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Catastrophizing and Parental Response to Child Symptom Complaints

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Abstract

This study investigated whether catastrophic thinking about pain by children with functional abdominal pain or by their parents is associated with health outcomes in the child. Subjects were 132 parent-child dyads. Child catastrophizing predicted child depression, anxiety and functional disability. Parents' catastrophizing cognitions about their own pain predicted self-reported protective responses to their children's abdominal pain (responding in ways that encourage illness behavior). Protectiveness, in turn, predicted child functional disability. All findings held despite controlling for child age, gender, and symptom severity. These results suggest that catastrophic cognitions play an important role in how children and parents cope and respond to functional abdominal pain, and may have implications for assessment and treatment in the clinical setting.

Keywords

Catastrophizing; Abdominal pain; Children; Illness behavior; Functional disability

Chronic pain is common among children and adolescents. In an epidemiologic investigation of pain among children under the age of 18, Perquin and colleagues reported that 54% of Dutch children experienced pain in the past 3 months, and 25% experienced chronic pain, defined as continuous or recurrent pain exceeding 3 months in duration (Perquin et al., 2000). The most common types of pain were headache, abdominal pain, and limb pain (Perquin et al.).

Cognitions regarding pain have emerged as important predictors of pain-related outcomes, in particular, catastrophizing, defined as "an exaggerated negative 'mental set' brought to bear during actual or anticipated pain experience" (Sullivan et al., 2001, p. 53). For example, someone prone to catastrophizing might worry that his or her headache signifies a brain tumor. Research in both children and adults suggests that catastrophic thinking amplifies

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pain experience (Crombez et al., 2003; Sullivan, Stanish, Waite, Sullivan, & Tripp, 1998). Catastrophizing among adults has been associated with greater pain intensity and severity, increased disability (Edwards, Bingham, Bathon, & Haythornthwaite, 2006; Severeijns, Vlaeyen, van den Hout, & Weber, 2001; Sullivan et al., 1998), increased psychological distress (Edwards et al., 2006; Severeijns et al., 2001), increased pain behavior (Thibault, Loisel, Durand, Catchlove, & Sullivan, 2008), and increased health care utilization (Turner et al., 2005). Similarly, catastrophizing among children has been associated with increased pain intensity (Crombez et al.; Lu, Tsao, Myers, Kim, & Zeltzer, 2007), decreased pain tolerance (Piira, Taplin, Goodenough, & von Baeyer, 2002), increased distress (Eccleston, Crombez, Scotford, Clinch, & Connell, 2004), and increased functional disability (Crombez et al.; Vervoort, Goubert, Eccleston, Bijttebier, & Crombez, 2006). Furthermore, many of these findings remained significant even when controlling for demographic characteristics and negative affectivity (Crombez et al.; Vervoort et al.).

The aforementioned findings concern associations between an individual's catastrophizing and his or her own health outcomes. However, catastrophizing also has the potential to affect how one interprets and reacts to others' pain. For example, Sullivan and colleagues (Sullivan, Martel, Tripp, Savard, & Crombez, 2006) showed videos of participants undergoing a pain pressor procedure to undergraduates (termed viewers). Viewers were asked to make judgments about the level of pain intensity experienced by the participants in the videos. Viewers high in catastrophizing judged the pain-pressor participants as experiencing more intense pain (Sullivan et al.). In validating a measure of parental pain catastrophizing, Goubert and colleagues found that parents' catastrophic thinking about their children's pain predicted both parent and child outcomes, specifically, parental depression, parental anxiety, child disability, and school attendance (Goubert, Eccleston, Vervoort, Jordan, & Crombez, 2006).

These studies highlight key associations between catastrophizing on the part of one person and deleterious outcomes on the part of another. However, it is important to note that catastrophizing does not directly influence others. Instead, it exerts its influence on others through behavior. Catastrophizing may lead to increased pain or distress behavior on the part of the catastrophizer, which acts as a signal to others (Sullivan et al., 2001). For example, Vervoort and colleagues found that parents of high catastrophizing children perceived their children as being more communicative about their pain, both verbally and nonverbally (Vervoort et al., 2008). Such communications, in turn, may be responded to by parents in ways that are inappropriately protective or encouraging of illness behavior. Catastrophizing on the part of an observer may "sensitize" that person to the presence of pain or distress behaviors in others, potentially leading them to interpret ambiguous signals as signs of pain or distress, or influence them to respond more solicitously to pain behaviors that they observe.

