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THE EPQ-R (JUNIOR): A DUTCH REPLICATION STUDY

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Summary—A Dutch version of the EPQ-R (junior) (Corulla, *Personality and Individual Differences, 11*, 65–76, 1990) was applied to 260 school children (143 males and 117 females). The analyses of Corulla were repeated. Substantially the same results were found on both the factor and scale level. The EPQ-R (junior) is, as a result, recommended for use in the Netherlands. For applied research, however, the reliability of the P scale will need amelioration.

INTRODUCTION

Recently there has been an increase in research on temperament-like dispositions and their role in the educational process (Bugenthal & Shennum, 1986; Janssens, 1991; Kohnstamm, Bates & Rothbart, 1989; Leenders, 1984). Eysenck's model of personality (1970) shows the heuristic value of exploring relationships between temperament-based personality traits, and educational environments (e.g. parenting, treatment, learning environment) on child behavior. The original instrument, used to measure the traits Neuroticism (N), Extraversion–Introversion (E) and Psychoticism (P) in children, was the junior version of the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975). In 1990, Corulla revised the P scale of the EPQ (junior). His factor analyses on the item scores of 1325 pupils (491 males and 834 females) confirmed the basic orthogonality of the factors. The EPQ-R (junior) is now the most recent version of a questionnaire that originated in the Eysenckian tradition.

In the Netherlands, the Amsterdam Biografische Vragenlijst voor Kinderen (ABV-K) (Van Dijl & Wilde, 1982) is the only questionnaire available which attempts to measure the dimensions N and E. The ABV-K questionnaire has been criticized by two of the present authors (De Bruyn & Delsing, 1992) on the quality of its validation procedure. Corulla's (1990) invitation to use the revised version of the EPQ (junior), and report the forthcoming results generated the present study. More precisely, our low confidence level in the validity of the ABV-K, combined with the promising results obtained in the EPQ (junior), prompted the idea to explore the adequacy of the EPQ-R (junior) in a Dutch sample. The general aim of the present study was to evaluate the feasibility of using a Dutch version of the EPQ-R (junior) to measure E, N and P. To evaluate this feasibility the analyses of Corulla (1990) were repeated on a Dutch sample. If the same results were obtained, the next step would be the gathering of norms on a representative sample.

METHOD

Subjects

The data were collected on 260 children (143 males and 117 females) having an age range of 11–15 ($M = 13.06$ for both males and females). The pupils belonged to classes in attendance at two schools situated in two different regions of the country (mid-west and south). The data in the south were collected in mid 1992; the data in the mid-west at the beginning of 1993.

Questionnaire

The translation of the EPQ-R (junior) by the first two authors was verified by a native English speaker appointed as a professional English translator in a Dutch company. An accurate translation was impossible for only one item (item 58). In this case, a Dutch rewording was sought to reflect the

original intended meaning. (The original and Dutch formulations can be obtained from the first author on request). The questionnaire contains the scales N, E, P and L, L being a Lie scale.

Procedure

The EPQ-R (junior) was administered together with the Dutch questionnaire ABV-K in an anonymous test condition. Instead of their names the pupils were asked to fill in a code. Parents were asked for their permission, and none declined. Within each class, the pupils were assigned at random to one of the possible test orders. Analyses revealed no test order, or age effect. To replicate Corulla's (1990) study the factor analyses were carried out primarily on the total sample. The items were inter-correlated and following Corulla analyzed by Principal Components. Again, following Corulla, the four remaining factors were rotated through Varimax and Direct Oblimin rotation.

RESULTS

Table 1 presents the factor-loadings of the items ordered along the scales they were supposedly a part of. Within each intended scale the loadings are ordered from high to low, and Corulla's values are given within parentheses. In contrast to Corulla, the N factor appeared as the first and the E factor as the second in the analysis.

With respect to the factor loadings inspection of the table reveals that in general, the loadings follow the same pattern as those of Corulla. The differences are mainly found in the P scale.

Table 2 presents the congruence between both factor sets in terms of Tucker's φ (phi) coefficient. As expected, the value for P (0.66) was lower than the satisfactory values of N (0.92), E (0.88), and L (0.92).

Table 3 presents the factor matrix derived from principal components analysis rotated through direct oblimin rotation. As was also the case in Corulla's study, the rotation did not affect the factor structure. The factor correlation matrix derived from this table is presented in Table 4. Again, as was the case in Corulla's study the correlations are negligible.

