; Furnham & Baguma, 1999 ; Furnham, Clark, et al., 1999;

Furnham, Fong, et al., 1999). All three studies found evidence of three factors. The first factor was labelled *Verbal* and had three intelligence types loaded on it (Verbal, Interpersonal, Intrapersonal). The second was labelled *Numerical* and had two items loaded on it (Mathematical and Spatial intelligence), while the third factor was labelled *Cultural* and had two items loading on it (Musical and Body-Kinesthetics). In nearly all of the previous analyses with orthogonal varimax rotation, about 50–70% of the variance was accounted for.

Unrotated factor analysis of the total *N* self-estimates in this study yielded a single factor (eigenvalue 3.22, variance accounted for 46.1%) with all seven intelligence types loading greater than .50. A varimax rotation also yielded just one single factor. Again, this suggests no implicit validity for Gardner's (1983) theory. It was possible to investigate this data at the general intelligence level (*g*), which was the arithmetic mean of the scores on the seven intelligence types; the level of the three factor scores found in three previous studies; or the level of the seven intelligence types themselves. It was decided to do the analysis at the former two levels firstly because the factor analytic results from this study suggested only one clear factor emerged. However, both to provide data comparable with previous studies and investigate the subtleties within the area of the estimates of others as suggested by Furnham, Clark, et al. (1999) and Furnham, Fong, et al. (1999), it was decided to investigate the data at the three factor level by getting the arithmetic mean for each factor when considering the ratings for self, parents, and siblings.

3.2. Sex and cultural analysis

Following this, a series of two-way ANOVAs (Sex × Culture) were run of ratings on self, mother, father, first brother, and first sister. For each person involved, four two-way ANOVAs were computed: an overall score (which comprised the mean totalled score on the seven specified intelligence types), as well as on each of the three factors set out above.

Table 3 shows results for self, mother, and father. Post hoc Scheffe tests were also run to examine where cultural differences occur.

3.2.1. Self

There were two sex differences for the self-score. Overall, males gave themselves higher totalled scores than females (109.07 vs. 105.95). They also rated their numerical intelligence significantly higher than did females (111.05 vs. 104.06). However, there were no significant sex effects on the verbal and cultural intelligence score. There was a strong significant culture difference on all four scores. American participants gave themselves the highest rating overall (108.73), followed by the British (106.78), and then the Japanese (101.73). Post hoc analysis showed that the British were not significantly different from the Americans on the three factor score. (Verbal, Numerical, Cultural), but they were significantly lower on the overall (averaged) score. There were no significant interactions. It is noteworthy that there is no objective data to support these perceptions that Americans are more intelligent that the British who are, in turn, more intelligent that the Japanese. Indeed, there is data to suggest the opposite may be true. Japanese test higher on WAIS and WISC than other groups (Lynn, 1982, 1994).

Table 3
Means and S.D.'s for self, father, and mother on the overall and the three factors of IQ

		Male			Female			*F* level		
		UK	USA	JP	UK	USA	JP	Sex	Culture	Sex × Culture
Self										
Overall IQ	*X*	110.64	112.00	102.09	108.06	110.24	98.58	***	***	
	S.D.	10.11	8.37	6.85	7.80	9.12	6.53	14.11	82.33	0.48
Verbal IQ	*X*	113.78	115.10	102.81	112.84	114.47	100.01		***	
	S.D.	11.16	11.17	8.88	9.55	10.27	7.61	2.36	96.32	0.32
Numerical IQ	*X*	112.71	113.51	104.68	105.94	109.01	96.24	***	***	
	S.D.	11.90	10.53	10.18	9.21	11.92	8.53	55.86	51.42	1.61
Cultural IQ	*X*	103.89	105.93	99.21	102.94	105.11	98.67		***	
	S.D.	14.08	12.02	11.8	12.24	13.36	8.78	0.56	12.99	0.13
Father										
Overall IQ	*X*	107.4	110.41	102.28	106.33	106.52	101.38	***	***	
	S.D.	9.52	10.23	6.64	8.82	11.67	6.83	5.67	22.49	1.34
Verbal IQ	*X*	106.97	111.28	102.8	105.73	107.09	102.10	*	***	
	S.D.	11.39	13.07	9.89	11.29	13.09	9.43	4.32	14.56	1.24
Numerical IQ	*X*	113.32	115.27	104.34	113.47	111.96	101.97		***	
	S.D.	11.95	13.09	8.67	11.33	14.26	9.4	3.35	42.20	1.18
Cultural IQ	*X*	102.26	103.54	99.54	100.06	100.24	99.76			
	S.D.	13.64	12.57	10.5	11.95	13.49	8.68	2.97	1.52	0.92
Mother										
Overall IQ	*X*	106.85	108.13	100.94	105.98	106.87	99.37		***	
	S.D.	11.48	8.27	6.31	7.97	10.91	6.7	2.63	32.19	0.69
Verbal IQ	*X*	111.74	112.94	104.32	110.64	111.15	102.64		***	
	S.D.	13.63	10.97	8.26	10.82	12.59	8.49	2.61	29.58	0.05
Numerical IQ	*X*	103.5	104.76	99.69	103.95	104.96	97.26		***	
	S.D.	14.49	6.04	8.49	10.68	13.23	7.67	0.36	15.24	0.8
Cultural IQ	*X*	102.01	104.22	97.42	101.01	102.36	96.56		***	
	S.D.	13.3	10.83	9.37	11.54	13.30	8.80	2.38	13.68	0.09