In the present study, we examined associations between (a) catastrophic thinking on the part of children with functional abdominal pain and their own health outcomes, (b) parents' catastrophic thinking about their own abdominal pain and responses to their children's abdominal pain, and (c) parents' responses to their children's abdominal pain and disability. In line with previous research, we expected child catastrophizing to predict greater child depression, anxiety, and functional disability (Crombez et al., 2003; Eccleston et al., 2004; Vervoort et al., 2006). We also expected parents' catastrophizing about their own pain to predict solicitous responses to their children's pain. This builds upon the undergraduate viewer study cited previously (Sullivan et al., 2006). Catastrophizing about one's own pain may reflect a belief that pain is a signal of harm or damage, therefore increasing concerns about the possible threat that another's pain signals to his or her health. Parents high in catastrophic thinking about their own abdominal pain, therefore, were expected to respond

to their children's pain complaints with increased protectiveness (e.g., encouraging the child to rest or abstain from normal activities). Protectiveness, in turn, was expected to predict child functional disability. The latter prediction is based upon research demonstrating links between parental encouragement of illness behavior and deleterious child outcomes (Chambers, Craig, & Bennett, 2002; Claar, Simons, & Logan, 2008; Levy et al., 2004; Peterson & Palermo, 2004; Walker, Claar, & Garber, 2002). For example, Levy and colleagues found an association between parental solicitousness in response to child abdominal pain complaints and increased school absences.

Finally, we predicted that the relationship between catastrophizing and outcomes would be stronger for children reporting greater symptom severity and for female children. The communal coping model holds that catastrophizing about pain serves a social, communicative function, designed to solicit attention and care from others (Sullivan et al., 2001). This phenomenon is likely to be increased in the presence of more symptoms or greater severity, ostensibly requiring more immediate aid. In addition, females are more likely to engage in communicative pain displays as compared to males (Sullivan et al.), in that they are more emotionally expressive (Hall, 1979) and more likely to respond to stressors in a social, relational manner (Taylor et al., 2000). Research also indicates that females experience more pain than males (Dao and LeResche, 2000; Perquin et al., 2000), evidence higher rates of abdominal pain than males (Perquin et al.), and catastrophize more than males (Keogh & Eccleston, 2006).

Method

Participants

One-hundred and thirty-two parent-child dyads recruited from a pediatric gastroenterology (GI) clinic and the community served as participants. Inclusion criteria were: child age 7–17, at least three episodes of abdominal pain over a 3-month period interfering with the child's activities, and a medical diagnosis of functional abdominal pain by a gastroenterologist. Exclusion criteria were: positive physical or lab findings that could explain the child's abdominal pain, chronic disease (e.g., Inflammatory Bowel Disease, pancreatitis, diabetes, epilepsy), developmental disability requiring either full-time special education or impairing ability to respond, and inability to comprehend English.

Procedures

Participants were enrolled in a randomized controlled trial designed to test two psycho-educational treatments for functional abdominal pain. The present manuscript focused solely on baseline data, collapsed across treatment condition. The baseline assessment was conducted prior to subjects learning their assignment to treatment condition or any intervention. Assessors were blind to treatment condition as well.

Parent-report measures

Parents completed the following pencil-and-paper assessments by mail.

