

**CDGRIP****The Preschool Behaviour Questionnaire: Stability of its Factor Structure Between Cultures, Sexes, Ages and Socioeconomic Classes**

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The Preschool Behaviour Questionnaire has been widely used in North-America to study social competencies and behavioural problems of preschool children. The 30 item rating scale was created by Behar and Stringfield (1974) as an adaptation of Rutter's (1967) Children's Behaviour Questionnaire intended for elementary school children. In their original study Behar and Stringfield proposed a three-component solution for their data: hostile-aggressive, anxious-fearful, hyperactive-distractible. Most studies using the Behar Preschool Behaviour Questionnaire, (B-PBQ) have been using this three-component solution. Fowler and Park (1979), after a study of a "normal" population sample, concluded that a two-component solution (aggressive-hyperactive-distractible, anxious-fearful) was a better approximation to simple structure and more easily interpretable. They also concluded that the two-component solution was stable across sexes, but questioned the stability for "populations differing significantly in socioeconomic or ethnic composition". This study addresses the "simple structure" problem and the "stability of structure" problem for the B-PBQ. Four different samples ranging from  $N=383$  to  $N=1161$  were assessed in francophone schools in Montréal. Results of principal component analyses compared to Behar and Stringfield's data as well as Fowler and Park's data lead to the following conclusions: a two-principal-component solution has a simpler structure and is easier to interpret with reference to Rutter's Children's

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Behaviour Questionnaire; the two-component solution is stable across sexes, ages, socioeconomic populations and cultures. The Preschool Behaviour Questionnaire paired with the Children's Behaviour Questionnaire should be suitable for longitudinal and cross-cultural studies of social competencies from preschool to junior high school.

## INTRODUCTION

More than 10 years ago Behar and Stringfield (1974) published data from a questionnaire they had created to assess preschool children's behaviour problems. The questionnaire was an adaptation of Rutter's (1967) Children's Behaviour Questionnaire built for rating primary school children's behavioural problems by teachers. Behar and Stringfield's version (B-PBQ) seems to have gained wide acceptance among North American investigators interested in assessing preschool children's behavioural problems or social competence (Campbell & Cluss, 1982; Erickson, Sroufe, & Egeland, 1985; Kinard & Reinherz, 1984; Rubin & Clark, 1983; Tremblay & Baillargeon, 1984). Rutter's version has also been used in Italy (Zimmerman-Tansella, Minghetti, Tacconi, & Tansella, 1978), in France (Dumaret, 1979; Duyme, 1981), in New Zealand (McGee, Williams, & Silva, 1985) and in England (Berg, Consterdine, Hullin, McGuire, & Tyrer, 1978; Berg, Goodwin, Hullin, & McGuire, 1983; Kolvin, et al., 1977; Weir, Stevenson, & Graham, 1980).

Behar and Stringfield presented data from a principal component analysis showing that the questionnaire had three main components: hostile-aggressive, anxious-fearful and hyperactive-distractible. A few years later Fowler and Park (1979) presented data showing that the questionnaire for girls as well as for boys had two components: aggressive-hyperactive-distractible, anxious-fearful. More recently Hoge, Meginbir, Khan and Weatherall (1985) showed with a multitrait-multimethod analysis of data, from normal children aged three and a half to four and a half, that there was no support for the validity of the hyperactive-distractible component. Some North American scientists use Fowler and Park's two components (Kinard & Reinherz, 1984) but most presently using the B-PBQ tend to use Behar and Stringfield's original three components (Bates, Maslin, & Frankel, 1985; Campbell & Cluss, 1982; Rubin & Daniels-Beirness, 1983; Tremblay & Baillargeon, 1984). In Europe two sub-scores (anti-social; neurotic) are usually generated from Rutter's (1967) version.

This state of affairs does not facilitate comparison of results between studies and should be remedied since the questionnaire's acceptance by investigators of different cultures working from preschool to high school could contribute to cross-cultural studies of children's behavioural problems and social competence.

