Assessment of Behavioral Distress and Depression in a Pediatric Population

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Abstract:
Using a multitrait—multimethod approach, measures designed to assess emotional distress in medical populations were compared with depression measures standardized on healthy children. In a hospitalized sample of children ages 4 to 12 years old, parent ratings of child distress were compared to nurse ratings and children's responses to a pictorial measure. An assessment battery was administered to 70 mothers and children; 32 nurse ratings were also obtained. Results indicated overlap between information obtained from measures of depression and pediatric-specific measures of distress. However, the findings provide some evidence that measures that incorporate the pediatric context in assessment may be more suitable for medically ill children.

Children's reactions to medical intervention vary considerably, but emotional distress during hospitalization is typical. In a pediatric context, emotional distress may be manifest as affective symptoms of depression (e.g., dysphoria, irritability) and behavioral signs of distress (e.g., social withdrawal, agitation, anxiety). Such distress can interfere with medical procedures, and research has historically demonstrated that without intervention during their stay, children display more long-term emotional and behavioral problems following hospitalization (e.g., Douglas, 1975; Melamed & Siegel, 1975).

A review of studies utilizing diagnostic criteria indicated that as many as 40% of children in pediatric settings exhibit depressive symptoms (Finch & Saylor, 1984). An early study of 7- to 12-year-old children found that 38% exhibited dysphoric mood during hospitalization, based on semistructured interviews of the parent and child (Kashani, Barbero, & Bolander, 1981). An examination of referral questions provided to a pediatric psychology service on inpatient children in a children's hospital found that 19% of consultations were referred for depression or suicide attempts, and 12% of consultations were referred for adjustment to chronic illness (Olson et al., 1988). A review of the effects of hospitalization and surgery on children estimated that at least 20% of children experience emotional as well as behavioral difficulties (Yap, 1988). Focusing on behavioral manifestations of distress, parent ratings of child behavioral upset during hospitalization have been found to be significantly higher than ratings of child distress at home (Rodriguez & Boggs, 1994). Younger pediatric patients also appear even more likely to display emotional distress than older children (Jay, Ozolins, Elliott, & Caldwell, 1983; Saylor et al., 1987; Yap, 1988). The variable findings regarding the prevalence of emotional distress in medically ill children may be attributable to variability in the definition and presentation of emotional distress, or to differences in assessment or in the incidence of distress associated with distinct medical groups (Kashani & Breedlove, 1994).

Obstacles in assessment complicate the study of emotional distress in pediatric samples. Few measures appropriate for use with hospitalized children are available. When requested to assess a child's emotional distress in a pediatric setting, psychologists have often been forced to turn to standard measures of depression. Such decisions are problematic for two reasons: Measures of depression are not necessarily applicable to pediatric populations, and measures of depressive symptomatology do not adequately assess behavioral indicators of distress. The solution is more complicated than simply standardizing such traditional measures on pediatric samples, because such a strategy would not resolve the problem that the measures often incorporate items inappropriate for ill children. For example, the Children's Depression Inventory (CDI; Kovacs, 1983) has been frequently administered to pediatric populations as a measure of depressive symptomatology (e.g., Eason, Finch, Brasted, & Saylor, 1985; Saylor, Finch, & McIntosh, 1988). Yet the CDI includes items pertaining to

school behavior that may be irrelevant during hospitalization as well as items assessing vegetative signs of depression, which may be confounded by the child's medical illness. Indeed, one study of pediatric cancer patients suggests that a structured interview of depression designed for healthy children is confounded by features of medical illness because of significant overlap between depressive symptoms and the degree of impairment due to medical illness (Heilgenstein & Jacobsen, 1988). Therefore, measures of depression that have been standardized using healthy children may artificially inflate estimates of emotional distress or depression in pediatric samples.