Children's Somatization Inventory—This is a measure of children's nonspecific somatic symptoms such as headaches, back pain, and sore muscles (Garber, Walker, & Zeman, 1991; Walker, Garber, & Greene, 1991). Each of 35 items is rated with respect to severity during the past two weeks, using a 5-point scale: *no pain* (0), *a little pain* (1), *some pain* (2), *a lot of pain* (3), and *a whole lot of pain* (4). Walker and colleagues reported psychometric properties as follows: 3-month test-retest reliabilities of .50 for well patients and .66 for patients with recurrent abdominal pain (Walker et al.), and an internal consistency of .90 (Walker, Garber, & Greene, 1994). For this report, only the GI symptoms

subscale was used, comprised of 7 items: nausea or upset stomach; constipation; loose bowel movements or diarrhea; stomachaches; vomiting; feeling bloated or gassy; and food making you sick. Internal consistency (Cronbach coefficient alpha) for the present sample was .75. Mean scores were reported, with higher values indicative of greater GI symptom severity (theoretical range = 0–4).

Adults' Responses to Children's Symptoms **(ARCS; Van Slyke & Walker, 2006; Walker, Levy, & Whitehead, 2006)—**This scale, an extension of the Illness Behavior Encouragement Scale (Walker & Zeman, 1992), assesses parents' responses to their children's abdominal pain symptoms. It contains three factor-analytically derived subscales: Protectiveness (15 items), Encouragement/monitoring (8 items), and Minimization (6 items). Protectiveness measures parental encouragement of illness behavior and putting the child in a sick role: limiting the child's activities, relieving the child of responsibilities, or rewarding the child with special privileges. It also assesses changes in family roles and dynamics, such as the mother staying home from work or requesting that other family members act differently around the child. Exemplar items include, "When your child has a stomachache or abdominal pain, how often do you bring your child special treats or little gifts?", "…let your child stay home from school?", or "…tell others in the family not to bother your child or to be especially nice?" The Encouragement/monitoring subscale assesses parental responses that serve to: monitor the child, reassure the child, distract the child from pain, and encourage the child to engage in activities. Exemplar items include, "When your child has a stomachache or abdominal pain, how often do you try to involve your child in some activity?" or "…talk to your child about something else to try to take her mind off the pain?" Finally, the Minimization subscale assesses parental responses that criticize illness behavior. Exemplar items include, "When your child has a stomachache or abdominal pain, how often do you insist that your child go to school?" or "…tell your child not to make such a fuss about it?" Ratings for all items are made on a 0–4 (*never* to *always*) scale.

The ARCS developers reported internal consistency (Cronbach coefficient alpha) values of .86 for Protectiveness, .79 for Encouragement/monitoring, and .67 for Minimization (Van Slyke & Walker, 2006). (In the present sample, Cronbach coefficient alpha values were .82 for Protectiveness, .84 for Encouragement/monitoring, and .56 for Minimization.) Validity was established for just the Protectiveness subscale. Mothers scoring high versus low on this subscale subsequently reported solicitous responses to their children's symptoms on a diary version of the ARCS; theyalso exhibited higher health care utilization for the child's GI symptoms and greater health care costs (Walker, Levy et al., 2006). Given the low internal consistency for Minimization, coupled with the lack of established validity for Minimization and Encouragement/monitoring, we chose to focus solely on Protectiveness. Mean scores were reported, with higher values indicative of greater protectiveness (theoretical range = 0–4).

Child-report measures

Children completed assessments via telephone. A nurse from the Pediatric Clinical Research Center at Children's Hospital and Regional Medical Center administered the phone assessment. Appointments were scheduled in advance, and answer keys were mailed to children prior to the calls. Answer keys guided children through the questions and response options, aiding administration.

Child Depression Inventory **(CDI; Kovacs, 2003)—**The CDI assesses children's depressive symptoms. In this measure, 27 items are rated on a 3-point (0–2) scale; summary scores have a theoretical range of 0–54. The developers reported internal consistencies

(Cronbach coefficient alpha) ranging from .71 to .87 across samples, and test-retest reliabilities ranging from .41 for a 1-year interval to .87 for a 1-week interval (Kovacs). They also demonstrated validity through appropriate relationships with constructs such as anxiety and self-esteem, and sensitivity to change, e.g., from pre- to post-treatment (Kovacs).