Fowler and Park proposed that the difference in the factor structure obtained in their study compared to Behar and Stringfield's is due to a difference in the populations. Fowler and Park's subjects (349 girls and 352 boys) were kindergarten children attending regular classrooms in a middle-size community in the northeastern United States. Behar and Stringfield's sample ( $N = 598$ ) had a majority of "normal" children attending preschool classrooms in North Carolina and Oregon but 21.4% of the males and 12% of the females were chosen to constitute a sample of emotionally disturbed children. Another major difference between the samples is the age variable. The mean age of Fowler and Park's sample was 59 months with a very small standard deviation (4 months for boys and 3.5 months for girls). In Behar and Stringfield's sample 20% of the children were aged three, 31% were aged four, 36% were aged five and 13% were aged six. Although there were no age differences in mean score on each subscale and the total, differences in ages between samples may affect the principal component structure (see Rubin, Moller, & Emptage, 1985).

Fowler and Park showed that results obtained for one sample of normal girls and boys when using both the principal component method and the maximum likelihood method were similar. They questioned whether the structure they obtained was stable enough to be replicated "across populations differing significantly in socioeconomic or ethnic composition" (Fowler & Park, 1979). We have been using the B-PBQ to assess preschool children in francophone schools in Montréal. Four different studies of more than 3000 children document the stability of the B-PBQ principal component structure across sex, age, socioeconomic groups and cultures.

## METHOD

### Study 1

Each study was done in kindergarten classes of Montréal's Catholic School Board in late spring (May and early June). In Study 1 we chose a random sample of schools in low socioeconomic areas offering both kindergarten classes for four year olds and classes for five year olds; we also chose a random sample of schools in middle and higher socioeconomic areas offering kindergarten classes only for five year olds. Kindergarten classes for four year olds are offered only in low socioeconomic areas. A total of 747 children were assessed by their teachers from 40 different classes and 13 different schools. Response rate by teachers was 82%. Boys and girls were evenly distributed (girls = 51.7%; boys = 48.3%), 82.2% were from five year old classes (50.8% were six years old, 43.2% were five years old, 6% were four years old) and 92% were white (7.4% were black). Like Fowler and Park (1979) we dropped two questions from Behar and

Stringfield's questionnaire, one dealing with sexual behaviour and one asking for a global evaluation of the child's maladjusted behaviour.

## Study 2

In Study 2, 825 immigrant children in kindergarten classes of Montréal's catholic school board were assessed by their teachers. These classes are French immersion classes for immigrant children. None of the children in these classes was francophone. We randomly chose half of these classes for the study ( $N = 50$ ). The response rate from teachers was 84.8%. Boys represented 52.1% of the sample while girls represented 47.9%. Twenty six per cent (26.4%) of the sample were four year olds, 52.5% were five year olds and 21.1% were six year olds. Most of the sample was white (76.1%); 13.7% were black and 10.1% were oriental.

## Study 3

In Studies 3 and 4 only boys were assessed for a longitudinal study of boys' aggressive behaviour during primary school. For Study 3 each kindergarten teacher in schools of two administrative regions of the Montréal catholic school board were asked to assess all the boys in their class whose parents were both francophone and born in Canada; 383 boys were assessed (mean age = 72.7 months; S.D. = 4.34).

## Study 4

In Study 4 the teachers of kindergarten classes in all the Montréal catholic school board schools located in low socioeconomic areas of Montréal ( $N = 61$ ) were asked to rate all boys in their classes whose parents were both francophone and born in Canada. The response rate was 85% and 1161 boys were assessed (mean age = 73.5 months; S.D. = 3.54). The questionnaire was modified for this fourth study. We were interested in assessing prosocial behaviour as well as conduct problems. The B-PBQ as well as Rutter's original formulation are exclusively centred on problem behaviours. The B-PBQ questions were mixed with the 20 questions of Weir and Duveen's (1981) Prosocial Behaviour Questionnaire (W-PBQ). We chose to use these questions because they were potentially useful for our study of boys at risk for delinquency; the formulation of each item had the same structure found in the B-PBQ. Weir and Duveen had shown that the total prosocial score was negatively correlated ( $r = -0.46$ ,  $P < 0.001$ ) with the "total maladjustment" score of Rutter's original version.

