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The Preschool Behavior Questionnaire¹

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The emphasis on early intervention regarding behavior problems has created a need for methods to aid in the preliminary identification of young children with apparent or emerging problems. Many instruments have been developed for screening in the classroom of elementary school children for the complicated entities or constellations of symptoms alternately labeled emotional problems, behavioral problems, adjustment problems, mental health problems, or sociocultural/developmental problems (e.g., Digman, 1963; Peterson, 1961; Rutter, 1967; Spivack & Swift, 1966; Stott, 1960; Walker, 1967; Werry & Quay, 1969, to name only a few). More recently, the focus on screening, diagnosis, and treatment of emotional problems in the preschool child has led to the development of new instruments for this age group (Bell, Waldrop, & Weller, 1972; Ireton & Thwing, 1972; Kohn & Rosman, 1972; Levine, Freeman, & Lewis, 1969; Nowicki & Duke, 1974). Walker (1973) described 143 socioemotional measures for the identification of problems in preschool and primary school children, and Stringfield and Woodside (1976) identified 62 additional measures for this age group. However, many of these 205 measures were designed to assess socioemotional functioning related to mental retardation, autism, or "minimal brain dysfunction." In eliminating instruments that (a) were designed for the above-listed populations, (b) had no standardization, and (c) were standardized on a population of less than 30, the number of useful instruments is less than 80. If the measures reported by Walker and by Stringfield and Woodside are closely scrutinized, it would seem that only 16 could be considered screening instruments that could be used efficiently in terms of time and skill required.

The original purpose in developing the Preschool Behavior Questionnaire was to provide a tool for the screening of preschool-age children in the context

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of nursery schools, day care centers, and kindergartens, using the same rationale concerning the values of teachers' participation in screening the young child that obtained in designing such measures in the school-age population. In the development of the Preschool Behavior Questionnaire, the following four criteria were used: (a) the scale should have validity in discriminating between normal and disturbed populations; (b) the scale should have both interrater and test-retest reliability; (c) the scale should be standardized across a wide range of preschoolers aged 3-6, male or female, black or white; (d) the scale should have clarity and brevity so that a teacher could conveniently use the instrument.

DESCRIPTION OF INSTRUMENT

The Preschool Behavior Questionnaire represents a modification of the Children's Behaviour Questionnaire, which was developed in England for elementary school children (Rutter, 1967). Rutter's scale is a 26-item behavior checklist with a 3-point scaling system; that is, the rater is asked to check for each item either "does not apply," "applies sometimes," or "frequently applies." The 26 items on Rutter's scale were used as a basis for the Preschool Behavior Questionnaire. The 3-point scaling system was retained. The scoring of the Preschool Behavior Questionnaire involves assigning values of 0, 1, and 2 to the response categories of "does not apply," "applies sometimes," "frequently applies," correspondingly. By adding item scores, a total for each subject is obtained.

After consultation with 12 experienced preschool teachers and perusal of existing preschool scales, 10 new items were added. These additions were made to include problem behaviors that occurred frequently in preschoolers but not in older children. Based on data collected during the standardization, 6 items which had appeared on Rutter's scale were deleted, primarily because they did not differentiate between the normal and disturbed population. Thus, in final form, the Preschool Behavior Questionnaire is a 30-item rating scale, using a 3-point scaling system, for use by preschool teachers to rate children in the context of a peer group.

STANDARDIZATION

The Preschool Behavior Questionnaire was standardized on a sample of 598 children, ages 3-6. Of these, 496 represented a normal population, defined as children in preschools that served the general public and not intended specifically for the care of autistic, emotionally disturbed, retarded, or other special segments of the population. A second part of the sample, 102 children, were from specialized treatment centers and were children who had been previously diagnosed professionally as emotionally disturbed or behavior disturbed, again

Table I. Means and Standard Deviations for Normal and Disturbed Populations, Mean Group Differences, Simple Regression, and Multiple Regression Rankings of the Preschool Behavior Questionnaire Items and Total Score (Multiple R = .74034; R = .5410)