Because such measures of depression are not suitable, researchers in pediatric psychology have developed alternative research instruments to evaluate emotional distress. One measure designed for pediatric populations, the Observational Scale of Behavioral Distress (Jay & Elliott, 1986; Jay et al., 1983), assesses behaviors indicative of anxiety and pain in cancer patients. Similarly, another observational pain-rating scale for children ages 2 through 6 includes some "depression-like" items (Gauvain-Piquard, Rodary, Rezvani, & Lemerle, 1987, p. 179). However, both observational rating scales were based on cancer patients, and both scales emphasize pain behavior rather than emotional distress. Moreover, the complex nature of observational measures results in such scales being used primarily in research rather than clinical practice. In contrast, the Behavioral Upset in Medical Patients - Revised (BUMP-R; Saylor et al., 1987) appears more promising for pediatric samples (see Rodriguez & Boggs, 1994) as a parent-report measure targeting behavioral manifestations of emotional distress designed for hospitalized children with diverse medical diagnoses.

Measures specifically developed for pediatric samples have not yet been directly compared with measures designed to evaluate depression in healthy children. Using a multitrait—multimethod approach, this investigation addressed these issues. This study involved the assessment of emotional distress in a sample of 4- to 12-year-old hospitalized children, including the 4- to 8-year-old age group because younger children are less often studied but may be at higher risk. Specifically, parent and nurse reports on a pediatric-specific measure (i.e., the BUMP-R) were compared to parent responses on a measure of depression standardized on healthy children across a wide age group. As part of the assessment battery, a new self-report scale appropriate for preschool children in hospital settings was designed based on items from the BUMP-R. For the older children, this self-report pediatric-specific measure was compared to the traditionally used CDI. Across informants, the pediatric-specific measures should be intercorrelated, demonstrating convergent validity. Moreover, the depression measures for healthy children should correlate more strongly with each other than with the pediatric-specific measures, evidencing discriminant validity. An additional comparison across context was performed using parent report of behavior in the hospital versus home; the pediatric-specific measures should be correlated more strongly with the hospital ratings than with the home ratings.

METHOD
Participants
Seventy mothers and their children were recruited from consecutive pediatric admissions at a university teaching hospital. These families were participants in an earlier study on the BUMP-R (Rodriguez & Boggs, 1994). Thirty-two of the children involved in the study were also rated by their nurses. The sample of children consisted of 29 boys and 41 girls between the ages of 4 years 2 months and 12 years 11 months (M = 8 years 6 months; SD = 2 years 5 months). Ethnic composition was 66% White, 27% African American, and 7% other (Asian American or Hispanic American); 66% of the children lived in two-parent homes, and 34% lived in single-parent homes. Although primarily lower to middle socioeconomic status (90%), the sample included all five levels of social class as measured by Hollingshead's (Myers & Bean, 1968) Two-Factor Index of Social Position (Class 1 = 3%; Class 2 = 7%; Class 3 = 16%; Class 4 = 37%; Class 5 = 37%).

With respect to illness-related variables, 40% of the children had never been previously hospitalized, 17% of the children had been hospitalized once before, and 43% had been hospitalized on multiple occasions (ranging from 2 to 20 prior admissions). The duration of illness associated with their diagnoses ranged from newly diagnosed to diagnosis at birth, with 41% diagnosed within 1 month and an additional 20% within 6 months. Children

received a wide variety of diagnoses, with the majority (65%) experiencing chronic illnesses (e.g., diabetes, asthma, nephrotic syndrome) and the remainder, acute illnesses (e.g., snakebite, fractures).

Measures

The BUMP–R is a 56-item parent rating of the child's behavior corresponding to emotional distress at the hospital and at home. The frequency of child behaviors was evaluated by parents on a Likert scale ranging from 0 (never) to 4 (always). Parents initially rated the frequency of 28 behaviors the child exhibited in the hospital (BUMP–R-Hospital) and then rated the same behaviors the child displayed at home, prior to hospitalization (BUMP–R-Home). Total scores on each form ranged from 0 to 112, with higher scores indicative of distress. This scale is a revision of a 32-item adult version (Zeldow & Braun, 1985), which reported internal consistency of .93 and test–retest reliability over variable intervals at .66. Saylor et al. (1987) revised the adult scale for use with children by having five judges independently evaluate which items were inappropriate for children, yielding the 28-item BUMP–R scale. Cronbach's coefficient alpha for the BUMP–R-Hospital measure was reported as .87, and four factors—Negativity/Agitation, Amiability, Dysphoria, and Noncompliance—were identified from 151 mothers of hospitalized 4- to 12-year-old children (Rodriguez & Boggs, 1994).