## Factor analysis procedure

The same procedure was used for the data of each study. Using SPSS (see Nie et al., 1975) a principal component analysis (with iteration) was per-

formed. In each case, after construction of the initial orthogonal factor matrices, two and three component were rotated to simple structure using the varimax criteria.

Fowler and Park (1979) have shown that, although "the scree tests indicated that either two- or three-component solutions were appropriate for these data matrices", in the three-component solution the salient variables reported by Behar and Stringfield for the hyperactive-distractible component also loaded on the aggressive-hostile component. Both two- and three-component solutions were hence considered to verify, if in our data approximation to simple structure and interpretability was obtained with the two- or three-component solution. No maximum likelihood factor analyses were performed since Fowler and Park showed that the obtained structure was stable across analytic methods.

## RESULTS AND DISCUSSION

### Two- or Three-Principal Component Solution?

Fowler and Park's comparison of the two- and three-principal component solutions led them to conclude that the two-component solution was a better approximation to simple structure. Our results from Study 1 data lead to the same conclusion. When comparing our three-component solution with Behar and Stringfield's (see Table 1) it can be seen that three of the four salient variables reported for the third component (hyperactivity-distractibility) also load on the first component (aggressivity-hostility). In fact, the two hyperactivity variables (restless, squirming) have a greater load on the first component (aggressivity-hostility) than on the third component (hyperactivity-distractibility). Also in Study 1, the variable "gives up", which Behar and Stringfield considered part of component 2, had a greater load on component 3 and 1.

The two-component solution (see Table 2) across five different samples (Fowler and Park's study and our Studies 1, 2, 3, and 4) has a much simpler structure and is more easily interpretable. The first component combines aggressive and hyperactive behaviour, a combination of component 1 and 3 from the three-component solution. These results are identical to Fowler and Park's except for the distractibility items (poor concentration, inattentive) which load on both components, with a tendency to load more heavily on the second component than on the first. The second component combines anxiety (worried, distressed, fearful, cries) and withdrawal (solitary, stares into space). The distractibility variables (poor concentration, inattentive) which load on this second component, as was mentioned, also load on the first component. The variable "gives up" also loads on both components.

When considering the variables which load on only one component,

TABLE 1  
Comparison of Study 1's Three-principal Component Solution with Behar and Stringfield's Principal Component Solution

	<i>Behar &amp; Stringfield</i> ( <i>N</i> = 598). <i>Component:</i>			<i>Study 1 (N = 747).</i> <i>Component:</i>		
	1	2	3	1	2	3
<i>Component 1</i>						
26. Inconsiderate	0.78	0.16	0.16	0.79	0.09	0.12
4. Fights	0.77	-0.03	0.13	0.81	0.00	0.08
3. Destroys	0.70	0.12	0.21	0.75	0.18	0.09
20. Bullies	0.71	0.00	0.05	0.83	0.06	0.06
27. Kicks, bites, hits	0.68	0.08	0.20	0.78	0.09	0.09
22. Doesn't share	0.65	0.24	0.21	0.68	0.20	0.03
24. Blames	0.64	-0.03	0.07	0.59	-0.08	0.20
<i>Component 2</i>						
14. Fearful	0.06	0.66	0.14	0.05	0.71	0.36
6. Worried	0.19	0.66	0.06	0.14	0.69	0.25
28. Stares into space	0.04	0.57	0.37	0.13	0.70	0.16
23. Cries	0.24	0.48	0.14	0.20	0.53	0.12
25. Gives up	0.16	0.47	0.40	0.38	0.24	0.53
<i>Component 3</i>						
21. Inattentive	0.19	0.24	0.80	0.26	0.11	0.79
13. Poor concentration	0.12	0.26	0.80	0.36	0.06	0.79
1. Restless	0.36	0.02	0.69	0.66	-0.03	0.32
2. Squirmy	0.37	0.09	0.68	0.66	0.05	0.41
Variance (%)	?	?	?	32.1%	6.2%	10.9%
Total variance (%)		37.7%			49.2%	

