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Efficacy of a Brief Relaxation Training Intervention for Pediatric Recurrent Abdominal Pain

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This study is a preliminary investigation of the efficacy of a brief intervention for recurrent abdominal pain (RAP) via a multiple baseline across subjects design. The intervention consisted of a single 1-hour session including psychoeducation and coaching of breathing retraining; the length, duration, and content of the intervention were designed with a goal of maximum portability to primary-care settings. Five children with recurrent abdominal pain participated in this study, 1 of whom served as a pilot participant. Children received the intervention at 1-week intervals. Parent and child reports of each child's abdominal pain, general somatic complaints, functional disability, and anxiety were collected throughout the study. All children participated in a 3-month follow-up session. Results indicated that this brief intervention was successful in lessening abdominal pain, as demonstrated by decreased Abdominal Pain Index (API) scores in two children and decreased abdominal pain following breathing retraining practice in all children. The intervention was also successful in decreasing some children's general somatic symptoms. Functional disability and anxiety symptoms remained consistent for all children throughout the study, which may be due to low levels of these symptoms pretreatment. Limitations and directions for future research are discussed.

Recurrent abdominal pain (RAP) is a prevalent chronic pain condition in children that has been implicated in the development of other gastrointestinal disorders over time (Colletti, 1998; Feuerstein & Dobkin, 1990; Stickler & Murphy, 1979; Walker, Garber, Van Slyke, & Greene, 1995; Walker, Guite, Duke, Barnard, & Greene, 1998). Children with RAP experience abdominal pain in the absence of an identifiable biological cause and generally have functional impairment in a variety of settings (Apley, 1975; Kaminsky, Robertson, & Dewey, 2006).

Anxiety has been hypothesized to be a causal factor in the development of RAP, because parental anxiety predicts the occurrence of RAP in children and because somatic complaints such as stomach pain are common in anxious individuals (Garber, Zeman, & Walker, 1990; Liakopoulou-Kairis et al., 2002; Ramchandani, Stein, Hotopf, & Wiles, 2006; Wasserman, Whitington, & Rivara, 1988; Woodbury, 1993).

Children with RAP are typically treated by their pediatricians or family practitioners; however, standard medical treatment has not proven to be effective with this population (Frazer & Rappaport, 1999; Walker, Garber, Smith, Van Slyke, & Claar, 2001). Some cognitive-behavioral treatments for RAP have appeared promising (e.g., Banez & Gallagher, 2006; Janicke & Finney, 1999; Robins, Smith, Glutting, & Bishop, 2005), but multiple barriers to these types of treatments for RAP exist, including length of the interventions and service setting (Robins et al., 2005; Walker et al., 2001). Brief treatments for anxiety may be beneficial in lessening costs, increasing compliance, and improving RAP complaints (Ramchandani et al., 2006). With the goal of creating a brief, one-session intervention that could be implemented in a physician's office, where most children with RAP do seek treatment (Walker et al., 2001), the aim of this multiple baseline across subjects study was to create a preliminary investigation of the effect of psychoeducation and breathing retraining on RAP symptoms. These two interventions are commonly used in cognitive-behavioral treatments of anxiety disorders and can be taught in one session. Breathing retraining can directly affect physiological responding (Chorpita & Southam-Gerow, 2006; Hazlett-Stevens & Craske, 2003; Houghton & Saxon, 2007; Ley, 1999) and can also provide its users with a sense of control (Garssen, de Ruiter, & Van Dyck, 1992), which is related to lower levels of anxiety (e.g., Sanderson, Rapee, & Barlow, 1989; Weems, Silverman, Rapee, & Pina, 2003). The hypotheses of this study were that children would report fewer and less intense abdominal

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pain episodes, less functional disability, fewer somatic complaints, and fewer anxiety symptoms following the intervention.