The Personality Inventory for Children–Depression Scale (PIC–D; Wirt, Lachar, Klinedinst, & Seat, 1984) contains 46 items and is one of 16 profile scales on the PIC, a true–false parent rating of psychological adjustment for children ages 3 through 16. The PIC–D correlated significantly with the CDI and all scales on the Conners Parent Questionnaire except the Antisocial scale (Leon, Kendall, & Garber, 1980). Test–retest reliability was reported as ranging from .80 to .94, and internal consistency was reported as .86 (Wirt et al., 1984).

The Children's Depression Inventory (CDI; Kovacs, 1983) is a 27-item, self-report depression scale for children ages 8 and older. Each item presents three statements representing graded levels of severity of a depressive symptom. 'The child selects one of the three statements that are valued from 0 to 2, with total scores ranging from 0 to 54 and higher scores indicative of depression. Internal consistency was reported as ranging from .70 to .94 (Kovacs, 1985). Test—retest reliability ranged from correlations of .38 to .87 (Saylor, Finch, Spirito, & Bennett, 1984).

The Behavioral Upset in Medical Patients—Child Self-Report Version (Child—BUMP) is a 27-item pictorial scale designed for this study to assess emotional distress at the hospital to serve as a pediatric-specific self-report measure. All items on the BUMP—R-Hospital were rephrased (by three independent sources) into language comprehensible for children ages 4 through 12. (One item was omitted because terminology was too similar to another item.) The format of the scale was modeled according to the Harter and Pike (1983) Pictorial Scale of Perceived Competence and Social Acceptance for Young Children. In a two-step process for each item, children were asked to select which picture was "most like" them from two options with corresponding pictures. Then, for each picture, two choices were offered regarding the frequency of that behavior. Each final response to an item was then scored 1 to 4, with total scores ranging from 27 to 108 and higher scores suggestive of behavioral distress. The order of pictures within an item were counterbalanced so that 14 of the items presented the choice of most behavioral upset on the left. Thirteen of the items depicted African American children. Male and female versions of the scale were identical except for the sex of the child in the picture and as gender was phrased in the question.

Procedure

Families were administered the set of questionnaires in the hospital room the day following the child's hospital admission. This delay allowed about 24 hr of behavior for both the parent and child, to assess reaction to hospitalization (time since hospitalization ranged from 17 to 35 hr). Parents were asked to complete the BUMP-R and PIC-D based on their child's behavior since hospitalization. The Child-BUMP was administered orally to all children, and the CDI was read aloud only to children ages 8 through 12 (n = 33). Because of varying work shifts, nurses were asked to complete the BUMP—R-Hospital form (Nurse-BUMP) only if the nurse had interacted with the child for a minimum of 8 hr (n = 32). Informed parental consent and child verbal assent were obtained independently.

RESULTS

Preliminary Analyses

Scores used for all analyses were the raw scores of the BUMP-R, Child-BUMP, Nurse-BUMP, CDI, and the standard T scores of the PIC-D. All outcome measures were normally distributed. The distributions of number of prior hospitalizations and duration of illness were skewed, and thus Spearman rho coefficients were computed for these variables. Descriptive statistics on each measure are displayed in Table 1. The sample mean on the PIC-D $(M = 60.9, SD = 15.0)$ was 1 SD above the normative sample mean, suggesting that mothers reported more depressive symptomatology in this hospitalized population than in the general population. In addition, the sample mean on the CDI $(M = 6.9, SD = 5.1)$ was comparable to the mean reported for newly diagnosed diabetics (Kovacs, 1983) and was below the recommended cutoff for depression. No normative data were available on the pediatric-specific measures.

