Moters’ Responses to Children’s Pain

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Objectives: This study was aimed at identifying mothers’ responses to children’s pain, evaluating whether these could be organized into different types of responses, and developing a questionnaire to assess these responses.

Methods: Common responses to children’s pain were identified on the basis of a review of the literature and interviews with mothers of pediatric patients with pain. Categories reflecting these parenting behaviors were generated for a questionnaire on Adult Responses to Children’s Symptoms, which was administered to 145 mothers of pediatric patients aged between 8–18 years referred for medical evaluation of abdominal pain.

Results: Factor analysis using principal components extraction with oblique rotation yielded 3 factors. Factor 1, Protect, reflected caretaking behaviors that placed the child in a passive sick role. Factor 2, Minimize, reflected criticism of the child’s pain behavior. Factor 3, Encourage and Monitor, reflected encouragement of the child’s activity while monitoring the child’s symptoms. Subscales based on these correlated factors had good internal consistency.

Discussion: Results suggest that mothers’ responses to children’s pain behavior may be classified into 3 distinct categories. Additional research is needed to assess whether observational methodologies would yield a similar typology of parents’ responses to children’s pain. Psychometric properties of the Adult Responses to Children’s Symptoms should be examined in larger samples and in studies of the relation of the subscales to related constructs (eg, measures of parenting beliefs and behavior) and to children’s pain behavior.

Key Words: significant others, social learning, children, chronic pain, parents


Chronic pain literature emphasizes the importance of environmental factors, particularly the behavior of family members, in understanding individuals’ pain behavior.1,2 Solicitous behavior by spouses toward adult pain patients is consistently associated with greater patient distress and impairment.3–8 This finding has been interpreted within an operant behavioral framework as evidence that positive attention from spouses may reinforce patients’ pain behavior. Two additional dimensions of spousal behavior toward chronic pain patients, labeled “Distracting” and “Punishing,” have also been identified.9,10 Distracting behavior refers to efforts to engage patients in activities that focus their attention away from pain. Punishing behavior refers to criticism and negative responses to patients. This tripartite typology of significant others’ behavior – Solicitous, Distracting, and Punishing – has been useful in predicting the pain behavior of adult patients and in discriminating among patients with different pain coping profiles.11–13

Researchers on chronic pain in children and adolescents have also investigated the behavior of significant others, typically parents, toward their children. To date, this research has focused primarily on solicitous parent behavior, ie, giving children positive attention, privileges, and relief from responsibility when they are in pain. Whitehead pioneered the work in this area with a study in which women were asked to recall their mothers’ behavior toward them when they were ill as children.14 Women who recalled more solicitous behavior by their mothers during childhood illness reported more symptoms and disability as adults. In an extension of Whitehead’s work, we developed the Illness Behavior Encouragement Scales (IBES),15 a questionnaire that assesses the extent of parents’ solicitous behavior during their children’s episodes of abdominal pain and other symptoms. Using the child-report version of the IBES, we found that in comparison to healthy children, pediatric patients with recurrent abdominal pain perceived more frequent solicitous behavior by their parents when they were ill.16 Other research teams have used the IBES to assess parents’ responses to children’s pain and other symptoms, reporting that pediatric patients whose parents were more solicitous toward them missed more days of school,17 had higher levels of pain-related functional disability,18 and were slower to recover from surgery.19

The pediatric literature on parent behavior toward children with chronic or recurrent pain is limited in that it has emphasized one type of parent behavior – solicitous responding. Findings from research on spouses’ behavior toward adult patients with pain suggest that other types of parent response may also relate in meaningful ways to children’s pain behavior. The goal of this study was to identify common parent behaviors that occur in response to children’s pain, to evaluate whether these reflect relatively independent categories of parent behavior, and to develop a questionnaire to assess these parent behaviors.
MATERIALS AND METHODS

Subjects
Participants were the mothers of 145 consecutive new patients referred to a pediatric gastroenterology clinic for evaluation of abdominal pain. All patients had been evaluated by their primary care provider and had no organic diagnosis for their pain and no chronic illness or disability. The mean duration of abdominal pain was 19 months (SD = 29.99; range = 1 to 184). With respect to frequency of abdominal pain episodes, 2% of participating patients reportedly had pain once monthly, 38% had pain 1 to 3 times weekly, and 60% experienced pain daily. The mean age of the target children was 12 years (SD = 2.54; range = 8 to 18) and 56% were female.

The majority of participating families were white (95%) and the remainder were African American (3%) or from other ethnic backgrounds (2%). Maternal education ranged from completion of 7 to 9 years of schooling (1%) to completion of an advanced professional degree (9%). The majority of the mothers (73%) had graduated from high school and received at least some college-level or technical education. As reported by the mothers enrolled in the study, the range of education levels completed by the fathers of participating patients was very similar to that completed by mothers; 66% of fathers had graduated from high school and at least started college or technical education courses. Furthermore, at the time of their participation in the study, 86% of mothers and 96% of fathers were working at least 30 hours per week.