* $P < .05$.
*** $P < .001$.

3.2.2. Father

Male participants rated their fathers as overall more intelligent than did female participants (107.19 vs. 104.95). Males also rated their father's verbal intelligence higher than did females (107.37 vs. 105.11). There was no significant sex difference on the ratings of numerical and cultural intelligence factors. There were three main effects for culture: The Japanese rated their fathers' overall verbal and numerical intelligence lower than the American and British participants, who were not significantly different from one another. Again, there were no significant interactions.

3.2.3. Mother

There were no significant main effects for sex of participant and no significant interactions, but all four main effects for culture were significant. As above, the Japanese participants rated their mothers' overall verbal, numerical, and cultural IQ as lower than did the American and British participants, who did not differ from each other.

3.2.4. Brother

There were no significant main effects for sex and no significant interactions; but three significant main effects for culture. Once again, the Japanese rated their brothers as less intelligent overall and lower on the verbal and numerical score than did the British and American participants who did not differ significantly from one another.

3.2.5. Sister

There was one significant main effect for sister. Males rated their sisters' cultural intelligence higher than did females. There were no other significant main effects or significant interactions. As above, there were three significant effects for culture. The Americans and British rated their sisters' overall, verbal, and numerical intelligence significantly higher than did the Japanese participants.

3.3. Ratings of parents and siblings

This study also sought to look at sex and culture differences in participants' ratings of father vs. mother and brother vs. sister. Hence, a set of mixed model three-way ANOVAs were computed with sex and culture of participant as between-subjects variables and parents (and sibling) as within-subjects variables.

3.3.1. Parents

Four mixed model three-way ANOVAs were computed on overall, verbal, numerical, and cultural intelligence. There was a significant main effect for all three variable in ratings of *overall* intelligence. Males gave higher ratings than females [$F(1,570) = 5.28$, $P < .05$], the Americans and British higher ratings than the Japanese [$F(2,570) = 35.82$, $P < .001$], and fathers were rated as more intelligent than mothers [$F(1,570) = 4.93$, $P < .05$]. For the *verbal* intelligence score, there was the expected sex and culture effect: Males rated higher than females [$F(1,570) = 5.12$, $P < .05$] and the Japanese lower than the Americans and British [$F(2,570) = 30.28$, $P < .001$]. There was also a significant Parent and Parent × Culture effect. Mothers were rated as having higher verbal IQ than fathers [$F(1,570) = 33.44$, $P < .001$]. The Parent × Culture interaction [$F(2,570) = 4.04$, $P < .01$] indicated that the Japanese rated their parents as more similar to one another (IQ points difference = 0.9) compared to the Americans (mean difference 3.0) and British (4.9). For *numerical* intelligence there was no main effect for sex of participant, but a culture main effect: Americans and British rated higher than Japanese [$F(2,570) = 41.67$, $P < .001$]. There was also a main effect for parents: Fathers were rated as having a higher numerical IQ than mothers [$F(2,570) = 167.24$, $P < .001$]. There was a significant Parent × Culture effect [$F(2,570) = 5.96$], which indicated

