

Development of a Brief Measure of Behavior During Pediatric Hospitalization: The Short Form of the Pediatric Inpatient Behavior Scale (PIBS-25)

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Ped Psych Consult-Liaison and Outcome Measurement: Barriers

- Inpatient Consultation-Liaison – a core component of pediatric psychology
 - Because of high volume, low resources, and crisis/time-pressure, tends to be less often a subject of research
 - Standardized assessment, outcome measurement, and well-defined/tested treatments are difficult to develop and implement in the consult setting
 - Limited time and resources
 - Reluctance to further strain the system

Consult-Liaison and Outcome Measurement: Importance

- The "SO-WHAT?" Factor
- The use of standardized instruments in behavioral assessment is considered to be a basic standard-of-care in clinical medicine and psychology
 - e.g., AACAP and AAP assessment guidelines for ADHD
- Some standardization in measurement is required for outcome measurement and evidence-based practice
- Well-known advantages of standardized instruments in measurement of behavior: quantified measurement, application of research to clinical work, enhanced interrater reliability in behavioral assessment/diagnosis, easier and/or more comprehensive assessment, application of norms

Consult-Liaison and Outcome Measurement: Current Measures

- Observation/Behavior Coding Measures
 - Observation Scale of Behavioral Distress (Jay, 1981; Blount et al., 1990; Powers et al., 1993)
- Rating Scales and Behavior Checklists
 - Behavior Upset in Medical Patients – Revised (BUMP-R; Saylor et al., 1987; Rodriguez & Boggs, 1994)
 - Pediatric Inpatient Behavior Scale (PIBS; Kronenberger, Carter, & Thomas, 1997)

Pediatric Inpatient Behavior Scale (PIBS)

- "A Behavior Checklist for Consultation-Liaison" - Rating scale of positive and negative behaviors shown by children during hospitalization
- 47 Items, rated on 0-1-2 frequency scale by nurses or parents
- Items derived through survey of pediatric and mental health professionals, refined using content validation procedures
 - Designed as an inpatient ped psych scale from the start
- Subscales derived initially through factor analysis
 - Subscale scores are mean of constituent items

PIBS Psychometrics: Subscales and Reliability

Subscale	Items	Alpha
Oppositional-Noncompliant	8	0.88
Positive-Sociability	8	0.83
Withdrawal	6	0.80
Conduct Problem	4	0.46
Distress	5	0.84
Anxiety	6	0.73
Overactive	2	0.72
Elimination Problem	3	0.55
Self-Stim	2	0.02
Self-Harm	1	--

Note: Subscales derived based on factor analysis of General Pediatric Inpatient Sample with selection of factors with eigenvalue > 1 and scree plot supporting cutoff. Kronenberger, Carter, & Thomas, 1997 (scale development); Kronenberger, Carter, & Limbird, 1999 (validation)

PIBS: Validation Research

- Children referred to C-L services score higher on Oppositional-Noncompliant, Withdrawal, Conduct Problems, and Anxiety subscales, compared to matched nonreferred children (Kronenberger et al., 1997)
- Children who are rated by nurses as high in need of psychological intervention score higher on PIBS Oppositional-Noncompliant, Withdrawal, Conduct Problems, Distress, Anxiety, and Overactive subscales, compared to those who are rated as low in need of psychological intervention (Kronenberger et al., 1997)
- Children with higher CBCL Externalizing scale scores prior to Stem Cell Transplant (SCT) score higher on the PIBS Oppositional-Noncompliant scale in the hospital during SCT (Carter et al., 1996)
- Families with greater life stress and hassles prior to SCT have children who show greater Oppositional-Noncompliant and Withdrawal behavior during SCT (Carter et al., 1996)