Measures

Adults' Responses to Children's Symptoms
The initial version of the Adult Responses to Children's Symptoms (ARCS) comprised 33 items describing behavior toward children experiencing pain. The items were derived from 3 sources: (a) the IBES,13 (b) the Significant Other Response Scales of the West Haven-Yale Multidimensional Pain Inventory (WHYM-PI),9 and (c) semistructured interviews in which mothers of pediatric abdominal pain patients between the ages of 8 and 18 years described how they responded to their child's most recent pain episode and, if appropriate, how they wished they had responded. Redundant items were deleted and all items were worded to be appropriate for parents or other adult caretakers in reference to children. Reading level was approximately third grade. The stem for all items was derived from the abdominal pain version.1 The stem of the IBES may be modified to refer to different types of symptoms of the IBES: “When your child has a stomachache or abdominal pain, how often do you . . .?” Respondents used a 5-point rating scale to indicate how often they responded to the child in the manner described by each item. Response options ranged from “never” (coded “0”) to “always” (coded “4”). The factor structure of the ARCS was the focus of this investigation and is described in the subsequent text.

Procedure
Mothers of consecutive new patients referred to the pediatric gastroenterology clinic for evaluation of abdominal pain were contacted by telephone during the week before their children's clinic appointments to describe the purpose of the study, screen for eligibility, and invite their participation. Eligibility required that the children have abdominal pain of at least 1 month's duration and not have a chronic illness or cognitive impairment requiring special school placement. Of the 215 families contacted, 17 (8%) declined participation due to time constraints, and 35 (16%) did not meet eligibility criteria. Another 18 (8%) families were omitted from analyses because of incomplete data. Informed consent procedures were conducted at the clinic, and mothers completed questionnaires in the waiting room before their children's medical evaluation.

RESULTS

Results of Factor Analysis
Because we expected a priori that dimensions of parenting responses to children's pain symptoms would not be independent or orthogonal, exploratory factor analyses were conducted using principal components extraction with oblique rotation. An initial analysis yielded 9 factors with eigen values greater than 1.00. However, the scree test suggested a 3-factor solution, which was readily interpretable. In the 3-factor solution, 29 items had a factor loading of 0.30 or greater on only 1 factor. Four items cross-loaded. The amount of variance accounted for by the factors were 22, 9 and 8%, respectively. Table 1 presents results of the factor analysis.

Items that loaded on factor 1 were characterized by protective caretaking behavior. Specific behaviors included limiting the child's activities (eg, keeping the child inside and letting the child sleep later than usual), relieving the child from responsibilities (eg, homework, chores), and granting special privileges (eg, special treats, sleeping in a “special” place). Factor 1 also was characterized by changes in family roles in that it included the mother staying home from work, taking over the child's chores, and instructing other family members to be especially nice to the child. We labeled this factor, “Protect.”

Factor 2 included behaviors that criticize the child's pain behavior, implying that the child is exaggerating his or her discomfort. In contrast to factor 1, factor 2 was characterized by holding the child accountable for his or her regular responsibilities and not making any changes in the family's routines. We labeled this factor, “Minimize.”

Parent behaviors that loaded on factor 3 included reassuring the child, encouraging the child to engage in activities, and attempting to distract the child from pain. In contrast to factor 1, which encouraged child passivity, factor 3 encouraged child activity. In addition, this factor included several items that referred to monitoring the child's symptoms (eg, asking questions and checking on
the child). Thus, we labeled this factor, “Encourage and Monitor.”

**Creation and Internal Consistencies of ARCS Scales**

To create scale scores representing Protect, Minimize, and Encourage/Monitor we omitted the 4 items that cross-loaded on more than 1 factor, resulting in scales with 15, 6, and 8 items, respectively. We averaged the ratings given to items, uniquely loading on each of the 3 factors. Distribution characteristics of the 3 scales are presented in Table 2. Internal consistency was adequate for all 3 scales; alpha reliabilities were 0.87, 0.67, and 0.79, for Protect, Minimize, and Encourage/Monitor, respectively. The Encourage/Monitor scale had the highest mean score, suggesting that it reflected common behavior by mothers when their children were experiencing abdominal pain. Protective and minimizing responses were relatively uncommon in this sample, – scale means were approximately “1” (on a 0 to 4 rating scale) on the Protect and Minimize scales.

**Correlation Among ARCS Scales**

The Pearson correlation coefficients between scales of the ARCS suggest that they are relatively independent. The highest correlation was between the Protect scale and

<table>
<thead>
<tr>
<th>Number of Items</th>
<th>Protect</th>
<th>Minimize</th>
<th>Encourage and monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td>1.37 (0.63)</td>
<td>0.98 (0.58)</td>
<td>2.89 (0.61)</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>0.64</td>
<td>-0.15</td>
<td>0.51</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.79</td>
<td>0.52</td>
<td>-0.60</td>
</tr>
<tr>
<td>Alpha</td>
<td>0.86</td>
<td>0.67</td>
<td>0.79</td>
</tr>
</tbody>
</table>

Cross-loading items deleted from scales.
the Encourage/Monitor scale \( (r = 0.42, P < 0.001) \). As might be expected, the Minimize scale had a significant negative correlation with the Protect scale \( (r = -0.22, P < 0.01) \) and was not significantly correlated with the Encourage/Monitor scale \( (r = -0.13, \text{n.s.}) \). Furthermore, no scale significantly correlated with child age, and there were no significant differences by gender or significant interactions between gender and age on any of the ARCS scales.