that the difference between ratings of parents for the Japanese (4.7 IQ points) was significantly lower than that of the Americans (8.6 IQ points) and the British (9.6 IQ points) on this factor. The final *cultural* intelligence factor revealed one significant main effect and one interaction. The Japanese rated both parents lower than Americans and British participants [$F(1,570) = 9.29$ $P < .001$] and a significant Parent × Cultural interaction [$F(2,570) = 3.80$, $P < .05$] indicated that the Japanese rated their father higher than their mother by 2.8 IQ points while the Americans rated their mothers' cultural IQ as slightly higher than that of their fathers by 0.8 IQ points. For the British, the difference in favour of the mother was 1.45 IQ points.

3.3.2. Siblings

The same set of four three-way mixed ANOVAs was computed on participants rating of siblings. There was only one significant effect for the rating of *overall* intelligence. The Americans and British rated their siblings' IQ as higher than the Japanese [$F(2,143) = 3.84$, $P < .05$]. There were two significant effects on *verbal* intelligence ratings. The British and Americans rated their siblings higher than did the Japanese [$F(2,143) = 6.31$, $P < .1$]. There was also a significant effect for siblings [$F(1,143) = 4.82$), $P < .05$]: Sisters were rated as having a higher verbal intelligence score than brothers. The ratings of *numerical* intelligence showed the Americans and British gave both siblings higher ratings than the Japanese [$F(2,142) = 3.19$, $P < .05$]. Brothers were rated as having a higher numerical intelligence than sisters [$F(1,142) = 5.37$, $P < .05$]. There was also a significant Sex × Sibling interaction [$F(1,142) = 4.56$, $P < .05$], which indicates that males' rating of the difference between brothers and sisters (IQ points = 3.2) was higher than females' (IQ points 1.5). There were no significant main interaction effects for cultural IQ ratings.

3.4. IQ tests

Two-way ANOVAs (Culture × Sex) were computed on the six questions derived from Furnham et al. (1999) (Table 4).

There was one main effect for sex. Despite the fact that less than a fifth of the participants agreed that males are more intelligent than females, males agreed more than females. There were a few significant effects for culture: Over two thirds of the Japanese had taken an intelligence test compared to less than a third of the British, with the Americans in-between. Whereas over 40% of the Americans and British believed IQ tests measure intelligence "fairly well," less than 20% of the Japanese did so. Whereas about 60% of the British believed intelligence is primarily inherited, less than 40% of the Japanese thought so. Finally, the British and Japanese were more likely than the Americans to say yes to questions concerning the existence of race differences in intelligence. This final question also yielded a significant Race × Culture interaction. American and British males were more likely to believe in race differences in intelligence, while for the Japanese, it was the case that females were more likely to believe in race differences in intelligence.

Table 4
Percentage saying yes to each question about IQ tests and ANOVAs on results

	Male			Female			*F* level		
Questions	UK	USA	JP	UK	USA	JP	Sex	Culture	Sex × Culture
(1) Have you ever taken an intelligence test?	30.0	37.9	70.5	24.8	43.2	69.3	0.90	37.64***	0.69
(2) Do you believe they measure intelligence fairly well?	36.4	47.8	8.3	47.3	43.4	15.7	1.39	26.62***	1.5
(3) Do you believe males are more intelligent than females?	18.7	18.1	21.3	7.5	5.40	14.9	12.69***	1.66	0.39
(4) Do you believe intelligence is primarily inherited?	67.0	52.7	37.7	56.8	41.3	41.2	2.10	10.26***	1.18
(5) Do you believe IQ tests are useful in an educational setting?	50.5	40.4	48.3	52.3	49.1	43.1	1.05	0.16	0.83
(6) Do you believe some races are more intelligent than others?	38.5	21.5	23.3	26.5	12.6	36.3	0.51	7.29***	4.11

*** $P < .001$.

It is quite possible that these questions are particularly prone to social desirability responses, perhaps mostly in America when the Bell Curve (Herrnstein & Murray, 1994) debated increased public awareness of intelligence testing in general.

