

Commentary

The power of optimism: Applying a positive psychology framework to pediatric pain

Laura A. Cousins, Rachel M. Tomlinson, Lindsey L. Cohen, and C. Meghan McMurtry

Introduction

Positive psychology aims to understand and promote factors that allow individuals, communities, and societies to flourish (Seligman & Csikszentmihalyi, 2000) and offers a novel perspective to cultivate strengths and optimize individual well-being despite adversity (Lopez & Snyder, 2009). Positive psychological factors (e.g. self-efficacy, acceptance, mindfulness) comprise a small but growing area of pediatric pain research (see Cousins et al., 2015a for review). One positive psychological factor that has recently received empirical attention in the pediatric pain literature is optimism, the focus of the current paper. The objectives of this commentary are to: 1) define the construct of optimism, 2) briefly review the literature supporting the importance of optimism in pain contexts, and 3) outline areas for future research and clinical implications.

Optimism is the extent to which an individual maintains positive expectancies for the future (Scheier & Carver, 1985). While predominantly a cognitive construct, optimism also includes motivational (i.e. exertion of effort) and emotional (i.e. positive or favorable feelings related to experience) components (Carver & Scheier, 2014). Optimism has been extensively studied in health contexts (e.g. coronary artery bypass surgery, breast cancer treatment, ischemic heart disease) and is associated with improved psychological and physical health (Carver et al., 2010).

Two theoretical models that explain the benefits of optimism are the broaden-and-build

theory of positive emotions (Frederickson, 2001) and the dynamic model of affect (Davis et al., 2004). Optimism and positive affect are distinct but related constructs (Lucas et al., 1996), and people high in optimism are likely to experience more positive emotions (Carver & Scheier, 2014). The broaden-and-build theory proposes that positive emotions expand thoughts and behaviors, which subsequently strengthen personal and social resources leading to immediate and long-term adaptive benefits (Frederickson, 2001). For example, positive emotions stemming from optimism may enhance cognitive flexibility, expand attention, counteract or minimize negative emotions, and promote resilience in response to adversity. The dynamic model of affect posits that positive and negative emotions remain predominantly independent in normative contexts, but become inversely correlated in contexts characterized by uncertainty (e.g. pain, stress; Davis et al., 2004); according to this model, people with high levels of optimism may be better able to access positive versus negative emotions when they experience the uncertain context of pain.

Optimism and pain

A wealth of research on optimism exists in experimental and chronic pain contexts with adult participants. For example, among healthy adults, optimism has been related to lower self-reported pain (Hood et al., 2012; Hanssen et al., 2014) and habituation to cold pressor pain (Smith et al., 2009). However, the benefits of optimism have been moderated by health-related cognitions (Geers et al.,

2008). This suggests that optimism may be related to lower pain through the use of active coping and disengagement from the stressor. Pain catastrophizing has been identified as a mediator of the association between optimism and pain in studies of adults (Hood et al., 2012; Goodin et al., 2013; Hanssen et al., 2013), suggesting that optimism may be related to lower experimental pain through decreased pain catastrophizing. Finally, optimism has also been shown to buffer the detrimental effect of pain on executive functioning following a cold pressor task (Boselie et al., 2014).

In addition to adult experimental pain contexts, optimism has also been examined in research on adults with chronic pain. Optimism has been associated with lower pain severity (Canella et al., 2007) and pain catastrophizing (Bargiel-Matusiewicz & Krzyzskowska, 2009) as well as higher functioning (Canella et al., 2007; Wright et al., 2011; Ramírez-Maestre et al., 2012), psychological well-being (Canella et al., 2007; Ferreira & Sherman, 2007; Wright et al., 2011; Ramírez-Maestre et al., 2012), active pain coping (Ramírez-Maestre et al., 2012), and internal locus of pain control (Bargiel-Matusiewicz & Krzyzskowska, 2009) in adults with a variety of chronic pain conditions. Optimism has also been shown to mediate the relation between pain and life satisfaction in older adults (aged 60 to 84) with chronic pain (Ferreira & Sherman, 2007).

Despite the extensive literature on optimism and pain in adults, there have only been a few studies examining optimism in pediatric populations with pain. In youth with cancer pain, optimism has been shown to be related to fewer problematic communications with health care providers and lower pain as well as higher quality of life and psychological, emotional, and behavioral functioning (Mannix et al., 2009; Williams et al., 2010). In adolescents with sickle cell disease pain, higher optimism was related to more consistent pairing of medication use with reported pain intensity (Pence et al., 2007). Among youth with chronic pain, Cousins and colleagues (2015b) found that higher optimism was related to increased quality of life and lower pain-related disability, catastrophizing, fear of pain, and pain duration. The relation between optimism and quality of life was

mediated by catastrophizing and fear of pain, suggesting that optimism minimizes prominent risk mechanisms in pediatric chronic pain.