Multidimensional Anxiety Scale for Children **(MASC; March, 1997)—**The MASC is a 39-item measure of anxiety symptoms. It contains four basic subscales (Physical symptoms, Harm avoidance, Social anxiety, and Separation/panic), a total scale, and an Anxiety Disorders Index. We focused here on the latter, comprised of ten items that discriminate children with an anxiety disorder from those without an anxiety disorder. Items such as "I feel tense or uptight" and "I keep my eyes open for danger" are rated on a 0–3 (*never true about me* to *often true about me*) scale. Summary scores have a theoretical range of 0–30. March reported reliability data as follows: internal consistency values ranging from .60–.64 for various age and gender subgroups and a 3-month test-retest reliability of .70.

Measures completed by both parents and children

Pain Response Inventory **(PRI; Walker, Smith, Garber, & Van Slyke, 1997)—** The PRI is a 60-item questionnaire designed to assess responses to pain. It includes 13 subscales representing specific coping strategies such as problem solving, seeking social support, catastrophizing, and stoicism. We focused here on the 5-item Catastrophizing subscale. Items such as, "When you have a stomachache, how often do you … think to yourself that something might be really wrong with you?" or "…think to yourself that you might be really sick?" are rated on a 0–4 (*never* to *always*) scale. With respect to psychometric properties of the Catastrophizing subscale, the developers reported internal consistency (Cronbach coefficient alpha) values of .77 for a sample of school children and .84 for a sample of children with abdominal pain, and a 6-month test-retest reliability of .46 for a sample of children with abdominal pain (Walker et al.). Validity was demonstrated by a positive association between catastrophizing and continued pain, and greater catastrophizing among nonrecovered (continued pain) versus recovered or well children (Walker et al.). Internal consistencies (Cronbach coefficient alpha) for the present sample were .83 for children and .75 for parents. Both children and parents rated the items with respect to themselves, i.e., their own coping responses to pain.

Functional Disability Inventory **(FDI; Walker & Greene, 1991)—**The FDI is a 15-item measure of disability developed specifically for children and adolescents. Respondents are asked to rate the extent to which activities such as "walking to the bathroom" or "playing sports" have been difficult or posed a physical challenge during the past week. Ratings are made on a 0–4 (*no trouble* to *impossible*) scale. Children rate the items with respect to themselves, and parents rate the items with respect to their children. The developers reported good psychometrics: coefficient alphas ranging from .86–.91; 2-week test-retest reliabilities ranging from .64 (parent-report) to .74 (child-report); and appropriate correlations with somatic symptoms and disability (Claar & Walker, 2006). Internal consistencies (Cronbach coefficient alpha) for the present sample were .88 for children and .93 for parents.

Results

Statistical analyses

Statistical analyses were conducted using Statistical Package for the Social Sciences 13.0. Descriptive statistics afforded characterization of the sample with respect to demographics, dependent variables and predictors. Hierarchical linear regression was used to identify

predictors of child-reported functional disability (FDI), depression (CDI), and anxiety (MASC). For each dependent variable, demographic characteristics were entered in the first block (child age and gender). Parent-reported child GI symptoms (ratings of severity) were entered in the second block, and child-reported catastrophizing was entered in the third block. Two interaction terms were entered in the final block: Gender X Catastrophizing and Severity X Catastrophizing.

Similar models were tested for parent-reported protectiveness and parent-reported child disability. For protectiveness, blocks were as follows: (1) child age and gender, (2) parent-reported child severity, and (3) parent-reported catastrophizing (parent ratings of self). For child functional disability, blocks were as follows: (1) child age and gender, (2) parent-reported child severity, and (3) parental protectiveness.

Sample characteristics

Table 1 lists demographic characteristics of the sample. Most parents were female and Caucasian. Three quarters were college-educated and three quarters were married or partnered. Children were (on average) 11 years old, 67% female, and predominantly Caucasian.

Table 2 displays descriptive statistics for study outcomes and predictors. As shown in the table, means for several of the measures fell below the theoretical midpoint on the scale (second column), and very few cases fell two standard deviations above the sample mean (fourth or rightmost column). Comparison to general population norms was possible for two of the measures, the CDI and the MASC. Mean depression and anxiety levels for the present sample were on par with normative values reported by Kovacs (2003) for the CDI and March (1997) for the MASC.