these two components from our four studies and Fowler and Park's, match almost perfectly the two sub-scores used in the Rutter scale (Rutter, 1967) from which Behar and Stringfield developed the B-PBQ. Rutter's anti-social sub-scores includes variables "destroys things, fights, disobedient, lies, bullies" (kicks-bites-hits in Behar and Stringfield). The only other variable included in that sub-score is "steals", an item dropped by Behar and Stringfield. The first component does in fact look like an anti-social dimension if one excludes the "restless", "squirmy" and "irritable" items in the B-PBQ. The second Rutter sub-score was named "neurotic". All four items of this "neurotic" sub-score are included in the second component, "worries, miserable, fearful, cries". The two other variables in the second B-PBQ component are withdrawal items, "solitary, stares into space".

TABLE 2  
Principal Component Structure of B-PBQ for Four Different Montréal Samples and Fowler and Park's (F.P.) Male Sample<sup>1</sup>

	Component 1					Component 2					F.P. (N = 352)	F.P. (N = 352)
	Study 1 (N = 747)	Study 2 (N = 825)	Study 3 (N = 383)	Study 4 (N = 1161)	F.P. (N = 352)	Study 1 (N = 747)	Study 2 (N = 825)	Study 3 (N = 383)	Study 4 (N = 1161)	F.P. (N = 352)		
1. Restless	70	68	69	70	78							
2. Squirmy	70	63	67	67	74							
3. Destroys	74	65	78	68	83							
4. Fights	81	76	81	82	83							
5. Not liked	56	33	64	56	69		43					
6. Worried						63	66				68	75
7. Solitary						52	43				51	61
8. Irritable	70	55	69	66	63							
9. Distressed						50	59				64	53
10. Twitches							31				40	42
11. Bites nails					31						30	44
12. Disobedient	76	72	72	80	79							
13. Poor concentration	45	40	36	43	64							
14. Fearful						57	49				37	42
15. Fussy						73	61				78	72
16. Tells lies											34	34
17. Soiled self	61	45	55	64	65							
18. Stutter												36
19. Speech difficulty												40
20. Bullies	83	71	84	80	83							
21. Inattentive	35			37	64							30
22. Doesn't share	66	57	65	60	63						54	51
23. Cries						44	43				58	43
24. Blames	75	53	67	70	82							60
25. Gives up	43		40	41	41						53	52
26. Inconsiderate	79	2	82	65	83							55
27. Kicks, bites, hits	78	72	85	80	83							
28. Stares into space						60	49				59	53
Variance (%)	32.1	24.1	32.0	30.1	31.1	10.9	10.9	12.4	11.3		12.4	13.7
Coefficient of congruence												
		0.97					0.92					

<sup>1</sup>Loadings <0.30 omitted.<sup>2</sup>Item not included in Study 2.

### Stability of the Principal Component Structure between Sexes

Fowler and Park's study showed remarkable stability between the two component structures of boys' and girls' samples. In our Study 1 we compared the two component structure of boys ( $N = 361$ ) and girls ( $N = 386$ ). In Table 3 it can be observed that both structures are almost identical. The coefficient of congruence (Harman, 1976) for component 1 is 0.97 and 0.95 for component 2. The two rotated components account for similar total percentages of variance for the boys sample (43%) and the girls sample (41.8%). Items loading greater than 0.30 are identical for boys and girls on component 1, and identical also, except for a marginal 0.31 for item 2 (squirmy), on component 2.

