

## Commentary

# Proposing an integrative model of the coping process: The importance of a person-centered, context-sensitive, and flexible approach for understanding coping with pediatric chronic pain

A. Natisha Nabbijohn and C. Meghan McMurtry

Chronic pain can impact and be impacted by numerous biological, psychological, and social factors (Bever et al., 2016; Gatchel et al., 2007). Coping is the use of intentional and effortful thoughts or behaviors to manage internal and external demands of stressful situations or experiences (Compas et al., 2014). Improved health outcomes are associated with many ways of coping (herein referred to as “coping responses”; e.g., problem-solving, distraction) in youth with chronic pain, including decreased pain and increased quality of life (e.g., Compas et al., 2006; Eccleston et al., 2014). However, the field lacks clarity around what we are (or should be) measuring when assessing and determining coping effectiveness in the context of the pain experience. Theoretical models like the biopsychosocial model of chronic pain (Gatchel et al., 2007), as well as the transactional (Lazarus & Folkman, 1987) and motivational models (Skinner, 1994) of coping, offer valuable insights into understanding coping; however, they are underutilized and, when employed in isolation, are insufficient. Here, we summarize conceptual challenges within coping research and propose a model for understanding coping within individualized contexts related to pediatric chronic pain.

## Conceptual Challenges

This section describes three challenges in coping theory: (1) countless coping responses; (2) oversimplified models; and (3) inconsistent coping response-outcome relationships.

Consistent with critiques of the broader coping literature (Skinner et al., 2003; Stanisławski, 2019), our review of 125 studies on coping in pediatric chronic pain demonstrated myriad conceptualizations and measures (Nabbijohn et al., 2021). For example, 21 questionnaires with varying conceptualizations of coping were identified, leading to 168 potentially unique coping responses. This extensive list of coping responses is partly a by-product of the various ways coping can be implemented (e.g., distraction can range from reading a book, to watching movies, to engaging in social activities, depending on the individual’s preferences and resource access). Since a single questionnaire cannot capture all coping responses, we question how useful these tools are in research and clinical contexts.

Most questionnaires utilize a nomothetic approach to categorize coping responses as a function of their intended purpose, and these higher-order categories are often used to understand coping

(Nabbijohn et al., 2021). An example is Lazarus and Folkman's problem- vs. emotion-focused coping; although influential, this conceptualization oversimplifies the coping process since responses do not usually fit solely within one category (e.g., planning guides problem-solving and calms emotions; Skinner et al., 2003). Alternative frameworks attempt to use additional dimensions and levels to capture more coping responses (e.g., control-based model), but these models are still not sufficiently exhaustive (Nabbijohn et al., 2021). Instead, these efforts lead to numerous taxonomies, which makes it challenging to compare, consolidate, apply, and build upon research.

Another issue is the assumption that coping responses are exclusively "adaptive" or "maladaptive". For example, "active" coping responses (i.e., working directly to control pain), such as problem-solving, are seen as adaptive, whereas "passive" coping responses (i.e., avoiding or denying the pain), such as self-isolation or wishful thinking, are seen as maladaptive. This simplistic conceptual approach treats coping as though it operates independently in managing people's pain experience, neglecting the reality that the etiology and treatment of chronic pain are intricately linked with biopsychosocial factors (Gatchel et al., 2007). Indeed, the effectiveness of coping responses can vary by biological (e.g., birth-assigned sex, age; Lynch et al., 2007), psychological (e.g., readiness to change, depression; Jensen et al., 2004), and social factors (e.g., ethnicity, culture; Hastie et al., 2004) as well as the assessed outcomes (e.g., quality of life, pain). For example, studies report a greater use of coping responses among females compared to males, as well as differences in the use of specific coping responses, such as females using more social support and males using more distraction (e.g., Bung et al., 2017; Casey et al., 2000; Keogh & Eccleston, 2006; Lynch et al., 2007). Systemic issues are also at play. Hood et al. (2023) called attention to the interrelationship between racism-based traumatic stress and chronic pain and noted that pain dismissal and obstacles in treatment faced by racialized individuals may promote the use of stoicism (i.e., enduring pain without displaying

feelings or complaint) as a coping response (Hood et al., 2023). They also argue that the active/adaptive vs. passive/maladaptive coping dichotomy oversimplifies and overlooks culturally-specific coping, potentially perpetuating harmful inequities by dismissing responses like prayer as passive/maladaptive through a White, Eurocentric lens (Hood et al., 2023). Inadequate representation of diverse groups in research limits understanding of how coping responses and outcomes may differ in relation to sociocultural factors (Nabbijohn et al., 2021).