To examine some of the psychometric properties of the pediatric-specific measures, the child self-report and nurse-report measures were subjected to internal consistency analyses. For the Child-BUMP, Cronbach's coefficient alpha was computed at .76, suggesting fair internal consistency. For the Nurse-BUMP, internal consistency was .93, indicating that the individual items were strongly intercorrelated.

Background variables and dependent measures were not related. An examination of the demographic variables indicated no significant t-test differences in the outcome measures based on the child's sex, ethnicity (White vs. non-White), or family composition (single-parent vs. two-parent household), with all p values greater than .05. Moreover, child distress or depression scores were not significantly correlated with age, and age grouping (4-8 vs. 8-12) did not reveal any significant t-test differences $(p > .05)$. Furthermore, measures of child behavioral upset or depression were not significantly correlated with the number of prior hospitalizations or duration of illness (all $p > .05$). Additionally, t tests revealed no significant differences in the distress or depression measures for chronicity of illness (all $p > .05$).

TABLE 1
Means and Standard Deviations of Outcome Measures

Measures	n	M	SD
BUMP–R-Hospital	70	27.2	13.3
BUMP–R-Home	70	24.7	11.2
PIC–D T-score	70	60.9	15.0
Child–BUMP	70	51.5	8.4
CDI	33	6.9	5.1
Nurse–BUMP	32	28.6	18.8

Note. BUMP–R = Behavioral Upset in Medical Patients–Revised; PIC–D = Personality Inventory for Children–Depression Scale; Child–BUMP = Child Self-Report Version of the BUMP; CDI = Children's Depression Inventory; Nurse–BUMP = Nurse's Behavioral Upset in Medical Patients-Revised.

Multitrait—Multimethod Comparison

Pearson correlations were performed among the outcome measures as displayed in Table 2. Comparisons between correlations were conducted using Williams's modification of Hotelling's T (see Steiger, 1980). Assessing convergent validity across sources, the mothers' BUMP-R-Hospital scores were significantly correlated with the Child-BUMP scores $(r = .36, p < .01)$ and marginally correlated with the Nurse-BUMP scores $(r = .39, p < .05)$. Also, in terms of convergent validity, the Child-BUMP scores correlated significantly with the mothers' BUMP-R-Hospital scores $(r = .36, p < .01)$ but not with the CDI $(r = .30, p > .05)$. Comparing the parent pediatric-specific measure to depression measures, the BUMP-R-Hospital scores were significantly correlated with the PIC-D $(r = .45, p < .001)$ as well as the CDI scores $(r = .43, p < .01)$. The two standard depression measures, the CDI and PIC-D, were significantly correlated $(r = .54, p < .001)$. In terms of discriminant validity, the correlation between the PIC-D and the CDI scores was stronger $(r = .54, p < .001)$ than the relation between the PIC-D and the BUMP-R-Hospital $(r = .45, p < .001)$, although the difference between the magnitude of these correlations was not significant. Similarly, the correlation between the PIC-D

and the CDI was stronger *(r .54, p < .001)* than the relation between the CDI and the BUMP—R-Hospital *(r = .43, p < .01)*, although the difference between these correlations was again not significant. With regard to informant variance, the PIC—D scores did not correlate significantly with either the Nurse—BUMP *(r = .04, p > .05)* or the Child—BUMP *(r = .14, p >. 05)*, and the Nurse—BUMP scores did not correlate with either child self-report measure, the Child—BUMP or CDI *(p > .05)*.

