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Pediatric Pain Beliefs Questionnaire: Psychometric Properties of the Short Form

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Abstract

Cognitive appraisals inform and shape individuals' pain experiences. As researchers examine mechanisms of cognitive behavioral interventions for chronic pain, psychometrically sound measures based in cognitive theory are needed to directly assess pain beliefs. The Pain Beliefs Questionnaire (PBQ), a 32 item self-report measure informed by coping and appraisal theory, was designed to assess children's pain threat appraisals, problem-focused pain coping efficacy, and emotion-focused pain coping efficacy. The present study aimed to 1) create a short form of the PBQ and 2) evaluate the psychometric properties of the reduced measure in a large database of pediatric patients with functional abdominal pain (FAP; n = 871). Item reduction analyses identified an 18-item short form of the PBQ (PBQ-SF) that exhibited similar psychometric properties to the original measure. All three subscales of the PBQ-SF exhibited strong internal consistency (α's ranged from 0.79-0.80) and adequate test-retest reliability at two weeks. Evidence for construct validity was provided by examining patterns of partial correlations for each subscale. The PBQ-SF represents a valid and reliable measure for evaluating children's pain beliefs. Future studies should investigate the treatment sensitivity of the PBQ-SF in order to evaluate its appropriateness for use in clinical trials.

Keywords

chronic pain; functional abdominal pain; pain coping; cognitive appraisal; measure development

Beliefs about pain are a central component of the pain experience [11, 15, 37]. Cognitive behavioral theory holds that beliefs about pain influence coping behavior, which in turn influences pain severity, emotional distress and physical functioning [32, 36]. Specifically,

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cognitive appraisals of pain as highly threatening and beyond one's ability to effectively cope have been associated with passive coping with pain [35]. Passive coping, in turn, has been shown to exert direct negative effects on long-term pain severity and disability [16, 29].

Indeed, cognitive behavioral therapy (CBT), which aims to modify patients' maladaptive beliefs about pain and increase adaptive behaviors, leads to improvements in patients' pain severity, mood, and disability following treatment in both adults and children [8, 10, 48]. Psychometrically sound measures of pain-related appraisals are needed to measure changes in cognitive processes that may mediate treatment response. Although many trials have evaluated the efficacy of CBT for chronic pain [10], few have investigated the processes by which these therapies exert their effects.

The Pain Beliefs Questionnaire (PBQ), a 32-item self-report measure of the pain beliefs of children and adolescents with chronic pain, assesses cognitive appraisals that may influence children's coping strategies, disability, mood, and pain severity [45]. The PBQ is grounded in the stress, appraisal and coping framework advanced by Lazarus and Folkman [22]. According to this framework, the extent to which a situation is experienced as stressful and associated with adverse consequences can be modulated by one's appraisal of the level of personal threat presented by the situation (i.e., primary appraisals) and one's ability to cope with the situation (i.e., secondary appraisals). The *Pain Threat* subscale of the PBQ assesses primary pain appraisal, i.e., the extent to which an individual believes that his or her chronic pain poses a significant personal threat. The *Problem-Focused Coping Efficacy (PFCE)* and *Emotion-Focused Coping Efficacy (EFCE)* subscales of the PBQ assess two conceptually distinct components of secondary appraisals related to one's perceived ability to cope with pain. PFCE represents the extent to which one believes he or she can do something to reduce the pain. EFCE represents the extent to which one believes he or she can psychologically adjust to the pain.

The PBQ was developed in the context of a long-term prospective study of pediatric patients with functional abdominal pain (FAP). The original Pain Threat, PFCE, and EFCE subscales have been published with reliability data in several papers and tested in models which provide evidence for construct validity [27, 39, 45], but never presented in a validation study. The PBQ has been utilized by several investigators [21, 23-28, 33, 34, 38, 45] in studies with a variety of designs (i.e., cross-sectional, longitudinal, and randomized controlled trials). The present study aims to: (1) create a short form of the PBQ (PBQ-SF) and (2) evaluate the internal consistency, test-retest reliability, concurrent validity, and construct validity of the subscales of the PBQ-SF in a large database of pediatric patients with FAP.

