Worry and catastrophizing about pain in youth: a re-appraisal

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Number of text pages: 12

Number of figures/tables: 0

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Key Words: pain, children, catastrophizing, development

1. Introduction.

Catastrophizing about pain is defined as “an exaggerated negative ‘mental set’ brought to bear during actual or anticipated pain experience’’ [25]. It is a salient form of worry, and one that has proven useful in explaining pain severity, disability, and adaptation to treatment in a range of different conditions and settings [7,12]. Catastrophizing involves repeated thought about threat as uncontrollable and likely to have awful consequences. These aspects have been captured neatly by Sullivan and colleagues with the labels of ‘rumination’, ‘helplessness’, and ‘magnification’ [24].

Catastrophizing was identified as important for children’s adaptation to pain and included in early measurement tools focussed on coping [20]. However, interest has been fuelled by the development of the child version of the adult Pain Catastrophizing Scale, the PCS-C [3,27,29]. We suggest that a re-appraisal of catastrophic thinking about pain in young people is needed before research blooms. In what follows we focus on a developmental view of emotional coping, we look again at how catastrophizing about pain has been researched with children, and we suggest an alternative view. Finally, we introduce the research and clinical implications of this re-appraisal.

2. Social-cognitive development.

Children and young people perceive the world, how it affects them, and how they can act on the world, in fundamentally different ways from adults [32]. Specifically, children emotionally appraise threat, its potential consequences, and how to cope, differently. Relevant to this re-appraisal are four key social-cognitive features of development in youth.

Emotional control. A primary developmental task of childhood is the mastery of emotional responses to events, in particular the ability to control aggressive, depressive, and anxious emotions. Socially unacceptable strong behavioural reactions (e.g., tantrum) are common causes of parental intervention. Similarly, parental emotion-management strategies are critical determinants of young children's emotional development [1,8]. Indeed, children under 11 regularly magnify the negative consequences of what to an adult's understanding is a neutral, relatively unthreatening, occurrence (e.g., being told 'no').

Magical thinking. Children have different beliefs from adults about what is real. Some are socially sanctioned (e.g., the tooth fairy), others emerge and are expressed as childhood anxieties. For example, common childhood fears across cultures and ages include monsters, the dark, and burglars [9]. Maturation brings a shift from beliefs judged by adults to be childish (e.g., monsters) to magical beliefs more socially acceptable to adults (e.g., superstitions). Distracting fears persist into late adolescence [18], but before reaching adulthood children over 12 increasingly develop the ability to think about their own beliefs, reflect on the veracity of those beliefs, and discuss alternatives [19]. Part of being a child is the ability to hold and manage what appear to adults to be irrational fears.

Egocentric distortion. A major task of child development is the tempering of egocentrism, including a raised awareness of personal vulnerability and the development of allocentrism (the ability to see the world from another's point of view). After 11 years of age most young people are cognitively capable of allocentric reasoning, although egocentrism extends well into adolescence [22]. Indeed egocentric distortion is common in adults (see for example, the self-serving attribution bias [21]), but for healthy children overestimating personal agency is

normal [19,32]. Young children also commonly believe that their wishes, wants, and hopes are powerful causes of events [30,33]. A defining feature of childhood is an attitudinal set that prioritizes one's own view of the world.

Fragile Coping. Cognitive development brings the ability to imagine future events and the possible negative consequences of those events. Potential sources of threat and the resources to cope with these threats increase. Children have less experience than adults in emotional coping, and fewer problem solving skills [2]. Younger children typically inhabit a world in which powerful adults act to solve problems. Adolescent social development can be defined as a period of behavioural experiment when novel and often fragile coping attempts emerge. For children, being dependent and being helped to cope with threat is the socially desirable norm.

Young people differ fundamentally from adults in what they fear, how they experience it, and how they attempt to cope. In summary, normal children have irrational fears, magnify the awful consequences of those fears, are habitually egocentric, have little experience in emotional and social coping, and are used to being helped.

