

Gender Differences on Self-Estimates of Multiple Intelligences: A Comparison Between Indian and Lebanese Youth

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ABSTRACT A sample of 648 Lebanese and 252 Indian students estimated their multiple intelligences based on Gardner's conceptualization. Males rated the body kinesthetic component higher than females while females estimated their verbal and intra-personal intelligence higher than males. Differences appeared between Indian and Lebanese samples on the cognitive components, namely, verbal, spatial and logical abilities. Using the educational level of the parent as a covariate, significant differences were found between the Indian and Lebanese sample on verbal, spatial, and logical abilities. Interaction effects of gender and nationality were observed on the logical component. While Lebanese males rated the logical component higher than the Lebanese females, Indian females rated the logical component higher than their male counterparts but lower than the male and female Lebanese students.

INTRODUCTION

The literature on the lay estimates of intelligence spans over more than five decades and is considerable in size. In fact, many of the initial studies were confined to measuring overall intelligence or 'g' (Bennett, 1996; Hogan, 1978) till Gardner's multiple intelligence theory appeared, which opened new vistas for researchers. Gardner (1983, 1999) argued that despite the success of standard IQ in predicting ability in school subjects, it did not highlight the potential/competence of an individual in particular fields of expertise. Gardner's theory of multiple intelligences identifies eight subtypes of intelligence that every normal individual should develop to some degree (linguistic, logical/mathematical, spatial, interpersonal, intrapersonal, musical, bodily-kinesthetic, and naturalistic (Gardner, 1983). Later, with the merger of cerebral research and cognitive psychology, specific ontological tasks were associated with intelligence. Blyth and Gardner (1993) and Gardner (1999) came up with two other debatable dimensions to multiple intelligences those being existential and spiritual. These together generated substantial interest among researchers and educators to demonstrate differences across various types of intelligence and in self-esti-

mates of multiple intelligences (Bennett, 1996; Furnham and Baguma, 1999; Furnham et al., 2001, Furnham et al., 2002). Several of these studies showed that lay perceptions of intelligence differed significantly from objective measures of intelligence and between males and females.

The differences in the understanding of intelligence among persons and cultures have yielded variegated findings in general. Intelligence can be considered but not limited to how well students do academically. Educators may assess intelligence through social skills like intra and interpersonal relationship, ability to be sympathetic, being considerate and showing affection (Dasen, 1984; Kojima et al., 1988). In developing and transition countries where educational institutions struggle to have the basic educational resources; it has been argued that the kinesthetic or musical abilities are a kind of luxury (Furnham et al., 2001) that many youth in these countries do not enjoy and hence may provide a lower estimate to overall multiple intelligence. Although teachers do evaluate students based on the basic adaptability and general attitudes and language; intelligence can be comprehensively viewed dealing with behavior, affect, and cognition.

Gender Differences

Research reviews suggest a small and significant gender differences in self-estimates

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of intelligence, and more so on specific skills. Beginning with Anastasi (1958), Tyler (1965), and Maccoby (1966), researchers have reported male performance increased with age on tests of mathematical reasoning compared to females. It is also observed that within societies having strong kinship and patriarchal systems, a distinct bias prevails in favor of higher male self-estimates on the mathematical and kinesthetic abilities. Hogan (1978) reported that in a review of 11 studies more than half of the studies demonstrated significant differences between male and female self-estimates of IQ levels. Hogan argued that women tend to be perceived as less intelligent than men as society may deny intellectual equality. In a study of Scottish students, it was noted that women underestimated while men overestimated their own intelligence along spatial and logical components (Beloff, 1992). Even the estimates of parental, grandparental, and sibling IQ favored males as brothers, fathers, and sons as more intelligent than sisters, mothers, and daughters respectively (Byrd and Stacey, 1993; Furnham and Rawles, 1995; Furnham et al., 1999b).