**DISCUSSION**

Results of this study support the multidimensional nature of mothers’ responses to children’s pain. Factor analysis identified 3 types of parenting behavior that were similar, but not identical, to those identified in the literature on significant others’ responses to adult pain patients. Differences between our typology of parenting behavior and typologies of significant others’ behavior toward adult patients are consistent with differences between parent–child and spousal relationships.

The first factor of the ARCS, labeled “Protect,” was characterized by caretaking behavior that placed the child in the sick role, ie, the special status conferred on patients in recognition of their vulnerability.\(^{20,21}\) Parenting behaviors that loaded on factor 1 included limiting the child’s activities, relieving the child from responsibilities, and granting special privileges. This factor was also characterized by alterations in family roles, including staying home from work, taking over the child’s chores, and instructing other family members to be especially nice to the child. Although some behaviors on this factor are similar to those on the solicitous scale of the WHYMPI,\(^9\) we labeled the factor “Protect” to capture the protective nature of these behaviors and to avoid the implication that these caregiver behaviors are excessive in all circumstances.

Factor 2, labeled “Minimize,” was characterized by discounting the child’s discomfort and criticizing the child’s pain behavior as excessive. In contrast to factor 1, the parenting behaviors on factor 2 held the child accountable for regular responsibilities and avoided changes in the family’s routines. Not surprisingly, factor 2 had a significant negative correlation with factor 1. Factor 2 of the ARCS is similar to the WHYMPI Punishing scale for spouse behavior\(^9\) in that it entails communication of negative affect toward the patient. However, unlike the Punishing scale of the WHYMPI, factor 2 of the ARCS also includes items instructing the patient on how to behave (eg, “be stronger,” “try to go to school”) and in this sense is consistent with the role of a parent.

Parenting behaviors that loaded on factor 3, labeled “Encourage and Monitor,” included reassuring the child and encouraging the child to engage in activities while continuing to monitor the child’s symptoms. Whereas behaviors associated with factor 1 place the child in a passive sick role, behaviors associated with factor 3 encourage child activity. Factor 3 is similar to the distracting scale of the WHYMPI\(^9\) except that factor 3 of the ARCS includes monitoring the patient’s symptoms, an activity consistent with the recommendation often made by pediatricians in cases of episodic, unexplained pain. Scores were higher on this factor than on the others, suggesting that these behaviors are more typical of these mothers than the protective behaviors that have most often been assessed in the literature.

Further research is needed to replicate and validate this typology of parent behavior. For example, it is important to know whether observational methodologies would yield a typology of parent behavior similar to that based on the self-report measure used in this study. Regarding further development of the ARCS, the factor structure should be investigated in larger samples of parents, and results should be replicated with confirmatory factor analysis. The IBES\(^{15}\) has been used in studying a variety of pediatric conditions,\(^17–19\) suggesting the possibility that the ARCS may also be relevant for parents of children with symptoms other than abdominal pain. Interestingly, a measure of parental responses to pediatric headache\(^{22}\) yielded similar subscales to those identified in this study. Finally, the validity of the ARCS remains to be established and will require studies of the relation of the ARCS subscales to related constructs (eg, parenting beliefs and behavior) and its utility in predicting children’s pain behavior.

Results of this study must be interpreted in the context of several limitations. Research participants were drawn from a tertiary care center and were likely to be more concerned about their children’s pain than mothers of children whose symptoms do not precipitate a clinic visit. Moreover, mothers completed research protocols in the clinic setting where social desirability demands and anxiety about their children’s upcoming medical evaluations may have influenced their responses. It should also be noted that ARCS items and the resulting typology were based on mothers’ reports of their own behavior. Fathers may behave in ways not captured by the items and children may perceive their parents’ behavior differently than parents themselves. Finally, the data were analyzed with exploratory factor analysis and results should be replicated with confirmatory factor analysis using larger samples.

Nonetheless, these data support the multidimensional nature of parents’ responses to children’s pain. Previous research has focused primarily on solicitous behavior in an effort to test the hypothesis that parental reinforcement of children’s pain behavior plays a role in the maintenance of chronic pain. By broadening our focus to include a wider range of parent behavior, we have the opportunity to identify parenting behavior that is more normative than solicitous behavior. Moreover, examination of a broader range of parent behavior may lead to identification of behaviors associated with positive and negative outcomes for children with pain. This information may have important implications for the design of interventions that...
teach parents how best to help their children cope with pain.

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REFERENCES


