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Pain Beliefs and Readiness to Change Among Adolescents With Chronic Musculoskeletal Pain and Their Parents Before an Initial Pain Clinic Evaluation

Jessica W. Guite, PhD[1,5], **Sohee Kim, BS**[1], **Chia-Pei Chen, MS**[3], **Jennifer L. Sherker, PsyD**[4], **David D. Sherry, MD**[4,5], **John B. Rose, MD**[1,5], and **Wei-Ting Hwang, PhD**[2,5]

[1]Department of Anesthesiology and Critical Care Medicine, The Children's Hospital of Philadelphia

[2]Department of Biostatistics and Epidemiology

[3]Department of Biotechnology, School of Engineering and Applied Science, The University of Pennsylvania

[4]Division of Rheumatology, Department of Pediatrics, The Children's Hospital of Philadelphia

[5]Perelman School of Medicine at the University of Pennsylvania

Abstract

Objectives—To understand relationships between pain-related beliefs and readiness to change among treatment-seeking adolescents with chronic musculoskeletal pain and their parents.

Methods—A total of 102 adolescent-parent dyads were recruited at the time of initial evaluation at a multidisciplinary pain management clinic. Dyads completed self-report measures to assess pain, catastrophizing, endorsement of a biopsychosocial perspective of pain, and readiness to change/motivation to adopt a self-management approach to pain coping.

Results—Agreement between adolescent-parent dyad reports of pain catastrophizing and readiness to change was found; however, adolescents were less likely to view pain as “affected by feelings and emotions” than parents. The hypothesis that greater pain catastrophizing would be correlated with less readiness to change was partially supported. Adolescent and parents who reported lower levels of endorsement of a biopsychosocial perspective were less willing to adopt a self-management approach to pain coping. Endorsement of a biopsychosocial perspective of pain aligned with readiness to change stages more consistently for parents.

Discussion—This study documents initial relationships among pain catastrophizing, biopsychosocial perspectives of pain, and readiness to engage in a self-management approach to pain coping for adolescents with chronic pain and their parents. Although agreement exists between dyads regarding catastrophizing and readiness to change, differences were noted in biopsychosocial perspective and dominant readiness to change stage before an initial pain clinic

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Corresponding Author: Jessica W. Guite, PhD, Assistant Professor of Pediatrics, University of Connecticut School of Medicine, Pediatric Psychologist and Clinical Investigator, Division of Pain and Palliative Medicine, Connecticut Children's Medical Center, Hartford Hospital/The Institute of Living, 282 Washington Street, Hartford, CT 06106, JGuite@connecticutchildrens.org, Phone: 860-837-5206, Fax: 860-837-6220.

encounter. Findings are considered in terms of future research to advance knowledge regarding the role these factors may play in treatment adherence and outcomes.

Keywords

pain catastrophizing; biopsychosocial; PSOCQ-A; PSOCQ-P; pain management

Introduction

Children and adolescents with chronic pain conditions are at risk for emotional and functional problems[1–5]. In addition, pediatric chronic pain presents challenges for parents and family members, including costs of lengthy and/or multiple treatments, time away from work, and family disruptions[6–8]. While effective treatments for chronic pediatric pain exist[9–10], recent research suggests that there is significant variability in patient and family adherence to multidisciplinary interventions for chronic pediatric pain[11]. A greater understanding of factors that influence adherence to pain interventions is needed. Conceptual and methodological challenges to gaining knowledge about adherence include the participation of parents in treatment, the complexity of treatment plans, and the active role parents and children play in determining how treatment is managed[12]. Thus, it is important to consider both the unique perspectives of the patient and parent, as well as agreement between these perspectives, in order to evaluate factors that may influence treatment outcomes for pediatric chronic pain patients. This study specifically aims to understand initial relationships between pain-related beliefs and readiness to engage in treatment among adolescents with chronic musculoskeletal pain and their parents.

Beliefs about pain potentially play an important role in patient and family initiation of and adherence to effective treatments for pediatric chronic pain. Pain-related beliefs including pain catastrophizing -- a form of pain coping in which an individual responds to pain as a “catastrophe” or significant threat to wellbeing[13–15] -- have been associated with poorer outcomes including greater psychological distress, pain, and functional impairment[16–21]. Prior research supports that threatening beliefs about pain such as pain catastrophizing influence the types of strategies used to cope with pain[20, 22]. Parental catastrophizing about their child’s pain further contributes to the child’s disability as well as to parenting stress[23–25].

Pain-related beliefs can also be understood from the perspective of the broader Biopsychosocial model of illness[26]. The Biopsychosocial model asserts the importance of psychological, social, behavioral, and biomedical factors in understanding health and illness and is a widely accepted framework for understanding chronic pain and its treatment[27]. Consistent with this model, chronic pediatric pain management typically includes: developmentally appropriate assessment with patient/parent(s), education, a focus on maximizing function (e.g., school attendance), aerobic exercise, sleep hygiene, utilization of pharmacologic and non-pharmacologic pain management strategies, and treatment of comorbid symptoms of anxiety and depression[28]. Because a multidisciplinary approach to treatment is often essential [9, 28–32], it may be important to understand patient and parent appreciation of a biopsychosocial perspective of pain management at the time that treatment recommendations are communicated as a potential indicator of future engagement in these recommendations. For example, patients and parents who are less willing to consider the role that psychological, social, or behavioral factors may play in the pain problem may also be less willing to engage in treatment recommendations that target these realms of functioning. Crushell and colleagues (2003)[33] provide some support for the idea that acceptance of a biopsychosocial model of illness is important for the resolution of pediatric pain. Specifically, their research showed that children of parents who acknowledged a "psychological" (vs. purely a "physical") cause for their child's pain were significantly more likely to have later recovered[33].