Corulla (1990) only performed factor analyses on total group data. Consequently, it was not possible to evaluate the outcome of an analysis on the boys' and girls' data separately. Furthermore, in relation to the number of items (89) involved, the Dutch sample sizes (143 males, 117 females) are too small to guarantee stable item loadings. Nevertheless it was felt that it could be interesting to explore the factor structure in both sex samples. Inspection of the factor matrices (principal component analyses followed by varimax rotation) showed that the loading profiles on the N, E and L items were basically the same for boys and girls. (The factor matrices of the male and female samples can be obtained from the first author on request.) For each of these scales in the male sample, items with the highest loading on the intended factor also had the highest loading on the corresponding factor in the female sample (and vice versa). The same did not hold for P. Only two items showed the same loading profile in the male and female samples. These items (59 and 23) were the top two that loaded on P in the matrix of the total sample (Table 1).

Table 5 presents the intercorrelations of the scales. The intercorrelations on the total sample were compared with the mean intercorrelations (after Fisher's z-transformation) of the sex groups in Corulla's study. Again, basically the same results were obtained.

As can be expected, correlations between scales are somewhat higher than those between the oblique factors. Even then, the scale scores are rather independent from each other. In Corulla's study the highest correlations were found between L and P (-0.27), and between L and E (-0.29). In the Dutch sample only the correlation between L and P remained at the same level (-0.34). The intercorrelations in the boys' and girls' samples generally follow the same pattern as those reported for the total sample. The application of a large sample χ^2-test (Bentler, 1989) did not reveal a statistical significance between the intercorrelation matrices of boys and girls ($\chi^2 = 7.792$, d.f. $= 6$, $P = 0.254$).

The reliability data (Cronbach's α) are shown in Table 6. To facilitate a comparison with Corulla's data, we computed the median value of the different sex and age groups of Corulla's study.

The level of reliability for E, N, and L in all samples is comparable with that of E, N, and L in Corulla's study. The P scale seems to be less reliable. Of course, the present sample is more restricted

Table 1. Factor matrix derived from principal components factor analysis, rotated through varimax rotation ($N = 260$, 143 male, 117 female)