	Nor	mal	Distu	bed	M diff (disturb-	Simple regres-	Multiple regres- sion
Item ^a	М	SD	M	SD	ed/normal)c	siond	rank
1. Restless	.64	.70	1.08	.77	.43e	.22	16
2. Negativistic ^b	.41	.63	1.12	.68	.70e	.39	29
3. Squirmy	.51	.65	1.09	.82	.58 <i>e</i>	.30	18
4. Destructive	.14	.40	.44	.57	.30e	.25	30
5. Fights	.37	.56	.62	.63	.25e	.16	31
6. Disliked	.12	.37	.49	<i>-</i> 58	.36 <i>e</i>	.32	12
7. Worries	.22	.48	.39	.66	.178	.13	27
8. Solitary	.57	.68	1.07	.76	.50e	.26	20
9. Irritable	.27	.52	.78	.77	.51 e	.32	10
10. Unhappy	.22	.46	.68	.68	.45e	.32	33
11. Twitches	.06	.27	.32	.68	.27e	.26	11
12. Sucks thumb ^b	.20	.50	.31	.66	.11	.08	35
13. Bites nails	.07	.29	.21	.53	.148	.15	17
14. Often absent b	.08	.32	.12	.40	.03	.03	34
15. Disobedient	.34	.54	.93	.66	.59e	.37	4
16. Poor concentration	.50	.62	1.31	.68	.82 <i>e</i>	.44	15
17. Fearful	.34	.57	.98	.74	.64 <i>e</i>	.37	36
18. Fussy	.19	.44	.50	.71	.31 <i>e</i>	.23	14
19. Lies	.12	.37	.31	54.	.20 <i>e</i>	.18	7
20. Steals ^b	.04	.22	.11	.38	.07	.10	13
21. Soils self	.08	.32	.45	.71	.37 e	.32	5
22. Complains of aches b	.14	.39	.07	.29	.07	.07	9
23. Tearful on arrival ^b	.15	.40	.31	.66	.16e	.13	32
24. Stutters	.05	.26	.21	.55	.16 ^e	.18	19
25. Other speech dif-							
ficulty	.16	.51	1.18	.91	1.01 <i>e</i>	.54	1
26. Bullies	.21	.48	.44	.64	.24 ^e	.14	28
27. Inattentive	.55	.61	1.28	.64	.73 ^e	.41	23
28. Does not share	.38	.56	.92	.67	.54 <i>e</i>	.33	24
29. Cries easily	.33	.54	.79	.78	.46 ^e	.29	22
30. Blames others	.39	.56	.47	.70	.088	.44	8
31. Gives up	.29	.53	1.01	.67	.72 ^e	.44	6
32. Inconsiderate	.25	.51	.66	.68	.40 <i>e</i>	.27	26
33. Sexual problems	.03	.16	.08	.34	.058	.10	21
34. Kicks, hits	.27	.54	.58	.67	.31 <i>e</i>	.20	25
35. Stares into space	.14	.39	.93	.75	.79 <i>e</i>	.53	3
36. Behavior problems	.26	.50	1.13	.69	.86 <i>e</i>	.52	2
Total	9.12	7.67	23.36	7.30	14.24 <i>f</i>		

a Items are presented in abbreviated form here.

bOmitted in the shortened version of the Preschool Behavior Questionnaire.

^cRounding errors from five places in columns 1, 3, and 5 make for small differences from simply subtracting column 1 from column 3.

dSimple regression is synonymous with zero-order correlation, with the criterion being group membership. ep = .0001. fp = .001. gp = .001.

excluding children who were primarily retarded, autistic, or otherwise handicapped. Children in both samples represented socioeconomic groups ranging from lower- to upper-middle-class families. Distribution of children in terms of race and sex were roughly comparable to the general population. The teachers of both populations of children filled out the Preschool Behavior Questionnaire on each child in their classes and totals were obtained.

Table I presents, in abbreviated form, the original 36 items, with means and standard deviations for each group. Chi squares were applied to each item and to the total score to determine whether the teachers' ratings significantly differentiated between the normal and disturbed populations. Table I indicates that 32 of the 36 items differentiated beyond the .01 level or better and the total scale score differentiated beyond the .0001 level of significance. Additional information concerning the power of items to differentiate between disturbed and normal populations was obtained using the multiple regression technique, and these scores are presented in columns 6 and 7 of Table I. Using all 36 items and using group memberships (normal vs. disturbed) as the criterion variable, a total multiple regression of .740 was obtained; thus 53.9% of the variance in the 36 items can be accounted for as group difference. A multiple regression of .740 seems acceptable, considering the likelihood that there may be some relatively well-adjusted children, perhaps preparing for exit, from the disturbed population and some relatively disturbed children in the normal population.

In addition to the documented differences between the normal and disturbed populations on the Preschool Behavior Questionnaire, an analysis of variance showed that there were significant differences between sexes and races. Males scored significantly higher than females (mean difference = 2.15, p < .001), and blacks scored significantly higher than whites (mean difference = 1.80, p < .01). None of the interaction effects among age, race, sex, or groups was significant.