Predictors of child-reported outcomes

Table 3 displays results of the hierarchical linear regressions for child-reported disability, depression and anxiety. As shown in the top portion of Table 3 (with disability as the criterion), child age and gender were entered in Block 1 and did not account for a significant amount of variance. Child GI symptom severity was entered in block 2 and explained 3% of the variance in disability above and beyond age and gender; children with more severe symptoms reported greater disability. Catastrophizing, entered in Block 3, accounted for an additional 12% of variance. Children with higher levels of catastrophic thinking reported greater disability. The Gender X Catastrophizing and Severity X Catastrophizing interaction terms (block 4) did not contribute significant predictive variance. Of note, this analysis was repeated using parent-rated child disability and yielded similar results (*p* values for change in $F = .18$ for block 1, .00 for block 2 [15% of variance explained], .05 for block 3 [3% of variance explained], and .52 for block 4).

Results for depression were similar (see middle portion of Table 3). Child GI symptom severity, entered in block 2, contributed significantly to the prediction of depression (4%), such that children with more severe symptoms reported greater depressive symptomatology. Catastrophizing (block 3) resulted in an additional 22% of variance explained. Children with higher levels of catastrophic thinking reported more depressive symptoms. The interaction terms entered in block 4 did not contribute significant variance to the prediction of depression.

Turning to the lower portion of Table 3, variance in MASC anxiety was not explained by child age and gender, or by symptom severity. Child catastrophizing contributed significant variance to the prediction of anxiety (8%), even after controlling for demographics and

severity. Children who scored higher in catastrophizing reported greater anxiety. The interaction terms entered in block 4 did not explain further variance in this outcome.

Predictors of parental response and parent-reported child disability

Table 4 displays results of the hierarchical linear regressions for parent-reported protectiveness and child disability. As shown in the upper portion of Table 4, neither child age, gender, nor symptom severity contributed significantly to the protectiveness shown by the parent. However, parental catastrophizing resulted in additional explained variance in protectiveness (8%). Parents who endorsed higher levels of catastrophic thinking regarding their own stomachaches reported greater protectiveness of their children when the children complained of stomachaches. Severity X Catastrophizing, entered in block 4, did not explain further variance in this outcome.

As shown in the bottom portion of Table 4, variance in parent-reported child functional disability was not explained by child age or gender. Child GI symptom severity contributed significant variance to the prediction of disability in block 2 (21%). Children with more severe symptoms were perceived by their parents as more disabled. Parental protectiveness was entered in block 3 and explained an additional 4% of variance in disability, which was significant. Parents who exhibited greater protectiveness towards their children saw them as more disabled even when controlling for severity of symptoms.

Discussion

This study demonstrated that catastrophic thinking among children with chronic, non-organic abdominal pain predicted child functional disability, depression, and anxiety, above and beyond the effects of child age, gender, and severity of GI symptoms. This is consistent with our hypothesis and in line with past research (e.g., Crombez et al., 2003). Catastrophizing clearly has intrapersonal effects, in that it adversely affects the catastrophizer's emotional state and functioning. This phenomenon can be interpreted in light of theory on schemas. A schema is an organized body of knowledge about a particular domain, and serves as a framework for information processing: attention, encoding and interpretation (Neisser, 1976). Individuals who catastrophize may have pain schemas that contain highly negative information about the experience of pain and their ability (or lack thereof) to cope with such pain; once activated, these schemas are likely to adversely influence both cognitive and affective functioning (Sullivan et al., 2001). Similarly, catastrophizing affects one's attentional focus. In particular, rumination has been found to be a key component of catastrophizing and predictive of disability (Sullivan, Sullivan, & Adams, 2002).