In addition to pain-related beliefs, consideration of an individual's level of motivation, or readiness to change, has emerged in adult pain research as a potentially important factor for successful pain self management[34–36]. The Pain Readiness to Change model (PRCM) has been assessed and validated in adults using The Pain Stages of Change Questionnaire (PSOCQ)[35–36]. The readiness to change concept aligns with the broader transtheoretical model (TTM) of behavioral change[37] with 4 stages conceptualized for chronic pain: Precontemplation (little perceived personal responsibility for pain control, no interest in implementing behavioral changes), Contemplation (awareness of personal responsibility for pain control, considering behavioral change), Action (active involvement in learning self-management strategies), and Maintenance (sense of personal responsibility for pain control and routine application of self-management strategies)[35–36]. The PRCM model has recently been applied to pediatric chronic pain, with validated adolescent (The Pain Stages of Change Questionnaire for Adolescents; PSOCQ-A) and parent (The Pain Stages of Change Questionnaire for Parents; PSOCQ-P) measures to assess readiness to change[38]. Initial validation of these measures in a multisite sample of 259 adolescent-parent dyads supported internal consistency and criterion validity for factor scales[38]. An individual's current, dominant stage is conceptualized as a snapshot of their beliefs about and commitment to change, which may provide important information about how likely they are to engage in and adhere to treatment recommendations.

Within adult populations, readiness to adopt a self-management approach to pain has been associated with improvement in multidisciplinary pain treatment and pain coping[39–40]. Specifically, decreasing PSOCQ precontemplation scores and increasing action and maintenance scores reflected enhanced commitment to a self-management approach[35]. For example, low precontemplation scores served as the best predictor of completion of a 10-visit cognitive-behavioral program for chronic pain[41]. Little is known about how the newly developed PSOCQ-A and –P measures function within a pediatric chronic pain population. It may be particularly important to consider the extent of agreement between adolescent and parent reports of readiness to change and pain-related beliefs in the context of an initial pediatric pain clinic evaluation to better understand relationships between these measures and treatment outcomes.

Informed by Biopsychosocial[26–27] and Pain Readiness to Change[35–36] models, as well as literature on parent and family factors (including social learning[42]) related to pediatric chronic pain and disability[43], this study examines how adolescent and parent measures of pain readiness to change function at an initial pain clinic consultation. Social learning theory leads us to expect there will be tendencies toward shared pain beliefs within adolescent-parent dyads and that these shared beliefs will be further related to readiness for a self-management approach to pain coping. Based on this theoretical perspective, we will test the following hypotheses: 1) agreement between adolescent–parent dyad reports of pain catastrophizing, endorsement of a biopsychosocial perspective of pain, and readiness to change will be significant beyond that expected by chance; 2) greater pain catastrophizing will be associated with less readiness to change for both adolescents and parents (reflected by higher Precontemplation and lower Action/Maintenance scale scores); and 3) stronger endorsement of a biopsychosocial perspective of pain will be associated with greater readiness to change (reflected by higher Action/Maintenance and lower Precontemplation scale scores) for both adolescents and parents.

Materials and Methods

Participants

A total of 107 adolescents and parents were prospectively recruited between 2007 and 2010 from a large pediatric institution that provides specialized tertiary care for the management of chronic pain. Participants were contacted prior to their initial evaluation appointment and consent/assent was provided to participate in a broader Institutional Review Board (IRB) approved protocol exploring pain beliefs, treatment expectations and short term outcomes for adolescents with chronic pain. This project serves as a report of findings pertaining to adolescent and parent pain beliefs and readiness to change in the context of the broader study. Patients were referred from a variety of medical subspecialties (e.g., orthopedics, rheumatology) and primary care pediatricians, usually after other treatment attempts failed to substantially reduce symptoms. Adolescents were eligible for participation if: 1) they were between 13-18 years of age, 2) they had a primary complaint of musculoskeletal pain (including, but not limited to, complex regional pain syndrome, fibromyalgia, or idiopathic musculoskeletal pain syndromes) lasting 3 months or longer, 3) their musculoskeletal pain was not related to chronic disease (e.g., juvenile idiopathic arthritis [JIA], lupus, abnormal biomechanics), and 4) they were not significantly cognitively impaired. After the initial pain clinic evaluation, four adolescent/parent dyads were subsequently excluded based on pain diagnosis criteria and only one dyad chose to discontinue participation. Thus, a total of 102 adolescent and parent participants with chronic musculoskeletal pain were included in the final sample. All participating parents were living in the same home as the adolescent.

Procedure

A description of the research project was mailed to patients when they scheduled the initial appointment. Eligible families who were interested in participating met with research staff at the clinic immediately prior to the initial appointment to obtain informed consent to include data from their medical chart and to have adolescents and parents separately complete additional study-specific measures.

Measures

Pain Management Overview Questionnaire—Parents provided information about the adolescent's pain and health history, parent and family pain and health history, and family demographic information including adolescent age, sex, ethnicity, grade, pain duration, parent participant, frequency of doctors visits in the last year, number of persons living in the home and family socioeconomic status (SES)[44].

Pain Intensity—Adolescents reported on their usual, most and least pain intensity during the preceding 2 weeks using a 100 mm visual analog scale (VAS)[45]. Scores were anchored at 0="no pain" to 100="unbearable pain", with higher scores reflecting greater pain intensity. VAS pain intensity ratings have established reliability and validity[46–47].

Pain Catastrophizing Scale for Children (PCS-C)[14] and for Parents (PCS-P)[23]—Adolescents and parents provided reports regarding their beliefs about the adolescent's pain. These 13-item, parallel measures assessed threatening beliefs about actual or anticipated painful experiences on a 5-point scale (both rated 0="not at all", 1="mildly", 2="moderately", 3="severely", and 4="extremely"). A total score reflecting tendencies to ruminate, magnify and/or feel helpless about pain was examined. Higher scores indicate stronger pain catastrophizing beliefs. Alpha coefficients for the current sample on the total score on the PCS- C = 0.91 and the PCS-P = 0.94, for adolescent and parent reports, respectively.

Biopsychosocial perspective of pain—

Two items were generated for the study to briefly assess the adolescent's and parent's degree of appreciation of a "biopsychosocial perspective" of pain. This construct consisted of each respondent's agreement with two core concepts related to the cause of pain, distilled from clinical interactions and research focusing on parental conceptions of causal factors for pediatric pain[33, 48]. Specifically, this construct was assessed by participants' direct ratings of, "how much you agree with," two statements: 1) "Pain always means a part of the body is damaged," and 2)"Pain is affected by feelings and emotions." Responses ranged from 0-10 and were anchored at 0="Strongly disagree", 5 = "Not sure", and 10="Strongly agree". A combined total score was calculated [((10-"Pain always means a part of the body is damaged") + "Pain is affected by feelings and emotions") = score range 0-20], with higher scores reflecting stronger endorsement of a "biopsychosocial perspective of pain".

