



## Does Pain Intensity Matter? The Relation between Coping and Quality of Life in Pediatric Patients with Chronic Pain

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### ABSTRACT

**Purpose:** Chronic pain is a complex and debilitating chronic health condition that negatively impacts a child's daily function. Previous investigations of coping behaviors in youth with chronic illness have suggested that secondary control/accommodative coping may be more adaptive than primary control/active coping or disengagement/passive coping. However, studies have not considered how pain intensity may change the effect of various coping strategies on functioning in this pediatric population. The current study examines how coping strategies relate to health-related quality of life (HRQOL) in youth with chronic pain at various levels of pain intensity.

**Design and Methods:** Sixty-five children and adolescents, aged 8–18 (77% female;  $M = 13.6$  years,  $SD = 2.64$ ) were recruited from a pediatric pain management clinic at an urban children's hospital. The Response to Stress Questionnaire examined coping behaviors of participants. The PedsQL 4.0 Generic Core Scales assessed HRQOL and a 10-cm Visual Analog Scale measured pain intensity.

**Results:** Primary control engagement coping had a significant main effect to predict higher HRQOL. There was a significant interaction between secondary control engagement coping and pain, and a marginal interaction between disengagement coping and pain. Specifically, secondary control engagement coping significantly related to higher HRQOL when pain was low and disengagement coping marginally related to higher HRQOL when pain was high.

**Conclusions:** Findings suggest that the effectiveness of specific coping strategies may vary depending on a child's level of pain.

**Practice Implications:** These findings suggest that clinicians (e.g., nurses, psychologists) use a more tailored approach when recommending interventions for managing chronic pain.

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### Introduction

Originally estimated to affect 15–20% of children and adolescents (Goodman & McGrath, 1991), epidemiological estimates for pediatric chronic pain have risen to 20–35% in recent years (King et al., 2011; Palermo, Eccleston, & Goldschneider, 2013; Stanford, Chambers, Biesanz, & Chen, 2008). Chronic pain has been defined as pain persisting beyond the expected amount of healing time of approximately 3–6 months and is rarely associated with sympathetic arousal (Merskey, 1986; Palermo et al., 2013). The experience of chronic pain varies considerably for children and adolescents in terms of duration, frequency, severity, and etiology, such as whether the cause is organic or functional. Further, research has found that pediatric chronic pain is more common in females and prevalence increases with age (King et al., 2011).

Pediatric chronic pain can give rise to significant physical impairments such as sleep disturbance (Lewin & Dahl, 1999; Long, Krishnamurthy, & Palermo, 2008), decreased physical activity (Palermo, Fonareva, & Janosy, 2008), and fatigue (Gold, Mahrer, Yee, & Palermo, 2009; Rangel, Garralda, Hall, & Woodham, 2003). Chronic pain can also lead to emotional and social impairments, including anxiety, depression, and excessive school absence (Bursch, Walco, & Zeltzer, 1998; Dufton, Dunn, & Compas, 2009; Gold, Yetwin, et al., 2009; Gorodzinsky, Hainsworth, & Weisman, 2011). Children and adolescents with chronic pain report significantly lower health-related quality of life (HRQOL) (e.g., physical, emotional, social, and school functioning) than healthy children (Varni, Burwinkle, Seid, & Skarr, 2003; Varni, Seid, & Kurtin, 2001) and children with other chronic illnesses, such as cancer and rheumatologic conditions (Connelly & Rapoff, 2006; Gold, Yetwin, et al., 2009; Varni, Burwinkle, Katz, Meeske, & Dickinson, 2002; Varni, Seid, Knight, Uzark, & Szer, 2002).

Chronic pain is a complex and challenging condition that requires a multidisciplinary treatment approach, which has prompted investigators

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to examine functional sets of coping skills in this population. Compas and colleagues (Compas et al., 2006; Compas, Jaser, Dunn, & Rodriguez, 2012; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000) have established a comprehensive control-based model of coping that assesses voluntary (i.e., problem-solving) and involuntary (i.e., increased heart rate) responses to stress in youth. Involuntary responses to stress consist of automatic reactions that may or may not be under conscious awareness while voluntary responses are within one's control and as such, are amenable to intervention.

Compas' model (Connor-Smith et al., 2000) and related instrumentation, the Response to Stress Questionnaire (RSQ), consists of a three-pronged approach to voluntary coping mechanisms: 1. Primary control engagement coping (e.g., problem solving), 2. Secondary control engagement coping (e.g., acceptance), and 3. Disengagement coping (e.g., avoidance). While primary control engagement coping strategies are active coping strategies that attempt to alter the stress-inducing situation or one's reaction to it (e.g., emotional expression), secondary control engagement coping skills involve adaptation and accommodation, such as acceptance and distraction. Disengagement coping consists of more passive strategies that attempt to avoid or deny the stressor. Previous research has demonstrated positive relations between primary and secondary control engagement coping and negative associations between disengagement and engagement coping factors (Campbell et al., 2009; Compas et al., 2006; Connor-Smith et al., 2000).