Just as catastrophizing affects information processing on the part of the person experiencing pain, catastrophizing on the part of an observer may affect the observer's information processing of pain-related stimuli, in keeping with the schema-activation notion. Catastrophizing on the part of an observer may sensitize the observer to the presence of pain or distress in others, leading them to interpret ambiguous signals as signs of pain or distress, or influence them to respond more solicitously to pain behaviors that they observe. With respect to the latter, research from the field of social psychology indicates that schemas influence not just cognitive processing but also behavior (Bargh, Chen, & Burrows, 1996; Kendzierski, 1990). Parents who perceive their own abdominal pain as signaling a potentially serious or threatening problem may perceive their children's complaints of abdominal pain (or even marginal signs of distress) as likewise signaling serious illness, and consequently respond to such complaints with protectiveness and solicitousness, such as relieving the child of typical day-to-day responsibilities. Indeed, we found that parents who

catastrophized about their own abdominal pain were more likely to behave protectively towards their children when their children reported a stomachache.

We also found that parental protectiveness predicted child functional disability, even when controlling for symptom severity. This is consistent with cognitive-behavioral formulations of chronic pain and the possibility that pain behaviors (facial, linguistic, or paralinguistic expressions of pain) can be influenced by the responses of significant others in the environment (Fordyce, 1976). Responses such as discouraging activity, expressing concern, and providing comfort may serve to inadvertently reinforce and maintain illness behaviors. A series of studies from the adult pain literature illustrates this point. Romano et al. (1991) observed interactions between chronic pain patients and their spouses, and healthy controls and their spouses; the chronic pain patients exhibited more pain behaviors as compared to the healthy controls, and their spouses exhibited more solicitous behaviors as compared to the control spouses. In addition, a sequential interaction pattern was documented, such that spouse solicitous behaviors preceded and followed patient pain behaviors in the chronic pain dyads, more so than the healthy control dyads (Romano et al., 1992). Furthermore, behaviorally-observed spouse solicitous responses predicted patient disability (Romano et al., 1995). Similar methodological approaches are warranted to fully understand how parents respond to children's abdominal pain complaints and resultant effects on outcomes such as disability and absenteeism.

In the present study, child gender did not predict child outcomes, nor did it interact with catastrophizing. Similarly, symptom severity did not interact with catastrophizing to produce increasingly negative outcomes. Perhaps in keeping with the encoding framework discussed previously, in the presence of catastrophizing even mild symptoms might be cause for concern and result in dysfunction. The gender findings, or lack thereof, are harder to reconcile, given established gender differences in pain, emotional expression, and catastrophizing (e.g., Perquin et al., 2000). However, much of the research on gender differences has been conducted on adults, and findings may apply only to adolescents, not children (Keogh & Eccleston, 2006). Our sample clearly included both pre- and post-pubertal children (mean age = 11).

Limitations

In this study, all constructs were measured concurrently and via self-report. Future research efforts in this area would benefit from the inclusion of behavioral indices, in particular, observer-rated parental responses, perhaps using an experimental paradigm (e.g., Walker, Williams et al., 2006). Future research would also benefit from more frequent assessments and extended follow-ups, to examine the long-term consequences of catastrophizing.

Confidence in our findings is bolstered by the inclusion of both child- and parent-reported outcome data. For example, child catastrophizing predicted both child-rated disability and parent-rated disability. The relationship between catastrophizing and disability, therefore, is not solely a function of common method variance or response set.

Implications for practice

This study highlights the importance of assessing cognitions about pain in both children with chronic pain and their parents. Catastrophizing has been shown to be a potent predictor of pain-related outcomes and may thus form an important target for cognitive and behavioral interventions aimed at improving coping and adjustment for children, and helping parents respond more adaptively to illness behavior. Clinicians should urge parents to reinforce wellness as opposed to illness behavior. Unless medically inappropriate or harmful, children should be encouraged to maintain normal responsibilities despite pain. Further research is

needed to test the utility of interventions aimed at changing catastrophic thought patterns in children with functional abdominal pain and their parents.