Item	Scale	Factor 1 (N)	Factor 2 (E)	Factor 3 (L)	Factor 4 (P)
63	N	0.61 (0.42)	−0.09 (−0.13)	−0.01 (0.12)	−0.11 (−0.08)
40	N	0.60 (0.50)	−0.16 (−0.16)	−0.00 (0.09)	−0.22 (−0.16)
82	N	0.57 (0.45)	−0.06 (0.05)	−0.09 (−0.12)	0.04 (−0.17)
70	N	0.57 (0.21)	−0.03 (0.23)	−0.17 (−0.32)	0.17 (−0.04)
29	N	0.56 (0.47)	−0.13 (−0.15)	−0.12 (0.08)	−0.18 (−0.10)
88	N	0.55 (0.39)	−0.06 (−0.03)	−0.13 (−0.01)	−0.08 (−0.01)
73	N	0.55 (0.52)	−0.10 (−0.08)	−0.05 (0.08)	0.05 (−0.04)
17	N	0.54 (0.40)	0.00 (−0.14)	−0.14 (−0.27)	0.00 (−0.10)
26	N	0.53 (0.45)	−0.10 (−0.03)	0.03 (0.08)	−0.01 (−1.17)
53	N	0.53 (0.56)	−0.06 (0.04)	−0.03 (−0.10)	0.20 (−0.09)
10	N	0.52 (0.37)	−0.04 (0.14)	−0.20 (−0.03)	−0.03 (−0.04)
40	N	0.49 (0.37)	−0.20 (0.12)	−0.08 (−0.13)	−0.05 (−0.24)
67	N	0.45 (0.53)	−0.04 (−0.03)	−0.08 (−0.06)	0.32 (0.10)
85	N	0.42 (0.43)	0.07 (0.05)	0.01 (0.09)	0.00 (−0.13)
76	N	0.40 (0.61)	−0.16 (−0.11)	0.10 (0.04)	0.24 (−0.02)
22	N	0.40 (0.45)	0.10 (−0.05)	−0.22 (−0.04)	0.27 (0.07)
34	N	0.36 (0.44)	−0.09 (0.02)	−0.19 (−0.11)	0.02 (0.12)
56	N	0.29 (0.25)	0.23 (0.29)	−0.32 (−0.16)	0.29 (0.09)
7	N	0.27 (0.29)	−0.03 (0.06)	−0.06 (−0.14)	0.13 (0.04)
2	N	0.14 (0.34)	−0.22 (−0.03)	−0.05 (−0.15)	0.33 (0.01)
65	E	−0.03 (−0.06)	0.66 (0.50)	0.01 (−0.08)	0.04 (−0.12)
79	E	0.16 (−0.01)	0.62 (0.47)	−0.09 (−0.16)	0.05 (−0.12)
28	E	0.06 (−0.09)	0.61 (0.58)	−0.09 (0.00)	0.16 (0.13)
75	E	−0.09 (−0.07)	0.59 (0.57)	−0.07 (0.00)	−0.13 (0.00)
89	E	0.09 (0.06)	0.56 (0.43)	0.06 (−0.18)	−0.10 (−0.07)
81	E	−0.17 (−0.23)	0.56 (0.44)	−0.14 (−0.15)	−0.10 (−0.11)
16	E	−0.06 (−0.12)	0.51 (0.51)	0.10 (−0.10)	−0.13 (−0.16)
51	E	0.00 (−0.03)	0.49 (0.43)	−0.01 (−0.03)	−0.03 (−0.11)
1	E	0.00 (−0.04)	0.49 (0.37)	−0.02 (−0.23)	0.03 (−0.05)
6	E	−0.16 (−0.04)	0.47 (0.30)	0.17 (0.03)	0.13 (−0.14)
86	E	−0.12 (0.00)	0.45 (0.25)	−0.19 (−0.23)	0.08 (0.16)
71	E	−0.08 (−0.06)	0.41 (0.36)	0.02 (−0.07)	−0.06 (−0.05)
12	E	−0.25 (−0.18)	0.40 (0.40)	−0.06 (−0.08)	−0.25 (−0.14)
20	E	−0.13 (0.06)	0.38 (−0.36)	−0.03 (−0.05)	0.10 (0.03)
15	E	−0.03 (0.00)	0.38 (0.65)	−0.03 (0.05)	−0.10 (−0.05)
37	E	0.08 (0.02)	0.36 (0.31)	0.18 (0.14)	0.21 (0.11)
55	E	−0.06 (−0.04)	0.33 (0.32)	−0.12 (−0.36)	0.20 (−0.02)
69	E	0.20 (0.12)	0.31 (0.33)	−0.11 (−0.10)	0.19 (0.05)
42	E	−0.04 (0.10)	0.31 (0.44)	0.06 (−0.03)	0.15 (0.22)
61	E	−0.09 (0.02)	0.30 (0.30)	−0.07 (−0.11)	0.13 (0.03)
84	E	−0.16 (−0.03)	0.29 (0.39)	−0.14 (0.05)	−0.06 (0.18)
60	E	−0.05 (−0.01)	0.27 (0.46)	−0.07 (−0.19)	0.09 (−0.29)
45	E	−0.03 (−0.01)	0.24 (0.29)	0.00 (0.24)	−0.07 (−0.11)
25	E	−0.09 (−0.04)	0.24 (0.37)	−0.08 (−0.06)	0.25 (0.08)
33	E	−0.11 (−0.01)	0.16 (0.29)	−0.02 (−0.18)	0.17 (−0.17)
24	L	−0.06 (−0.05)	−0.01 (−0.12)	0.59 (0.49)	0.16 (−0.16)
19	L	−0.12 (−0.14)	0.08 (0.00)	0.48 (0.47)	−0.17 (−0.11)
83	L	0.01 (0.10)	−0.16 (0.14)	0.47 (0.48)	0.00 (0.19)
74	L	0.07 (0.07)	−0.05 (0.03)	0.46 (0.37)	0.03 (−0.26)
4	L	−0.21 (−0.14)	0.07 (−0.02)	0.43 (0.48)	−0.17 (−0.01)
64	L	−0.14 (−0.05)	−0.01 (−0.05)	0.42 (0.27)	−0.06 (−0.11)
68	L	−0.02 (−0.15)	−0.12 (−0.25)	0.41 (0.40)	−0.09 (−0.16)
80	L	−0.05 (−0.08)	−0.02 (−0.22)	0.40 (0.44)	0.16 (0.13)
13	L	−0.20 (0.08)	−0.34 (−0.25)	0.40 (0.40)	−0.21 (−0.17)
50	L	−0.04 (0.01)	0.20 (0.09)	0.39 (0.45)	0.13 (0.07)
9	L	−0.07 (−0.11)	−0.13 (−0.12)	0.39 (0.53)	−0.07 (0.09)
54	L	0.03 (0.02)	−0.31 (−0.39)	0.38 (0.31)	−0.04 (0.00)
41	L	−0.10 (−0.16)	0.01 (−0.02)	0.36 (0.44)	0.08 (0.18)
58	L	0.17 (0.11)	0.03 (−0.06)	0.31 (0.41)	−0.12 (0.19)
18	L	−0.31 (−0.18)	−0.16 (−0.11)	0.30 (0.45)	0.00 (0.00)
31	L	0.11 (0.09)	−0.01 (0.03)	0.28 (0.57)	−0.23 (−0.15)
78	L	0.12 (0.07)	0.32 (0.20)	0.26 (0.39)	−0.03 (−0.06)
36	L	−0.02 (0.07)	−0.23 (−0.19)	0.21 (0.39)	−0.30 (−0.14)
44	L	0.17 (0.10)	−0.06 (−0.06)	0.09 (0.41)	0.09 (0.07)
59	P	0.07 (0.01)	0.09 (0.15)	0.08 (0.10)	0.58 (0.59)
23	P	0.23 (0.11)	−0.03 (0.15)	−0.08 (0.04)	0.53 (0.57)
66	P	−0.16 (−0.11)	0.04 (0.08)	−0.24 (−0.24)	0.45 (0.39)
62	P	0.33 (0.27)	−0.13 (0.05)	0.07 (0.04)	0.39 (0.33)
43	P	0.30 (−0.04)	−0.03 (0.14)	0.02 (−0.07)	0.37 (0.56)
11	P	0.05 (−0.08)	0.13 (−0.05)	−0.27 (−0.24)	0.34 (0.42)
72	P	0.33 (0.26)	0.05 (0.00)	0.06 (0.04)	0.34 (0.23)
46	P	0.25 (0.09)	0.27 (0.18)	−0.11 (0.04)	0.32 (0.51)
47	P	−0.25 (−0.26)	−0.27 (−0.08)	−0.13 (−0.10)	0.31 (0.35)