TABLE 2
Correlations Among Outcome Measures

Measures	BUMP–R-Hospital		BUMP–R-Home		PIC–D		Child–BUMP		CDI	
	r	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*
BUMP–R-Home	.53	70**								
PIC–D	.45	70**	.49	70**						
Child–BUMP	.36	70*	.10	70	.14	70				
CDI	.43	33*	.52	33**	.54	33**	.30	33		
Nurse–BUMP	.39	32ᵃ	.02	32	.04	32	.32	32	–.17	14

Note. BUMP–R = Behavioral Upset in Medical Patients–Revised; PIC–D = Personality Inventory for Children–Depression Scale; Child–BUMP = Child Self-Report Version of the BUMP; CDI = Children's Depression Inventory; Nurse–BUMP = Nurse's Behavioral Upset in Medical Patients-Revised.
ᵃBecause the significance level was set at .01, this marginal relationship was found at only *p < .05*.
**p < .01. ***p < .001*.

Cross-Context Comparison

The BUMP—R-Home, which assesses behavior exhibited at home, was significantly correlated with the BUMP—R-Hospital *(r = .53, p < .001)*. It is interesting to note that the Child—BUMP scores were significantly correlated with the BUMP—R-Hospital scores *(r = .36, p < .01)* but not with the BUMP—R-Home scores *(r = .10, p > .05)*. In contrast, the CDI scores were more strongly correlated with the BUMP—R-Home *(r = .52, p < .001)* than with the BUMP—R-Hospital *(r = .43, p < .01)* scores, although the difference between the correlations was not significant. Similarly, the PIC—D scores were significantly correlated with the BUMP—R-Home *(r = .49, p < .001)*, slightly but not statistically stronger than the relation to the BUMP—R-Hospital *(r = .45, p < .001)*. Furthermore, the Nurse—BUMP, which was marginally correlated with the BUMP—R-Hospital *(r = .39, p < .05)*, was unrelated to the BUMP—R-Home scores *(r = .02, p > .05)*.

DISCUSSION

This study conducted a multitrait—multimethod assessment of behavioral distress and depression in a sample of 4- through 12-year-old hospitalized children. Measures specifically designed for medically ill pediatric patients were compared to measures originally intended for healthy children, obtaining information from children, mothers, and nurses. Results from this study suggest that depression measures standardized on healthy children provide similar information as the measures targeted for pediatric patients, thus arguing for their suitability in this population. However, the pattern of findings suggests that pediatric-specific measures may be preferable.

Mothers' scores on the BUMP—R-Hospital were positively correlated with both of the two standard depression measures, the other parent-report measure (the PIC—D scale), and the child self-report measure (CDI), suggesting that the relation between standard depression measures and pediatric-specific measures reflects more than just method variance. The BUMP—R-Hospital scores were more strongly correlated with the CDI than with the self-report pediatric-specific measure, the Child—BUMP, or the nurse-report pediatric-specific measure, the Nurse—BUMP, failing to support discriminability between traditional versus pediatric-specific measures. These relations suggest that the BUMP—R-Hospital, a measure designed to assess behavioral manifestations of emotional distress in ill children, taps into the construct of emotional distress similar to instruments traditionally used to assess depression and emotional distress in healthy children.

However, some of the remaining findings offer an indication that pediatric-specific measures may be able to tap behaviors specific to the hospital, although differences between the correlations reported later were not significant and there-fore simply represent a pattern supporting the use of pediatric-specific measures. Across informants, the BUMP—R-Hospital scores were positively correlated with the child and nurse reports, suggesting convergent validity. Self-report on the Child—BUMP was more strongly correlated with parent report on the BUMP—R-Hospital than with the other self-report measure, the CDI; thus, the convergence of the pediatric-specific measures was stronger than the expected source variance within the child-report measures. Across informants, children and parents showed convergent validity for depression in their moderate agreement on the standard depression measures, with a positive correlation between the CDI and the PIC—D. Indeed, the PIC—D and CDI were more strongly correlated with each other than with the BUMP—R-Hospital, thus providing some indication of discriminant validity. This pattern of results suggests that pediatric-specific measures may assess behaviors and elements of emotional distress in a hospital that are not addressed with measures designed for healthy children.