Methods

Participants

Five children between the ages of 6 and 16 participated in this study. All children had nonorganic recurrent abdominal pain or recurrent abdominal pain in excess of that expected from the child's medical condition, as determined by each child's physician. Only children who had undergone medical evaluation to rule out medical conditions that could account for recurrent abdominal pain were accepted into the study. Children whose physicians determined they did not have an organic cause for their pain or who had pain in excess of what their physicians deemed likely to occur from their medical condition were admitted into the study. Children were included if they had demonstrated abdominal pain consistent with Apley's (1975) definition of RAP (e.g., three or more pain episodes in the last 3 months), as well as some level of functional disability (e.g., missed school due to pain). In order to participate in this study, parents agreed that their children would not pursue additional treatments, either medical or psychological, during the study duration, although children did continue with treatment as usual (e.g., medications they had already been stabilized on). One child was recruited through a gastroenterology clinic in a regional children's hospital and was used as a pilot case, as the first author was subsequently unable to recruit additional participants from this location. The other four children were recruited locally from advertising in the community, and were treated in a multiple baseline across subjects design.

The child in the pilot case, "Jeffrey," was a 9-year-old Caucasian boy who had been having stomach pain for 1 year and was diagnosed with irritable bowel syndrome (IBS) 6 months before enrolling in the study. Throughout the duration of the study, he continued to take a medication for IBS that he had been stabilized on for a month before joining the study. The first child in the multiple baseline design, "Lisa," was an 8-year-old Caucasian girl who had been having stomach pain for over a year and had been diagnosed with acid reflux. Throughout the duration of the study, she continued to take an antacid medication that she had been stabilized on for 3 months prior to joining the study. The second child, "Brittany," was a 16-year-old Caucasian girl who had a history of stomach pain, especially in response to eating certain foods. There was no known medical cause for her pain. The third child, "Samantha," was an 11-year-old Caucasian girl with no known medical cause for her stomach pain, which had been occurring for the past 3 years. Finally, the fourth child, "Sophie," was a 7-year-old African American girl. Sophie had been having stomach pain for the last 5 years, without any known medical cause.

Measures

The Abdominal Pain Index (API; Walker & Greene, 1989)

The API allows for both parent and child responders and consists of five items, two items that measure frequency, two items that measure intensity, and one item that measures duration of abdominal pain in the previous 2 weeks. Scores range from 0 to 38, with higher scores being more severe. Alpha reliability of the API ranges from .80 to .93 (Walker & Greene). In this study the API was modified to measure abdominal pain that day, with the exception of one item asking about frequency of abdominal pain over the course of the week.

The Children's Somatization Inventory (CSI; Garber, Walker, & Zeman, 1991; Walker & Garber, 2003; Walker, Garber, & Greene, 1991)

The CSI has both parent and child forms and assesses symptoms of nonspecific somatic complaints, such as headaches or dizziness, commonly found in children with recurrent abdominal pain. Scores range from 0 to 140, with higher scores indicating more severe somatization. Three-month test-retest reliability for the CSI is .50 for well patients and .66 for patients with chronic pain (Walker et al., 1991).

The Functional Disability Inventory (FDI; Walker & Greene, 1991)

The FDI includes both child and parent reports and assesses disturbances in physical and psychosocial functioning over the previous 2 weeks due to pain and associated health difficulties. Scores range from 0 to 60, with higher scores indicating more functional disability. The FDI has good internal consistency and 3-month test-retest reliability above .60 for children with RAP. Additionally, it has been significantly correlated with school absence (Walker & Greene). In this study the FDI was modified to measure functional disability that day.

The Revised Children's Manifest Anxiety Scale, 2nd edition (RCMAS; Reynolds & Richmond, 2008)

The RCMAS includes items measuring anxiety symptoms in the areas of physiological anxiety, worry/oversensitivity, and social concerns. Scores are represented in *T* scores. Cronbach's alpha reliability for the RCMAS subscales and total anxiety scale range from .70 to .92 (Reynolds & Richmond).

The Child Behavior Checklist (CBCL; Achenbach, 1991)

The CBCL measures parents' views of their children's psychological and somatic symptoms over the last 6 months. It contains 118 problem behaviors rated on a 3-point Likert scale ranging from *not true* (0) to *often or always true* (2). This study focused specifically on the Anxiety/Depression and Somatic Complaints subscales. The test-retest reliability is .86 for the Anxiety/Depression