Investigations employing the RSQ to examine coping in pediatric pain populations have primarily targeted children and adolescents with chronic abdominal pain. In this specific pain population, secondary control engagement coping has been consistently linked to fewer somatic complaints, anxiety, depressive symptoms, and pain (Compas et al., 2006; Dufton, Dunn, Slosky, & Compas, 2011; Hocking et al., 2011; Thomsen et al., 2002). These findings are consistent with prior research demonstrating that coping strategies focused on adaptation rather than control are more successful at helping individuals cope with seemingly uncontrollable stressors, such as chronic pain, and result in lower levels of anxiety and depression (Thomsen et al., 2002; Walker, Smith, Garber, & Claar, 2007).

Reports on the effects of primary control engagement coping have been mixed, with several studies of children with chronic abdominal pain failing to detect associations between this coping strategy and psychological adjustment (Compas et al., 2006; Dufton et al., 2011; Hocking et al., 2011). Thomsen et al. (2002) found that primary control engagement coping was related to lower levels of anxiety and depressive symptoms but higher levels of pain. It has also been reported that adolescents with chronic abdominal pain tend to use more primary control engagement coping strategies than secondary control engagement or disengagement coping techniques (Compas et al., 2006). This may explain Walker et al.'s (2007) finding that youth with chronic abdominal pain lacked confidence in their ability to adapt to stress and were therefore less likely to engage in accommodative coping strategies.

Disengagement coping has been found to be positively associated with high pain levels in children with recurrent abdominal pain, as well as symptoms of depression, anxiety, and somatic complaints (Compas et al., 2006; Thomsen et al., 2002). Similarly, Walker and colleagues suggested negative effects of passive coping, which is similar to disengagement coping, in their investigation of youth with chronic abdominal pain (Walker et al., 2007; Walker, Smith, Garber, & Claar, 2005). Specifically, passive coping was linked to more pain, somatic symptoms, depressive symptoms, and functional disability (Walker et al., 2005, 2007).

The role of coping strategies in youth with chronic pain has not been widely studied and the findings have been mixed, suggesting a complex relationship between pain, HRQOL, and coping. In a study of children aged 8–18 with chronic abdominal pain that assessed both cognitive and behavioral coping strategies, catastrophizing was the only coping technique that significantly predicted poorer HRQOL (Warschburger et al., 2014). It fully mediated the relationship between pain severity and HRQOL and explained the largest proportion of variance in the

study's model. Another investigation of youth with chronic pain aged 12–17 from a tertiary care chronic pain clinic found that the relation between participants' anxiety and disability was fully mediated by passive coping (Kaczynski, Simons, & Claar, 2011).

By contrast, in a sample of children aged 8–18 with juvenile idiopathic arthritis that administered the Waldron/Varni Pediatric Pain Coping Inventory, there was little evidence that coping mediated the relationship between pain intensity and HRQOL, with only a weak effect noted for seeking social support, which is considered an active strategy (Sawyer et al., 2005). Seeking social support was also the only coping skill that showed a consistent relationship with child-reported HRQOL after adjusting for the child's experience of pain, with greater use of this coping technique relating to decreased HRQOL. One possible explanation for this finding, as posed by the investigators, is that children with juvenile idiopathic arthritis may find themselves in greater need of help in times of more pain, when their HRQOL would be significantly impaired.

Due to the paucity of literature on the effectiveness of coping skills employed by more diverse pediatric pain populations, the current investigation explored the relations between RSQ coping skills, pain, and HRQOL in a cross-sectional sample of children and adolescents from an outpatient pain clinic at a pediatric urban hospital. Our first objective was to assess what types of coping behaviors are most prevalent in the pediatric chronic pain sample. The second objective was to examine how primary control, secondary control, and disengagement coping strategies predict HRQOL in youth with chronic pain at various levels of pain intensity. It was hypothesized that the efficacy of various coping strategies would depend on the severity of self-reported pain intensity. Specifically, we expected that secondary control engagement coping would predict higher HRQOL regardless of pain level, but that primary control engagement coping would only be effective at lower levels of pain. Disengagement coping was expected to predict lower HRQOL regardless of pain level, based on previous investigations of passive coping strategies.

## Design and Methods

### Procedures

Participants were recruited from January 2003 through November 2007 during their initial evaluation at the Pediatric Pain Management Clinic at Children's Hospital Los Angeles (CHLA). If they were interested in participating in the study, eligible participants completed assent and consent forms and study questionnaires at the conclusion of their pain clinic appointment. The hospital Institutional Review Board approved all study procedures in accordance with requirements established by the U. S. Department of Health and Human Services. This investigation is a secondary analysis of a study conducted by Gold, Yetwin, et al. (2009) that examined health-related quality of life in youth with chronic pain and demonstrated that their average functional impairment was greater than impairment shown in studies with children without chronic illness as well as children with cancer and rheumatologic disease.

Ninety-six child-caregiver dyads were approached for study participation in order to obtain 65 sets of completed measures, resulting in a 68% participation rate. Nineteen sets were not returned, 7 sets did not have a complete child battery, 1 set did not have a complete caregiver battery, 2 child-caregiver dyads withdrew, and 2 families declined to participate. Power analyses using G\*Power (Faul, Erdfelder, Buchner, & Lang, 2009) showed that in the current study, a sample of 65 had sufficient power (0.80) to detect between a medium- and large-sized effect.

### Participants

Children were considered eligible for the study if they were English-speaking, between the ages of 8 and 18 years, had a diagnosis of chronic pain, and had a caregiver present. Exclusion criteria included developmental disability or cognitive/neurological deficits that would interfere with their comprehension of study materials (e.g., intellectual disability,

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