The Pain Stages of Change Questionnaire for Adolescents (PSOCQ-A) and for Parents (PSOCQ-P)[38]—

These two recently validated measures were adapted from the 30-item adult PSOCQ[35–36] to assess adolescent self-reports of readiness to adopt a self-management approach to chronic pain and parent reports of their own mindset regarding motivation to change with respect to their adolescent's current behavior. The 30-item PSOCQ-A and –P measures include parallel items rated on a 5-point scale: 1="Strongly Disagree", 2="Disagree", 3="Undecided or Unsure", 4="Agree", 5="Strongly Agree". Data from a subset of initial participants in the current study were included in the larger PSOCQ-A and -P validation samples. Validation analyses supported a 3-factor solution for the PSOCQ-A measure [includes Precontemplation (4 items), Contemplation (10 items), and combined Action/Maintenance (13 items) scales] and a 4-factor solution for the PSOCQ-P measure [includes Precontemplation (5 items), Contemplation (10 items), Action (6 items) and Maintenance (7 items) scales][38]. Alpha coefficients for the current sample were as follows: PSOCQ-A Precontemplation 0.71, Contemplation 0.80, Action/Maintenance 0.89; PSOCQ-P Precontemplation 0.67, Contemplation 0.81, Action 0.75, and Maintenance 0.82. The highest PSOCQ subscale score value was used to determine each reporter's "dominant" stage of change[38]. Greater readiness to change was conceptualized as lower Precontemplation and/or higher Action/Maintenance scores, while less readiness to change was represented by higher Precontemplation and/or lower Action/Maintenance scores.

Data Analysis Plan

Descriptive statistics for study measures were generated and examined for normality. To test hypothesis 1, the agreement between adolescent and parent reports on parallel measures were estimated with Lin's concordance correlation coefficient (CCC)[49–50] and the associated 95% confidence intervals (CI). Lin's CCC evaluates the degree to which pairs of *continuous* measures fall on the 45 degree line through the origin. Thus a high CCC requires not only two measures to be linearly correlated with each other, but to also agree in the actual values. Lin's CCC's use significance cut off values similar to Kappa coefficients used for assessing agreement among *categorical* measures. Specifically >0.7 indicates excellent/strong agreement, 0.4 to 0.7 indicates moderate to good agreement, and <0.4 denotes marginal agreement. Differences between adolescent and parent reports on study measures were analyzed by paired t-test.

Correlation coefficients were used to test relationships between the variables on separate measures examined in hypothesis 2 (that greater pain catastrophizing will be positively associated with PSOCQ Precontemplation and negatively associated with Action/Maintenance scale scores) and hypothesis 3 (that a biopsychosocial perspective of pain will be positively associated with Action/Maintenance and negatively associated with Precontemplation scale scores) for both adolescents and parents. Both Spearman and

Pearson's correlations were examined for non-normally distributed variables. No meaningful differences were found for the significance levels between the two statistics, thus Pearson's correlations were reported for all relationships. A conservative cut-off value of $p<0.01$ was used as criteria for statistical significance for correlations to control for multiple tests. All tests were two-sided. Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS, version 17) and the R package (www.r-project.org).

Results

Table 1 presents demographic data for the sample. Sample demographics are consistent with that of other pediatric pain specialty clinic in the high representation of female, Caucasian adolescents of relatively high SES[51–52]. Table 2 presents descriptive statistics for study measures. Patients in our sample presented with longstanding pain (averaging over 2 years in duration) of moderate usual intensity.

Categorization into a dominant PSOCQ stage of change

We examined adolescent and parent dominant PSOCQ stage at the time of the initial evaluation (see Table 3). Almost half of the adolescents in our sample were categorized into a Precontemplation stage, while only 11% of the parents in our sample categorized in this stage. A Chi-square test was conducted to compare the adolescent and parent distributions of 3 stages of change: Precontemplation, Contemplation and Action/Maintenance (note that the parent Action and Maintenance scales were combined and coded as one category for this analysis). Results indicated between reporter differences for primary stage ($\chi^2(4) = 10.96$, $p = 0.03$). Specifically, 59/102 (58%) of parents were categorized in a conceptually "higher" stage in the model than the adolescent, 37 (36%) of the dyads were categorized into the same stage, while only 6 (6%) of the adolescents were a higher stage than their parent.

Agreement between adolescent-parent dyads

Results supported our prediction that agreement between adolescent and parent dyad reports of pain catastrophizing and readiness to change would be significant beyond that expected by chance. Specifically, "moderate to good" agreement was found for pain catastrophizing [Lin's concordance correlation coefficient (CCC) =0.43; 95% CI=0.28, 0.57]. Significant agreement was also found for all the PSOCQ readiness to change subscales, with the strength of the agreement falling within or close to the moderate to good range [Precontemplation (Lin's CCC=0.21; 95% CI=0.07, 0.35), Contemplation (Lin's CCC=0.36; 95% CI=0.18, 0.51), Parent Action with Adolescent Action/Maintenance (Lin's CCC=0.29; 95% CI=0.11, 0.46), and Parent Maintenance with Adolescent Action/Maintenance (Lin's CCC=0.50; 95% CI=0.34, 0.63)].

We did not find significant agreement between dyads related to their degree of endorsement of a biopsychosocial perspective of pain Lin's CCC=0.09, 95 % CI=-0.09, 0.27). However, a closer examination of this variable revealed significant agreement between reporters regarding specific perceptions of pain being caused by damage to the body (""Pain always means a part of the body is damaged"" Lin's CCC=0.22, 95 % CI=0.03, 0.40), but not affected by feelings and emotions ("Pain is affected by feelings and emotions" Lin's CCC=0.12, 95 % CI = −0.03, 0.27). Consistent with these findings, paired t-tests comparing adolescent and parent reports (see Table 2) showed that in comparison to parents, adolescents reported higher mean levels of usual pain, pain catastrophizing and PSOCQ Precontemplation, and lower scores on the biopsychosocial pain perspective items.

Correlations between measures for adolescent and parent reports

Table 4 presents Pearson correlations between pain catastrophizing, readiness to change, and biopsychosocial pain perspective for adolescents and parents, respectively.

Is greater pain catastrophizing associated with less readiness to change?