continued overleaf

Table 1—*continued*

Item	Scale	Factor 1 (N)	Factor 2 (E)	Factor 3 (L)	Factor 4 (P)
52	P	−0.01 (−0.03)	−0.02 (0.02)	−0.29 (−0.16)	0.27 (0.23)
21	P	−0.03 (−0.04)	0.05 (−0.16)	0.17 (0.00)	0.22 (0.49)
77	P	−0.07 (−0.11)	−0.15 (−0.09)	−0.35 (−0.28)	0.21 (0.39)
8	P	−0.15 (−0.15)	−0.05 (−0.32)	0.03 (0.07)	0.18 (0.38)
49	P	−0.01 (−0.07)	0.24 (0.32)	−0.37 (−0.36)	0.18 (0.20)
27	P	−0.39 (−0.12)	0.06 (−0.23)	−0.14 (−0.04)	0.16 (0.45)
87	P	−0.17 (−0.13)	−0.04 (0.00)	−0.14 (−0.13)	0.14 (0.41)
39	P	0.03 (0.14)	0.17 (0.21)	−0.49 (−0.22)	0.10 (0.34)
30	P	−0.41 (−0.23)	−0.17 (−0.13)	−0.12 (−0.03)	0.05 (0.39)
5	P	−0.04 (−0.18)	−0.06 (−0.18)	−0.24 (−0.13)	−0.01 (0.42)
14	P	0.05 (0.01)	−0.02 (−0.12)	0.02 (−0.04)	−0.02 (0.49)
32	P	0.00 (0.12)	0.20 (−0.07)	0.03 (0.05)	−0.02 (0.33)
35	P	−0.11 (−0.13)	0.01 (−0.12)	0.20 (0.04)	−0.03 (0.47)
38	P	0.02 (−0.06)	0.00 (−0.27)	−0.09 (0.04)	−0.03 (0.34)
3	P	−0.11 (−0.02)	0.05 (0.11)	−0.44 (−0.31)	−0.08 (0.25)
57	P	−0.29 (−0.21)	−0.14 (0.12)	−0.14 (−0.05)	−0.08 (0.17)

Note: Corulla's (1990) figures between parentheses.

than Corulla's and may not be viewed as representative of the population. The data indicate that no sharp drop in reliability is to be expected in a more balanced and extended sample.