FACTOR ANALYSIS

After reviewing several approaches to factor analysis for this type of instrument (Digman, 1963, 1965; Kohn & Rosman, 1972; Peterson, 1961; Walker, 1967), it was decided to seek a simple solution by using a root number, root plot analysis. It was expected that this type of analysis would lead to a solution involving fewer and more stable factors. All factors that this system produced were analyzed. Using all of the subjects in both samples, from the above analysis, the data were factor analyzed using a principal-component analysis. Examination of the root plot led to a three-factor solution. These three orthogonal factors were then varimax rotated (Kaiser, 1958). The three rotated factors of the Preschool Behavior Questionnaire accounted for 37.7% of the total variance of the scale,

and the next factor accounted for 4.4% of the total variance. Each of the three major factors was unipolar. The items that showed the highest loadings in each factor are presented in Table II.

Examination of the items loading highest on Factor 1 led to labeling this dimension Hostile-Aggressive. The items which loaded highest refer to behaviors such as fighting, destroying property, and bullying others. These items appear similar to those included in Peterson's (1961) Conduct Problem dimension and the inverse of his Lack of Aggression dimension, and similar to Kohn and Rosman's (1972) Factor 2 on their Symptom Checklist.

The label of Anxious-Fearful was applied to Factor 2, which included items referring to fearfulness, tearfulness, and crying behaviors, which are similar to Peterson's Personality Problem dimension and Kohn and Rosman's Factor 1. Thus, the first two dimensions of the Preschool Behavior Questionnaire strongly resembled both Peterson's and Kohn and Rosman's two dimensions. There appears to be considerable documentation for Peterson's statement, made some 15 years ago, as to the enormous generality of these two factors.

The third significant factor extracted from the Preschool Behavior Questionnaire was related to poor attention span and restlessness. This dimension,

Table II. Preschool Behavior Questionnaire Items with the Highest Loadings on the Three Factors

	Factor				
Factor and item	1	2	3		
Factor 1 (Hostile-Aggressive)		1			
Inconsiderate of others	.78	.16	.16		
Fights with other children	.77	.03	.13		
Destroys own or others' belongings	.70	.12	.21		
Bullies other children	.71	.00	.05		
Kicks, bites, hits other children	.68	.08	.20		
Does not share toys	.65	.24	.21		
Blames others	.64	.03	.07		
Factor 2 (Anxious-Fearful) Tends to be fearful or afraid of new things or new situations Appears miserable, unhappy, tearful, or distressed	.06	.66	.14		
Stares into space	.04		.37		
Cries easily Gives up easily	.24 .16		.14 .40		
Factor 3 (Hyperactive-Distractible) Inattentive Has poor concentration or short attention	.19	.24	.80		
span	.12	.26	.80		
Restless, runs about or jumps up and down, does not keep still	.36	.02	.69		
Squirming, fidgety child	.37	.09	.68		

labeled Hyperactive-Distractible, was quite similar to two of Stott's (1960) dimensions, Restlessness and Lack of Staying Power.

Stringfield and Woodside (1976) reported, from a later study of 30 children, significantly high correlations between the Preschool Behavior Questionnaire, the California Preschool Social Competency Scale (Levine et al., 1969), and the Social Competence Scale and the Problem Checklist (Kohn & Rosman, 1972). Intercorrelations among these instruments are shown in Table III.

Additional data and discussion regarding the factor analysis of the Preschool Behavior Questionnaire are presented in an earlier article (Behar & Stringfield, 1974).

ITEM DELETION

In an attempt to shorten the Preschool Behavior Questionnaire without significantly affecting its validity, items were deleted according to the following criteria: (a) items that did not differentiate significantly on the chi-square test, which eliminated items 12, 14, 20, and 22; and (b) items that did not either rank in the highest 25 on the stepwise multiple regression or have a factor loading higher than .55 on one of the three factors, which eliminated items 2 and 23. To determine how much information was lost by deleting the six items listed above, a canonical correlation between the total score on the long and short forms was computed, with the resulting correlation coefficient of .99. On the multiple regression, the shortened form lost less than 1/2% of the discriminative power of the longer form.

After deleting the six items, a new set of totals was prepared. The mean for the normal population became 8.01, with a standard deviation of 7.72, representing a change from 9.12 and 7.67, respectively. The mean for the disturbed group became 21.32 with a standard deviation of 6.80, decreasing from 23.36 and 7.30. On the shortened form, 6.65%, or 33 children, in the normal sample scored above the mean for the deviant group; and 1.97%, or 2 children, in the disturbed sample scored below the mean for the normal group.