To address these conceptual challenges, the field would benefit from applying models that conceptualize coping across people, time, and situations. There are two current frameworks used to understand coping from an individualized lens. The *transactional* model was the earliest developed theory suggesting person-environment interactions play a powerful role by mediating cognitive appraisals of threat, selection of coping responses, and outcomes (Lazarus & Folkman, 1987). This model highlights how the situational context plays a crucial role in coping, as individuals may cope differently depending on who is present (e.g., peers vs. parents), the task demands, and the physical or social opportunities available to them. Integrating information from a biopsychosocial lens, such as acknowledging sociocultural factors at play (e.g., sex/gender, culture, resource accessibility), may lead to more realistic ways of assessing coping and tailoring recommendations to meet individual needs within specific situations. The second framework is the *motivational* model which highlights youth's goals for coping in relation to psychological needs (i.e., relatedness, autonomy, competence; Skinner et al., 1994). An additional need related to chronic pain is pain management. Understanding the intentionality behind coping distinguishes it from similar constructs (e.g., adaptation, stress responses; Audulv et al., 2016). Although these models exist, they are seldom referenced in the pediatric chronic pain coping literature (Nabbijohn et al., 2021). Also, using these models independently only captures parts of the coping process (i.e., motivational = coping goals; transactional = person-environment interactions and coping outcomes). An integrated way of conceptualizing coping is needed.

### Proposing an Integrative Model of the Coping Process

We propose an integrative, process-oriented coping model combining motivational and transactional theories of coping with the biopsychological model of chronic pain (Figure 1, parts A-C). Applying the biopsychosocial model specifically to coping may broaden our understanding of factors impacting coping beyond the situational context. First, it is important to break down coping into three clear and operational parts: coping goals, coping responses, and coping outcomes (Rudolph et al., 1995; see Figure 1A). Drawing from the motivational model, the intention and effort involved in coping can be understood through an individual’s coping goals, which are reasons for using a particular coping response (e.g., to reduce one’s physical discomfort). Coping responses are the specific thoughts or behaviors

initiated to accomplish a coping goal, such as using positive self-statements or seeking social support (commonly referred to as “coping strategies”). Lastly, coping outcomes are changes in internal and external demands of the pain experience because of a coping response. Each time a person engages in this process, it is referred to as a coping attempt.

Reflecting elements of the transactional model, coping goals are expected to influence an individual’s selection of responses and appraisals of outcomes; responses and outcomes influence each other as well as future coping goals (Figure 1B). This process may occur through cognitive reappraisal, where outcomes indicating improved well-being (e.g., reduced pain/emotional distress) or deemed congruent with one’s objectives may be regarded as effective attempts, reinforcing future utilization.