DISCUSSION

The purpose of the study was to evaluate the feasibility of using a Dutch version of the EPQ-R (junior). The overall result is a remarkable robustness of the factor structure described by Corulla as expressed by the correspondence in the supposedly equivalent factors N, E, and L. As a result, we conclude that the corresponding scales measure the same underlying dimension. The only dissonant finding concerns factor P and its connected P scale. Tucker's φ was only 0.66, and Cronbach's α only 0.57. Interestingly enough it was the psychometric criticisms against the P scale that precipitated Corulla's study (1990, p. 65). Finally, in contrast to the N, E, and L factors, the P factor failed to show up as a clearcut factor in the boys' and girls' samples.

Inspection of the item loadings in the British and Dutch scales shows that all but one item of the British P scale load 0.20 or more. In fact, this item (57) even had a larger loading on another factor (-0.29 on N) than on the P factor (0.17) and can be viewed as misplaced even in the British scale. All other items of the British P scale, however, neatly fit the intended factor. Of the Dutch P items, only half (12 of 25) had loadings of 0.20 or more on the P factor. For those items, however, the pattern of loadings throughout the factor matrix correspond very well with that of the British items, with items 59 and 23 having the top loadings in both scales. The other half of the items did not have loadings of 0.20 or more on the Dutch P factor. In the varimax solution, their loadings ranged from 0.18 to -0.08 with a medium of -0.01.

Examination of the factor matrix shows that these items as a set do not belong to one of the other factors. Some of them have their primary loading on N (item 27, 30, 57), one of them on E (item 32), and some of them on L (item 49, 39, and 3). Interestingly enough, of the three items that loaded on the N factor, two of the corresponding British but P loading items have also minor loadings (0.20 or more) on the N factor (item 30 and 57). Moreover, the three British P loading items 49, 39 and 3 had also minor loadings on L.

Table 2. Correspondency between British and Dutch factor solutions (varimax rotation) by Tucker's φ ($N = 260$)

	N	E	L	P
N	0.92			
E	0.04	0.88		
L	−0.07	−0.24	0.92	
P	−0.04	0.23	−0.19	0.66

Table 3. Pattern matrix derived from principal components factor analysis, rotated through direct oblimin rotation $N = 260$, 143 male, 117 female