RELIABILITY AND REPLICATION

To provide replication and reliability data, a second study was undertaken, involving a new sample of children. For the second study, 80 children were selected from a population of normal preschool children and 9 were selected from a therapeutic preschool class. Each child in the second study was rated by two raters: the child's teacher and the teacher's aide. Using Pearson's r, a mean interrater reliability of .84 was derived for the overall scale and .81, .71, and

Name of scale	PBQT	PBQ1	PBQ2	PBQ3	KPC1	PBQT PBQ1 PBQ2 PBQ3 KPC1 KPC2 KSCS1 KSCS2	KSCS1	KSCS2
Preschool Behavior Questionnaire: Total score (PBQT) Factor 1: Hostile-Aggressive (PBQ 1) Factor 2: Anxious-Fearful (PBQ 2) Factor 3: Hyperactive-Distractible (PBQ 3)	.92 <i>a</i> .82 <i>a</i> .60 <i>a</i>	.63 <i>a</i> .53 <i>a</i>	91.					
Kohn Problem Checklist: Factor 1: Apathy-Withdrawal (KPC 1) Factor 2: Anger-Defiance (KPC 2)	.57 <i>a</i> .58 <i>a</i>	.57a .45b58a70a	.69 <i>a</i> .29	.14	.29			
Kohn Social Competence Scale: Factor 1: Interest Participation vs. Apathy Withdrawal (KSCS1)	714	54	71 <i>a</i> 54 <i>a</i> 76 <i>a</i> 3276 <i>a</i> 27	32	76	27		
Factor 2: Cooperation Compliance vs. Anger Defiance (KSCS2)	n6L'-	80	59	47 <i>b</i>	38	79a80a59a47b3868a	.664	
California Preschool Social Competency Scale (CAL)	76	67	65	534	714	76^a 67^a 65^a 53^a 71^a 49^b $.90^a$	»06°	.73

Table IV. Normal versus Disturbed Groups: Means, Standard Deviations, and Mean Differences as Rated by Teachers and Aides

	Va	didity st	ıdy	Reliability-replication study					
		Teachers	3		Teacher	rs	Aid	Aides	
Scale	N	М	SD	N	М	SD	M	SD	
Hostile									
Disturbed	102	6.24	4.15	9	8.11	3.22	8.56	3.71	
Normal	496	2.66	3.35	80	3.16	3.03	4.35	4.24	
Difference		3.58 <i>a</i>			4.95 <i>a</i>		4.214		
Anxious									
Disturbed	102	6.73	3.61	9	6.22	3.49	5.89	3.26	
Normal	496	1.96	2.34	80	2.42	2.40	2.51	3.05	
Difference		4.774			3.80 <i>a</i>		3.38 <i>b</i>		
Hyperactive									
Disturbed	102	4.75	2.26	9	3.22	1.20	2.44	2.67	
Normal	496	2.21	2.21	80	1.82	1.81	2.05	2.19	
Difference		2.544			1:404		.39		
Preschool Behavior Question- naire total									
Disturbed	102	21.30	7.19	9	21.22	5.21	24.67	8.90	
Normal	496	8.09	7.25	80	8.74	5.96	12.41	10.01	
Difference		13.21¢			12.48¢		12.26b		

 $a_p = .001$.

.67 for Factors 1, 2, and 3, respectively, showing decreasing reliability with the decreasing size of the factors.

Test-retest reliability was measured by asking the same teachers and aides to rate the same children after a 3- to 4- month interval. The Mean r was .87 for the overall scale and .93, .60, and .94 for factors 1, 2, and 3, respectively.

Data from the replication study and the original validity study are presented in Table IV for comparison purposes. These scores reflect significant differences between the normal and disturbed populations on the total Preschool Behavior Questionnaire score and each of the subscales. The mean scores obtained in the replication study are quite similar to those obtained in the original study.

To summarize the standardization study, it would seem that the validity, interrater reliability, and test-retest reliability of the scale have been demonstrated at acceptable levels.

USES OF THE SCALE

In keeping with the original intent of the scale and the ways in which it was standardized, the Preschool Behavior Questionnaire could appropriately be

 $b_p = .01.$

 $[\]dot{c_p} = .0001.$

used by preschool teachers to rate children, ages 3-6, in the context of a peer group. Any deviation from this approach might or might not produce meaningful data; however, it would be difficult to assess the reliability and validity of data collected by other procedures without further standardization studies. Thus, using children from different age groups as subjects, or using adults other than teachers as raters, or rating single children in a class (target children) represents deviations from the manner in which the scale was standardized and is thus open to question.