The hypothesis that greater pain catastrophizing (PCS) would be correlated with less readiness to change for adolescents and parents was partially supported (see Table 4). Specifically, greater pain catastrophizing by the parent (PCS-P) was correlated with parent reports of greater PSOCQ-P Precontemplation ($r = .251$, $p<.01$). Adolescent pain catastrophizing (PCS-C) did not attain a statistically significant correlation with PSOCQ-A Precontemplation ($r = .237$, $p = 0.017$) with our $p<.01$ cut off criteria; however, we did find a significant negative correlation between PCS-C scores and the PSOCQ-A Action/ Maintenance scale ($r = -.273$, $p<.01$). This is noteworthy from the standpoint of the pain stages of change theoretical model, as we would expect adolescent-reported Precontemplation to be negatively associated with their reports on Action/Maintenance.

Is stronger endorsement of a biopsychosocial perspective of pain associated with greater readiness to change?

Correlations between endorsement of a biopsychosocial perspective of pain and the PSOCQ measures provided results that were partially consistent with the PRCM (see Table 4). These findings were more consistent for parent than adolescent reports. Consistent with the model, we found that stronger adolescent endorsement of a biopsychosocial perspective of pain was related to lower PSOCQ-A Precontemplation scores ($r = -.299$, $p < .01$). However, we did not find a significant relationship between adolescent biopsychosocial perspective of pain and PSOCQ-A Action/Maintenance scores. Parent reports showed the expected relationships between stronger endorsement of a biopsychosocial perspective of pain and, 1) lower PSOCQ-P Precontemplation scores ($r = -.493$, $p < .01$), and 2) higher PSOCQ-P Action scores ($r = .349$, $p < .01$). However, we did not find the expected relationship between stronger parent endorsement of a biopsychosocial perspective of pain and higher PSOCQ-P Maintenance scores.

Based on these findings, correlations between the individual variables comprising the biopsychosocial perspective of pain score (i.e., “Pain always means a part of the body is damaged” and “Pain is affected by feelings and emotions”) were further explored for both adolescent and parent reports. Results presented in Table 4 showed that stronger endorsement of “pain always means a part of the body is damaged” was associated with greater PSOCQ-P Precontemplation ($r = .338$, $p < .01$) for parents, but was not significant for adolescent reports. In addition, stronger endorsement of “pain is affected by feelings and emotions” was associated negatively with PSOCQ-P Precontemplation ($r = -.389$, $p < .01$) and positively with Action ($r = .296$, $p < .01$) for parents, but were not related for adolescent reports.

Discussion

This study provides a foundation for understanding adolescent and parent pain beliefs and readiness to change at the time of an initial multidisciplinary pain clinic evaluation. Results generally support agreement between adolescent and parent perspectives on the majority of the variables examined, with the exception of those assessing beliefs that pain is “affected by feelings and emotions”. In addition, results support relationships among adolescent and parent reports of pain catastrophizing, a biopsychosocial perspective of pain, and readiness to change that are consistent with some, but not all expectations based on Biopsychosocial[26–27] and Pain Readiness to Change[35, 38] theoretical models. In general, parents' responses appeared to be more conceptually consistent with hypotheses guided by these models than adolescents' responses, and are considered in greater detail throughout this discussion.

Agreement between adolescent and parent reports on parallel measures

Findings related to similarity between adolescent and parent reports on measures generally showed significant levels of agreement in the modest to moderate range on most (pain catastrophizing and readiness to change), but not all, scales (i.e., biopsychosocial perspective). Our findings are consistent with research showing that adolescent-parent agreement differs across domains of functioning[53], with greater agreement typically occurring for more easily observable behaviors or domains (e.g., functional disability). Thus, the significant agreement found for adolescent-parent reports of pain catastrophizing and readiness to change may relate to more readily observable aspects of these constructs, while the biopsychosocial perspective of pain construct is less likely to be associated with any readily observable behaviors. The relatively high degree of agreement between adolescent and parent beliefs related to pain catastrophizing may suggest the importance of developing interventions to modify this pain belief in both parties in order to create successful, sustainable treatment outcomes.

Contrary to expectations, our findings failed to show strong agreement within adolescent-parent dyads on endorsement of a biopsychosocial perspective of pain as assessed by the composite biopsychosocial perspective of pain score. Upon further examination, we found both adolescents and parents rarely agreed with the statement, “Pain always means a part of the body is damaged,” and that parents showed stronger agreement that “pain is affected by feelings and emotions,” than adolescents. These findings are consistent with the developmental literature focusing on children's understanding of pain and illness symptoms, which suggests that an appreciation of the role of emotional and psychological factors in the pain experience is the most developmentally complex stage of understanding[54–56]. Future research is needed to examine whether adolescents with chronic pain are less developmentally advanced than peers with respect to their conceptualization of emotions influencing pain symptoms. Alternatively, adolescents in our sample may be reluctant to acknowledge the role of emotions in the pain experience due to concerns that treatment providers may dismiss their symptoms as being “all in your head”[57].

Agreement between adolescent-parent dyad reports of readiness to change was supported via significant Lin's CCC results for each of the PSOCQ scales. However, when we categorized adolescents and parents into a “dominant” stage at the time of the initial evaluation, we found that 48% of adolescents – compared to only 10.8% of parents – fell in the precontemplation stage, reflecting the least readiness to change. We interpret this pattern to indicate that at the time of the initial evaluation, parents, more so than adolescents, appear to value a self-management approach to treatment for chronic pain and take the initiative to seek out and schedule the multidisciplinary pain clinic evaluation. Adolescents may gravitate to the Precontemplation stage due to social desirability[57] and/or developmental[54–56] factors. It may also be that parent's more “advanced” stage of readiness is in part due to the items on the PSOCQ-P measure, which were intended to capture parent motivation to change their own mindset and behaviors based on perceptions of their adolescent's current behavior [38]. Parents may perceive having more control over their own motivation and behavior than they do regarding their adolescent's motivation and behavior. Additionally, parents may have understood the items on the PSOCQ measure better. Although comprehension of the PSOCQ measure was not assessed in this study, the 6th grade readability level for the adolescent measure was appropriate for the age range of the sample[38].