### Stability of the Principal Component Structure between Cultures

The comparison of same sex samples from different populations (Study 1 vs. Fowler and Park) shows that the stability of structure holds for French Canadian and American cultures (see Table 3).<sup>1</sup> The two rotated components account for similar total percentages of variance for the boys samples (43% and 44.8%) and for the girls samples (41.8% and 43.1%). For component 1, comparison of the item loadings for each sex shows that items loading greater than 0.30 are identical in both cultures except for a marginal 0.31 of item 11 (bites nails) in the boys' Fowler and Park sample. For component 2 there are more differences both between boys' samples and girls' samples. The overall picture gives the impression that there are fewer differences between boys and girls of the same culture than between same sex of different cultures. In the Fowler and Park samples items 10 (has twitches), 11 (bites nails), 15 (fussy), 18 (has stutter, stammer) all have loadings greater than 0.30 on component 2 while the loadings are smaller than 0.30 in the French Canadian samples. The reverse is observed for item 13 (poor concentration). Marginal differences are observed on items 2, 17 and 21. The differences between the cultures on component 2 relate to items of "nervousness" (twitches, bites nails, stutter, fussy) and "concentration". "Nervousness" items have more weight on component 2 for the American sample than the French Canadian sample (although none of the items has loading greater than 0.47) and "poor concentration and

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<sup>1</sup>No coefficient of congruence was calculated for these comparisons because Fowler and Park's published data are limited to items having weights above 0.30 on each component



inattentiveness" (item 13 and 21) have more weight on component 2 for the French Canadian sample.

The stability across cultures can also be judged by comparing our Study 2 sample with our other Montréal samples. The Study 2 sample consists of immigrant children grouped in immersion classes to learn French. The data in Table 2 show that on component 1 there are two items (21: inattentive; 25: gives up) which do not have a loading greater than 0.30 as we observe in our three other studies of a francophone population. But loadings for these items in those studies are all below 0.44. The coefficient of congruence between Study 1 (our normative sample for the Montréal francophone population) and the immigrant group is 0.97. For component 2 the differences are also marginal. Item 5 (not liked) has a loading of 0.43 whereas its loading is smaller than 0.30 in every other study. The coefficient of congruence between study one and two for this second component is 0.93.

Component 1 does seem to be quite stable across cultures. Component 2 appears a little less stable. It could be assumed from the data presented above that cultural differences do not come mainly (or only) from the children observed, but from the raters. In study 2 the children were immigrants but the raters were (except in a few cases) French Canadian kindergarten teachers similar to those in the other Montreal studies; the principal component solutions are almost identical. On the other hand when we compare Study 1 to Fowler and Park's we are comparing raters as well as children of different cultures; we observe more differences, especially for component 2.

### Stability of the Principal Component Structure between Socioeconomic Areas

In Study 1 we had samples of children going to school in low socioeconomic areas of Montréal and middle to high socioeconomic areas. We could perform separate principal component analyses for children in five-year-old kindergarten classes of low socioeconomic areas and same age children from middle to high socioeconomic areas. Results of these analysis are presented in Table 4. On component 1 two items have a loading of 0.30, and above in only one of the two samples: item 10 (has twitches, 0.39) and item 28 (stares into space, 0.30). The coefficient of congruence is 0.91. Percentages of variance explained for low and middle to high socioeconomic areas are respectively 33.8% and 27.5%. On component 2 three items have a loading greater than 0.30 for middle to high socioeconomic areas and not for low socioeconomic areas. They are item 1 (restless, 0.31), item 2 (squirmy, 0.36) and item 17 (wet or soiled self,

TABLE 3  
Principal Component Structure of the B-PBO in Study 1<sup>1</sup> and Fowler and Park<sup>2</sup> (F.P.)