In a review of gender differences on lay estimates of intelligence, Bennett (1996) observed that male respondents self-estimate their intelligence quotient (IQ) higher than females, but males did not attribute higher levels of interpersonal intelligence over females. Halpern (1997) wrote that males on average, score higher on tasks that require transformations in visual-spatial working memory, motor skills involving aiming, spatial-temporal and fluid reasoning, especially in abstract mathematical and scientific domains. Whereas males performed better than females on the mathematical reasoning and spatial tasks, females were more successful at tasks requiring the use of language, arithmetical evaluation, and manual precision (Halpern, 1992; Springer and Deutsch, 1993). Among Zulu mothers, Furnham and Mkhize (2003) noted the mathematical and spatial intelligence were the best predictor of self-estimates of their children. They observed few significant differences in their estimates of sons and daughters on multiple intelligences. Furnham and associates found British fathers estimating their overall IQ and the logical and spatial components higher than the mothers, and both parents rated their sons more intelligent than daughters (Furnham and Gasson, 1998; Furnham, 2000). Furnham (2000) speculated that the logical

and spatial intelligences lay at the heart of people's conception of intelligence. Lay People may conflate logical and spatial intelligence with overall intelligence, leading to overall gender differences in self-estimates.

Cross-National Differences

Several researchers have explored the concept of intelligence across Europe (Favia and Fontaine, 1997); United States (Sternberg, 1990); Africa (Wober, 1973), Lebanon (Keehn and Prothero, 1958), and Asia (Azuma and Kashiwagi, 1987), and demonstrated cross-national differences. Furnham and Baguma (1999) found a significant national difference between American and Africans on the mean scores for Gardner's (1999) seven intelligences-verbal, logical, spatial, musical, body-kinesthetic, interpersonal, and intra-personal, as White Americans reported higher mean estimates on the logical and spatial component (mathematical), and musical and bodily kinesthetic (cultural), while Africans rated their verbal IQ higher. Furnham et al. (2001) compared American, British and Japanese students on three factors that underlie the seven multiple intelligences. Male self-estimates were higher than females. Americans gave the highest estimates followed by British and Japanese. Furnham et al. (1999b) compared the estimates of intelligence among British, Hawaiian and Chinese Singaporeans. The self-estimates of intelligence for British were higher than Hawaiians followed by Chinese Singaporeans. In one study that compared British and Iranian students Furnham et al. (2001) noted that British subjects gave higher estimates on the mathematical component but were lower than Iranians on spatial, musical, and intra-personal components. In view of the given cultural differences in gender role behavior and the influence of Western culture in the East, it seems logical to conjecture that estimates of intelligence in non-Western or Eastern societies have greater propensity to yield lower self-estimates of multiple intelligences and yet have a larger gap between males and females. The inclusion of Gardner's intelligence types-naturalistic, existential, and religious in this study also suggests that females are expected to rate the non-masculine components or feminine stereotyped attributes higher than males.

Table 1 includes the information on means

and the type of questionnaire used in selected cross-national studies.

Table 1: Means for nine studies on the estimates of intelligence

	<i>Nation</i>	<i>Type of Intelligence Questionnaire</i>	<i>Females</i>	<i>Males</i>
Beloff (1992)	Scotland	General "g"	120.5	126.9
Byrd and Stacey (1993)	New Zealand	General "g"	121.9	121.5
Furnham and Rawles (1995)	England	General "g"	112.31	118.48
Rammstedt and Rammsayer (2000)	Germany	Gardner's 7 Multiple Intelligence	111.9	114.1
Furnham, Hosoe and Tang (2001)	USA	Gardner's 7 Multiple Intelligence	110.2	112.0
Furnham, Hosoe and Tang (2001)	Japan	Gardner's 7 Multiple Intelligence	98.6	102.3
Furnham, Shahidi and Baluch (2002)	Iran	Gardner's 7 Multiple Intelligence	111.56	111.87