These findings may also point to the utility of enhanced education about components of effective multidisciplinary pediatric pain management prior to the initial appointment. This may include education regarding the benefits of a multidisciplinary approach and/or specific strategies communicated by a referring provider to the family, as well as parent discussion of this information with the patient prior to intake. Finally, it may be that categorization into a “dominant” stage, is not the most helpful metric for interpreting readiness to engage in “pain self management”. This is in part due to the fact that: 1) “pain self management”, as conceptualized by the PSOCQ scale, actually encompasses a range of specific behaviors each of which a patient may or may not be ready to engage in, and 2) that a given “dominant” stage, particularly when scores on one subscale are only marginally higher than on others, is not necessarily conceptually independent from the other PSOCQ stages. Further prospective research is needed to understand the extent to which a “dominant” stage variable relates to treatment outcomes and/or if potentially a “stage profile”[58] may be more sensitive to accurately capturing and understanding readiness to change over time. “Stage profiles” have more recently been examined among adult chronic pain patients in order to take advantage of the multidimensional nature of the PSOCQ measure and to identify groups of individuals who vary across stage scale scores in reliable patterns[58]. For example, rather than relying on a “dominant” scale that uses only the highest individual stage score for categorization, individuals may be grouped as Precontemplation or as Contemplation because they also have particular patterns of low scores on other subgroup scales. Consistent with the TTM, patients with a Precontemplation or Contemplation stage profile may benefit most by increasing receptiveness to considering a self-management approach and emphasizing experiential processes of change, whereas a patient in the Action stage would be better served by introducing other types of strategies.

Relationships between pain catastrophizing and readiness to change

Our hypotheses regarding relationships between pain catastrophizing and readiness to change were partially supported. Specifically, we found that greater parent catastrophizing about the adolescent’s pain was related to less readiness to change (as reflected by higher levels of PSOCQ-P Precontemplation). However, less parental pain catastrophizing was not specifically related to greater readiness to change on either of the PSOCQ-P Action or Maintenance scales. In contrast, for adolescents we found that less pain catastrophizing was significantly correlated with greater readiness to change (as indicated by the PSOCQ-A Action/Maintenance scale), but that more catastrophizing was not significantly related to less readiness to change (as reflected in the PSOCQ-A Precontemplation scale). When compared to the PSOCQ validation sample, the current findings are consistent for parent report and for the negative relationship between adolescent catastrophizing and PSOCQ-A Action/Maintenance[38]. While the correlation between adolescent catastrophizing and PSOCQ-A Precontemplation ($r = .237$, $p = 0.017$) did not attain statistical significance with our conservative $p < .01$ criteria, we note that the relationship holds the same direction as the correlation reported for the larger validation sample ($r = 0.33$, $p < .001$)[38]. Collectively, these results provide general support for the predicted relationships between pain catastrophizing and PSOCQ scales reflecting stages associated with the greatest and least readiness to change, though future research is needed to further confirm these findings.

When correlations between adolescent and parent reports were examined, we found a significant relationship between adolescent pain catastrophizing and both parent catastrophizing and parent perceptions of readiness to change. While the direction of these relationships cannot be established with this correlational data, the findings may indicate the presence of bi-directional effects between these variables and reporters. For example, it may be that adolescent pain catastrophizing influences parent catastrophizing and readiness to take a self-management approach to coping with the adolescent’s pain problem.

Alternatively, parent ambivalence about a self-management approach to pain coping may be related to greater adolescent catastrophizing. While future longitudinal research is needed to understand causal relationships among these variables, our findings provide initial support for the importance of simultaneously considering the role of both parent and patient pain beliefs such as pain catastrophizing in future chronic pediatric pain studies.

Relationships between a biopsychosocial perspective of pain and readiness to change

Our final hypothesis that stronger endorsement of a biopsychosocial perspective of pain would be associated with greater readiness to change was partially supported. These findings more consistently aligned with the Pain Stages of Change model for parent than adolescent reports. We found that adolescents who more strongly endorsed a biopsychosocial perspective of pain had lower PSOCQ-A Precontemplation scores. However, these adolescents who endorsed a stronger biopsychosocial perspective of pain did not also report more readiness to change as indicated by greater PSOCQ-A Action/Maintenance scores. In addition, neither the “Pain is affected by feelings and emotions” nor the “Pain always means a part of the body is damaged” items comprising the biopsychosocial perspective of pain scale were correlated with PSOCQ-A Action/Maintenance. This negative result may be related to the fact that data collection occurred prior to the initial evaluation. The “Action/ Maintenance” stage reflects a sense of personal responsibility for pain control and routine application of self-management strategies (e.g., relaxation techniques, etc.) that many adolescents may not have learned yet. As patients are frequently referred to specialized pain clinics to access additional support for developing pain management strategies, it may not be realistic to expect that many adolescents would be categorized into the “Action/ Maintenance” stage at the time of the initial evaluation.

More consistent with the Pain Readiness to Change Model, we found stronger parent endorsement of a biopsychosocial perspective of pain was associated both with less PSOCQ-P Precontemplation and with greater readiness to change (as reflected by PSOCQ-P Action, but not Maintenance scores). Again, we suggest that the lack of correlation with the PSOCQ-Maintenance scale may be related to the context of the initial evaluation and limited prior access to effective pain management strategies. Closer examination of the items that comprised the biopsychosocial perspective of pain scale showed that greater parent endorsement that “pain always means a part of the body is damaged” was related to greater precontemplation, while greater endorsement that “pain is affected by feelings and emotions” was related to less precontemplation and greater action. Collectively, we interpret our results to suggest that less “buy in” to a biopsychosocial perspective of pain is related to less perceived responsibility for pain control/interest in implementing behavioral changes for both adolescents and parents.

Some limitations to this study are important to consider. The cross sectional nature of the data reported limits our ability to understand causal links among variables. While beyond the scope of the current manuscript, it will be important to examine causal relationships among these variables in future research. Our sample had limited ethnic/racial and gender diversity and was primarily composed of female adolescents with chronic musculoskeletal pain and their mothers, which may limit the ability to generalize these findings. We note that the two items used to create the “biopsychosocial perspective of pain” variable provided us with a brief, but potentially limited, approach to capturing a complex construct. Future research is needed to determine how to best assess parent and child perspectives on potential causes and factors relating to chronic pain that encompass a “biopsychosocial perspective”. In addition, the parent Precontemplation scale on the recently validated PSOCQ-P measure shows a relatively low alpha reliability in the current sample (0.67) that may limit how robust the findings are for this scale. While the reliability for this scale in the larger validation sample is somewhat better (alpha = 0.72), we encourage additional research to better understand the reliability, stability, and implications of this scale in other samples.