Item	Scale	Factor 1 (N)	Factor 2 (E)	Factor 3 (L)	Factor 4 (P)
63	N	0.61 (0.42)	−0.06 (0.12)	−0.01 (0.12)	−0.12 (−0.05)
40	N	0.61 (0.50)	−0.13 (−0.16)	−0.02 (0.09)	−0.23 (−0.13)
82	N	0.57 (0.44)	−0.04 (0.03)	−0.09 (−0.11)	0.03 (−0.14)
70	N	0.56 (0.48)	−0.11 (−0.14)	−0.13 (0.08)	−0.19 (−0.07)
29	N	0.56 (0.20)	−0.02 (0.20)	−0.16 (−0.30)	0.16 (−0.04)
88	N	0.54 (0.39)	−0.04 (−0.03)	−0.12 (−0.01)	0.07 (0.02)
73	N	0.54 (0.53)	−0.08 (−0.08)	−0.05 (0.09)	0.05 (0.08)
17	N	0.54 (0.40)	0.02 (−0.17)	−0.13 (−0.28)	−0.01 (−0.09)
26	N	0.53 (0.45)	−0.07 (−0.03)	0.03 (0.09)	−0.01 (−0.13)
53	N	0.52 (0.56)	−0.05 (0.03)	−0.02 (−0.08)	0.20 (−0.06)
10	N	0.52 (0.37)	−0.02 (0.14)	−0.20 (−0.01)	−0.04 (−0.02)
40	N	0.49 (0.36)	−0.18 (0.10)	−0.08 (−0.12)	−0.05 (−0.22)
67	N	0.45 (0.53)	−0.04 (−0.03)	−0.06 (−0.05)	0.31 (0.13)
85	N	0.42 (0.43)	0.08 (0.05)	0.01 (0.10)	−0.01 (−0.09)
76	N	0.38 ( )	−0.15 ( )	0.11 ( )	0.25 ( )
22	N	0.38 (0.45)	0.09 (−0.06)	−0.20 (−0.14)	0.26 (0.09)
34	N	0.36 (0.44)	−0.09 (0.01)	−0.19 (−0.10)	0.01 (0.14)
56	N	0.27 (0.25)	0.22 (0.28)	−0.30 (−0.12)	0.27 (0.11)
7	N	0.26 (0.29)	−0.03 (0.04)	−0.05 (−0.13)	0.12 (0.05)
2	N	0.12 (0.34)	−0.22 (−0.04)	0.07 (−0.14)	0.34 (0.02)
65	E	−0.01 (−0.07)	0.66 (0.50)	0.03 (−0.04)	0.02 (−0.12)
79	E	0.18 (−0.02)	0.63 (0.46)	−0.07 (−0.12)	0.03 (−0.12)
28	E	0.07 (−0.09)	0.60 (0.59)	−0.06 (0.05)	0.14 (0.15)
75	E	−0.07 (−0.07)	0.59 (0.58)	−0.06 (0.06)	−0.15 (0.01)
89	E	0.12 (0.06)	0.58 (0.41)	0.07 (−0.14)	−0.11 (−0.06)
81	E	−0.14 (−0.23)	0.56 (0.43)	−0.13 (−0.13)	−0.12 (−0.12)
16	E	−0.03 (−0.12)	0.52 (0.50)	0.10 (−0.06)	−0.14 (−0.16)
51	E	0.02 (−0.04)	0.49 (0.43)	0.00 (0.00)	−0.05 (0.00)
1	E	0.02 (−0.05)	0.49 (0.34)	0.00 (−0.21)	0.01 (−0.26)
6	E	−0.15 (−0.03)	0.47 (0.32)	0.19 (0.06)	0.13 (0.16)
86	E	−0.11 (0.00)	0.44 (0.23)	−0.17 (−0.21)	0.06 (0.15)
71	E	−0.07 (−0.06)	0.41 (0.36)	0.03 (−0.04)	−0.07 (−0.05)
12	E	−0.23 (−0.18)	0.40 (0.39)	−0.07 (−0.05)	−0.27 (−0.15)
20	E	−0.01 (0.00)	0.39 (0.66)	−0.03 (0.11)	−0.11 (−0.02)
15	E	−0.12 (0.06)	0.38 (0.36)	−0.03 (−0.01)	0.09 (0.04)
37	E	0.08 (0.02)	0.36 (0.34)	0.21 (0.18)	0.21 (0.13)
55	E	−0.06 (−0.05)	0.32 (0.28)	−0.10 (−0.34)	0.19 (−0.03)
69	E	0.20 (0.12)	0.31 (0.33)	−0.08 (−0.06)	0.18 (0.06)
42	E	−0.04 (0.10)	0.31 (0.43)	0.08 (0.00)	0.15 (−0.20)
61	E	−0.09 (−0.02)	0.29 (0.29)	−0.05 (−0.08)	0.12 (0.03)
84	E	−0.15 (−0.02)	0.28 (0.41)	−0.14 (0.10)	−0.07 (0.20)
60	E	−0.05 (−0.02)	0.27 (0.43)	−0.06 (−0.17)	0.08 (−0.29)
45	E	−0.02 (0.00)	0.24 (0.32)	0.00 (0.27)	−0.08 (−0.09)
25	E	−0.09 (−0.04)	0.22 (0.37)	−0.05 (−0.02)	0.24 (0.08)
33	E	−0.11 (0.00)	0.15 (0.23)	−0.01 (−0.21)	0.17 (0.15)
24	L	0.06 (−0.05)	0.00 (−0.08)	0.60 (0.48)	0.18 (−0.13)
19	L	−0.10 (−0.13)	0.10 (0.05)	0.48 (0.47)	−0.15 (−0.08)
83	L	0.01 (0.10)	−0.15 (0.10)	0.47 (0.46)	0.03 (0.17)
74	L	0.07 (−0.07)	−0.04 (0.06)	0.46 (0.37)	−0.01 (−0.24)
4	L	−0.19 (−0.13)	0.08 (0.03)	0.42 (0.49)	−0.16 (0.01)
64	L	−0.13 (−0.04)	0.00 (−0.02)	0.42 (0.27)	−0.04 (0.13)
68	L	−0.06 (−0.07)	−0.02 (−0.17)	0.41 (0.43)	0.18 (0.15)
80	L	−0.03 (0.01)	0.21 (0.13)	0.41 (0.47)	0.14 (0.11)
13	L	−0.02 (−0.14)	−0.11 (−0.21)	0.40 (0.39)	−0.07 (0.16)
50	L	−0.07 (−0.09)	−0.12 (−0.06)	0.38 (0.53)	−0.05 (0.12)
9	L	−0.19 (−0.07)	−0.33 (−0.21)	0.38 (0.37)	−0.18 (−0.15)
54	L	0.02 (0.03)	−0.30 (−0.36)	0.37 (0.28)	−0.01 (0.00)
41	L	−0.10 (−0.15)	0.01 (−0.19)	0.37 (0.43)	0.10 (0.19)
58	L	0.18 (0.11)	0.05 (−0.02)	0.31 (0.41)	−0.11 (−0.16)
18	L	−0.31 (−0.18)	−0.16 (−0.06)	0.29 (0.44)	0.02 (0.01)
31	L	0.14 (0.08)	0.34 (0.24)	0.27 (0.41)	−0.03 (0.02)
78	L	0.13 (0.09)	0.01 (0.09)	0.26 (0.59)	−0.22 (−0.11)
36	L	0.01 (0.07)	−0.22 (−0.16)	0.18 (0.38)	−0.28 (−0.11)
44	L	0.16 (0.11)	−0.05 (−0.01)	0.09 (0.42)	0.09 (0.10)
59	P	0.04 (0.03)	0.07 (0.18)	0.12 (0.13)	0.59 (0.60)
23	P	0.20 (0.13)	−0.04 (0.18)	−0.05 (0.08)	0.53 (0.59)
66	P	−0.18 (−0.10)	0.01 (0.03)	−0.21 (−0.23)	0.44 (0.37)
62	P	0.31 (0.28)	−0.13 (0.07)	0.09 (0.06)	0.40 (0.36)
43	P	0.28 (−0.03)	−0.04 (0.16)	0.04 (−0.04)	0.37 (0.56)
11	P	0.31 (0.28)	0.06 (0.02)	0.09 (0.06)	0.34 (0.25)
72	P	0.03 (−0.08)	0.11 (−0.06)	−0.25 (−0.24)	0.33 (0.40)
46	P	−0.28 (−0.25)	−0.29 (−0.08)	−0.12 (−0.10)	0.32 (0.33)
47	P	0.24 (0.10)	0.26 (0.21)	−0.08 (0.08)	0.31 (0.52)