Purpose of the Study

This study compares the self-estimates of intelligence of Indian and Lebanese university/college entering students as the two societies are non-western (Near East and East) yet very different socially and politically. The choice of Lebanese students is considered significant as they have experienced political turmoil for 16 plus years of civil war, occupation by foreign powers, and a series of assassinations leading to destabilization, compared to their Indian counterparts living in a democracy and moving slowly along the path of modern development. Lebanese social system is patriarchal in which the nuclear family structure and kinship networks are strong affecting the identity formation (Khalaf, 2001). The patriarchal belief-system (Sharabi, 1975; 1988) permeates the social, economic, and political institutions in Lebanon legitimating the subjugation of women to the male-dominated socio-political structure that openly denies them citizenship rights, cultural and legal advantages. Only women from high

socio-economic status tend to find autonomy to advance as professionals or head of families (Schvaneveldt et al., 2005). Similarly, in Indian society kinship structure and patriarchy operate as two discriminatory practices against women (marriage system and economic value). For instance women from high socio-economic groups enjoy autonomy in the work force and sexual freedom (Malhotra et al., 1995). In India there also prevailed historically greater diversity and distinct regional patterns (Sopher, 1980), although such regional differences or the differences in kinship behavior of different confessional groups in Lebanon are not to limit the role of exogenous variables in this research.

Although Furnham (2001) recognized that parental attentiveness, solicitousness, socioeconomic status, and socio-cultural parenting are important sources of influence on self-estimates of intelligence, so far no empirical tests have been reported of the relation between the socioeconomic status and estimates of intelligence. The fact that in India as well as in Lebanon, substantial growth in educational infrastructure and rise in general educational levels have been recorded in the last few decades, perceptible changes have also occurred in societal and individual values, attitudes and norms. This suggests the need of treating the estimates of intelligence as a central issue in educational assessment (Furnham, 2001, Furnham et al., 2002). To paraphrase, a very high percent of children and youth in both countries are receiving modern education now and forming substantially different perspectives to life than their illiterate parents and thus would self-estimate their intelligence higher than their parents or grandparents. In fact, there seems to be the probability of finding a positive link between the estimations of intelligence and the level of the education of parents. To state the main premise of this research to testing country differences it additionally proposes to test the role of parents' education as a predictor in self-estimates of intelligence. As it is beyond the scope of this paper to qualify the similarities and differences of the behavioral structure of students in Lebanese and Indian societies, this research advances the proposition that the strong effect of the kinship structure in two societies would be seen in gender differences in self estimates of intelligence of the two national groups.

METHOD AND MATERIALS

Method

The Lebanese sample consisted of 247 females and 401 males aged between 16 and 30 and a mean age of 18.2 years. They were undergraduate students taking entrance exams for a private university in Lebanon that followed the American educational system. The university offered programs in liberal arts, education, social sciences and humanities, as well as professional degrees in engineering and computer science. The majority of students came from schools in Lebanon having English as the medium of instruction and only a small minority from Arab nations (n = 11). The Indian sample included 110 female and 142 male students finishing secondary school and applying for admission to the first year university degree in colleges/university in the capital and other regions of the country. The average age for the Indian sample was about 18 years. They came from schools having English as the language of instruction. Indian as well as Lebanese respondents were thus potential entrants into the comparable degree programs in humanities and social sciences, sciences,

commerce, engineering, medicine and dental science.

Materials

Section I of the questionnaire required filling up of background information; gender, age, socio-economic class of the family, and educational level of the mother and father. Section II included the 10 multiple intelligence estimates, these being verbal, logical, spatial, musical, body-kinesthetic, inter-personal, intra-personal, existential, spiritual, and naturalistic. Participants were asked to rate their intelligence based on the normal curve distribution i.e., they were presented with the normal curve and told the areas around the middle under the curve from -1 to 1 standard deviations included 68% of the population, -2 to 2 standard deviations about 96% of the population and from -3 to 3 about 100% of the population which ranged from 15 to 145 IQ units respectively (see Figure 1). The lowest IQ unit was 15 corresponding to -3 standard deviations and the highest, 3 standard deviations corresponding to 145 IQ units. Thus, participants were to rate their intelligence, on a scale from 15 to 145 were 100 being the middle point.