Furthermore, as our understanding of the neurophysiologic complexities inherent to chronic pain processing advances, future research is needed to explore the extent to which patient and parent perspectives related to the cause and meaning of chronic pain keeps pace with this new knowledge. For example, the important role that “central sensitization”[9, 59] provides in understanding the qualitative changes in central pain processing networks that occur in chronic pain suggests that the cause is neither purely physical nor psychological, but rather falls somewhere in between. Thus, we acknowledge that our measure takes an overly simplistic approach to capturing a “biopsychosocial perspective” by forcing an artificial dichotomy between what is "physical" and what is "psychological". That said, it is our clinical experience that overwhelming majority of pediatric patients and parents are not familiar with concept of “central sensitization” and are at best considering *both* physical and psychological factors vs. *only* focusing on physical factors as a potential contributor to the pain problem. As the complex causes for chronic pain syndromes become more widely understood, patient and parents understanding will hopefully follow and become an important consideration for future research.

Despite these limitations, the current study provides an important initial effort to document and better understand relationships between adolescent and parent pain beliefs and motivation to engage in a self-management approach to pain coping prior to an initial pain clinic evaluation. Our findings provide general support for concordance between adolescent-parent perspectives on pain catastrophizing and readiness to change, yet highlight differences in perspectives on whether pain is affected by feelings and emotions. Relationships between variables were generally more consistent with predictions based on Biopsychosocial and Pain Readiness to Change Models for parents than adolescents and are likely associated with developmental considerations. We maintain that it is essential to understand both the adolescent and parent perspective related to these constructs in order to obtain a more complete understanding of the pain experience in which they are both key stakeholders. These findings may inform future model building, hypothesis generation and prospective research efforts. A better understanding of the relationships between pain beliefs and readiness to change, as well as consistent domains of adolescent-parent concordance and discordance, may help tailor assessment and intervention efforts to affect the most positive outcomes for chronic pediatric pain patients and their families.

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References

1. Kashikar-Zuck S, Goldschneider KR, Powers SW, et al. Depression and functional disability in chronic pediatric pain. Clin J Pain. 2001; 17:341–349. [PubMed: 11783815]

2. Walker LS, Garber J, Greene JW. Psychosocial correlates of recurrent childhood pain: A comparison of pediatric patients with recurrent abdominal pain, organic illness, and psychiatric disorders. J Abnorm Psychol. 1993; 102:248–258. [PubMed: 8315137]
3. Palermo TM. Impact of recurrent and chronic pain on child and family daily functioning: A critical review of the literature. J Dev Behav Pediatr. 2000; 21:58–69. [PubMed: 10706352]
4. Bursch B, Walco GA, Zeltzer LK. Clinical assessment and management of chronic pain and pain-associated disability syndrome. J Dev Behav Pediatr. 1998; 19:45–53. [PubMed: 9524306]
5. Stanford EA, Chambers CT, Biesanz JC, et al. The frequency, trajectories and predictors of adolescent recurrent pain: a population-based approach. Pain. 2008; 138
6. Bennett SM, Huntsman E, Lilley CM. Parent perceptions of the impact of chronic pain in children and adolescents. Child Health Care. 2000; 29:147–159.
7. Eccleston C, Crombez G, Scotford A, et al. Adolescent chronic pain: Patterns and predictors of emotional distress in adolescents with chronic pain and their parents. Pain. 2004; 108:221–229. [PubMed: 15030941]
8. Jordan AL, Eccleston C, Osborn M. Being a parent of the adolescent with complex chronic pain: An interpretative phenomenological analysis. European Journal of Pain. 2007; 11:49–56. [PubMed: 16458550]
9. Walco, GA.; Rozelman, H.; Maroof, DA. The assessment and management of chronic and recurrent pain in adolescents. In: O'Donohue, WT.; Tolle, LW., editors. Behavioral approaches to chronic disease in adolescence: A guide to integrative care. New York, NY: Springer Science + Business Media; 2009. p. 163-175.
10. Eccleston C, Palermo TM, Williams A, et al. Psychological therapies for the management of chronic and recurrent pain in children and adolescents (Review). Cochrane Database of Systematic Reviews 2009. 2009:1–52.
11. Simons LE, Logan DE, Chastain L, et al. Engagement in multidisciplinary interventions for pediatric chronic pain: Parental expectations, barriers, and child outcomes. The Clinical Journal of Pain. 2010; 26:291–299. [PubMed: 20393263]
12. De Civita M, Dobkin PL. Pediatric Adherence: Conceptual and Methodological Considerations. Child Health Care. 2005; 34:19–34.
13. Sullivan MJL, Bishop SR, Pivik J. The pain catastrophizing scale: Development and validation. Psychological Assessment. 1995; 7:524–532.
14. Crombez G, Bijttebier P, Eccleston C, et al. The child version of the pain catastrophizing scale (PCS-C): A preliminary validation. Pain. 2003; 104:639–646. [PubMed: 12927636]
15. Sullivan MJL, Thorn BE, Haythornthwaite J, et al. Theoretical perspectives on the relation between catastrophizing and pain. Clin J Pain. 2001; 17:52–64. [PubMed: 11289089]
16. Lewis HA, Kliewer W. Hope, coping, and adjustment among children with sickle cell disease: Tests of mediator and moderator models. J Pediatr Psychol. 1996; 21:25–41. [PubMed: 8820071]
17. Gil KM, Thompson RJ, Keith BR, et al. Sickle cell disease pain in children and adolescents: Change in pain frequency and coping strategies over time. J Pediatr Psychol. 1993; 18:621–637. [PubMed: 8295083]
18. Walker LS, Smith CA, Garber J, et al. Development and validation of the pain response inventory for children. Psychological Assessment. 1997; 9:392–405.
19. Thomsen AH, Compas BE, Colletti RB, et al. Parent reports of coping and stress responses in children with recurrent abdominal pain. J Pediatr Psychol. 2002; 27:215–226. [PubMed: 11909929]
20. Walker LS, Smith CA, Garber J, et al. Testing a Model of Pain Appraisal and Coping in Children With Chronic Abdominal Pain. Health Psychol. 2005; 24:364–374. [PubMed: 16045372]
21. Huguet A, Eccleston C, Miró J, et al. Young people making sense of pain: Cognitive appraisal, function, and pain in 8–16 year old children. European Journal of Pain. 2009; 13:751–759. [PubMed: 18801680]
22. Walker LS. Psychological factors in the development and natural history of functional gastrointestinal disorders. J Pediatr Gastroenterol Nutr. 2008; 47:687–688. [PubMed: 18955878]

