

PCIT Reliability
Grade 2/Year 3
Fast Track Project Technical Report
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Table of Contents

- I. Scale Description
- II. Report Sample
- III. Scaling
- IV. Differences Between Groups
- V. Recommendations for Use
- VI. Means and SDs
- VII. Correlations

Appendix

SAS scoring program

Citations

References

Conduct Problems Prevention Research Group (CPPRG). (1993). *Parent-child interaction task: observational data collection manuals*. Unpublished manuscript, Fast Track Project.

Crnic, K. and Greenberg, M. (1990). Minor parenting stresses with young children. *Child Development*, 61, 1628-1637.

Forehand, R. & McMahon, R. (1981). *Helping the noncompliant child: A clinician's guide to parent training*. New York: Guilford Press.

Report

Rains, C. (2003). *PCIT Reliability* (Fast Track Project Technical Report). Available: <http://www.fasttrackproject.org>

Data Sources

Raw: 03Erel

Scored: PCR3

I. Scale Description

The Parent-Child Interaction Task (PCIT) was administered to the child and the parent as part of the summer interview in the child's home. Two measures are included in the PCIT: the Behavioral Coding System (BCS; Forehand & McMahon, 1981) and the Interaction Ratings Scale (Crnic and Greenberg, 1990). The PCIT is comprised of four separate segments, which occur in the following sequence: Child's Game (free play, 5 minutes), Parent's Game (parent-directed play, 5 minutes), Lego Task (5 minutes), and Clean-Up (3 minutes). The BCS is used by the child interviewer to record both parent behaviors and child behaviors during each task; the amount of time for each task and the total time are also recorded and used in the scoring of the subscales. The child interviewer then completes the IRS, which is a set of 16 global ratings of the mother and child with respect to gratification, sensitivity, and involvement, after each of the 4 tasks that the parent and child complete together.

To check the reliability of the scoring by the child interviewer, the site's lead interviewer or assistant lead interviewer accompanied the assigned pair of interviewers to complete a version of the BCS and the IRS. These scores were then compared to the child interviewer's scores. For

the BCS variables, the subscales (commands, positive attention, negative attention, compliance, noncompliance, and disruptive behavior) were compared for percent agreement. For the IRS variables, three things were checked: the number of items with a reliability of zero, the sum of all of the reliability ratings, and the number of items with exact agreement. These reliability checks were performed on 15% of the home visits. Reliability checks were supposed to be distributed evenly across interviewers but not across samples (intervention, control, normative).

II. Report Sample

These exploratory analyses were conducted with the first cohort on the control sample (n=155) and on the normative sample (n=387, 463 with overlap) during the third year of the study. Overall, 70 records were included in the reliability check. 22 of these were from the control sample (6 from Durham, 4 from Nashville, 8 from Pennsylvania, and 4 from Washington) and 60 were from the normative sample (19 from Durham, 10 from Nashville, 20 from Pennsylvania, and 11 from Washington). Of these, only a small number had a reliability check for all of the scores: 3 were from the control sample (1 from Durham and 2 from Pennsylvania) and 4 were from the normative sample (3 from Durham and 1 from Pennsylvania). A number of records were missing anywhere from 1 to 4 reliability checks.

III. Scaling

Separate methods were used for the BCS and IRS to calculate the reliability checks.

For the BCS subscales, in order to obtain a percentage interobserver agreement, the score sheet of the child interviewer is compared with that of the lead observer. To calculate percentage interobserver agreement for 5 of the BCS scales (commands, positive attention, negative attention, compliance, noncompliance), the following steps are taken:

- 1) Calculate the number of agreements and disagreements between the lead observer and the child interviewer for each 30-second interval. Agreements are defined at the level of total number of behaviors scored in the interval, rather than the specific location of the behaviors within the interval.
- 2) Then, the total number of agreements for a behavior (positive attention, compliance, etc.) across the intervals is summed.
- 3) Next, the total number of disagreements for a behavior across the intervals is summed.
- 4) Last, the percentage is calculated by dividing the number of agreements by the sum of the number of agreements and the number of disagreements.
- 5) The same procedure is used for each of these five scales (behaviors) for the BCS.

A slightly different procedure is used for the BCS scale, Child Disruptive Behavior. There are 36 possible occurrences of this type of behavior. In order to calculate the reliability, only intervals where both the child interviewer and the lead observer coded this behavior are used. Then, the number of agreements and disagreements are summed, followed by using the same percentage formula as with the other BCS scales.

Finally, a Total Percentage Interobserver Agreement is calculated by summing the number of agreements for all six behaviors, then summing the number of disagreements for all six behaviors, and using the same percentage formula, as mentioned above.

For any percentage agreement for the BCS scales, reliability is considered adequate if it is 70% or higher.