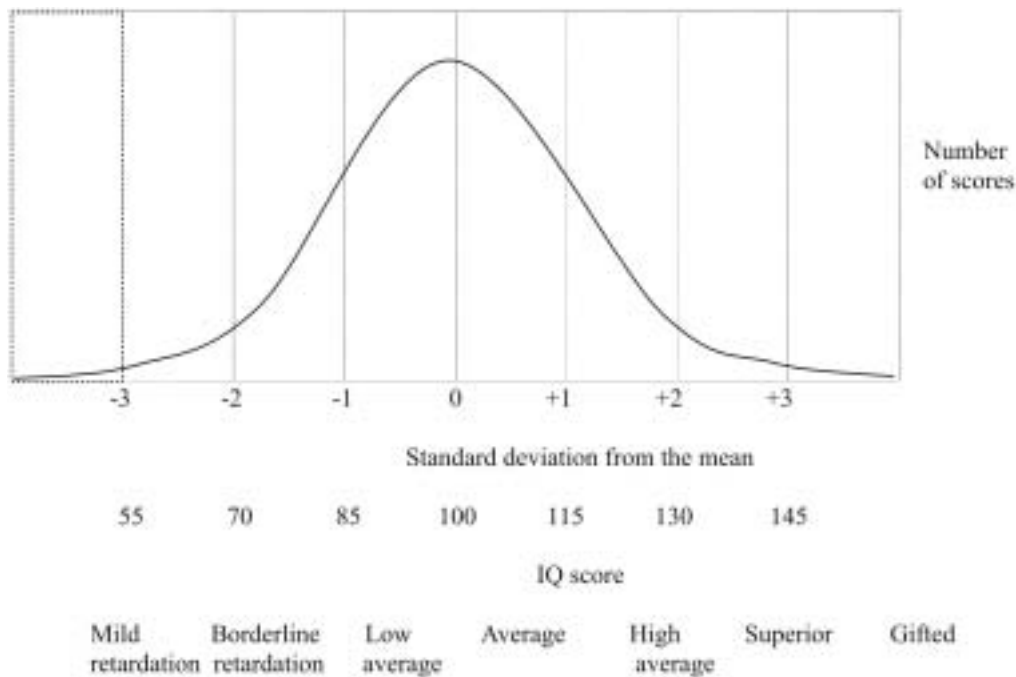


Fig. 1. Normal curve with IQ units for the rating of Gardner's multiple intelligences

Participants were required to assess themselves on this questionnaire. Prior to the administration of the questionnaire respondents were briefed about the research and were told that no penalty will be levied if they did not respond to the questionnaire. In India, the school principals were approached and their permission sought to meet the students and administer the questionnaire. All principals as well as students were fully informed about the research objectives. Respondents were then assembled in small groups in the school premises and asked to read the directions along with the researcher. Once they were clear about the task they were asked to respond to the questionnaire. If they did not understand the concept of the normal curve, they could ask the researcher again. The researcher gave an illustration of what the normal curve represents and the notion of central tendency measures.

Data Analysis

Once the data was gathered it was entered into an excel sheet which was then saved to an SPSSx data file. Data were analyzed by using MANOVA and MANCOVA procedures. Means,

SD, and F values have been obtained and reported.

RESULTS

In the first instance, the two national samples were analyzed separately. Table 2 presents the mean scores on ten multiple intelligences using gender as an independent variable.

The result of one-way MANOVA by gender on the 10 multiple intelligences was significant for the Lebanese sample $F(1,456) = 5.83, p < 0.05$, but not for the Indian sample $F(1,258) = 1.905, p > 0.05$.

The results of MANOVA showed significant differences between males and females with higher female estimates on the verbal component for the Lebanese and the Indian sample. Lebanese male students made higher estimates on the logical and body kinesthetic, whereas the females made higher estimates on the interpersonal and intra-personal components. In the Indian sample, the males scored higher on interpersonal, whereas the females scored somewhat higher on intra-personal intelligence type. In the Indian sample, the females made higher estimates on the verbal component, while

Table 2: Mean scores and MANOVA results for self-estimates in the two nationality samples by gender.