continued overleaf

Table 3—*continued*

Item	Scale	Factor 1 (N)	Factor 2 (E)	Factor 3 (L)	Factor 4 (P)
52	P	−0.03 (−0.03)	−0.04 (0.02)	−0.28 (−0.15)	0.26 (0.22)
21	P	−0.04 (−0.02)	0.05 (−0.14)	0.19 (0.00)	0.23 (0.48)
77	P	−0.09 (−0.10)	−0.17 (−0.11)	−0.34 (−0.28)	0.20 (0.37)
8	P	−0.16 (−0.14)	−0.06 (−0.30)	0.04 (0.05)	0.19 (0.37)
49	P	−0.40 (−0.11)	0.03 (−0.22)	−0.13 (−0.05)	0.16 (0.44)
27	P	−0.02 (−0.07)	0.22 (0.30)	−0.35 (−0.34)	0.15 (0.18)
87	P	−0.18 (0.13)	−0.06 (0.00)	−0.14 (−0.13)	0.14 (0.40)
39	P	0.02 (0.14)	0.10 (0.21)	−0.48 (−0.18)	0.08 (0.35)
30	P	−0.42 (−0.22)	−0.20 (−0.12)	−0.13 (−0.03)	0.06 (0.38)
5	P	−0.04 (−0.17)	−0.06 (−0.18)	−0.25 (−0.14)	−0.01 (0.39)
14	P	0.05 (0.03)	−0.02 (−0.10)	0.02 (−0.03)	−0.01 (0.49)
32	P	−0.10 (−0.12)	0.01 (−0.10)	0.19 (0.04)	−0.02 (0.47)
35	P	0.01 (0.13)	0.20 (0.06)	−0.03 (0.06)	−0.02 (0.34)
38	P	0.02 ( )	0.00 ( )	−0.09 ( )	−0.04 ( )
3	P	−0.11 (−0.02)	0.03 (0.09)	0.45 (−0.29)	−0.10 (0.23)
57	P	−0.30 (−0.21)	−0.16 (0.12)	−0.15 (−0.04)	−0.08 (0.16)

Note: Corulla's (1990) figures between parentheses. Items 76 and 38 are missing in Corulla's table.