To check the reliability for the IRS, the lead observer again compares his/her score sheet with the score sheet of the child interviewer. Each pair of scores is to receive a score as follows:

- 0 = scores match exactly or are ± 1
- 1 = scores that differ by ± 2
- 2 = scores that differ by ± 3

The researchers set values for reliability levels for the IRS. 12 out of 16 points or 75% of the ratings should have a reliability of zero. This is to ensure a reasonable degree of accuracy. The sum of all the IRS reliability ratings should not exceed 4 to ensure that there is no excessive variability in the ratings.

IV. Differences between Group

A series of t-tests between the high-risk control sample and the normative sample (including the overlap) indicated no significant differences for any of the BCS scales and IRS variables.

PCIT Reliability

Variable	Normative Sample		Control Sample		DF	t Value	Pr > t
	Mean	Std Dev	Mean	Std Dev			
BCS: COMMANDS % AGREEMENT (O3E_R1)	84.77	9.07	82.64	10.92	68	-0.86	0.3947
BCS: POSITIVE ATTENTION % AGREEMENT (O3E_R2)	72.02	24.90	67.05	25.21	62	-0.73	0.4701
BCS: NEGATIVE ATTENTION % AGREEMENT (O3E_R3)	62.50	48.27	53.13	47.13	18	-0.43	0.6727
BCS: COMPLIANCE % AGREEMENT (O3E_R4)	73.98	16.84	68.82	17.32	68	-1.18	0.2421
BCS: NONCOMPLIANCE % AGREEMENT (O3E_R5)	47.53	47.31	48.14	43.14	22	0.03	0.9767
BCS: DISRUPTIVE BEHAVIOR % AGREEMENT (O3E_R6)	66.46	44.11	75.00	38.87	17	0.44	0.6672
BCS: TOTAL % AGREEMENT (O3E_R7)	79.98	10.38	77.64	11.53	68	-0.85	0.4002
IRS: # OF ITEMS WITH RELIABILITY OF ZERO (O3E_R8)	15.17	1.91	15.00	1.63	68	-0.35	0.7240
IRS: SUM OF RELIABILITY RATINGS (O3E_R9)	0.90	2.09	0.91	1.23	68	0.03	0.9780
IRS: # OF ITEMS WITH EXACT AGREEMENT (O3E_R10)	8.96	3.47	9.68	2.34	68	0.89	0.3776

V. Recommendations for Use

Analysts should note that distribution properties for these scores might be nonnormal due to the small sample sizes involved and the nature of the variable construction. With that in mind, Positive Attention % Agreement and Number of Items with Reliability of Zero were negatively skewed for both the normative and control samples. One score, Sum of Reliability Ratings, was positively skewed for both samples.

Another approach to reliability would have been to calculate the inter-class correlations for these two measures. However, raw data for the lead observer were not available to perform these calculations.

VI. Means and SDs

PCIT Reliability Normative Sample Year 3

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
O3E_r1	BCS: Commands % Agreement	60	83.82	9.94	50.00	100.00
O3E_r2	BCS: Positive Attention % Agreement	54	70.37	25.29	0.00	100.00
O3E_r3	BCS: Negative Attention % Agreement	16	54.69	46.74	0.00	100.00
O3E_r4	BCS: Compliance % Agreement	60	72.63	16.63	0.00	100.00
O3E_r5	BCS: Noncompliance % Agreement	21	44.19	46.69	0.00	100.00
O3E_r6	BCS: Disruptive Behavior % Agreement	14	68.86	41.83	0.00	100.00
O3E_r7	BCS: Total % Agreement	60	79.07	10.81	50.00	100.00
O3E_r8	IRS: # of Items with Reliability of 0	60	15.07	1.95	7.00	16.00
O3E_r9	IRS: Sum of All Reliability Ratings	60	0.93	1.98	0.00	10.00
O3E_r10	IRS: # of Items with Exact Agreement	60	8.97	3.23	1.00	16.00

PCIT Reliability Control Sample Year 3

Variable	Label	N	Mean	Std Dev	Minimum	Maximum
O3E_r1	BCS: Commands % Agreement	22	82.64	10.92	50.00	100.00
O3E_r2	BCS: Positive Attention % Agreement	19	67.05	25.21	0.00	96.00
O3E_r3	BCS: Negative Attention % Agreement	8	53.13	47.13	0.00	100.00
O3E_r4	BCS: Compliance % Agreement	22	68.82	17.32	43.00	100.00
O3E_r5	BCS: Noncompliance % Agreement	7	48.14	43.14	0.00	100.00
O3E_r6	BCS: Disruptive Behavior % Agreement	8	75.00	38.87	0.00	100.00
O3E_r7	BCS: Total % Agreement	22	77.64	11.53	50.00	100.00
O3E_r8	IRS: # of Items with Reliability of 0	22	15.00	1.63	9.00	16.00
O3E_r9	IRS: Sum of All Reliability Ratings	22	0.91	1.23	0.00	5.00
O3E_r10	IRS: # of Items with Exact Agreement	22	9.68	2.34	5.00	14.00