Methods

Participants

Baseline—Data for the study were collected in three cohorts of pediatric patients described in detail elsewhere [1, 42, 44, 47]. Study participants (n = 871) were consecutive new patients, aged 8-18 years, who presented to a tertiary pediatric gastroenterology clinic for evaluation of abdominal pain between 1993 and 2004. Patients were eligible for participation in the baseline evaluation if they lived with parent(s) or parent figure, reported abdominal pain of

at least 3 months duration, had no history of chronic illness or disability, and had no organic disease diagnosis for abdominal pain from the referring physician.

The average age of participants at baseline was 11.56 years (SD=2.46). The majority of participants were female (59.24%) and white (87.83%). A minority of participants were African American (4.13%), Hispanic (.69%), Asian (.69%), another race (1.61%), or did not report their race (5.05%). This is representative of the clinic population from which participants were recruited.

Time-two (T2) participants—We recruited participants from two of the cohorts to participate in a follow-up assessment (T2) two weeks after the baseline evaluation (n = 300, 57% female).

Procedure

For the baseline evaluation, an interviewer administered questionnaires to pediatric patients in a private room at the clinic before their medical evaluation. Parents completed questionnaires independently at the same time. For T2 follow-up interviews, an interviewer administered questionnaires to patients over the phone. Appropriate informed consent and assent were obtained at baseline and follow-up. The study was approved by the Institutional Review Board.

Measures

Pain Beliefs Questionnaire (PBQ)—The PBQ consists of 32 statements designed to assess youth's beliefs about their abdominal pain (see Table 1 for items). The measure is comprised of three subscales – Pain Threat (e.g., “My stomach aches mean I have a serious illness”), Problem-Focused Coping Efficacy (e.g., “When I have a bad stomach ache, I can find ways to feel better”), and Emotion-Focused Coping Efficacy (e.g., “I know that I can handle it no matter how bad my stomach hurts”). The items for these subscales were developed to capture primary and secondary appraisals as described by Lazarus and Folkman [22]. The Pain Threat subscale consists of twenty items capturing five dimensions of pain severity: duration of chronic pain, chronic pain seriousness, pain frequency, episode duration, and episode intensity. The PFCE and EFCE subscales consist of six items each.

For each item on the PBQ, respondents indicate how true the statement is on a 5-point rating scale ranging from “not at all true” (0) to “very true” (4). Subscale total scores are computed by averaging items pertaining to each subscale. Reverse coded items are noted in Table 1. For the Pain Threat subscale, a higher score indicates stronger beliefs that one's pain represents a personal threat. For the PFCE and EFCE subscales, higher scores indicate a stronger belief in one's ability to cope with pain. A parent version of the measure captures parents’ beliefs about their child's abdominal pain utilizing parallel items (e.g., “My child's stomach aches mean he/she has a serious illness”).

Abdominal pain severity—The Abdominal Pain Index (API) comprises four questions that assess weekly and daily frequency, duration, and intensity of abdominal pain

experienced during the previous two weeks. The revised scoring method for the API described in a recent validation study [20] creates a composite score ranging from 0 to 4

Somatic symptoms—The Children's Somatization Inventory (CSI) assesses the severity of 35 somatic symptoms (e.g., headaches, faintness or dizziness, nausea) over the past two weeks [40, 41]. Participants rated how much they were bothered by each symptom on a 5-point scale ranging from “not at all” (0) to “a whole lot” (4). Item responses were averaged yielding a mean score ranging from 0 to 4 with higher scores indicating higher levels of somatic symptoms.

Functional disability—The Functional Disability Inventory (FDI; [4, 43]) assesses self-reported difficulty in physical and psychosocial functioning due to physical health during the past two weeks. Responses to each of 15 items are scored on a 5-point scale, ranging from “no trouble” (0) to “impossible” (4). Items were averaged to compute a composite score. The Cronbach alpha coefficient for the FDI was 0.90.