Examination of the results for the BUMP—R-Home parent ratings of behavior exhibited at home may offer some additional perspectives on the distinction between pediatric-specific measures and depression measures. A strong positive correlation between the BUMP—R-Hospital scores and BUMP—R-Home scores corroborate earlier findings (Rodriguez & Boggs, 1994; Saylor et al. 1987). This relation may reflect method variance, although psychological functioning prior to hospitalization may also predict response to hospitalization. Children who were experiencing behavioral signs of emotional distress at home are probably at greater risk to demonstrate difficulty in the hospital. Thus, this finding would suggest some overlap in behavior across context. Examining further the effect of context by comparing BUMP—R-Home and Hospital scores, the Child—BUMP scores were significantly correlated with the BUMP—R-Hospital but not with the BUMP—R-Home scores. Similarly, the Nurse—BUMP scores were marginally correlated with the BUMP—R-Hospital scores but not with the BUMP—R-Home scores. Thus, the pediatric-specific measures related more to reports of behavior in the hospital than to behavior at home. In contrast, the standard depression measures may relate more to reports of behavior at home than to behavior in the hospital. The PIC—D scores were somewhat more strongly correlated with the BUMP—R-Home scores than with the BUMP—R-Hospital scores; similarly, the CDI was more strongly correlated with the BUMP—R-Home scores than with the BUMP—R-Hospital scores, although differences between these correlations were not significant.

Together, the results from this study indicate that measures of depression and emotional distress designed for healthy children share considerable variance with those measures targeted for pediatric populations. The pattern of findings further suggests that pediatric-specific measures may assess additional distress behaviors unique to the hospital, perhaps because the pediatric-specific measures incorporate the 'context into the items. However, statistical comparison of differences between the magnitude of correlations did not reveal any significant differences; thus, although a pattern may have emerged, future work with larger sample sizes is required to definitively establish the discriminability of pediatric-specific measures from the traditional measures of depression.

In addition to these findings on constructs, this study confirmed previous work that has demonstrated limited correspondence among respondents (see Achenbach, McConaughy, & Howell, 1987, for a review). Generally, correlations between reports by children and others are low (.25 with parents and .20 with teachers; Achenbach et al., 1987), so the correspondence obtained in this investigation is consistent with, or above, those correlations reported in the literature. The mothers' BUMP—R-Hospital ratings were significantly positively correlated with both of the child-report measures, the Child—BUMP and CDI, supporting that children and their mothers evidence some mild to moderate agreement. Neither of the child self-report measures, the Child—BUMP or the CDI, were related to the Nurse—BUMP, which suggests little agreement between these two sources. Nurses ratings on the Nurse—BUMP were only marginally positively correlated with mothers' reports on the BUMP—R-Hospital.

Younger children in this study did not obtain higher behavioral distress or depression scores. Previous studies have suggested an inverse relation between age and emotional distress in pediatric populations using observational or parent-report measures (e.g., Jay et al., 1983, Saylor et al., 1987). However, the strength of this reported relation has been mild (cf. Rodriguez & Boggs, 1994; Saylor et al., 1987), suggesting that the relation between age and distress upon hospitalization does not appear strong. Alter-natively, increased distress in younger pediatric patients may apply to very young children (e.g., younger than 4), as has been reported anecdotally as well as in the literature (e.g., Jay et al., 1983). Consequently, assessment of behavioral distress in such young pediatric samples would likely preclude self-report data.

Several limitations to the study should be noted. First, conclusions from this study regarding correspondence with nurses are cautious given the small sample of 32 nurses eligible to complete the BUMP—R-Hospital. From the marginal relation found between mothers' and nurses' ratings and the strong internal consistency of the Nurse—BUMP, nurses appear confident about their ability to rate behavioral distress in a hospitalized child after as little as 8 hr of contact. Future work may clarify the reliability and validity of their reports using larger samples of health personnel (e.g., nurses, physicians). However, at this point, the results indicate that nurses cannot adequately substitute for mothers as informants. The two sources appear to provide differing information, possibly because nurses compare the individual child to other hospitalized children in their experience, whereas mothers compare their child to the child' s typical behavior.