VII. Correlations

PCIT Reliability Report Sample Year 3

Pearson Correlation Coefficients Prob > r under H0: Rho=0 Number of Observations					
	O3E_r1	O3E_r2	O3E_r3	O3E_r4	O3E_r5
O3E_r1 BCS: Commands % Agreement	1.00000 70	0.35586 0.0039 64	0.35788 0.1213 20	0.62133 <.0001 70	0.49658 0.0136 24
O3E_r2 BCS: Positive Attention % Agreement	0.35586 0.0039 64	1.00000 64	0.38723 0.1014 19	0.36135 0.0033 64	0.33985 0.1217 22
O3E_r3 BCS: Negative Attention % Agreement	0.35788 0.1213 20	0.38723 0.1014 19	1.00000 20	0.45455 0.0441 20	0.69669 0.0370 9
O3E_r4 BCS: Compliance % Agreement	0.62133 <.0001 70	0.36135 0.0033 64	0.45455 0.0441 20	1.00000 70	0.54353 0.0060 24
O3E_r5 BCS: Noncompliance % Agreement	0.49658 0.0136 24	0.33985 0.1217 22	0.69669 0.0370 9	0.54353 0.0060 24	1.00000 24
O3E_r6 BCS: Disruptive Behavior % Agreement	0.29008 0.2283 19	0.17665 0.4694 19	0.03249 0.9339 9	-0.04374 0.8589 19	0.65136 0.0802 8
O3E_r7 BCS: Total % Agreement	0.87341 <.0001 70	0.57569 <.0001 64	0.57490 0.0080 20	0.76917 <.0001 70	0.64800 0.0006 24
O3E_r8 IRS: # of Items with Reliability of 0	0.12753 0.2928 70	-0.11610 0.3609 64	0.01322 0.9559 20	0.07509 0.5367 70	-0.03474 0.8720 24
O3E_r9 IRS: Sum of All Reliability Ratings	-0.09834 0.4180 70	0.10233 0.4210 64	0.16680 0.4821 20	-0.05999 0.6218 70	0.04592 0.8313 24
O3E_r10 IRS: # of Items with Exact Agreement	-0.10653 0.3801 70	-0.12376 0.3299 64	-0.09419 0.6929 20	-0.03060 0.8014 70	-0.06242 0.7720 24

Pearson Correlation Coefficients Prob > r under H0: Rho=0 Number of Observations					
	O3E_r6	O3E_r7	O3E_r8	O3E_r9	O3E_r10
O3E_r1 BCS: Commands % Agreement	0.29008 0.2283 19	0.87341 <.0001 70	0.12753 0.2928 70	-0.09834 0.4180 70	-0.10653 0.3801 70
O3E_r2 BCS: Positive Attention % Agreement	0.17665 0.4694 19	0.57569 <.0001 64	-0.11610 0.3609 64	0.10233 0.4210 64	-0.12376 0.3299 64
O3E_r3 BCS: Negative Attention % Agreement	0.03249 0.9339 9	0.57490 0.0080 20	0.01322 0.9559 20	0.16680 0.4821 20	-0.09419 0.6929 20
O3E_r4 BCS: Compliance % Agreement	-0.04374 0.8589 19	0.76917 <.0001 70	0.07509 0.5367 70	-0.05999 0.6218 70	-0.03060 0.8014 70

Pearson Correlation Coefficients Prob > r under H0: Rho=0 Number of Observations					
	O3E_r6	O3E_r7	O3E_r8	O3E_r9	O3E_r10
O3E_r5 BCS: Noncompliance % Agreement	0.65136 0.0802 8	0.64800 0.0006 24	-0.03474 0.8720 24	0.04592 0.8313 24	-0.06242 0.7720 24
O3E_r6 BCS: Disruptive Behavior % Agreement	1.00000 19	0.34802 0.1443 19	-0.28674 0.2340 19	0.30581 0.2029 19	-0.19890 0.4143 19
O3E_r7 BCS: Total % Agreement	0.34802 0.1443 19	1.00000 70	0.04324 0.7223 70	-0.01701 0.8888 70	-0.10015 0.4094 70
O3E_r8 IRS: # of Items with Reliability of 0	-0.28674 0.2340 19	0.04324 0.7223 70	1.00000 70	-0.95490 <.0001 70	0.60823 <.0001 70
O3E_r9 IRS: Sum of All Reliability Ratings	0.30581 0.2029 19	-0.01701 0.8888 70	-0.95490 <.0001 70	1.00000 70	-0.62150 <.0001 70
O3E_r10 IRS: # of Items with Exact Agreement	-0.19890 0.4143 19	-0.10015 0.4094 70	0.60823 <.0001 70	-0.62150 <.0001 70	1.00000 70

Appendix – SAS Scoring Program
[\(See Instrument Summary\)](#)