Pain coping—The Pain Response Inventory (PRI) [43, 46] was developed to assess children's typical coping responses to recurrent pain. The PRI consists of 60 items beginning with the stem, “When you have a bad stomach ache, how often do you...”. Response categories for each item are “never” (0), “once in a while” (1), “sometimes” (2), “often” (3), and “always” (4). It yields three broad-band factor scores. *Active coping* reflects problem-focused strategies aimed at pain reduction (e.g., “Try to do something to make it go away”). *Passive coping* reflects strategies that avoid confronting pain (e.g., “Not even try to do anything about it because it will not help”). *Accommodative coping* reflects efforts to accept and adjust to pain (e.g., “Try to learn to live with it”). The PRI was validated in three samples of children and adolescents with chronic abdominal pain [47]. In the current baseline sample, the Cronbach alpha coefficients for the active, passive, and accommodative scales of the PRI were 0.86, 0.90, and 0.89, respectively.

Global self-efficacy—The Self-Perception Profile for Children (SPPC; [12]) assesses several dimensions of children's perceived competence and self-worth and has been validated in multiple samples of children [31]. For this study, we utilized the global self-efficacy scale composed of six items. Patients read two statements representing opposite descriptions of competence, one on the left side of the page and the other on the right side of the page, and select the statement that is most like them, rating it as either “sort of true for me” or “really true for me”. A mean score for the six items was computed ranging from 1 to 4. Higher scores indicate higher levels of perceived self-efficacy.

Negative affect—The self-report Children's Depression Inventory (CDI; [18, 19]) was used to assess the severity of negative affect. For each of 26 items, participants were presented with 3 statements and asked to select the one that best described how they felt during the past 2 weeks. The Cronbach alpha coefficient was 0.86.

Family socioeconomic status—The Hollingshead Index of Socioeconomic Status (Hollingshead, 1975) is a survey designed to measure social status based on educational attainment and occupational prestige. Parents completed this measure at baseline.

Data Analysis Overview

First, we performed item analyses for the three scales of the PBQ to reduce the overall measure length. Although we focused on reducing the 20-item Pain Threat scale, we also examined the PFCE and EFCE scales to see whether removal of any of these items was warranted. The overall objective of these analyses was to yield an 18-item measure (PBQ-SF), with each scale represented by 6 items.

Second, we evaluated the psychometric properties of the PBQ-SF by examining internal consistency, test-retest reliability, concurrent validity, and construct validity for each of the subscales. Cronbach's alpha coefficients were calculated to evaluate internal consistency for both child and parent-report subscales of the PBQ-SF. To assess test-retest reliability, we examined the strength of the correlations between baseline PBQ-SF subscale scores and follow-up PBQ-SF subscale scores in the cohort who completed T2. We examined the correlation between parent-report PBQ-SF scores and children's self-report PBQ-SF scores for evidence of concurrent validity. To assess construct validity, we examined the pattern of partial correlations for each of the three subscales assessed at baseline with baseline measures of pain coping, pain severity, functional disability, depressive symptoms, and global self-efficacy, while controlling for the other two subscales.

Results

Item Reduction

The baseline sample was randomly split into two subsamples and reliability analyses were computed within each subsample for the 20-item Pain Threat subscale. Within each subsample, we selected six items from the Pain Threat subscale based on the following criteria: (1) face validity, (2) high item-total correlations, and (3) a balance of items reflecting both characteristics of pain episodes (duration and intensity) and characteristics of the overall chronic pain condition (chronic pain duration, intensity, and pain frequency). The final reduced Pain Threat subscale consisted of items #5, 7, 8, 16, 18, and 20. It exhibited high alpha reliability across both subsamples (α =.830 for subsample 1, α = .778 for subsample 2, and α = .804 for total sample) and exhibited similar psychometric properties to the original 20-item subscale and earlier iterations of the reduced subscale.

We also examined the internal consistency and item-total correlations of the PFCE and EFCE scales to see whether removal of any items would improve the overall reliability of the scale in both samples. We found that removal of any items resulted in negligible changes to alpha reliability. Thus, we retained all six items for the PFCE and EFCE scales. The PBQ-SF consisted of 18-items divided into three 6-item subscales (Table 1; Appendix 1). All results reported below use the PBQ-SF.