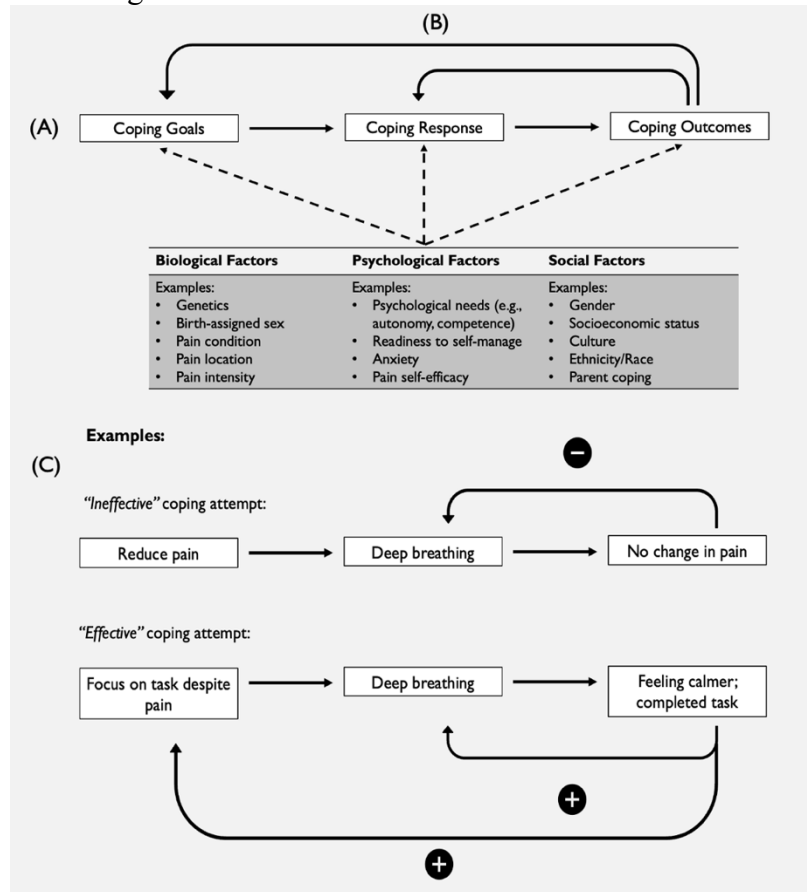


Figure 1. An integrative model of the coping process. (A) An attempt is made up of goals, responses, and outcomes impacted by numerous factors. (B) Appraisals of outcomes decrease or promote future goals and responses. (C) Examples of coping attempts using this model. For future attempts, “-” denotes a potential decrease and “+” denotes a potential increase.

Conversely, outcomes indicating worsened well-being (e.g., increased pain/emotional distress) or not aligning with a person's coping goal may be appraised as an ineffective attempt, diminishing future use. Furthermore, biopsychosocial factors and other transactional factors related to the situation may act on all parts of the coping process, including coping goals (Ghio et al., 2021).

An example of using deep breathing in a coping attempt is used to illustrate this dynamic process (see Figure 1C). If a person opts for deep breathing with a goal of reducing their pain, and pain persists, they may evaluate this coping attempt as ineffective, and this appraisal may decrease future application. In contrast, if their goal was to function despite pain, and found themselves feeling calmer and more focused on task demands, they may appraise this as an effective coping attempt and use this strategy in the future. However, factors such as their readiness to self-manage pain experience or self-efficacy may influence their willingness to engage with deep breathing (i.e., acting on their coping response selection); an anxious predisposition or being in a public and/or a highly stimulating environment may limit changes in calmness (i.e., acting on their coping outcome). Focusing on coping effectiveness within a specific person/context decreases emphasis on labeling responses as uniformly (mal)adaptive and encourages consideration of factors that may have impacted effectiveness. Ideally, thinking about coping this way may help to assess coping as a dynamic construct and better understand the influence of individual, cultural, and situational factors. In turn, this approach may help clinicians to

tailor coping interventions to the needs of youth with chronic pain.

### Future Directions

The next step is to engage in theory testing and building, including examining the clinical utility of the proposed model. Evidence in support of this model may indicate that alternative methods of assessment are needed. For example, daily diaries and interviews capture information about person-specific and contextual factors. We recognize, however, that these approaches are not always feasible; questionnaires afford efficiency and consistency. When using questionnaires, researchers and clinicians may consider gathering supplemental information, using think-aloud methods, and/or performing levels of analysis (i.e., items, subscales). Lastly, we need to be less conclusive about relationships we observe between coping responses and outcomes, and more curious about the factors that may have contributed to the observed relationships.

A. Natisha Nabbijohn, MA  
Graduate Student, Department of Psychology,  
University of Guelph  
Guelph, Ontario, Canada

C. Meghan McMurtry, Ph.D., C.Psych  
Associate Professor, Department of Psychology,  
University of Guelph and  
Pediatric Chronic Pain Program, McMaster  
Children's Hospital  
Guelph, Ontario, Canada

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## Commentary

# Occupational Therapy: Specialized Contributions to Multidisciplinary Pediatric Pain Management

Megan Silvia and Shealyn O'Donnell

Pediatric chronic pain is surprisingly common, with 44% of school-aged youth reporting at least weekly pain in the last six months (Gobina et al., 2019). Youth pain presentations are heterogeneous, and can include persistent headaches, abdominal pain, musculoskeletal pain, or neuropathic pain, in singular or multiple sites. These conditions have long been associated with decreased engagement in nearly all daily activities, such as self-care, sleep, school, socialization, and leisure participation (Roth-Isigkeit et al., 2005). Such impairment indicates the need for comprehensive, multi-modal pain management and rehabilitation, which often benefits from the inclusion of occupational therapy (OT; Harrison et al., 2019; Rabin et al., 2017). In their position statement on pain, the American Occupational Therapy Association (AOTA, 2021) asserts that occupational therapy practitioners (OTPs) possess the interprofessional training necessary to collaborate on pain treatment teams to ensure youth who are impacted by pain can engage in their desired occupations. OTPs define “occupations” as meaningful activities in which individuals need or want to participate. OT focuses on improving participation in valued occupations to enhance overall health, wellness, and quality of life (AOTA, 2020). In this article, we describe the overarching role of OT within a multidisciplinary pain treatment team and highlight OTPs’ unique contributions to the functional restoration of youth with pain.