	Component 1				Component 2			
	Boys: Study 1	Boys: F.P.	Girls: Study 1	Girls: F.P.	Boys: Study 1	Boys: F.P.	Girls: Study 1	Girls: F.P.
1. Restless	0.70	0.78	0.65	0.66				
2. Squirmy	0.69	0.74	0.69	0.63	0.31			0.33
3. Destroys	0.72	0.83	0.74	0.73				
4. Fights	0.83	0.83	0.76	0.79				
5. Not liked	0.63	0.69	0.48	0.71	0.64	0.75	0.62	0.79
6. Worried					0.49	0.61	0.54	0.67
7. Solitary								
8. Irritable	0.73	0.63	0.65	0.72	0.51	0.56	0.50	0.62
9. Distressed						0.42		0.33
10. Twitches						0.44		0.39
11. Bites nails		0.31						
12. Disobedient	0.76	0.79	0.72	0.84				
13. Poor concentration	0.43	0.64	0.45	0.65	0.53	0.76	0.60	0.81
14. Fearful					0.74		0.73	
15. Fussy						0.34		0.47

16. Tells lies	0.60	0.65	0.64	0.70		
17. Soiled self					0.36	
18. Stutter					0.40	0.30
19. Speech difficulty						
20. Bullies	0.84	0.83	0.80	0.73		
21. Inattentive	0.35	0.64	0.35	0.68	0.30	0.64
22. Doesn't share	0.66	0.63	0.65	0.72		
23. Cries					0.60	0.37
24. Blames	0.73	0.82	0.75	0.78		
25. Gives up	0.39	0.41	0.45	0.56	0.55	0.58
26. Inconsiderate	0.79	0.83	0.77	0.82		
27. Kicks, bites, hits	0.79	0.83	0.77	0.62		
28. Stares into space					0.52	0.64
Variance (%)	32.2	31.1	30.3	29.7	10.8	13.7
Coefficient of congruence		0.97	0.98		0.95	0.96
					11.5	13.4

<sup>1</sup>Boys: N = 361. Girls: N = 386.

<sup>2</sup>Boys: N = 352. Girls: N = 349.

<sup>3</sup>Loadings <0.30 omitted.

TABLE 4  
Principal Component Structure of the B-PBQ for Kindergarten Children in Low  
( $N = 386$ ) and Middle to High ( $N = 226$ ) Socioeconomic Areas<sup>1</sup>

	<i>Component 1</i> <i>Socioeconomic Areas:</i>		<i>Component 2</i> <i>Socioeconomic Areas:</i>	
	<i>Low</i>	<i>Middle to High</i>	<i>Low</i>	<i>Middle to High</i>
1. Restless	0.72	0.49		0.31
2. Squirmy	0.74	0.60		0.36
3. Destroys	0.73	0.61		
4. Fights	0.83	0.68		
5. Not liked	0.61	0.57		
6. Worried			0.68	0.68
7. Solitary			0.53	0.38
8. Irritable	0.76	0.56		
9. Distressed			0.44	0.45
10. Twitches		0.39		
11. Bites nails				
12. Disobedient	0.82	0.66		
13. Poor concentration	0.49	0.40	0.52	0.67
14. Fearful			0.75	0.70
15. Fussy				
16. Tells lies	0.63	0.64		
17. Soiled self				0.36
18. Stutter				
19. Speech difficulty				
20. Bullies	0.83	0.76		
21. Inattentive	0.42	0.31	0.56	0.62
22. Doesn't share	0.66	0.50		
23. Cries			0.34	0.44
24. Blames	0.77	0.70		
25. Gives up	0.46	0.34	0.50	0.53
26. Inconsiderate	0.76	0.79		
27. Kicks, bites, hits	0.80	0.69		
28. Stares into space	0.30		0.58	0.55
Variance (%)	33.8	27.5	10.6	10.9
Coefficient of congruence		0.91		0.90

<sup>1</sup>Loadings <0.30 omitted.