3. Catastrophic thinking and worry about pain.

Catastrophic thinking in adults is defined by magnification (e.g., "this is really serious"), rumination (e.g., "I can't keep it out of my mind"), and helplessness (e.g., "I can do nothing") [24]. Although this approach is valid for understanding adults with chronic pain, applying this scheme to young people risks judging perfectly normal developmentally appropriate behaviour to be abnormal. In particular, it may be normal for young people to think of painful events as serious, to think about wanting them to stop, and to feel helpless to change them.

On adopting this perspective we took the empirical opportunity to look critically at some of our own work. Taking four samples of children who completed the PCS-C from different studies, two of schoolchildren without chronic pain, and two from clinical samples of children with chronic pain, we explored in more detail the pattern of item endorsement. Full details of the samples are available in the individual publications, but samples include 912 schoolchildren [26], a further 1332 schoolchildren [28], 43 adolescent chronic pain patients [29], and 61 adolescent patients with painful arthritis [26]. The PCS-C is a 13 item questionnaire that is almost identical to the PCS in content, but the reporting format has been simplified. It has six 'helplessness' items, four 'rumination' items, and three 'magnification' items. The mean strength of endorsement for all items in a total sample (n=2348) on a 1-5 point scale was 1.21 (SD=1.08) demonstrating that these cognitions are not particularly strong or frequent; although greater for the clinical samples (M=1.47 SD=1.22) than non-clinical (M=0.94, SD=0.94). The most highly endorsed items were "When I am in pain I want it to go away", followed by "When I am in pain I keep thinking about how much I want it to stop" reflecting a ruminative or worrying aspect to the experience. Given the low strength of endorsement of most of these items in numerous samples, and the primacy of rumination, we consider it likely that the PCS-C does not have content entirely relevant to child catastrophizing. The PCS-C may better be understood as an index of worry about pain rather than of catastrophic beliefs [4].

Worry is prevalent in youth and develops extensively in early adolescence [13,16]. The content of worry is different to that of adults. Children worry about separation, abandonment, and attack from unknown sources. Adolescent worries are dominated largely by the fear of adult disapproval, social rejection, appearance, and

task failure. Secondary worries have been described: of poor health in others, family conflict, environmental disaster, harm to pets, and of monsters [23,15,17]. Unfortunately, we know little about worry in the context of pediatric chronic pain as it has never, to our knowledge, been directly investigated. For adults worry is experienced as aversive, it maintains a focus on a problem and its negative consequences if unsolved, and it is thought to promote attempts at problem solving. Catastrophizing can usefully be thought of as extreme worry, with specific content about the consequences of a salient threat [4]. For children, however, we do not know what form worry about pain takes, and how it functions in relation to coping.

4. Research implications.

This re-appraisal promotes a developmental view of children's emotional coping with pain. It foregrounds a number of important research domains.

Assessment. Measurement tools of catastrophic thinking have been useful in some settings but almost certainly lack content validity [3, 20], offering at best only a partial sampling of child catastrophic thinking. Perhaps the strategy of adapting successful adult measures, as we did with the PCS-C, should be seen as only a first step. Needed are new measures of internalizing coping that begin with a child normative view of anxious thinking, explain child verbal behaviour as a function of cognitive and emotional development, and that are sensitive to the immediate social context of pain, such as adult helping.

Worry. Second, we encourage the investigation of worry about pain and its consequences in young people. We have no data on what young people in pain worry about, the way in which they worry about it, and the functions of worry in promoting coping attempts from self or powerful others. Similarly, we have little

understanding of the consequences of chronic worry about pain on social and emotional functioning in later life.

Catastrophic thinking. Third, catastrophic thinking about pain may have a specific role to play in the development of child coping skills. However, fear about the potentially uncontrollable consequences of pain is likely to be found in developmentally relevant domains. For a figurative example it is more likely that young people ruminate about the devastating effects of pain on appearance and relationships, than on the ability to financially support dependents [11].

Individual differences. Finally, our consideration of worry and catastrophizing has not addressed individual differences such as age, sex, temperament, and parenting. Age differences in worry are well documented. For example younger children reported higher worries about disasters than older children [23]. Four to six year olds were found to worry most about separation from parents. Older children are concerned with personal harm or harm to others, and at ten concerns about test performance emerge and begin to dominate [16]. Sex differences should also be investigated as girls worry more about academic and social competence [23]. Similarly, parenting is of critical importance in the adoption of pain coping strategies and should be investigated [31].