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Table 1

Demographic and Clinical Characteristics of the Sample

Parent characteristics	
Age, *M* (*SD*)	43.8 (6.0)
Gender, *n (%)*	
Male	13 (9.8)
Female	119 (90.2)
Race, *n (%)*	
Caucasian	123 (93.2)
African American	4 (3.0)
Native American	1 (0.8)
Other	1 (0.8)
Unknown	3 (2.3)
Educational status, *n (%)*	
High school degree	10 (7.6)
Some college or trade school	41 (31.1)
Four-year college degree	49 (37.1)
Graduate school	31 (23.5)
Unknown	1 (0.8)
Marital status, *n* (%)	
Married or cohabiting	99 (75.0)
Child characteristics	
Age, *M* (*SD*)	11.36 (2.50)
Gender, *n (%)*	
Male	43 (32.6)
Female	89 (67.4)
Race, *n (%)*	
Caucasian	117 (88.6)
African American	3 (2.3)
Asian	2 (1.5)
More than one race	3 (2.3)
Other	4 (3.0)
Unknown	3 (2.3)

Table 2

Descriptive Statistics for Outcomes and Predictors

Measure	*M (SD)*	Range	% ≥ 2 *SD* above *M*
Child-report of self			
Child catastrophizing (PRI)	1.54 (0.88)	0.00–4.00	3.8
Child functional disability (FDI)	0.75 (0.59)	0.00–2.87	5.3
Child depression (CDI)	9.29 (6.58)	0.00–32.00	4.5
Child anxiety (MASC)	13.13 (4.30)	2.00–26.00	1.5
Parent-report of child			
Child functional disability (FDI)	0.88 (0.75)	0.00–3.53	3.8
Child GI symptom severity	1.20 (0.72)	0.00–4.00	3.0
Parent-report of self			
Parental catastrophizing (PRI)	0.89 (0.64)	0.00–3.00	3.0
Parental protectiveness (ARCS)	1.22 (0.53)	0.00–2.67	3.0

Note. PRI = Pain Response Inventory; FDI = Functional Disability Inventory; CDI = Child Depression Inventory; MASC = Multidimensional Anxiety Scale for Children; GI = gastrointestinal; ARCS = Adults' Responses to Children's Symptoms.

Table 3

Summary of Hierarchical Regression Analyses Examining Predictors of Child-reported Outcomes

Criterion	Block	Predictor	β	R^2	ΔR^2	ΔF
Child disability	1	Child age	.04	.02	.02	00.92
	1	Child gender (0 male, 1 female)	−.12			
	2	Child severity (parent-report)	.18*	.05	.03	04.13*
	3	Child catastrophizing (child-report)	.36**	.16	.12	17.02**
	4	Gender X Catastrophizing	.25	.17	.01	00.76
	4	Severity X Catastrophizing	.21			
Child depression	1	Child age	.06	.02	.02	00.91
	1	Child gender (0 male, 1 female)	.10			
	2	Child severity (parent-report)	.20*	.05	.04	04.89*
	3	Child catastrophizing (child-report)	.49**	.27	.22	36.38**
	4	Gender X Catastrophizing	.30	.29	.02	01.44
	4	Severity x Catastrophizing	.29			
Child anxiety	1	Child age	−.08	.01	.01	00.76
	1	Child gender (0 male, 1 female)	.08			
	2	Child severity (parent-report)	−.06	.02	.00	00.42
	3	Child catastrophizing (child-report)	.30**	.10	.08	11.32**
	4	Gender X Catastrophizing	.11	.10	.00	00.24
	4	Severity X Catastrophizing	.15			

Note.

* $p < .05$.

** $p < .01$.

Table 4

Summary of Hierarchical Regression Analyses Examining Predictors of Parent-reported Outcomes

Criterion	Block	Predictor	*β*	R^2	ΔR^2	ΔF
Protectiveness	1	Child age	.16	.03	.03	01.67
	1	Child gender (0 male, 1 female)	−.03			
	2	Child severity (parent-report)	.08	.03	.01	00.85
	3	Parental catastrophizing	.28**	.11	.08	10.58**
	4	Severity X Catastrophizing	−.17	.12	.01	00.63
Child disability	1	Child age	.15	.02	.02	01.53
	1	Child gender (0 male, 1 female)	−.01			
	2	Child severity (parent-report)	.47**	.23	.21	33.18**
	3	Parental protectiveness	.19*	.27	.04	06.10*

Note.

* $p < .05$.

** $p < .01$.