This all means that the relatively low loading of the P item set on its assigned factor, can not be specifically explained by one of the other factors. It rather, seems, that in the Dutch version, the effect of the P factor on these items lost its integrity. However, the same pattern of 'secondary' loadings were found on each of the other factors. This explains the low internal consistency of the entire original scale. It means also that the interpretation of the P scale as ultimately reflecting the same P factor as the British scale still can be maintained. As previously mentioned, the items that do load on this factor show the same pattern of loadings as do the corresponding items in the British scale.

It is clear that the P scale needs revision in order to reach an acceptable level of internal consistency. This can best be done by designing new items that are believed to reflect the P factor. It remains intriguing why such a group of P items did not prove to be P factor loaded in the Dutch version. Currently we can only speculate. One of the striking observations is that most of these items do indeed

Table 4. Factor correlation matrix derived from Table 3 (N = 260)

	Factor 1 (N)	Factor 2 (E)	Factor 3 (L)	Factor 4 (P)
Factor 1 (N)	1.00			
Factor 2 (E)	−0.07 (0.01)	1.00		
Factor 3 (L)	−0.02 (−0.04)	−0.06 (−0.20)	1.00	
Factor 4 (P)	0.06 (−0.09)	0.07 (−0.06)	−0.12 (−0.09)	1.00

Note: Carulla's (1990) figures between parentheses.

Table 5. Intercorrelations between the four scales for the EPQ-R (junior) Dutch version

Scale	N	E	L
		Total (N = 260)	
E	−0.14 (−0.03)		
L	−0.16 (−0.14)	−0.09 (−0.29)	
P	0.06 (−0.08)	0.15 (−0.03)	−0.34 (−0.27)
		Male (n = 143)	
E	−0.16 (−0.01)		
L	−0.11 (−0.12)	−0.12 (−0.31)	
P	−0.03 (−0.12)	0.17 (−0.12)	−0.42 (−0.26)
		Female (n = 117)	
E	−0.11 (−0.04)		
L	−0.23 (−0.15)	−0.06 (−0.29)	
P	0.21 (−0.03)	0.21 (0.06)	−0.26 (−0.26)

Note: Carulla's (1990) values between parentheses.

Table 6. Cronbach's α for the four scales of the EPQ-R (junior)

Version	N	E	L	P
		Total (N = 260)		
Dutch	0.84	0.82	0.73	0.57
British	0.78	0.79	0.69	0.76
		Male (n = 143)		
Dutch	0.82	0.85	0.73	0.59
British	0.74	0.77	0.65	0.79
		Female (n = 117)		
Dutch	0.87	0.78	0.73	0.48
British	0.79	0.81	0.69	0.72

Note: British values are the median values of Corulla's (1990) study.

differ from the other P and other scale items in a rather systematic way. Of the 89 items in the EPQ-R (junior) 81 items require the child to rate his or her own behavioral tendencies in general. The remaining eight items do not directly refer to the behavioral tendencies of the respondent. All but one of these items belong to the P scale. Six of these items require the child to assess the reactions of other people toward him/herself (e.g. item 72, "Do other children tell you a lot of lies?"). Two items require a judgement about the behavior of other people (e.g. item 66, "Should people always try not to be rude?"). If we restrict ourselves to items that do not imply the ascription of a characteristic of a child to others (as item 75 does), we retain seven items which belong to the P scale. Four of these items behave as P items, three however do not. Consequently, we can not attribute the fall-out of P items to a particular deviant item type.

In conclusion, the present study is evidence that the Dutch version of the EPQ-R (junior) captures the same independent factors as the original one. Based on this evidence we would recommend the use of this questionnaire in The Netherlands instead of the Dutch ABV-K in measuring E and N. The results also warrant the sampling of norms in order to provide an instrument that can be used in applied research. Our only reservation has to do with the low internal consistency of the P scale. We were unable to offer an explanation for the fall-out of approximately half of the P items while the other half did behave as P loaded items. Also the results of the exploratory analyses on the separate boys' and girls' samples question the robustness of the P factor. It is clear that more research is needed to elevate the P scale to the same level of applicability as the other scales.

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