Furthermore, with regard to findings on the CDI, only 33 children were old enough to complete the measure. Because of this reduced sample size, the statistical power to detect significant correlations between the child self-report measures and among the parent and nurse report measures was diminished. Moreover, the CDI is regarded as a measure of depressive symptoms rather than as a diagnostic tool (see Reynolds, 1994, for a review). Future studies should consider larger sample sizes using such instruments as structured diagnostic interviews.

An additional limitation involves the use of a new self-report pictorial measure of behavioral distress in the hospital, the Child—BUMP, piloted in this study based on the items from the BUMP—R. The measure appeared to function as designed, with children readily grasping the two-step process, particularly with repetition of items. However, the reported results regarding this assessment instrument should be interpreted cautiously at this point until further refinement and validation is obtained, to determine its suitability for preschool pediatric samples. For example, the absence of a relation between the CDI and the Child—BUMP and the stronger relation of the BUMP—R-Hospital with the CDI than with the Child—BUMP may reflect weaknesses in the new measure rather than evidence of the suitability of depression measures for hospital populations. Moreover, internal consistency of the Child—BUMP was only in the moderate range. To address these concerns, work is underway that examines the applicability of the Child—BUMP with another pediatric sample and a control group of healthy children, comparing parent report on the BUMP—R with the Child—BUMP and with an observational measure of distress. Overall, future research should pursue investigation of such pictorial measures because they can be administered to preschool children, an understudied age group because of the unique challenges of research with very young children.

With regard to sample characteristics, children involved in this study were not evaluated for psychiatric diagnoses. Both child and parent (including fathers) report of behavioral upset could be compared to clinician ratings of either emotional distress or diagnoses of depression, or both, to further determine the validity of the BUMP—R and Child—BUMP. Medically hospitalized pediatric patients could also be compared to a group of inpatient psychiatric patients in treatment for depressive disorders. Research of this nature may establish which scores on the BUMP—R would be considered clinically elevated levels of distress. To ascertain the specific effect of medical hospitalization, scores on the BUMP—R and Child—BUMP from hospitalized children should be compared to an outpatient pediatric control sample.

Additionally, given the relation between behavioral upset at home and in the hospital, children could be screened prior to hospital admission for existing psychiatric conditions (e.g., emotional and behavioral

difficulties) to identify which children may be most susceptible to experiencing an exacerbation of such difficulties upon hospitalization. To determine factors that lead to children desensitizing versus worsening in the hospital, further investigation of the BUMP—R should also evaluate the consistency of distress ratings over time.

IMPLICATIONS FOR PRACTICE
The pediatric-specific measures, all variants on the BUMP—R, define emotional distress as behavioral indicators of upset. The CDI and PIC—D present emotional distress in the context of depressive symptomatology in healthy children. Consequently, the findings accurately reflect that the BUMP—R measures assess emotional distress (similar to the CDI and PIC—D) but not depressive symptoms. Rather, the BUMP—R measures are intended to assist pediatric psychologists to identify when a child is experiencing considerable, maladaptive emotional distress in a pediatric environment. Hence, individual pediatric psychologists will need to decide on a case-by-case basis the nature of the information they are attempting to gather in a particular referral, bearing in mind the referral question, their criteria for the level of distress required to intervene with a child, and the potential benefits of selecting instruments that integrate the hospital context.

Given the ease of administration of the BUMP—R measures (e.g., as compared to the research observational measures), such pediatric-specific measures are appealing. Although further work is needed with the nurse-report and child-report versions, pediatric psychologists may find parent report on the BUMP—R useful in referrals regarding distress behavior in the hospital. As part of a larger assessment battery, pediatric psychologists may find that BUMP—R scores can identify those children demonstrating higher distress in the hospital than at home or those children obtaining high scores on both forms (greater than 1 *SD* above the mean). However, further work is required to establish clinical elevations and significant differences between the Hospital and Home forms.

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