23. Goubert L, Eccleston C, Vervoort T, et al. Parental catastrophizing about their child's pain. The parent version of the Pain Catastrophizing Scale (PCS-P): a preliminary validation. Pain. 2006; 123:254–263. [PubMed: 16644128]
24. Caes L, Vervoort T, Eccleston C, et al. Parental catastrophizing about child's pain and its relationship with activity restriction: The mediating role of parental distress. Pain. 2011; 152:212–222. [PubMed: 21126822]
25. Vowles KE, Cohen LL, McCracken LM, et al. Disentangling the complex relations among caregiver and adolescent responses to adolescent chronic pain. Pain. 2010; 151:680–686. [PubMed: 20833472]
26. Engel GL. The clinical application of the biopsychosocial model. Am J Psychiatry. 1980; 137:535–544. [PubMed: 7369396]
27. Gatchel RJ, Peng YB, Peters ML, et al. The biopsychosocial approach to chronic pain: scientific advances and future directions. Psychol Bull. 2007; 133:581–624. [PubMed: 17592957]
28. Berde, CB.; Solodiuk, J. Multidisciplinary programs for management of acute and chronic pain in children. In: Schechter, NL.; Berde, CB.; Yaster, M., editors. Pain in Infants, Children, and Adolescents. Philadelphia: Lippincott Williams & Wilkins; 2003. p. 471-486.
29. Sherry DD, Wallace CA, Kelley C, et al. Short- and Long-term Outcomes of Children with Complex Regional Pain Syndrome Type I Treated with Exercise Therapy. Clin J Pain. 1999; 15:218–223. [PubMed: 10524475]
30. Eccleston C, Malleson PN, Clinch J, et al. Chronic pain in adolescents: Evaluation of a programme of interdisciplinary cognitive behaviour therapy. Arch Dis Child. 2003; 88:881–885. [PubMed: 14500306]
31. Malleson PN, Connell H, Bennett SM, et al. Chronic musculoskeletal and other idiopathic pain syndromes. Arch Dis Child. 2001; 84:189–192. [PubMed: 11207160]
32. Hechler T, Dobe M, Kosfelder J, et al. Effectiveness of a 3-week multimodal inpatient pain treatment for adolescents suffering from chronic pain: Statistical and clinical significance. The Clinical Journal of Pain. 2009; 25:156–166. [PubMed: 19333163]
33. Crushell E, Rowland M, Doherty M, et al. Importance of parental conceptual model of illness in severe recurrent abdominal pain. Pediatrics. 2003; 112:1368–1372. [PubMed: 14654611]
34. Jensen MP, Nielson WR, Kerns RD. Toward the development of a motivational model of pain self-management. J Pain. 2003; 4:477–492. [PubMed: 14636816]
35. Kerns RD, Habib S. A critical review of the pain readiness to change model. J Pain. 2004; 5:357–367. [PubMed: 15501193]
36. Kerns RD, Rosenberg R, Jamison RN, et al. Readiness to adopt a self-management approach to chronic pain: the Pain Stages of Change Questionnaire (PSOCQ). Pain. 1997; 72:227–234. [PubMed: 9272807]
37. Prochaska, JO.; DiClemente, CC. The transtheoretical approach; crossing traditional boundaries of therapy. Homewood, IL: Dow Jones-Irwin; 1984.
38. Guite JW, Logan DE, Simons LE, et al. Readiness to change in pediatric chronic pain: Initial validation of adolescent and parent versions of the Pain Stages of Change Questionnaire. Pain. 2011; 152:2301–2311. [PubMed: 21802852]
39. Jensen MP, Nielson WR, Turner JA, et al. Changes in readiness to self-manage pain are associated with improvement in multidisciplinary pain treatment and pain coping. Pain. 2004; 111:84–95. [PubMed: 15327812]
40. Kerns RD, Rosenberg R. Predicting responses to self-management treatments for chronic pain: application of the pain stages of change model. Pain. 2000; 84:49–55. [PubMed: 10601672]
41. Biller N, Arnstein P, Caudill MA, et al. Predicting completion of a cognitive-behavioral pain management program by initial measures of a chronic pain patient' s readiness for change. Clin J Pain. 2000; 16:352–359. [PubMed: 11153793]
42. Bandura, A. Social learning theory. Englewood Cliffs, NJ: Prentice-Hall; 1977.
43. Palermo TM, Chambers CT. Topical review: Parent and family factors in pediatric chronic pain and disability: An integrative approach. Pain. 2005; 119:1–4. [PubMed: 16298492]
44. Hollingshead, AB. Four-factor index of social status. New Haven: Yale University, Department of Sociology; 1975.

45. Varni JW, Thompson KL, Hanson V. The Varni/Thompson Pediatric Pain Questionnaire: I. Chronic musculoskeletal pain in juvenile rheumatoid arthritis. Pain. 1987; 28:27–38. [PubMed: 3822493]
46. McGrath, PA. Pain in Children: Nature, Assessment, and Treatment. New York, NY: Guilford Press; 1990.
47. Price DD, McGrath PA, Rafii A, et al. The validation of visual analogue scales as ratio scale measures for chronic and experimental pain. Pain. 1983; 17:45–56. [PubMed: 6226917]
48. Guite JW, Logan DE, McCue RL, et al. Parental beliefs and worries regarding adolescent chronic pain. The Clinical Journal of Pain. 2009; 25:223–232. [PubMed: 19333173]
49. Lin LI-K. A concordance correlation coefficient to evaluate reproducibility. Biometrics. 1989; 45:255–268. [PubMed: 2720055]
50. Lin LI-K. A note on the concordance correlation coefficient. Biometrics. 2000; 56:324–325.
51. Gauntlett-Gilbert J, Eccleston C. Disability in adolescents with chronic pain: Patterns and predictors across different domains of functioning. Pain. 2007; 131:132–141. [PubMed: 17267129]
52. Kashikar-Zuck S, Flowers SR, Claar RL, et al. Clinical utility and validity of the Functional Disability Inventory among a multicenter sample of youth with chronic pain. Pain. 2011; 152:1600–1607. [PubMed: 21458162]
53. Cohen LL, Vowles KE, Eccleston C. Adolescent chronic pain-related functioning: concordance and discordance of mother-proxy and self-report ratings. Eur J Pain. 2010; 14:882–886. [PubMed: 20189421]
54. Bibace R, Walsh ME. Development of children's concept of illness. Pediatrics. 1980; 66:912–917. [PubMed: 7454481]
55. Gaffney A, Dunne EA. Children's understanding of the causality of pain. Pain. 1987; 29:91–104. [PubMed: 3588004]
56. Gaffney AA, Dunne EA. Developmental aspects of children's definitions of pain. Pain. 1986; 26:105–117. [PubMed: 3737225]
57. Logan DE, Claar RL, Scharff L. Social desirability response bias and self-report of psychological distress in pediatric chronic pain patients. Pain. 2008; 136:366–372. [PubMed: 17822848]
58. Kerns RD, Wagner J, Rosenberg R, et al. Identification of subgroups of persons with chronic pain based on profiles on the pain stages of change questionnaire. Pain. 2005; 116:302–310. [PubMed: 15985332]
59. Woolf CJ. Central sensitization: Implications for the diagnosis and treatment of pain. Pain. 2011; 152:S2–S15. [PubMed: 20961685]