Descriptive Statistics

Baseline means and standard deviations on the PBQ-SF subscales by sex and age are presented in Table 2. Pain threat was significantly higher for girls than for boys ($F[1, 869]=14.73$, $p<.001$). Furthermore, PFCE and EFCE were significantly lower in girls compared to boys for both problem-focused coping ($F[1, 869]=16.64$, $p<.001$ and $F[1,$

869]=13.80, p<.001, respectively). Pain threat and PFCE significantly correlated with age. Specifically, older children tended to report higher pain threat (r = .23) and lower PFCE (r = −.18). There was no relation between EFCE and age. Socioeconomic status as indicated by the Hollingshead Index (Hollingshead, 1975) was not significantly associated with pain threat (r = .03), PFCE (r = .02), or EFCE (r=.05). Table 3 presents the zero-order correlations of the PBQ-SF subscales with baseline outcome measures of pain severity, somatic symptoms, pain coping, functional disability, and emotional functioning.

Internal Consistency

Cronbach alpha coefficients were .80, .79, and .79, for the pain threat, EFCE, and PFCE subscales, respectively. Alpha reliability for the corresponding parent report subscales were . 75, .67, and .76 respectively.

Test-Retest Reliability

All baseline PBQ-SF subscales were strongly correlated with their respective scales at two week follow-up. Specifically, baseline Pain Threat was strongly correlated with Pain Threat at two week follow-up (r = .75, p < .001, n = 306), baseline EFCE was strongly correlated with EFCE at two week follow-up (r = .77, p < .001, n = 305), and baseline PFCE was strongly correlated with PFCE at two week follow-up (r = .75, p < .001, n = 305).

Concurrent Validity

We predicted that children's self-report PBQ-SF scores would be moderately associated with parent repot PBQ scores. Following convention (Cohen, 1988; 1992), we defined a large (strong) effect as a Pearson's correlation coefficient greater than 0.5, and a moderate effect as a Pearson's correlation between .2 and .4. Children's PBQ-SF subscale scores exhibited moderate to large correlations with their parents' PBQ-SF subscale scores (Pain Threat: r =. 78, p<.001, n = 801; EFCE: r = .21, p < .001, n = 803; PFCE: r = .49, p < .001, n = 801).

Construct Validity

To evaluate construct validity, we computed partial correlations for each subscale, controlling for the other two subscales, to examine the unique relations of each subscale to measures of pain, disability, emotional functioning, and pain coping. Column 1 of Table 4 presents the partial correlations of the Pain Threat subscale, with related self-reported constructs, controlling for EFCE and PFCE. We expected pain threat to be positively correlated with measures of passive, active, and accommodative pain coping because perceiving pain as a threat should signal a need to cope with one's pain. Additionally, we expected strong correlations between Pain Threat and measures of symptom severity and disability because individuals who perceive their pain as threatening likely also report more severe symptoms and impairment. We did not anticipate a relationship between Pain Threat and global self-efficacy because Pain Threat assesses one's appraisals of the consequences and implications of pain, not appraisals regarding their ability to take action or adjust to pain. Indeed, controlling for EFCE and PFCE, Pain Threat exhibited significant positive correlations with active, passive, and accommodative coping, as well as with abdominal pain

severity, somatic symptoms, functional disability, and depressive symptoms. Pain Threat, controlling for EFCE and PFCE, did not correlate with global self-efficacy.

Column 2 of Table 4 presents partial correlations of the EFCE subscale with related self-reported constructs, controlling for Pain Threat and PFCE. We expected a significant positive correlation between EFCE and accommodative coping and a significant negative correlation between EFCE and passive coping because the EFCE subscale represents one's perceived ability to psychologically adjust to having chronic pain. We did not expect a relation between EFCE and active coping. Additionally, we expected EFCE to exhibit a stronger negative correlation with disability than pain severity because patients who believe they can continue to live with their pain are more likely to engage in valued activities despite their pain intensity. Similarly, we expected EFCE to significantly correlate with global self-efficacy because one's general feelings about his or her self-worth likely generalize to one's ability to psychologically adapt to a challenge such as pain. Indeed, controlling for Pain Threat and PFCE, EFCE exhibited a significant positive correlation with accommodative coping and a significant negative correlation with functional disability. In addition, EFCE exhibited a significant positive correlation with global self-efficacy and significant negative correlations with passive coping, somatic symptoms, and depressive symptoms. Notably, the correlation with abdominal pain was not statistically reliable.