5. Clinical Implications.

Promising psychological treatments for the management of chronic pain in children have been developed [5]. These treatments have content aimed at helping young people identify dysfunctional cognition and adopt strategies for improved problem solving. This re-appraisal suggests that the treatment literature can be improved with a focus on three specific areas.

Addressing child worry. Understanding worry about chronic pain will allow for treatments that either reduce uncertainty, or improve tolerance for uncertain imagined outcomes. Wherever possible, abstract reasoning should be replaced by direct experience and behavioural experiment. Attempts to reassure by denying feared outcomes and generalizing are likely to be ineffective (e.g., “don’t worry it will be alright”), because these fears will be contingent on age-dependent social norms, and have specific targets [14].

Coping skills training. Recognizing the nascent coping repertoire and unstable emotional control will be important. Needed are problem solving interventions that are tailored to the specific problems and concerns identified as being caused by pain. We have found, for example, that adolescents with chronic pain are delayed in their development of independence and relationship confidence [6]. An increased focus on the goals of adolescence interrupted by pain may be fruitful.

Public Health. In addition to direct psychotherapeutic interventions the role for community based interventions should be considered. Pain is a common childhood experience that can lead to altered self-perception and anxious searching for relief, including the risk of an increase in the use of illicit drugs and alcohol. Children search for pain related information which is rarely provided outside of specialist contexts [10]. There is a role for enriched personal care training for young people that specifically addresses common fears and anxieties about pain and its consequences.

6. Conclusions

Young people think in very different ways than adults. Research into catastrophic thinking and worry in children’s pain can be enriched by a re-appraisal of the social and developmental context of cognition about threatening events. Research could usefully be re-focussed on worry about pain and its consequences,

and treatment could be improved with an understanding of child fears and what sustains them, and the development of specific interventions that account for these fears.

References

1. Brand AE, Klimes-Dougan B. Emotion socialization in adolescence: The roles of mothers and fathers. In A. Kennedy Root & S. Denham (Eds.), The role of gender in the socialization of emotion: Key concepts and critical issues. New Directions for Child and Adolescent Development, San Francisco, Jossey-Bass 2010;128:85–100.
2. Compas BE. Coping with stress during childhood and adolescence. Psychol Bull 1987;101:393-403.
3. Crombez G, Bitjttebier P, Eccleston C, Mascagni T, Mertens G, Goubert L, Verstraeten K. The child version of the pain catastrophizing scale (PCS-C): a preliminary validation. Pain 2003;104:639-46.
4. Eccleston C, Crombez G. Worry and chronic pain: A misdirected problem solving model. Pain 2007;132:233-6.
5. Eccleston C, Palermo TM, Williams ACDC, Lewandowski A, Morley S. Psychological therapies for the management of chronic and recurrent pain in children and adolescents. Cochrane DB of Systematic Reviews 2009;2.
6. Eccleston C, Wastell S, Crombez G, Jordan A. Adolescent social development and chronic pain. Eur J Pain 2008;12:765-74.
7. Edwards RR, Calahan C, Mensing G, Smith M, Haythornthwaite J. Pain, catastrophizing, and depression in the rheumatic diseases. Nat Rev Rheumatol 2011;7:216-24.