		<i>Lebanese</i>			<i>Indian</i>		
		<i>Mean</i>	<i>SD</i>	<i>F</i>	<i>Mean</i>	<i>SD</i>	<i>F</i>
Verbal	Male	106.486	.713	13.977**	101.972	1.246	6.011*
	Female	110.714	.878		106.620	1.429	
Logical	Male	115.228	.904	13.152**	104.127	1.370	.993
	Female	110.027	1.113		106.204	1.571	
Spatial	Male	114.080	.884	.060	108.556	1.354	.012
	Female	113.736	1.088		108.333	1.552	
Musical	Male	99.217	1.342	.532	100.599	1.602	.305
	Female	100.769	1.652		101.944	1.837	
Body Kinesthetic	Male	112.609	.971	8.523*	109.190	1.564	.287
	Female	108.110	1.196		107.917	1.793	
Inter-personal	Male	118.446	.823	13.108**	120.986	6.437	.199
	Female	123.170	1.013		116.620	7.381	
Intra-personal	Male	117.355	.842	4.272*	113.556	6.412	1.976
	Female	120.115	1.037		127.269	7.352	
Existential	Male	114.841	.997	.098	111.901	1.421	.439
	Female	114.346	1.228		113.333	1.629	
Spiritual	Male	107.072	.905	.364	102.183	1.830	.361
	Female	107.940	1.115		100.509	2.098	
Naturalistic	Male	105.431	.999	.034	106.303	1.584	4.561*
	Female	105.137	1.230		101.157	1.816	

*two-tailed $p < .05$,

**two-tailed $p < .001$

males made higher estimates on the naturalistic component. Only the logical components among Lebanese males showed higher estimates.

A second MANOVA was performed to test for differences between Lebanese and Indian sample on the estimates of intelligence. The means and F-ratios are reported on Table 3. It was found that the Lebanese students made higher self-estimates of intelligence than Indian students on the verbal, logical, spatial and spiritual components. The overall MANOVA results yielded a significant F-ratio ($F(1,707) = 7.54, p < 0.001$).

Table 3: Mean scores and MANOVA results for Lebanese and Indian students

	Nationality	Mean	SD	F
Verbal	Lebanese	108.166	.614	16.592**
	Indian	103.964	.829	
Logical	Lebanese	113.162	.729	44.291**
	Indian	105.004	.985	
Spatial	Lebanese	113.943	.711	20.274**
	Indian	108.566	.960	
Musical	Lebanese	99.834	.991	.769
	Indian	101.295	1.339	
Body Kinesthetic	Lebanese	110.821	.800	2.715
	Indian	108.606	1.081	
Inter-personal	Lebanese	120.323	2.186	.114
	Indian	119.084	2.953	
Intra-personal	Lebanese	118.452	2.188	.085
	Indian	119.522	2.955	
Existential	Lebanese	114.644	.779	2.461
	Indian	112.590	1.053	
Spiritual	Lebanese	107.417	.827	18.412**
	Indian	101.454	1.117	
Naturalistic	Lebanese	105.314	.817	.678
	Indian	104.183	1.104	

*two-tailed $p < .05$

**two-tailed $p < .001$

Data were further analyzed to examine the relationship between the educational level of parents and respondents' estimates of intelligence across nationality and gender groups by using MANCOVA. The results of MANCOVA are included in Tables 4 and 5 respectively, which should be read together to facilitate interpretation. Table 4 reports the means and Table 5 reports the F-values.