## Frameworks Guiding Pain Treatment and OT

Together with their multidisciplinary colleagues, OTPs are well-versed in using evidence-based models to guide pain treatment. For instance, OTPs are familiar with the constructs of the Biopsychosocial (BPS) Model of Pain, the established framework of intersecting factors influencing the chronic pain experience (Lioffi & Howard, 2016). This model provides the foundation for the success of multidisciplinary outpatient treatment (Odell & Logan, 2013) and intensive interdisciplinary pain treatment programs (Hechler et al., 2015). The BPS model parallels existing occupation-based models, such as the Person-Environment-Occupation-Performance (PEOP) Model. Like the BPS model, the PEOP model similarly expands on the biomedical model and considers the whole person, including personal characteristics and environmental factors influencing occupational performance (Baum et al., 2015). Both models are patient-centered and acknowledge the complex relationships between the intrinsic and extrinsic factors impacting participation in daily life. As such, OTPs utilize these models as frameworks for exploring the dynamic, interconnected factors that can precipitate, exacerbate, and maintain an individual’s pain as they pursue meaningful occupations.

## OT Assessment in Pain Treatment

A crucial component of the initial OT evaluation for youth with chronic pain is the semi-structured interview, known as an Occupational Profile. Here, the OTP gathers detailed information from the patient and caregivers, establishing a complete occupational history. This allows the OTP to understand the biopsychosocial factors impacting both pain itself and engagement in valued occupations. The Occupational Profile pinpoints the patient's current functioning, relative to their functioning prior to pain onset, by assessing *how* a patient is participating in their occupations and the *quality* of their participation. For example, when assessing participation in self-care, a patient may initially report independence with dressing and bathing. With further questioning, the OTP learns the patient avoids wearing certain shoes and showers less frequently due to pain. These nuances are critical, yet rarely captured in standardized assessments.

To complement the Occupational Profile, the OTP carefully selects objective measures to evaluate body function/structures, and subjective measures to assess activity limitations and participation restrictions. Specific patient-reported outcome measures, such as the Canadian Occupational Performance Measure (Dorich & Cornwall, 2020), the Upper Extremity Functional Index (Stratford et al., 2001), and the PROMIS Pediatric Pain Interference measure (Varni et al., 2010), can be used in conjunction with clinical observations to establish a baseline. Pairing objective and subjective measures not only provides meaningful data for tracking progress, but it also highlights clients' self-perception, which may, in turn, impact their performance (Kempert et al., 2017). All collected information is synthesized to develop a patient-centered treatment plan focused on increasing engagement and improving the quality of participation in valued occupations (Hurtubise et al., 2020).

## OT Interventions to Support Pain Management

While OT interventions for pediatric chronic pain are highly individualized, there are universal,

empirically supported treatment elements that help patients to meet their goals. OT interventions for pediatric pain prioritize functional engagement, performance in daily occupations, and participation in re-established or newly established roles, routines, and responsibilities. These interventions emphasize functional restoration, an overarching, clinically effective approach to pediatric chronic pain (Friedrichsdorf et al., 2016), which de-emphasizes pain reduction as the primary outcome. Instead, the approach facilitates the reduction of disability *first*, followed by pain reduction over time (Hechler et al., 2014; Randall et al., 2018). The functional restoration approach seamlessly aligns with and is indeed an essential component of OT treatment. Importantly, rather than recommending lifestyle modifications to avoid pain, OTPs gradually re-introduce patients to previously avoided but valued occupations. Increasing participation in meaningful, developmentally appropriate occupations serves as both the intervention and the primary outcome. To promote successful functional restoration in youth with pain, OTPs employ specialized interventions, each rooted in evidence-based psychoeducation, sensory reeducation, functional use of the affected body part, and caregiver involvement (Tay & Rider, 2024).

***Pain Neuroscience Education.*** Given that chronic pain treatment is often counterintuitive for patients and families, providing a solid explanation of the biopsychosocial approach, via pain neuroscience education (Moseley et al., 2015), is an essential precursor to the development of the adaptive self-regulation and coping strategies needed for functional restoration. Evidence in adults suggests that fully understanding pain decreases its threat value, thereby promoting more effective pain coping. Robins and colleagues (2016) argue this rationale is equally relevant for enhancing youth engagement in treatment for pain.