Important, Reliable, Valid, and Unused: The Practical Problem

- An important lesson – the translation of assessment research to the clinical setting is limited by perception and resources, regardless of the research usefulness of the instrument
 - Related to “effectiveness-efficacy” distinction
- Positives and Negatives for PIBS Clinical Acceptance
 - Positives: developed by pediatric/clinical professionals, broad coverage of important behaviors, *relatively* short (psychologists), identifies need for intervention, tracks outcome
 - Negatives: too long (nurses), looks too complicated, not clear what it's measuring (face validity), difficult to score

A Practical C-L Scale: The Redevelopment of the PIBS

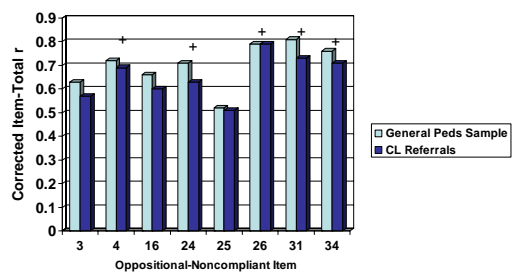
- Shorten
 - Nurses will *tolerate* 25 items
- Improve Scoring and Face Validity
 - Group items by subscales
 - Same number of items per subscale

Step 1: Retain Best Subscales

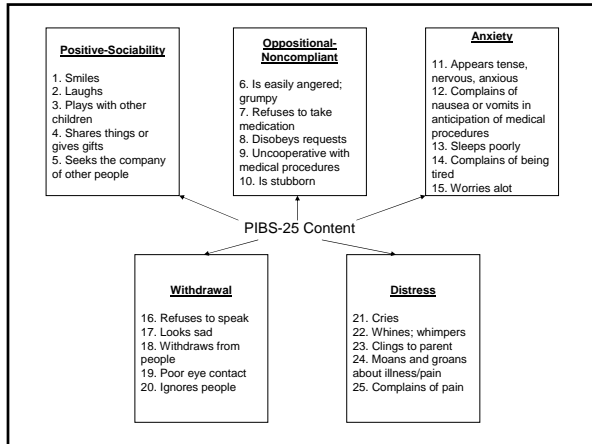
Subscale	Items	Alpha (Cross-Validation Sample)
Oppositional-Noncompliant	8	0.88
Positive-Sociability	8	0.83
Withdrawal	6	0.80
Conduct Problem	4	0.46
Distress	5	0.84
Anxiety	6	0.73
Overactive	2	0.72
Elimination Problem	3	0.55
Self-Stim	2	0.02
Self-Harm	1	--

Criteria for Retention: 5 Items or More, Alpha > 0.70; data from Kronenberger et al., 1997, 1999

Step 2: Retain Best Items (Based on Internal Consistency) – Oppositional-Noncompliant Subscale