4. Discussion

This study tested a number of specific hypotheses concerning self- and other estimates of IQ. Despite Gardner's (1983, 1998) insistence on multiple intelligence types, an unrotated principal component of self, parents, and sibling within each country population and for the groups combined showed one single factor which would be described as "*g*." Rotated factor analysis in previous studies did reveal the three factors that were readily interpretable in terms of studies that have factor analysed actual intelligence tests like the WAIS. Ratings of own scores seem more prone to halo effects than ratings of others.

Sternberg (1990) spoke of psychologists as being either lumpers or splitters. Those that favour a "*g*" or global/general perspective and those that favour distinguishing various types of intelligence. Whether it could be attributed to attributional halo effect or not, it does seem that lay people, both with regard to themselves and others, tend more to being lumpers than splitters. However, Sternberg, Conway, Ketron, and Bernstein (1981) did find that lay people have well-formed prototypes corresponding to various types of intelligence, which are fairly similar for both experts and lay people and which are clearly used in the evaluation of one's

own and others' intelligence. Indeed, one way to test Gardner's (1998) theory would be to obtain descriptions of "intelligent behaviour" by lay people and see if they correspond to Gardner's theory. However, there is always the danger that the increasing popularity of the theory in fact leads to this occurring though it would therefore not provide evidence for theory merely its popularization.

This study demonstrated as hypothesized the universal nature of the self-rated IQ hubris effect among males and (relative) humility effect among females. For over 20 years, results on self-evaluation of performance have shown a self-enhancing bias in men and a self-derogatory bias in women (Beyer, 1990). Male participants rated their own overall IQ and that of their fathers higher than female participants in accordance with nearly all the previous literature (Furnham & Gasson, 1998). As demonstrated before, this difference was primarily caused by higher ratings on the numerical factor (which combined ratings of mathematical and spatial intelligence). As Furnham (1999) has noted, it is primarily on this factor that all self-estimated differences lie (Furnham, Clark, et al., 1999; Furnham, Fong, et al., 1999). The overall *g* estimate thus obscures the fact that self-estimated differences occur mainly in mathematical and spatial intelligence (see Table 2). Indeed, as Table 2 shows, four different studies showed no significant sex differences in estimates of verbal, musical, body-kinesthetic, interpersonal, or intrapersonal intelligence.

This work on self-estimates of IQ may be better understood within the wider concept of gender differences in the accuracy of self-evaluations of performance (Beyer, 1990). In a series of programmatic studies Beyer (1998, 1999) and Beyer and Bowden (1997) has demonstrated sex differences in expectations, self-evaluations, and performance on ability-related tasks. Her results support the male hubris, female humility results of studies on self-estimated intelligence. Further, she argues that sex differences in self-evaluations effect expectancies of success and failure, and, ultimately performance on those tasks. She notes: "Because of the serious implications of underestimations for self-confidence and psychological health more attention should be devoted to the investigation of gender differences in the accuracy of self-evaluations. Such research will not only elucidate the underlying processes of self-evaluation biases and therefore use of theoretical interest but will also be of practical value by suggesting ways of eliminating women's underestimation of performance" (Beyer, 1990, p. 968).

Beyer (1998) reviewed various studies to conclude that individuals make poor self-evaluators: Correlations between medical students self-rated knowledge and exam grades was almost exactly zero (-0.01); self-perceptions of physical attractiveness and judges ratings were 0.22; while another correlation between performance on a test of managerial skill and experts' ratings was 0.32. "Interestingly, outside evaluators seem to be better assessors of a target's performance than the target her/himself" (Beyer, 1998, p. 104). There is an extensive literature on 360° feedback, which tells the same story (Furnham & Stringfield, 1998). What it shows is that when the work-related behavioural ratings and those of his/her boss, colleagues (peers), and reports (subordinates), as well as occasionally others, like assessors, clients, consultants, and others, we calculated correlations between self and others is low and often nonsignificant, whereas correlations between observers are highly significant. Thus, it seems that while self-estimates of intelligence may not be useful as proxy IQ tests as various

studies have shown (Paulus et al., 1998), they may be useful in explaining some of the variability in actual test results through the process of expectations set out by Beyer (1999).