0.36). It would seem that hyperactivity items for middle to high socioeconomic areas tend to load on the "anxiety" component as well as on the "aggression" component. This is not the case for low socioeconomic areas. Percentages of variance explained for low and middle to high socioeconomic areas are respectively 10.6% and 10.9%. The coefficient of congruence for component 2 between socioeconomic areas is 0.90.

## Stability of the Principal Component Structure between Ages

In Study 1, children from low socioeconomic areas were in four- and five-year-old kindergarten classes.<sup>2</sup> A comparison of the principal component structure for each age group permits us to assess the stability of the structure across ages. Results are presented in Table 5.

On component 1 two items have a loading of 0.30 and above in only one of the two samples: item 21 (inattentive, 0.42) and item 28 (stares into space, 0.30); both load on component 1 for six-year-olds but not for five-year-olds. The coefficient of congruence is 0.92. Percentages of variance explained by component 1 are 34.5% for five-year-olds and 33.8% for six-year-olds. On component 2 only one item (squirmy) has a loading greater than 0.30 (0.33) for one sample (five-year-olds) and not the other. The coefficient of congruence is 0.91. Percentage of variance explained by component 2 are 12.8% for five-year-olds and 10.6% for six-year-olds.

## CONCLUSION

The purpose of this paper was to document the principal component structure of the Preschool Behaviour Questionnaire by addressing the question of "best approximation to simple structure" and the question of "stability of structure" which Fowler and Park (1979) had raised. Our data come from four large samples in a North American francophone community. The data permitted to study the stability of the principal component structure of the B-PBQ between cultures, between sexes, between ages and between socioeconomic areas.

With reference to the simplicity of structure, our comparison between the two- and three-principal-component solutions lead to the same conclusion reached by Fowler and Park: for a random sample of five- and six-year-old kindergarten children in "normal" classes, the two-component solution is a better approximation to simple structure. It may very well be that the three-component structure obtained by Behar and Stringfield was due, as Fowler and Park suggested, to the overrepresentation of classes of maladjusted children. A replication study of such a sample with the B-PBQ is needed, but results obtained by Venables et al. (1981) with the Rutter Children's Behaviour Questionnaire supports this hypothesis.

The two-component solution has an "aggressive-hyperactive" component (restless; squirmy; destroys; fights; not liked; irritable; disobedient; tells lies; bullies; doesn't share; blames others; inconsiderate; kicks, bites,

<sup>2</sup>The data having been collected at the end of the school year (May) children in four-year-old classes were age five and children in five-year-old classes were age six.

TABLE 5  
Principal Component Structure of the B-PBQ for Samples of Five- ( $N = 133$ ) and Six- ( $N = 386$ ) Year Olds in Low Socioeconomic Areas<sup>1</sup>

	<i>Component 1</i>		<i>Component 2</i>	
	<i>5-year-olds</i>	<i>6-year-olds</i>	<i>5-year-olds</i>	<i>6-year-olds</i>
1. Restless	0.78	0.72		
2. Squirmy	0.72	0.74	0.33	
3. Destroys	0.83	0.73		
4. Fights	0.89	0.83		
5. Not liked	0.52	0.61		
6. Worried			0.53	0.68
7. Solitary			0.56	0.53
8. Irritable	0.70	0.76		
9. Distressed			0.61	0.44
10. Twitches				
11. Bites nails				
12. Disobedient	0.76	0.82		
13. Poor concentration	0.44	0.49	0.55	0.52
14. Fearful			0.75	0.75
15. Fussy				
16. Tells lies	0.66	0.63		
17. Soiled self				
18. Stutter				
19. Speech difficulty				
20. Bullies	0.89	0.83		
21. Inattentive		0.42	0.66	0.56
22. Doesn't share	0.77	0.66		
23. Cries			0.57	0.34
24. Blames	0.77	0.77		
25. Gives up	0.51	0.46	0.57	0.50
26. Inconsiderate	0.87	0.76		
27. Kicks, bites, hits	0.82	0.80		
28. Stares into space		0.30	0.65	0.58
Variance (%)	34.5	33.8	12.8	10.6
Coefficient of congruence		0.92		0.91