Future directions

The recent ecological resilience-risk model in pediatric chronic pain provides a framework for the study of optimism and other positive psychological variables in pediatric chronic pain (Cousins et al., 2015a). This model highlights the interplay of risk and resilience trait-like factors and situational mechanisms, which occur at the individual, family, social, cultural and other levels, and changes over time to impact long-term outcomes. Within this model, optimism is conceptualized as an individual resilience resource that promotes adaptive functioning and growth outcomes by minimizing risk processes (e.g. pain catastrophizing) and enhancing resilience processes (e.g. pain-related self-efficacy). Foundational work in optimism and pediatric pain research is needed including determining whether there are sex, developmental, or cultural differences as well as examining relations between optimism and important outcome variables (e.g. pain intensity, functional disability, sleep) in different populations with chronic pain. Future pediatric pain research should determine the stability of optimism over time and across situations or contexts (e.g. is an individual's optimism consistent or variable across spheres of his/her life?). Finally, as optimism relates to the broadening of thoughts and behaviors, studies investigating neural processes underlying optimism's influence on pain offer an innovative area of research.

Notably, Seligman (2006) highlighted that optimism can be learned; indeed, positive future thinking techniques learned through training interventions increase optimism (Peters et al., 2010; Meevissen et al., 2011). Further research is needed to assess the longevity of these treatment effects. The integration of these techniques in current treatments may help youth cultivate positive resources to help manage their pain and improve overall well-being.

Clinical implications

Incorporating strategies to increase and sustain positive emotions has significant implications for tailoring current evidence-based pain management. For example, positive future thinking techniques, such as the best possible self-visualization and writing exercise (King, 2001), have been shown to increase positive affect and positive future expectancies (Peters et al., 2010; Meevissen et al., 2011; Hanssen et al., 2013). During this exercise, individuals are encouraged to think about their optimal self for 1 minute and subsequently write about an optimal life in consideration of their optimal self for 15 minutes. Finally, individuals are prompted to visualize the writing piece they generated for 5 minutes. Such optimism training interventions may be useful to apply to pediatric pain populations in order to enhance positive thinking and counteract maladaptive pain-related cognitions. Visualizing long-term positive goals may increase motivation to engage in activities and increase overall functional ability.

In addition to pain mitigation, optimism may also influence other domains that directly improve functioning, such as engagement in health-promoting behaviors, utilization of adaptive coping, participation in psychological interventions, adherence to treatment recommendations, and prioritization of self-care (Carver & Scheier, 2014). Optimists exhibit enhanced engagement with highly prioritized goals, including treatment programs (e.g. psychotherapy) if they value the program and perceive it as important (Geers et al., 2010). The overlap between optimism and goal attainment suggests that youth with higher optimism may particularly benefit from acceptance and commitment therapy (Hayes et al., 2012), considered a probably efficacious treatment for chronic pain (Öst, 2014), or similar approaches that prioritize setting behavioral goals consistent with personal values.

Optimism may also foster increased social support in youth with pain, as optimists tend to place more effort into their relationships (Segerstrom, 2007), perceive themselves to have greater social support (Vollmann et al., 2011), and maintain larger social networks and diverse

relationships, contributing to social flexibility (Andersson, 2012). The relation between optimism and social support appears to be mutually beneficial, as having strong social support can also increase optimism (Segerstrom, 2007). Indeed, given that prior studies have highlighted the necessity of understanding the protective role of peer friendships, particularly as they relate to chronic pain prevention and treatment success (e.g. Fales & Forgeron, 2014), maintaining and strengthening social support is an important future target for interventions.

Optimism may also help youth with pain expand (e.g. ability to access broad affect and cognitions in pain contexts) and/or reframe their pain-related cognitions and behaviors to minimize pain-related fear and catastrophizing. Effective engagement in problem-solving may be increased, as optimism may instill a positive problem orientation or the belief that all problems have a solution (Palermo et al., 2014). Since problem-solving is one of the central tenets within cognitive behavioral therapy for pain management, discovering ways to enhance optimism could be valuable. Optimism may also enable identification of positive changes/gains as a result of pain (i.e. benefit finding).