Note: Top 5 Items indicated with "+". Data from Kronenberger et al., 1997, 1999

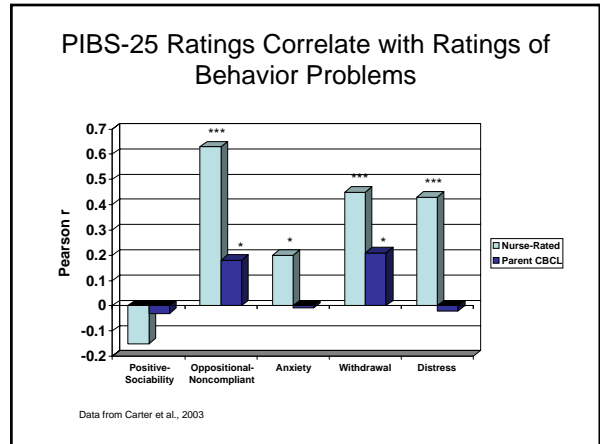
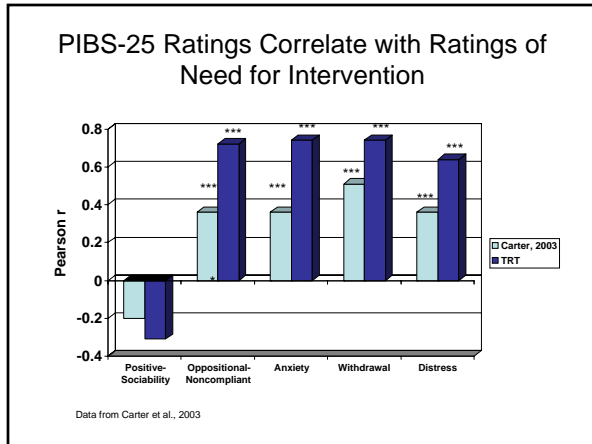
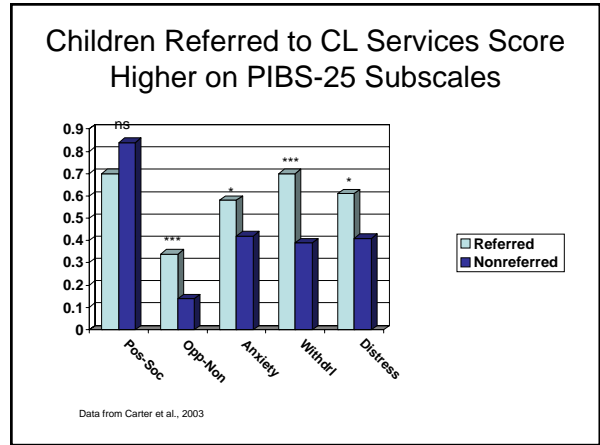


PIBS-25: Reliability and Validity Samples

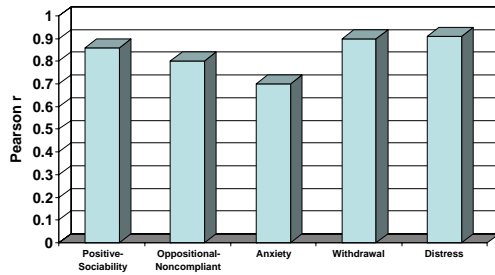
- Case-Controlled Pediatric Inpatient Sample (Carter et al., 2003) – sample of 142 children (ages 6-17 years) consisting of 78 C-L Cases and 64 Matched (age, sex, illness) Controls, all of whom provided complete nurse-rated PIBS scales
 - Variety of physical diagnoses
- Test-Retest Sample (TRT; new data) – 25 nonreferred children (ages 8-17 years) rated two times (1-7 days apart) by same nurse
 - Time 1 data used for analyses that are not test-retest
- All samples were currently hospitalized in tertiary care children's hospitals
 - All ratings completed by nurses

Step 3: Internal Consistency and Correspondence of New (Short Form) Subscales

Subscale	Items	Alpha		Correlation with Parent Scale	
		Carter, 2003	TRT	Carter, 2003	TRT
Oppositional-Noncompliant	5	0.78	0.88	0.95	0.95
Positive-Sociability	5	0.79	0.86	0.96	0.96
Withdrawal	5	0.81	0.89	0.98	0.98
Distress	5	0.75	0.87	1.00	1.00
Anxiety	5	0.74	0.75	0.99	0.99



PIBS-25 Ratings and Test-Retest Reliability



Data from Test-Retest Reliability sample; all $p < 0.001$

Conclusions

- Lesson Learned – if clinical application is a goal, practicality must be built-in from the start
- A behavior checklist can provide reliable and valid information about adjustment of children seen by C-L services
- Behavior checklist results relate to need for referral or intervention
- Behavior checklist results are predicted by key pre-hospitalization indices such as behavior problems and parent stress

Conclusions

- PIBS-25 Subscales have good psychometrics (comparable to parent scales) and correlate very strongly with parent scales
- PIBS-25 is very brief, can be “eyeball-scored,” and is likely to fit better in the demanding pediatric hospital environment
- Content of PIBS-25 lacks some of the more severe (self-harm, conduct problems) and unusual (self-stim, elimination problems) components of the original PIBS
 - May not be as appropriate for psychiatric inpatient settings or severely psychologically impaired children