<sup>1</sup>Loadings <0.30 omitted.

hits) and an "anxious-withdrawn" component (worried; solitary; distressed; fearful; cries; stares into space). This two-component solution is more easily comparable to the scoring and the factor structure of the Rutter questionnaire (Rutter, 1967; Venables et al., 1981) which led to the development of the Preschool Behaviour Questionnaire. For those who are conducting longitudinal studies from preschool to high school it would

seem useful to use the Preschool Behaviour Questionnaire with a two-component solution (aggressive-hyperactive, anxious-withdrawn) up to the first or second primary school year (Rubin & Daniels-Beirness, 1983) and then switch to the Rutter Children's Behaviour Questionnaire up to adolescence. Component 1 of the B-PBQ should be consistent with Rutter's antisocial score and component 2 should be consistent with Rutter's neurotic score. In this sense the two-component solution should be more easily interpretable. Also the two-component solution is comparable to most broad-band groupings of behaviour problems which categorise behaviours as aggressive versus inhibited (Achenbach & Edelbrock, 1978; Quay, 1979).

These results do not mean that hyperactivity cannot be differentiated from aggressive or antisocial behaviour. A number of studies have shown that factor analyses of ratings of children's behaviour can produce separate factors of aggressive and hyperactive behaviours (Conners, 1969; Lahey, Stempniak, Robinson, & Tyroler, 1978; Trites & Laprade, 1983). McGee, Williams and Silva (1985) have shown recently that inattention behaviours could also be differentiated from hyperactive and antisocial behaviours. Our results, with those of Fowler and Park (1979) and Hoge et al. (1985), show that the B-PBQ ratings by teachers of children aged 3.5 to 6 should not be used to attempt to make these differences. It is possible that in older children, hyperactivity as a separate phenomenon from aggressivity becomes more salient and thus can be more easily discriminated (Rescorla, 1986). It should however be recalled that Schachar, Rutter and Smith (1981) have shown that only "pervasive hyperactivity", i.e. hyperactivity rated by teachers and parents, "appears to constitute a meaningfully distinct clinical phenomenon".

With reference to the problem of stability of the principal component structure our results show remarkable stability between sexes, between socioeconomic areas and between ages. Fowler and Park (1979) had already shown the stability of the principal component solution between sexes in an American sample. Our results replicate these findings within a North American francophone population. One of our samples was dichotomised into children living in low and middle to high socioeconomic areas. The comparison of the principal component structure for these two groups leads to the conclusion that the two-component solution is stable between socioeconomic areas within a given culture. The comparison of samples of five- and six-year-old children also leads to the conclusion that at these two different ages the two-component structure is stable within a given culture. These results do not of course mean that the two-component structure is stable for every age.

Finally, our study permitted an attempt to test the stability of the two component solution between cultures. The comparison of the solutions

derived from male francophone and anglophone samples, as well as female samples from both these cultures, leads to the conclusion that the two-component structure is stable between these two cultures, although more stability is apparent between sexes within a given culture than within a given sex between cultures. It should be recalled that Venables et al. (1981) have also shown stability of the two factor structure, for the Rutter scale, between cultures on the island of Mauritius.

The study of a population of immigrant children in the francophone culture also leads to the conclusion of structure stability between cultures but raises the question of the origin of the stability, i.e., is the stability of the principal component solution due to similarity of the behaviour structure of children from different cultures or to similarity of raters' perception of children's behaviour? From our results one could conclude that both raters' structural organisation of their perceptions and children's behaviour contribute to similarities and differences between cultures. We observe a relatively stable structure when we compare children of different cultures rated by raters of their own culture, as well as when children of different cultures are rated by adults of a given culture. But the greater "apparent" stability of the latter comparison seems an indication that raters' culture contributes to principal component structural stability and should be taken into account when studies from different cultures are compared.

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