8. Ehrenreich JT, Micco JA, Fisher PH, Warner CM. Assessment of relevant parenting factors in families of clinically anxious children: The family assessment clinician-rated interview (FACI). Child Psychiat Hum D 2009;40:331-42.
9. Gordon J, King N, Gullone E, Muris P, Ollendick TH. Nighttime fears of children and adolescents: Frequency, content, severity, harm expectations, disclosure, and coping behaviours. Behav Res Ther 2007;45:2464–72.
10. Henderson EM, Keogh E, Rosser BA, Eccleston C. Internet sites offering adolescents help with headache, abdominal pain, and dysmenorrhoea: a description of content, quality, and peer interactions. J Pediatr Psychol (in press).
11. Huguet A, McGrath PJ, Pardos J. Development and preliminary testing of a scale to assess pain related fear in children and adolescents. J Pain 2011;12:840-48.
12. Khan RS, Ahmed K, Blakeway E, Skapinakis P, Nihoyannopoulos L, Macleod K, Sevdalis N, Ashrafian H, Platt M, Darzi A, Athanasiou R. Catastrophizing: a predictive factor for postoperative pain. Am J Surg 2011;201:122-31.
13. Laing SV, Fernyhough C, Turner M, Freeston MH. Fear, worry and ritualistic behaviour in childhood: Developmental trends and interrelations. Infant Child Dev 2009;18:351-66.
14. McMurtry CM, Chambers CT, McGrath PJ, Asp E. When “don’t worry” communicates fear: Children’s perceptions of parental reassurance and distraction during a painful pediatric medical procedure. Pain 2010;150:52-8.
15. Muris P, Meesters C, Merckelbach H, Sermon A, Zwakhalen S. Worry in normal children. J Am Acad Child Psy 1998;37:703-10.
16. Muris P, Merckelbach H, Gadet B, Moulaert V. Fears, worries and scary dreams in 4- to 12-year-old children: Their content, developmental pattern, and origins. J Clin Child Psychol 2000;29:43-52.

17. Muris P, Merckelbach H, Meesters C, van den Brand K. Cognitive development and worry in normal children. Cogn Ther Res 2002;26:775-87.
18. Ollendick TH, King NJ. Fears and their level of interference in adolescents. Behav Res Ther 1994;32:635-38.
19. Piaget J. The child's conception of the world. London: Routledge & Kegan Paul 1929.
20. Reid GJ, Gilbert CA, McGrath PJ. The pain coping questionnaire: preliminary validation. Pain 1998;76:83-96.
21. Roese NJ, Olson JM. Better, stronger, faster: Self-serving judgment, affect regulation, and the optimal vigilance hypothesis. Perspect Psychol Sci 2007;2:124-41.
22. Schwartz PD, Maynard AM, Uzelac SM. Adolescent egocentrism: A contemporary view. Adolescence 2008;43:441-48.
23. Silverman WK, La Greca AM, Wasserstein S. What do children worry about? Worries and their relation to anxiety. Child Dev 1995;66:671-86.
24. Sullivan MJL, Bishop SR, Pivik J. The pain catastrophizing scale: Development and validation. Psychol Assessment 1995;7:524-32.
25. Sullivan MJL, Thorn B, Haythornthwaite JA, Keefe F, Martin M, Bradley LA, Lefebvre JC. Theoretical perspectives on the relation between catastrophizing and pain. Clin J Pain 2001;17:52–64.
26. Vervoort T, Craig KD, Goubert L, Dehoorne J, Joos R, Matthys D, Buysse A, Crombez G. Expressive dimensions of pain catastrophizing: A comparative analyses of school children and children with clinical pain. Pain 2008;134:59-68.

27. Vervoort T, Eccleston C, Goubert L, Buysse A, Crombez G. Children's catastrophic thinking about their pain predicts pain and disability 6 months later. Eur J Pain 2010;14:90-6.
28. Vervoort T, Goubert L, Crombez G. Parental responses to pain in high catastrophizing children: the moderating effect of child attachment. J Pain 2010;11:755-63.
29. Vervoort T, Goubert L, Eccleston C, Bijttebier P, Crombez G. Catastrophic thinking about pain is independently associated with pain severity, disability, and general somatic complaints in children with and without chronic pain. J Pediatr Psychol 2006;31:674-83.
30. Vikan A, Clausen SE. Freud, Piaget, or neither? Beliefs in controlling others by wishful thinking and magical behavior in young children. J Genet Psychol 1993;154:297–314.
31. Vowles KE, Cohen LL, McCracken LM, Eccleston C. Disentangling the complex relations among caregiver and adolescent responses to chronic pain. Pain 2010;151:680-86.
32. Woolley JD. Thinking about fantasy: Are children fundamentally different thinkers and believers from adults? Child Dev 1997;68:991-1011.
33. Woolley JD, Phelps KE, Davis DL, Mandell DJ. Where theories of mind meet magic: The development of children's beliefs about wishing. Child Dev 1999;70:571-87.