Column 3 of Table 4 presents partial correlations of the PFCE subscale with related self-reported constructs, controlling for Pain Threat and EFCE. We expected a strong, positive correlation between PFCE and active coping, which reflect efforts to reduce one's pain, and PFCE reflects one's level of efficacy in engaging in such strategies. Additionally, we expected a negative correlation between PFCE and pain severity because individuals who believe they can do something to reduce their pain likely act on these beliefs. We did not expect a relation between PFCE and global self-efficacy because PFCE is very domain specific and only taps one's beliefs regarding his or her ability to reduce pain. Indeed, controlling for Pain Threat and EFCE, PFCE exhibited a significant positive correlation with active coping, and a significant negative correlation with abdominal pain severity. Additionally, PFCE demonstrated a significant negative correlation with functional disability, and a significant positive correlation with accommodative coping. PCFE did not correlate with global self-efficacy, controlling for EFCE and Pain Threat.

Discussion

Measures of pain beliefs should be theory-based, with items closely reflecting the theoretical constructs [7]. The Pain Beliefs Questionnaire is based on Lazarus and Folkman's theory of appraisal and coping [22]. In this study, we aimed to create a short form of the measure (PBQ-SF) and to evaluate its psychometric properties in pediatric patients with FAP. The psychometric properties of the PBQ-SF provide promising initial evidence for the scale's validity. The subscales of the PBQ-SF exhibited high internal consistency and strong correlations with the PBQ-SF at two week follow-up.

The pattern of correlations between the PBQ-SF subscales and measures of pain, disability, emotional functioning, and coping were mostly as hypothesized, providing evidence for

convergent and discriminant validity. As hypothesized, children who reported higher scores on the Pain Threat subscale of the PBQ-SF reported greater pain severity, disability, and depressive symptoms. The significant positive correlations of the Pain Threat subscale with all three methods of coping suggest that greater threat perception is associated with a general need to utilize more pain coping strategies. PFCE correlated positively with both active and accommodative coping which provides evidence for the unique link between believing one can do something to reduce the pain and acting on these beliefs by utilizing problem-focused, active coping strategies. Higher levels of EFCE were associated with higher levels of accommodative coping and lower levels of depression and passive coping. The unique relation between EFCE and depressive symptoms provides evidence for discriminant validity in that believing one can psychologically adjust to the challenges of living with chronic pain likely protects against depressive symptoms.

We anticipated unique contributions of all three PBQ-SF subscales to both symptom severity and disability. Although higher levels of PFCE and EFCE correlated with lower levels of abdominal pain and somatic symptoms, the associations between EFCE and abdominal pain severity and PFCE and somatic symptoms did not remain significant when controlling for the other two PBQ-SF subscales. Threat appraisal, compared to one's perceived ability to cope with pain, may be more closely related to one's appraisal of abdominal pain and somatic symptom severity. In contrast, Pain Threat, PFCE, and EFCE each exhibited a unique relation with functional disability when controlling for the other two PBQ-SF subscales. Both threat appraisal and perceived coping ability contribute to one's ability to function despite pain.

The concurrent relations between children's self-report and parents' proxy report subscales of the PBQ-SF were strong for Pain Threat, moderate for PFCE, and weak for EFCE. Because EFCE measures one's ability to psychologically adjust to having pain, these internal processes may not be as observable as threat appraisals or PFCE. Parents and children tend to have higher levels of agreement on observable behaviors [13]. The correlation between parent and child reported EFCE was comparable to the size of correlations between parents and children found in studies of children's internalizing emotional symptoms [6].

The PBQ-SF could be useful for identifying pain beliefs associated with poor outcomes and assessing treatment mechanisms and outcomes in interventions directed at changing pain beliefs. Utilizing the original PBQ, a childhood pain profile characterized by high pain threat, low PFCE, and low EFCE in combination with somatic symptoms, negative affect, and disability, predicted greatest risk for persistent abdominal pain, multiple chronic pain sites, and anxiety disorders at nine year follow-up in late adolescence and young adulthood [44]. In a randomized controlled trial evaluating the efficacy of cognitive behavioral therapy for treatment of pediatric FAP, Levy and colleagues [26] demonstrated that parents' and children's pain beliefs as assessed by the PBQ changed significantly more in the CBT condition as compared to a control condition. This finding suggests that the treatment achieved the aims of reducing perceived pain threat and increasing pain efficacy beliefs. Reductions in parental pain threat appraisals during the intervention mediated reductions in child-reported GI symptom severity and child-reported pain at three, six, and twelve months [23]. Similar studies will need to be replicated with the PBQ-SF in order to provide

further information regarding the treatment sensitivity and long-term predictive validity of the PBQ-SF subscales.