Table 1

Demographic Variables

	Mean or n	**(SD) or %**
Adolescent Age	15.7	(1.4)
Adolescent Gender: Females	81	79.4%
Adolescent Ethnicity: Caucasian	90	88.2%
Adolescent Grade in School	9	1.48
Adolescent Pain Duration in Months	27.2	(27.4)
Parent Participant: Mother	91	89.2%
Doctor's Office Visits for Pain in Past Year (raw count)	15.5	(18.3)
Number of Persons Living in the Home	4.4	(1.0)
Family SES (Hollingshead Scale)	49.5	(10.7)
Adolescent Pain Diagnostic Category		
Diffuse Musculoskeletal Pain	38	37.3%
Complex Regional Pain Syndrome (CRPS)– Type1	25	24.5%
Localized Musculoskeletal Pain	27	26.5%
Back Pain	3	2.9%
Chest or Torso Pain	2	2.0%
Intermittent Musculoskeletal Pain – Diffuse	4	3.9%
Intermittent Musculoskeletal Pain – Localized	3	2.9%

Table 2

Descriptive data for study measures

Measure	Adolescent Report n=102 M	Adolescent Report n=102 SD	Parent Report n=102 M	Parent Report n=102 SD	Paired t-value (significance)
Pain Intensity (0–100mm VAS scale)					
Usual Pain	59.17	22.06	54.72	22.72	2.72 (0.008)
Most Pain	85.02	18.3	80.78	20.48	2.40 (0.018)
Least Pain	35.35	22.21	39.28	23.98	−1.85 (0.068)
Pain catastrophizing (PCS-C and PCS-P)	30.89	10.33	26.52	11.43	3.94 (<0.001)
Biopsychosocial perspective of pain					
BIOPSYCH (range 0–20)	11.97	3.66	13.39	2.69	−2.92 (0.004)
DAMAGE (range 0–10)	3.98	3.04	4.25	2.96	−0.74 (0.460)
EMOTION (range 0–10)	5.95	2.68	7.65	2.10	−5.48 (<0.001)
Readiness to change					
Precontemplation (PSOCQ-A,PSOCQ-P)	3.63	0.84	3.02	0.67	6.75 (<0.001)
Contemplation (PSOCQ-A, PSOCQ-P)	3.53	0.57	3.67	0.58	−2.09 (0.039)
Action/Maintenance (PSOCQ-A)	3.35	0.67	-	-	
Action (PSOCQ-P)	-	-	3.79	0.56	
Maintenance (PSOCQ-P)	-	-	3.32	0.70	

Note. BIOPSYCH = “Biopsychosocial perspective of pain” total score; DAMAGE = “Pain always means a part of the body is damaged”; EMOTION = ”Pain is affected by feelings and emotions”

Table 3

Numbers of adolescents (N=102) and parents (N=102) in each “dominant” PSOCQ scale category

	PSOCQ-A	**PSOCQ-P**
“Dominant” Pain Stages of Change Questionnaire Scale	**n (%)**	**n (%)**
Precontemplation	49 (48.0)	11 (10.8)
Contemplation	27 (26.5)	28 (27.5)
Action/Maintenance (PSOCQ-A only)	26 (25.5)	-
Action (PSOCQ-P only)	-	39 (38.2)
Maintenance (PSOCQ-P only)	-	24 (23.5)

Note. PSOCQ-A=Pain Stages of Change Questionnaire for Adolescents; PSOCQ-P=Pain Stages of Change Questionnaire for Parents

Table 4

Pearson correlations for measures reported by adolescents and by parents

			Adolescent Report			
Measure		**PCS-C**	**PSOCQ-A**			
			Precontemplation	**Contemplation**	**Action/ Maintenance**	
PSOCQ-A	Precontemplation	.237				
	Contemplation	.181				
	Action/Maintenance	−.273*				
BPP	DAMAGE	.136	.208	.095	−.028	
	EMOTION	.178	−.171	.206	.201	
	BIOPSYCH	.017	−.299*	.072	.171	
			Parent Report			
Measure		PCS-P	PSOCQ-P			
			Precontemplation	Contemplation	Action	Maintenance
PSOCQ-P	Precontemplation	.251*				
	Contemplation	.034				
	Action	−.066				
	Maintenance	−.082				
BPP	DAMAGE	.251*	.338*	−.077	−.225	−.085
	EMOTION	−.005	−.389*	.251*	.296*	−.001
	BIOPSYCH	−.205	−.493*	.205	.349*	.067

Note. PCS-C=Pain Catastrophizing Scale for Children; PCS-P=Pain Catastrophizing Scale for Parents; PSOCQ-A=Pain Stages of Change Questionnaire for Adolescents; PSOCQ-P=Pain Stages of Change Questionnaire for Parents; BPP=Biopsychosocial Perspective of Pain; BIOPSYCH = “Biopsychosocial perspective of pain” total score; DAMAGE = “Pain always means a part of the body is damaged”; EMOTION = ”Pain is affected by feelings and emotions”

*Correlation is significant at $p < 0.01$