***Pain Coping & Self-Regulation.*** Youth self-efficacy (Kalapurakkal et al., 2015) and willingness to (Logan et al., 2012) self-manage chronic pain are associated with functional improvements, psychological well-being, and resilience. To facilitate self-management of pain, OTPs teach youth to independently identify and utilize active



(vs. passive) coping skills to sustain functioning instead of terminating an activity. Such skills (e.g., distractions, relaxation techniques, and movement-based strategies), are critical in retraining the nervous system, promoting neuroplasticity, and enhancing functioning (Harrison et al., 2019). Additionally, OTPs can draw upon their wealth of self-regulation knowledge to diversify and individualize a coping “tool-box.” Given that atypical sensory processing and modulation patterns are associated with decreased function in youth with chronic pain (Sinclair et al., 2019), sensory-informed interventions (i.e., with consideration of unique sensory processing systems and presentations) can further facilitate participation in occupations and improve quality of life.

### ***Sensory Reeducation & Graded Exposure.***

When pain persists, youth may develop a conditioned fear of pain/movement, resulting in avoidance of activity and established performance patterns without intervention (Simons & Kaczynski, 2012). To break this cycle, decrease fear, and improve functioning, OTPs apply principles of graded exposure and sensory re-education to gradually re-introduce avoided stimuli. This is commonly achieved via desensitization (Tay & Rider, 2023), an intervention typically used to reduce sensory sensitivities to tactile, auditory, and visual stimuli. These principles can also be applied to any facet of school, community, and leisure reintegration. When graded exposures delivered by OTPs are paired with active coping and repeated until habituation is reached, youth demonstrate increased tolerance and normalized responses to stimuli (Simons et al., 2020).

***Habits & Routines.*** Oftentimes youth experiencing chronic pain disengage from previous routines or fail to establish developmentally appropriate routines. While abundant evidence supports normative functioning in the presence of pain as a pathway to long-term pain reduction (Lynch-Jordan et al., 2014), patients/caregivers may find this counterintuitive. To address this, OTPs incorporate pain neuroscience education and

elements of psychotherapy to promote behavior change, encourage healthy habits, and re-establish daily routines. Using structured frameworks to organize and guide treatment, OTPs collaborate with patients/caregivers to implement clear functional expectations, reduce activity avoidance, and improve consistency with daily functioning (Smith & Bryant, 2020).

***Activity Pacing.*** Many individuals with chronic pain experience difficulty with activity pacing (i.e., significant inactivity/activity avoidance, over-engagement in activity, or a combination thereof; Birkholtz, et al., 2004). Such maladaptive patterns can lead to considerable fatigue and disrupted participation in valued occupations. OTPs provide education on pacing and energy conservation techniques that support consistent, sustainable participation in daily activity. OTPs perform a thorough activity analysis, which identifies the “demands” that support or inhibit activity engagement. This knowledge is translated into helping patients determine the ideal balance of activity to sustain participation in occupations throughout the day, from one day to the next, while pain is present. Indeed, though activity pacing may not decrease pain severity, it can reduce the impact of fatigue upon daily function (Guy et al., 2019) and promote better balance (i.e., productivity vs. leisure/relaxation), all without negatively impacting overall activity participation (Andrews et al., 2018).

## **Conclusion**

Pediatric chronic pain is prevalent, complex, and consequential, presenting risk for functional disability and decreased participation in developmentally appropriate, valued occupations. Though empirical evidence is still emerging (Caes et al., 2018; Suder et al., 2023), OTPs offer a specialized lens and unique expertise which are well-versed to treat pediatric pain, in collaboration with other providers. Through their patient-centered, comprehensive approach, OTPs can help restore occupational performance and establish new activity patterns among youth with chronic pain.



Megan Silvia, OTD, OTR  
Assistant Professor, School of Occupational  
Therapy, Massachusetts College of Pharmacy and  
Health Sciences, Worcester, MA  
email: [megan.silvia@mcphs.edu](mailto:megan.silvia@mcphs.edu)

Shealyn O'Donnell, MS, OTR  
Lead Occupational Therapist, Mayo Family  
Pediatric Pain Rehabilitation Center, Young Adult  
Pain Rehabilitation Center, Department of Physical  
and Occupational Therapy, Boston  
Children's Hospital, Boston, MA

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