Other investigators have developed measures of pain-related cognitions and pain-related self-efficacy in children [2, 14]. In recent years, the pediatric version of the Survey of Pain Attitudes (Peds-SOPA) has evidence for its validity and reliability [9, 30]. Although some overlap exists between constructs measured by the Peds-SOPA and the PBQ-SF, the PBQ-SF subscales measure broader constructs defined by a specific theoretical framework, and therefore may have greater utility for measuring cognitive processes in psychological interventions grounded in similar theories. The Pain Self-efficacy Scale developed by Bursch and colleagues [2] has been utilized by several investigators in recent years [3, 17]. It is a seven item measure which assesses children's confidence in their ability to function normally despite pain. In contrast, the PFCE and EFCE scales of the PBQ assess children's confidence in their ability to cope with their pain, which represents a different dimension of self-efficacy than the Pain Self-efficacy Scale. Additionally, the Pain Threat subscale of the PBQ-SF may overlap conceptually with aspects of pain catastrophizing. Further investigation is needed regarding discriminant validity between Pain Threat from the PBQ-SF and the Pain Catastrophizing Scale for Children [5].

One limitation of this study is the relative homogeneity of our sample. Studies with more diverse samples will help determine whether our results generalize to other age groups, ethnicities, and chronic pain populations. Because all of our participants had FAP, it is unknown whether the PBQ is appropriate for use in individuals with other types of chronic pain. The PBQ-SF is easily modifiable for other types of chronic pain by replacing “stomach” or “stomach aches” with other pain locations (e.g., “back,” “back pain”). The PBQ-SF could also be utilized with mixed or general pain populations by leaving out a specific location and replacing “stomach aches” with “pain” (e.g., “When I have bad pain, I can find ways to feel better,” “I have pain all the time”). These modifications need further investigation to determine their validity and reliability.

We conclude that the PBQ-SF is a valid and reliable measure of abdominal pain beliefs in children and adolescents ages 8 and above with FAP. The PBQ-SF could be useful for evaluating mechanisms of cognitive-behavioral interventions targeted at changing pain beliefs. Additional steps for further validation include evaluation of treatment sensitivity, predictive validity, and examination of psychometric properties in other pediatric chronic pain populations.

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Appendix 1. Pain Beliefs Questionnaire-Short Form (PBQ-SF) Child Version

Now I'm going to read some things that children sometimes say about their stomach aches. Some of these things might be very true about your stomach aches, and some of them might be mostly true, some true, or just a little true. And some of them might be not at all true for your stomach aches. I'll read the sentence, and you tell me how true it is for your stomach aches.

			Not at all true	A little true	Some true	Mostly true	Very true
PFCE	1.	When I have a bad stomach ache, I can find ways to feel better	0	1	2	3	4
PT	2.	I get stomach aches all the time	0	1	2	3	4
EFCE	3.	When I have a bad stomach ache, I just can't take it	0	1	2	3	4
PT	4.	My stomach aches hurt a whole lot	0	1	2	3	4
PT	5.	I'm going to have stomach aches for the rest of my life	0	1	2	3	4
EFCE	6.	I know I can handle it no matter how bad my stomach hurts	0	1	2	3	4
PFCE	7.	When I have a bad stomach ache, I can feel better if I decide to	0	1	2	3	4
EFCE	8.	I don't think I'll be able to stand it if I keep having stomach aches	0	1	2	3	4
PT	9.	My stomach aches mean that I'm very sick	0	1	2	3	4
PT	10.	My stomach aches hurt worse than anything	0	1	2	3	4
PFCE	11.	When I have a bad stomach ache, there are ways I can get it to stop	0	1	2	3	4
PT	12.	My stomach aches go on forever	0	1	2	3	4
PFCE	13.	When I have a bad stomach ache, nothing I try seems to help	0	1	2	3	4
EFCE	14.	Things will be OK for me even if I keep having stomach aches	0	1	2	3	4
EFCE	15.	If I keep having stomach aches, my life will be terrible	0	1	2	3	4
PFCE	16.	When I have a bad stomach ache, there's not much I can do to feel better	0	1	2	3	4
EFCE	17.	I can't deal with it when I have a stomach ache	0	1	2	3	4
PFCE	18.	When I have a bad stomach ache, I can't seem to make it better	0	1	2	3	4