Since the publication of the scale (Behar & Stringfield, 1974) 341 professionals have received single sample copies and 106 professionals a minimum of 100. In reply to a follow-up questionnaire in the summer of 1976, 81 of the 106 responded, and 57 of these had used the PBQ with a total of 3,395 children for screening or research. Fifty-two of the 57 rated the PBQ "Excellent" or "Good" for their purposes and only 5 as "Fair" or "Poor." Several deviations from standard usage were reported. Thirteen respondents used the scale with 746 2-year-olds. Thirty-six applied the PBQ to 510 target children in other than a school setting and without a peer group's being rated. With 381 children 11 professionals utilized parents, nurses, or social workers for comparison with teachers as respondents; only 3 used parents alone. Several workers deviated in more than one way in the application of the scale. Altogether, over half of the 57 chose to apply the PBQ to somewhat less than a third of the children in ways for which the norms may or may not be appropriate.

Most of the professionals using the Preschool Behavior Questionnaire agreed to make their data available for additional standardization studies. Clearly, additional work needs to be done on the scale to provide norms for these variations on the original use of the instrument. At present, these data are not complete but should provide interesting information in the future.

Recent pilot studies on the issue of using parents as respondents have produced conflicting findings. Harwell (1972), using the extremes of adjustment of 48 white upper-middle-class children scored on the PBQ, found significant similarities between parents and teachers and beteen parents in ratings. In contrast, Thomas (1976), with black children, reported that parents of normal children agreed in the perceptions of total PBQ adjustment more than either parent agreed with the child's teacher. The small samples in each study and their various differences allow for different interpretations. These studies do at least raise the question, however, about the appropriateness of using other than teachers as respondents, in view of the PBQ standardization using preschool teachers.

One other interesting aspect of the PBQ is found in a comparison in the Stringfield and Woodside (1976) study correlating the Preschool Behavior Questionnaire, the California Preschool Social Competency Scale, and Kohn's Social Competency Scale and Problem Checklist with the Valenski (1972) Social Interaction Scale. The latter instrument is a well-standardized behavior observation schedule with categories of behavior similar to the factors of the

Table V. Correlations Between the Valenski Social Interaction Scale and Four Behavior Rating

Valenski	Scale	PBQT	PBQ1	PBQ2	PBQ3	KPC1	KPC2	KPCS1	KSCS2	CAL
Cooperative tion with p										_
F	(COOP)	36	28	41 ^b	05	17	08	.38	.29	.23
Aggression a peers	gainst (AGGR)	05	01	13	10	32	14	.16	.06	.17
Victim of ag	gression (VICT)	.17	.18	.11	.13	.02	.13	.14	.08	.08
Positive inte										
	(T+)	08	15	.04	06	24	37	.12	.16	.26
Negative into										
	(T-)	08	13	08	.17	18	28	14	.07	06
Alone, Inde	pendent (IND)	.38	.27	.50 b	02	.27	.04	50 ^b	32	30

^aPBQT: Preschool Behavior Questionnaire total.

other scales. Although the sample of 31 children were perceived as much alike when the rating scales were used (see Table III), Table V shows a relative lack of correlation between ratings and actual observed behavior.

SUMMARY

In summary, the Preschool Behavior Questionnaire was developed as a screening instrument for use by preschool teachers, providing norms for children, ages 3-6. During the 34-month period since its publication in late 1974, the scale has been used to a considerable extent in the screening of young children. Those who have used the scale evaluate it highly. However, the variations in the application of the scale provide clear indications that additional normative data are needed, as well as additional research in the area of the relationship between behavior rating scales and behavior observation techniques.

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PBQ1: Preschool Behavior Questionnaire, Factor 1 (Hostile-Aggressive).

PBQ2: Preschool Behavior Questionnaire, Factor 2 (Anxious-Fearful).

PBQ3: Preschool Behavior Questionnaire, Factor 3 (Hyperactive-Distractible).

KPC1: Kohn Problem Checklist, Factor 1 (Apathy-Withdrawal).

KPC2: Kohn Problem Checklist, Factor 2 (Anger-Defiance).

KSC1: Kohn Social Competence Scale, Factor 1 (Interest Participation vs. Withdrawal).

KSC2: Kohn Social Competence Scale, Factor 2 (Cooperation Compliance vs. Anger Defiance).

CAL: California Preschool Social Competence Scale.

 $b_p = .01.$

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