Conclusions

Research suggests that positive emotions not only provide short-term benefits, but also foster psychological growth, individual strengths, and improved well-being over time. Thus, we propose that applying the study of optimism to pediatric pain research contexts will provide a novel strengths-based perspective to gain new insight into optimizing functioning and living with pain and will inform resilience-focused interventions for pain management

Laura A. Cousins, MA
Department of Psychology, Georgia State
University, Atlanta, GA, USA
email: lcousins1@student.gsu.edu

Rachel M. Tomlinson, MA
Department of Psychology, University of Guelph,
Guelph, ON, Canada

Lindsey L. Cohen, PhD
Department of Psychology, Georgia State
University, Atlanta, GA, USA

C. Meghan McMurtry, PhD
Department of Psychology, University of Guelph,
Guelph, ON; Children's Health Research Institute,
London, ON; Department of Paediatrics, Schulich
School of Medicine & Dentistry, Western
University, London, ON, Canada

Acknowledgements

Laura Cousins and Rachel Tomlinson are trainee members of Pain in Child Health (PICH), a Strategic Training Initiative in Health Research of the Canadian Institutes of Health Research.

References

- Andersson MA. Dispositional optimism and the emergence of social network diversity. *Sociol Q* 2012;53:92-115.
- Bargiel-Matusiewicz K, Krzyzskowska A. Dispositional optimism and coping with pain. *Eur J Med Res* 2009;14(Suppl 4):271-274. www.pubmed.gov/20156771
- Boselie JJ, Vancleef LM, Smeets T, Peters ML. Increasing optimism abolishes pain-induced impairments in executive task performance. *Pain* 2014;155:334-340. www.pubmed.gov/24145210
- Cannella DT, Lobel M, Glass P, Lokshina I, Graham JE. Factors associated with depressed mood in chronic pain patients: the role of intrapersonal coping resources. *J Pain* 2007;8:256-262. www.pubmed.gov/17174608
- Carver CS, Scheier MF. Dispositional optimism. *Trends Cogn Sci* 2014;18:293-299. www.pubmed.gov/24630971
- Carver CS, Scheier MF, Segerstrom SC. Optimism. *Clin Psychol Rev* 2010;30:879-889. www.pubmed.gov/20170998
- Cousins LA, Cohen LL, Venable C. Risk and resilience in pediatric chronic pain: exploring the protective role of optimism. *J Pediatr Psychol* 2015b;40:934-942. www.pubmed.gov/25355543
- Cousins LA, Kalapurakel S, Cohen LL, Simons, LE. Topical review: resilience resources and mechanisms in pediatric chronic pain. *J Pediatr Psychol* 2015a;40:840-845. www.pubmed.gov/25979085
- Davis MC, Zautra AJ, Smith BW. Chronic pain, stress, and the dynamics of affective differentiation. *J Pers* 2004;72:1133-1159. www.pubmed.gov/15509279
- Fales JL, Forgeron P. The importance of friendships in youth with chronic pain: The next critical wave of research. *Pediatr Pain Lett* 2014;16(3):35-39. www.childpain.org/ppl/issues/v16n3_2014/v16n3_fales.pdf
- Ferreira VM, Sherman AM. The relationship of optimism, pain and social support to well-being in older adults with osteoarthritis. *Aging Ment Health* 2007;11:89-98. www.pubmed.gov/17164163
- Frederickson BL. The role of positive emotions in positive psychology: the broaden-and-build theory of positive emotions. *Am Psychol* 2001;56:218-226. www.pubmed.gov/11315248
- Geers AL, Wellman JA, Helfer SG, Fowler SL, France CR. Dispositional optimism and thoughts of well-being determine sensitivity to an experimental pain task. *Ann Behav Med* 2008;36:304-313. www.pubmed.gov/19067097
- Geers AL, Wellman JA, Seligman LD, Wuyek LA, Neff LA. Dispositional optimism, goals, and engagement in health treatment programs. *J Behav Med* 2010;33:123-134. www.pubmed.gov/20091111
- Goodin BR, Glover TL, Sotolongo A, King CD, Sibille KT, Herbert MS, et al. The association of greater dispositional optimism with less endogenous pain facilitation is indirectly transmitted through lower levels of pain catastrophizing. *J Pain* 2013;14:126-135. www.pubmed.gov/23218934
- Hanssen MM, Peters ML, Vlaeyen JW, Meevissen Y, Vancleef LM. Optimism lowers pain: evidence of the causal status and underlying mechanisms. *Pain* 2013;154:53-58. www.pubmed.gov/23084002
- Hanssen MM, Vancleef LM, Vlaeyen JW, Peters ML. More optimism, less pain! The influence of generalized and pain-specific expectations on experienced cold-pressor pain. *J Behav Med* 2014;37:47-58. www.pubmed.gov/23239369
- Hayes SC, Strosahl KD, Wilson KG. Acceptance and commitment therapy: the process and practice of mindful change (2nd ed.). New York: Guilford Press, 2012. www.worldcat.org/oclc/713181786

