

The Longitudinal Impact of Parent Distress and Behavior on Functional Outcomes Among Youth With Chronic Pain

Erika T. Chow,^{*,†} John D. Otis,^{‡,§,¶} and Laura E. Simons^{*,||,**}

^{*}Division of Pain Medicine, Department of Anesthesiology, Perioperative and Pain Medicine, Boston Children's Hospital, Boston, Massachusetts.

[†]Boston University School of Medicine, Boston, Massachusetts.

[‡]Research Division, VA Boston Healthcare System, Boston, Massachusetts.

[§]Department of Psychiatry, Boston University School of Medicine, Boston, Massachusetts.

[¶]Department of Psychological and Brain Sciences, Boston University, Boston, Massachusetts.

^{||}Department of Psychiatry, Harvard Medical School, Boston, Massachusetts.

^{**}P.A.I.N. Group, Boston Children's Hospital and Center for Pain and the Brain, Boston, Massachusetts.

Abstract: Accumulating evidence supports the concurrent association between parent distress and behavior and child functioning in the context of chronic pain, with existing longitudinal studies limited to a pediatric surgical context that identify parent catastrophizing as influential. In this study, we examined how parent factors assessed at a multidisciplinary pediatric pain clinic evaluation affect child psychological and functional outcomes over time. A cohort of 195 patients with chronic pain (ages 8–17 years) and their parents who presented for a multidisciplinary evaluation completed measures at baseline and at 4-month follow-up. Patients completed measures of pain catastrophizing, pain-related fear and avoidance, generalized anxiety, depressive symptoms, and functional disability. Parents completed measures of pain catastrophizing, pain-related fear and avoidance, and protective responses to child pain. Parent-reported child school functioning was also collected. Parent distress and behavior was concurrently associated with child distress and functioning at evaluation. After controlling for baseline child functioning, baseline parent avoidance and protective behavior emerged as significant predictors of child functioning at 4-month follow-up. Parent distress and behavior influence child distress and functioning over time and these findings identify key parent domains to target in the context of a child's pain treatment.

Perspective: Parent behavior, specifically avoidance and protective responses, influence child distress and functioning over time. Child pain treatment interventions should include influential parent factors to ensure successful outcomes.

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The correlation between parent distress and behavior and child psychological and physical functioning has been established,^{15,16,28,34,38,49} and several recent models have been proposed to map out how parent factors interrelate and influence the child's

pain experience.^{14,25,27,38} Among the current cross-sectional findings, parent catastrophizing has been linked to a parent's tendency to encourage his or her child to control pain rather than engage in activities, which affects child disability,⁵¹ child anxiety,²⁸ child depressive symptoms,^{28,35} and child pain catastrophizing.¹¹ Parent catastrophizing and protective behavior have also been shown to directly affect school attendance and functioning, with protectiveness mediating this relationship.¹⁶ These 2 parent factors have also been shown to influence disability in a different order, with parent protectiveness affecting functional disability indirectly through pain catastrophizing.⁴⁹ Parent avoidance of activities has been shown to indirectly contribute to child avoidance and parent fear indirectly contributes to child distress.²⁷

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Address reprint requests to Laura E. Simons, PhD, Boston Children's Hospital, 21 Autumn St., Boston, MA 02215. E-mail: laura.simons@childrens.harvard.edu

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Collectively, these investigations have focused on how parent distress and behavior relate to the existing psychological and functional disability profile of a child, with little work carried out on how child psychological and physical functioning is affected over time, particularly in a pediatric chronic pain setting. Existing longitudinal studies have examined the influence of parent factors on child outcomes in the context of surgery. These studies have identified parent catastrophizing as a key cognitive bias associated with worse outcomes in children.^{23,24,31}

A profile of parent distress and behavior and how they affect a child's chronic pain over time is needed and would greatly contribute toward refining the models that have been put forth. The goal of this study is to provide initial data regarding the influences of parental distress and behavior on a child in the context of chronic pain over time. The data from this study could inform future directions of treatment of pediatric chronic pain involving parents. Current interventions that address parent influence on the pediatric chronic pain experience generally focus on operant techniques that teach parents how to respond to a child's pain or how to encourage a child to cope with the pain.⁹ Despite the accumulating evidence that parent distress can influence a child's pain experience, none of these treatments directly targeted parent distress or the effect it could have on parent behavior and consequently on child distress and behavior.⁹ Two recent interventions do seem to be more focused on the parent experience: one through the use of art therapy²⁹ and another through parent problem-solving skills.²⁶ The problem-solving intervention yielded promising results of decreased parental distress and protective behavior with concomitant improvements in child distress and functioning (without the child even involved in direct treatment).²⁶ A primary goal of the current study is to not only provide impetus for more parental interventions but also help to identify specific targets to be addressed.

For this investigation, parent pain-related distress was represented by pain-related fear, magnification and rumination, and helplessness. Parent behavior was represented by avoidance of activities and protective behavior. We hypothesized that 1) parent distress and behavior would be associated with child pain-related distress and functioning at baseline, 2) associations between baseline parent factors and child outcomes at 4 months would continue to be significantly related, albeit more modestly, and 3) after controlling for the predictive effects of child baseline factors and age (given that previous studies suggest that the interplay of child and parent factors may change as a child gets older and cognitions change,² we controlled for child age in our predictive models), parent distress and behavior would significantly predict child pain-related fear, avoidance of activities, pain catastrophizing, depression, anxiety, functional disability, and school functioning.

Methods

Participants and Procedure

Children aged 8 to 19 years with chronic pain and an accompanying parent who consecutively presented for initial evaluation from January 2012 to April 2014 at the Chronic Pain Clinic at Boston Children's Hospital were invited to participate, thus minimizing selection bias. Patients were recruited regardless of pain site, diagnosis, or duration. The only inclusion criteria were that patients needed to be able to speak English sufficiently to complete the measures (because the measures used have not had their validity tested in other languages), and patients must have been 8 years or older to ensure the ability to read and understand the questionnaire items.

Patients and their parents consented/assented to the study to a research assistant and asked if their responses to the clinic evaluation measures could be used in addition to measures that were completed as part of a larger institutional review board-approved study designed to develop a child screening tool for pediatric pain.³⁷ Within this larger cohort ($n = 321$), we tested the Interpersonal Fear Avoidance Model, which examined child and parent variables, but focused only on the child outcome of disability and did not look at these relationships longitudinally, which is the primary aim of the current study.⁴ The current sample size was determined by the larger institutional review board-approved study; thus, we conducted a sensitivity analysis to determine if our study was sufficiently powered to detect significant effects using G*Power 3.¹⁰ With an α set at .05, power set to .80, total sample size of 195, and inclusion of 5 predictors in our regression models, we were powered to detect small effect sizes ($f^2 \geq .068$).

During the initial evaluation of the children, the treatment team, which consisted of a physician, a physical therapist, and a clinical psychologist, met to discuss assessment and recommendations for treatment. The treatment recommended typically involved some combination of medical, physical, and psychological intervention. Within this study sample, for medical treatment, 69% were recommended a new medication or dosage change to the current medication. For physical therapy, 50% were recommended to initiate physical therapy and 29% were recommended to continue already existing physical therapy. For psychology, 70% were recommended to initiate outpatient psychological treatment and 33% were recommended to continue with their current provider. Overall, patients were adherent to medical recommendations (94%) and physical therapy recommendations (92%), but they were relatively less adherent to psychology treatment recommendations (73%).³⁷

Four months after evaluation within the context of the screening tool validation procedures, patients and their parents were contacted via phone and asked to complete the same measures via REDCap (Research

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