There was no sex difference on the ratings of the participants' mothers' IQ. However, the analysis that compared participants' ratings of parental IQs showed that fathers were rated as having a higher overall and specifically numerical score than mothers, but that mothers were rated as having a higher verbal IQ than fathers. Interestingly, sisters were rated as having a higher verbal IQ than brothers, who, in turn, were rated as having a higher numerical IQ than sisters. These results are in line with previous studies in the area (Furnham, 2000; Furnham & Baguma, 1999) and also the literature on differences in psychometric g between the sexes (Halpern, 1997).

Previous studies suggest that estimates of IQ appear to decline about half a standard deviation for each generation back sampled: e.g., Self 115, Parents 107, Grandparents 100. It appears that the perceived IQ differences between self and grandparents were smaller in the present sample across the three groups. The differences were smallest in the Japanese group and may reflect the cultural norm of filial piety. On the other hand, this pattern may be a result of the student participants in these studies receiving significantly better and longer education than both their parents and particularly their grandparents, which maybe seen as having an impact on intelligence. The sampling of the individual universities maybe crucial here, particularly in America as the catchment group may indeed relate fairly consistently to parental total years of education.

The cultural differences in IQ estimates were as predicted. Two previous papers based on similar methodology showed consistent and replicable cultural differences in IQ estimates. Furnham, Fong, et al. (1999) found in comparable groups of participants that the British awarded themselves highest points (IQ = 109) followed by the Singaporeans (IQ = 106) and then students from the state of Hawaii (IQ = 104). Furnham and Baguma (1999) found in comparable student groups that Americans rated themselves higher (IQ = 114) than did Britons (IQ = 109) and Ugandans (IQ = 110). This paper showed that Americans gave consistently higher ratings than the Japanese. It was a matter of level rather than interaction as the Americans rated all aspects of their own parents' and siblings' IQ higher than the Japanese, who followed the same pattern but always a third to two-thirds of a standard deviation lower. This maybe more explicable in terms of Japanese humility or modesty rather than American hubris because for university students (at least in Great Britain), it may be expected that their IQ is at least one standard deviation above the norm. In this sense, it may be true that American students' estimates are more accurate than those of the Japanese, but only psychometric testing would ascertain the veracity of this idea. The "modesty" bias has been called a self-effacing bias, and it has been reported in various studies conducted with Asian participants. Smith and Bond (1998) have, however, pointed out that not only are there self-serving and self-effacing biases that are quite different in different cultures, but that these often depend on the nature of the ratings made. Thus, Asians tend to show modesty effects (self-effacing biases) for ability ratings and hubris effects (self-serving biases) for effort ratings. Further, it should not be assumed that modesty is necessarily a sign of low self-esteem or inability to become assertive. Interpersonal styles are often culturally defined ways of solving everyday problems. In other words, it is particularly difficult to do crosscultural

research on rating data such as those used here and understanding the exact meaning of the results (Smith & Bond, 1998).

The results of the six short questions about intelligence tests are instructive. They show that whereas the Japanese had more experience with tests they were also more sceptical about their validity. There was a predictable sex difference on the sex difference question, but only a fifth of male participants (compared to about a tenth of female participants) believed that males are more intelligent than females. It is interesting that the British believed more in the hereditary nature of IQ than the other groups, despite many popular controversies about this precise issue (i.e., the Burt affair). As predicted, the Americans were most against the idea that some (unspecified) races are more intelligent than others. This may be because people in the United States are more concerned about racial discrimination and affirmative action than people in other societies, and this may also be related, in turn, to the particular university that they are attending (where in the country, the number of minority students there, and other admissions criteria and policy). In this sense, these questions are obviously very sensitive to social desirability responding. Certainly, these sample questions indicate that it may be worthwhile actually examining participants' experience and knowledge of IQ tests and relating this to their estimates of their scores.

The results of this and other studies in this programmatic research endeavour (Furnham, 2000; Furnham, Clark, et al., 1999; Furnham, Fong, et al., 1999) should not be seen as attempts to validate Gardner's (1983, 1999) theory, although it surely does require robust empirical assessment. Rather they represent attempts to better understand lay theories about intelligence (Flugel, 1947; Sternberg, 1990) and how they may relate to expectations, evaluations, and performance on ability tests of all kinds (Beyer, 1999; Halpern, 1997; Lynn, 1994).

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