Table 4: Means and SD for nationality and gender Groups on multiple intelligences

	Nationality	Gender	Mean	SD
Verbal	Lebanese	Male	106.451	.790
		Female	110.779	.974
	Indian	Male	102.022	1.095
		Female	106.695	1.258
Logical	Lebanese	Male	115.277	.944
		Female	109.925	1.164
	Indian	Male	104.171	1.309
		Female	106.269	1.503
Spatial	Lebanese	Male	114.094	.925
		Female	113.637	1.140
	Indian	Male	108.635	1.282
		Female	108.449	1.473
Musical	Lebanese	Male	99.278	1.292
		Female	100.907	1.593
	Indian	Male	100.556	1.791
		Female	101.882	2.057
Body-Kinesthetic	Lebanese	Male	112.545	1.039
		Female	108.189	1.281
	Indian	Male	109.123	1.440
		Female	107.818	1.654
Inter-personal	Lebanese	Male	118.341	2.854
		Female	123.066	3.518
	Indian	Male	121.243	3.956
		Female	117.000	4.544
Intra-personal	Lebanese	Male	117.600	2.842
		Female	120.671	3.503
	Indian	Male	113.019	3.940
		Female	126.474	4.525
Existential	Lebanese	Male	114.835	1.012
		Female	114.504	1.248
	Indian	Male	111.749	1.403
		Female	113.108	1.612
Spiritual	Lebanese	Male	107.025	1.079
		Female	108.010	1.330
	Indian	Male	102.045	1.495
		Female	100.306	1.718
Naturalistic	Lebanese	Male	105.433	1.060
		Female	105.035	1.307
	Indian	Male	106.219	1.470
		Female	101.034	1.688

*Two-tailed $p < .05$

** two-tailed $p < .001$

Table 5: F-values for main and interaction effects of gender and nationality on self- estimates of intelligence

Educational Level (Covariate)	Gender	Nationality	Gender By Nationality
.430	18.717**	16.395**	.027
.230	1.714	34.540**	8.968*
.760	.070	18.711**	.012
.113	.754	.430	.008
.440	4.282*	1.882	1.241
.858	.004	.174	1.422
3.787	4.877*	.026	1.922
2.403	.149	2.769	.401
1.726	.070	19.523**	.919
.655	4.000	1.298	2.934

*two-tailed $p < .05$

**two-tailed $p < .001$

The analysis showed significant main effects for gender, with females scoring higher than males on the verbal and interpersonal intelligence. However, males rated themselves higher also on the body-kinesthetic component. Cross-nationally, Lebanese students rated themselves higher than the Indian students on four components- verbal, logical, spatial, and religious components. The interaction effects between nationality and gender were found significant on the logical component only. The Lebanese male students scored higher than females, while the Indian female respondents scored higher than their male counterparts. It appeared that the educational level of parents as a covariate had no effect on the estimates of intelligence of respondents. Combining the Lebanese and Indian sample by gender and using the educational level of the parent as a covariate, common variance between the two removed, the females scored higher than males on verbal and intra-personal components. The MANCOVA results were found similar to the MANOVA results even with the use of educational level as a covariate. The MANCOVA error term was much smaller to be considered appropriate for gain score analysis.

In essence it was evident that cultural differences matter, irrespective of the use of educational level as a covariate.

DISCUSSION

A number of studies assessed and found gender differences on some types of multiple intelligences specifically spatial and logical components (Furnham, 2000 and 2001; Furnham and Baguma, 1999; Furnham et al., 1999c). In the present research, the MANOVA analysis showed that Lebanese male students self-estimated their intelligence somewhat higher than their female counterparts. However, this was not found true about the Indian sample. According to Furnham (2001), logical and spatial components were the constituents of mathematical ability, implying those higher on one should be higher on the other. Studies by Halpern (1997) and Bennett (1996) also reported differences between males and females on spatial and logical reasoning. In the Lebanese as well as Indian students, the females estimated their verbal and intra-personal ability higher than males. These results are found attuned to the stereotypical hypothesis of Beloff