* Items 3, 8, 13, 15, 16, 17, 18 are reverse coded. PT = Pain Threat; PFCE = Problem-Focused Coping Efficacy; EFCE = Emotion-Focused Coping Efficacy

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Perspective

This article presents the psychometric properties of a reduced 18-item version of a measure utilized to assess children's pain beliefs in a large sample of children with functional abdominal pain. This measure could help identify processes and individual differences underlying children's responses to psychological treatments for chronic pain.

Highlights

- The Pain Beliefs Questionnaire (PBQ) is grounded in appraisal and coping theory.
- The PBQ-Short Form (PBQ-SF) for children shows promising psychometric properties.
- The PBQ-SF may be useful in evaluating efficacy of pediatric pain treatments.

Table 1

Pain Beliefs Questionnaire

Original Item #	Item	Scale	Reverse coded?	Retained in reduced scale	Reduced Scale Item #
1.	My stomach aches mean I have a serious illness	PT-CS		No	
2.	I'll always have stomach aches	PT-CD		No	
3.	When I have a bad stomach ache, I can find ways to feel better	PFCE		Yes	1
4.	When I have a bad stomach ache, it usually lasts a long time	PT-ED		No	
5.	I get stomach aches all the time	PT-CF		Yes	2
6.	When I have a bad stomach ache, I just can't take it	EFCE	Yes	Yes	3
7.	My stomach aches hurt a whole lot	PT-EI		Yes	4
8.	I'm going to have stomach aches for the rest of my life	PT-CD		Yes	5
9.	I know I can handle it no matter how bad my stomach hurts	EFCE		Yes	6
10.	Even though I get stomach aches, there's nothing seriously wrong with me	PT-CS	Yes	No	
11.	When I have a bad stomach ache, I can feel better if I decide to	PFCE		Yes	7
12.	I almost always have a stomach ache	PT-CF		No	
13.	My stomach aches don't hurt very much	PT-EI	Yes	No	
14.	I don't think I'll be able to stand it if I keep having stomach aches	EFCE	Yes	Yes	8
15.	I'll still have stomach aches when I'm older	PT-CD		No	
16.	My stomach aches mean that I'm very sick	PT-CS		Yes	9
17.	My stomach aches only last a few minutes	PT-ED	Yes	No	
18.	My stomach aches hurt worse than anything	PT-EI		Yes	10
19.	When I have a bad stomach ache, there are ways I can get it to stop	PFCE		Yes	11
20.	My stomach aches go on forever	PT-ED		Yes	12
21.	When I have a bad stomach ache, nothing I try seems to help	PFCE	Yes	Yes	13
22.	I only get stomach aches once in a while	PT-CF	Yes	No	
23.	Things will be OK for me even if I keep having stomach aches	EFCE		Yes	14
24.	My stomach aches are no big deal	PT-CS	Yes	No	
25.	If I keep having stomach aches, my life will be terrible	EFCE	Yes	Yes	15
26.	My stomach aches go away quickly	PT-ED	Yes	No	
27.	When I have a bad stomach ache, there's not much I can do to feel better	PFCE	Yes	Yes	16
28.	My stomach aches hurt really bad	PF-EI		No	
29.	I can't deal with it when I have a stomach ache	EFCE	Yes	Yes	17
30.	I always get stomach aches	PT-CF		No	

Original Item #	Item	Scale	Reverse coded?	Retained in reduced scale	Reduced Scale Item #
31.	When I have a bad stomach ache, I can't seem to make it better	PFCE	Yes	Yes	18
32.	I'll stop having stomach aches soon	PT-CD	Yes	No	

Note: PT = pain threat, CD = condition duration, CF = condition frequency, CS = condition seriousness, ED = episode duration, EI = episode intensity, PFCE = problem focused coping efficacy, EFCE = emotion focused coping efficacy