Hood A, Pulvers K, Carrillo J, Merchant G, Thomas M. Positive traits linked to less pain through lower pain catastrophizing. *Pers Individ Dif* 2012;52:401-405. www.pubmed.gov/22199416

King LA. The health benefits of writing about life goals. *Pers Soc Psychol Bull* 2001;27:798-807.

Lopez SJ, Snyder CR. Oxford handbook of positive psychology. New York: Oxford University Press, 2009. www.worldcat.org/oclc/263497908

Lucas RE, Diener E, Suh E. Discriminant validity of well-being measures. *J Pers Soc Psychol* 1996;71:616-628. www.pubmed.gov/8831165

Mannix MM, Feldman JM, Moody K. Optimism and health-related quality of life in adolescents with cancer. *Child Care Health Dev* 2009;35:482-488. www.pubmed.gov/19196249

Meevissen YM, Peters ML, Alberts HJ. Become more optimistic by imagining a best possible self: effects of a two week intervention. *J Behav Ther Exp Psychiatry* 2011;42:371-378. www.pubmed.gov/21450262

Öst LG. The efficacy of Acceptance and Commitment Therapy: an updated systematic review and meta-analysis. *Behav Res Ther* 2014;61:105-121. www.pubmed.gov/25193001

Palermo TM, Law EF, Essner B, Jessen-Fiddick T, Eccleston C. Adaptation of problem-solving skills training (PSST) for parent caregivers of youth with chronic pain. *Clin Pract Pediatr Psychol* 2014;2:212-223. www.pubmed.gov/25422795

Pence L, Valrie CR, Gil KM, Redding-Lallinger R, Daeschner C. Optimism predicting daily pain medication use in adolescents with sickle cell disease. *J Pain Symptom Manage* 2007;33:302-309. www.pubmed.gov/17349499

Peters ML, Flink IK, Boersma K, Linton SJ. Manipulating optimism: can imagining a best possible self be used to increase positive future expectancies? *J Posit Psychol* 2010;5:204-211.

Ramírez-Maestre C, Esteve R, López AE. The role of optimism and pessimism in chronic pain patients adjustment. *Span J Psychol* 2012;15:286-294. www.pubmed.gov/22379718

Scheier MF, Carver CS. Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health Psychol* 1985;4:219-247. www.pubmed.gov/4029106

Segerstrom SC. Optimism and resources: effects on each other and on health over 10 years. *J Res Pers* 2007;41:772-786. www.pubmed.gov/24347739

Seligman MEP. Learned optimism: how to change your mind and your life. New York: Vintage Books, 2006. www.worldcat.org/oclc/62793275

Seligman ME, Csikszentmihalyi M. Positive psychology: an introduction. *Am Psychol* 2000;55:5-14. www.pubmed.gov/11392865

Smith BW, Tooley EM, Montague EQ, Robinson AE, Cosper CJ, Mullins PG. The role of resilience and purpose in life in habituation to heat and cold pain. *J Pain* 2009;10:493-500. www.pubmed.gov/19345153

Vollmann M, Antoniow K, Hartung FM, Renner B. Social support as mediator of the stress buffering effect of optimism: the importance of differentiating the recipients' and providers' perspective. *Eur J Pers* 2011;25:146-154.

Williams NA, Davis G, Hancock M, Phipps S. Optimism and pessimism in children with cancer and healthy children: confirmatory factor analysis of the youth life orientation test and relations with health-related quality of life. *J Pediatr Psychol* 2010;35:672-682. www.pubmed.gov/19797406

Wright MA, Wren AA, Somers TJ, Goetz MC, Fras AM, Huh BK, et al. Pain acceptance, hope, and optimism: relationships to pain and adjustment in patients with chronic musculoskeletal pain. *J Pain* 2011;12:1155-1162. www.pubmed.gov/21820969