(1992); Rammstedt and Rammsayer (2000), which suggested that mental components associated with stereotypical gender attitudes prescribe a specific structure to intelligence that differentiate between male and female estimates of intelligence. This stereotypic structure is also seen reinforced by a higher estimate made by Indian male students on the naturalistic component. Indian male students participate much more frequently in activities related to sports, farming or other manual activities. Evidence also confirms that strong kinship societies are inclined to favor males over females, specifically in abilities that are male prescribed. For instance, males in both samples made significantly higher estimates on the kinesthetic abilities than females, and females rated themselves better than males on musical ability. The Lebanese males estimated themselves higher than females on logical and spatial components, while the gender differences on spatial component were non-existent in the Indian sample. On the logical ability, surprisingly, Indian females estimated themselves better than males. The results of this research for the Lebanese sample are in general consistent with the findings of earlier researches, indicating the probability of universality of gender differences in the way of estimating intelligence on the logical and spatial components. However, the anomaly in the results of this study among Indians is the higher rating for the logical components among females than males indicating that India is moving along egalitarian social movements were females and males maybe considered equal along the cognitive aspects of intelligence.

Some systematic differences have been observed between Lebanese and Indian students. Lebanese students tend to provide consistently higher self-estimates than their Indian counterparts. The significant differences on verbal, logical, spatial, and spiritual components seem interesting. Lebanese rated their intelligence higher than Indians on cognitive components consciously, as it is acknowledged in general that the mathematical abilities of students in Asian countries are better developed. Lebanese in particular rate themselves higher because of their coming from good schools, rigorous training and preparation for college. In fact the baccalaureate in Lebanon is internationally acclaimed, as students completing the baccalaureate have gone through a set of rigorous tests in mathematics, science, languages,

social sciences, and humanities. Indian youth showed a good deal of realism in their assessments, given the high competition for the limited number of seats in good courses and go through tough grinding in the final stage of school, they do not overestimate their ability. It has been noted in earlier studies that students from poorer countries, such as Uganda (Furnham and Baguma, 1999), and Slovakia (Furnham et al., 1999) provided higher self-estimates of intelligence, but both in India and Lebanon college going population represents better social strata. Furnham et al. (2002) also noted that in developing/poorer nations as it is more difficult to get a university seat or even get accepted in the choice of major, students self-estimate their intelligence close to some notion of the national norms. Lebanese students made higher estimates on religious intelligence than Indians, as in Lebanon religion and kinship play a much more important role than in India in developing the sense of identity in the youth (Khalaf, 2001). In a way, religion constitutes the main base of the political, social, and legal structure in Lebanon. However, this is not exactly true of Indian urban educated youth particularly Hindus (a predominantly higher percent in the sample), who do not routinely indulge in religious practices.

The use of parents' educational level as a covariate did not show significant effects on students' estimates of intelligence. It was expected that the higher educational level of parents would be reflected in higher self-estimates of intelligence, as these students may be more intellectually oriented and would estimate their intelligence higher than those not having parents' with higher educational levels. It is known that in societies characterized by strong kinship bonds, parents play an important role in the education of their children. This was not found true here. Perhaps some other factors like the socio-economic status of parents played an even bigger role (Furnham, 2001). It may be helpful in future research to use the level of education of parents and SES together as covariates in estimates of parents' intelligence by their offspring. It has been interesting to note that the Lebanese respondents reported significantly higher education level of parents ($M=2.18$, $SD=0.75$) and made higher estimates of intelligence than the Indian sample ($M=2.00$, $SD=0.78$; $t=3.03$, $df=848$, $p=0.01$). Possibly, the educational disparities are more glaring in India

because of the sheer diversity of its populace and resource constraints than Lebanon. It remains true however that the Lebanese as well as Indian parents value college education for their sons and daughters highly and encourage them to do well as it opens door to upward socio-economic mobility.

LIMITATIONS

It emerges that researchers must take adequate precautions while comparing different national groups. Although respondents of this research came from the same age and were all beginning students at the university, many other free floating (uncontrolled) variables remained active that could have played a role in forfeiting the differences between the samples. Secondly, the concept of the bell-shaped or the normal curve presented an educational process and researchers at both ends needed to make sure that before responding students understood the basic concepts of central tendency. Also as researchers had no control on student learning (amount and quality), this might have intervened in the process of students' self-estimates of intelligence.

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