Table 2

Baseline PBQ-SF subscale scores by sex and age in pediatric patients with FAP Pain Threat Appraisal

	N	Mean	SD	Range	10%	90%
Male						
Childhood	146	1.11	0.89	0.00-3.83	0.17	2.38
Early Adolescence	161	1.26	0.88	0.00-3.50	0.20	2.50
Late Adolescence	48	1.35	0.91	0.00-3.80	0.15	2.83
Female						
Childhood	209	1.18	0.92	0.00-3.83	0.17	2.67
Early Adolescence	218	1.53	0.84	0.00-3.67	0.50	2.67
Late Adolescence	89	1.80	0.88	0.00-3.67	0.50	3.00

Emotion-Focused Coping Efficacy						
	N	**Mean**	**SD**	**Range**	**10%**	**90%**
Male						
Childhood	146	2.49	0.95	0.00-4.00	0.00	1.98
Early Adolescence	161	2.57	0.84	0.00-4.00	0.00	2.10
Late Adolescence	48	2.76	0.85	0.17-4.00	0.00	1.91
Female						
Childhood	209	2.34	0.90	0.00-4.00	1.17	3.33
Early Adolescence	218	2.30	0.89	0.00-4.00	1.00	3.50
Late Adolescence	89	2.25	0.95	0.00-4.00	0.67	3.50

Problem-Focused Coping Efficacy						
	N	**Mean**	**SD**	**Range**	**10%**	**90%**
Male						
Childhood	146	2.15	0.97	0.00-4.00	0.67	3.33
Early Adolescence	161	1.95	0.91	0.00-4.00	0.67	3.13
Late Adolescence	48	1.88	0.96	0.00-3.80	0.33	3.18
Female						
Childhood	209	1.97	0.94	0.00-4.00	0.67	3.17
Early Adolescence	218	1.62	0.94	0.00-4.00	0.33	2.68
Late Adolescence	89	1.57	0.86	0.00-3.67	0.33	2.67

Note. For purposes of the above table, childhood was defined as 8-10 years of age, early adolescence was defined as 11-14 years of age, and late adolescence was defined as 15-18 years of age

Table 3

Zero-order correlations of PBQ-SF subscales with other measures at baseline

	Pain Threat	PFCE	EFCE	Active Coping	Passive Coping	Accommodative Coping	Abdominal Pain	Somatic Symptoms	Functional Disability	Depressive Symptoms
Pain Threat	--									
PFCE	−.503**	--								
EFCE	−.628**	.539**	--							
Active Coping	.312**	.023	−.183**	--						
Passive Coping	.557**	−.375**	−.554**	.294**	--					
Accommodative Coping	−0.019	.277**	.311**	.325**	.022	--				
Abdominal Pain	.492**	−.368**	−.306**	.152**	.282**	−.003	--			
Somatic Symptoms	.506**	−.306**	−.365**	.252**	.501**	.099**	.460**	--		
Functional Disability	.431**	−.356**	−.399**	.233**	.518**	.025	.354**	.605**	--	
Depressive Symptoms	.422**	−.345**	−.441**	.089**	.606**	−.084*	.288**	.521**	.514**	--
Global Self-Efficacy	−.179**	.183**	.254**	.057	−.419**	.084*	−.035	−.273**	−.309**	−.643**

Note.

* p < .05

** p < .01

Table 4

Partial correlations between Pain Beliefs Questionnaire subscales and measures of pain coping, pain severity, and affect

	1. Pain Threat (controlling for PFCE and EFCE)	2. EFCE (controlling for Pain Threat and PFCE)	3. PFCE (controlling for Pain Threat and EFCE)
Active Coping	.306**	−.051	.193**
Passive Coping	.307**	−.282**	−.019
Accommodative Coping	.310**	.322**	.193**
Abdominal Pain	.364**	.063	−.171**
Somatic Symptoms	.373**	−.079*	−.039
Functional Disability	.219**	−.143**	−.109*
Depressive Symptoms	.223**	−.216**	−.043
Global Self-Efficacy	−.042	.165**	.020

Note. EFCE = emotion focused coping efficacy, PFCE = problem focused coping efficacy

* $p < .05$

** $p < .001$