

INTRODUCTION

Pain catastrophizing has been defined as “an exaggerated ‘mental set’ brought to bear during actual or anticipated pain experience” [1]. In recent years, pain catastrophizing has emerged as a meaningful factor in the conceptualization of pediatric pain, mainly related to chronic pain problems. The aim of this work was to study how this construct has been used to explain the experience of pediatric pain.

METHOD:

PsycInfo, MEDLINE, CINAHL, ERIC, and Psychology and Behavioral Science Collection databases were searched from 1980 to 2011 (December). The terms used were catastrophizing AND pain AND (adolescents OR children). Reference lists of relevant retrieved papers were also checked to identify additional published works not found in the computerized database searches. An article was **eligible** if it met the following criteria: 1) it had been published in a peer reviewed journal; 2) participants were 20 years old or less; and 3) the article had been written in English. An article was **excluded** if it was related to cancer pain.

We identified all variables that were studied in relation to pain catastrophizing in each study. Following Miró’s suggestions [2], we grouped and subsumed those variables into three different units (individual, dyad and context) and four levels (physic, behavioral, affective and cognitive) of analysis.

- The **Individual Unit** relates to the unique characteristics of the single person when is considered as a separate entity (e.g., characteristics of a child in pain or of their parents).
- The **Dyad Unit** includes all variables that allude to the relationship that the child establishes with a close person (e.g., father, mother, and sibling).
- The **Context Unit** includes variables that refer to the physical settings and social contexts -beyond the dyad- that the child in pain might encounter (e.g., school, peer group).

REFERENCES:

- [1] Sullivan MJ, Thorn B, Haythornthwaite J a, Keefe F, Martin M, Bradley L a, et al. Theoretical perspectives on the relation between catastrophizing and pain. The Clinical Journal of Pain. 2001 Mar;17(1):52–64.
 [2] Miró J. Dolor crónico: procedimientos de evaluación e intervención psicológica. Bilbao: Desclée de Brouwer; 2003.

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RESULTS:

- 59 papers were retrieved in our search.
- Most studies (49) explore catastrophizing within the individual as the unit of analysis. In those studies, catastrophizing has been mainly studied in relation to pain intensity, pain tolerance and facial expressions of pain in studies of experimentally induced pain. In non experimental pain studies, catastrophizing has been studied related to pain intensity, disability and depression. The Context Unit is underrepresented, with just four works looking at it. See Tables 2, 3, and 4.

Table 1. Characteristics of the studies

	Experimental pain papers (N=14)	Non experimental pain papers (N=45)
Clinical sample	5	21
Non clinical sample	13	22
Age range	7-19 years	6-20 years
Pain induction method		
• Cold pressor test	9	
• Pressure pain test	3	
• Thermal heat pain stimuli	3	
• Water load symptom provocation test to induce visceral discomfort	1	
• 2-min walking task	1	
Participants' pain problem		
• Chronic headache		1
• Chronic abdominal pain	1	3
• Chronic musculoskeletal pain		2
• Postoperative pain		3
• Pain associated with a chronic rheumatic disease	3	3
• Mixed chronic pain problems	1	18

Table 2. Number of variables per Unit of Analysis.

	Total	Child's catastrophizing (C-child)	Parental catastrophizing about their child's pain (PC-child)	Parental catastrophizing about their own pain (PC-own)
Experimental pain studies				
Individual variables	11	7	1	4
Dyadic variables	8	5	3	0
Contextual variables	0	0	0	0
Non experimental pain studies				
Individual variables	36	30	8	1
Dyadic variables	24	17	10	1
Contextual variables	7	5	2	0

Table 3. Units of analysis in Experimental pain studies.

	C-child	PC-child	PC-own	Number of papers
INDIVIDUAL UNIT				
Pain intensity	Thastum et al, 1997; Vervoort et al, 2011a; Lu et al, 2007; Vervoort et al, 2009;			4
Pain tolerance	Thastum et al, 1997; Pira et al, 2001; Thastum et al, 2001			3
Discomfort	Thastum et al, 1997; Lu et al, 2007			2
Facial pain expression	Vervoort et al, 2008; Vervoort et al, 2011a	Vervoort et al, 2011b		3
DYAD UNIT				
Parental presence	Vervoort et al 2008; Vervoort, 2011a			2
CONTEXT UNIT				
				0

Only variables that appeared in at least 2 papers are shown in the table.

CONCLUSIONS:

- ✓ Although catastrophizing has become a construct of interest in the study of pediatric pain, with a fair amount of literature already available, there are still areas that remain unexplored.
- ✓ Pain catastrophizing has been mostly studied from the behavioral level of analysis.
- ✓ Future studies would profitable examine the units and levels of analysis that remain unexplored, they could help us understand better the role that catastrophizing might be playing in the development of chronic pain and related disability in children.

Table 4. Units of analysis in Non Experimental pain studies.

	C-child	PC-child	PC-own	Number of papers
INDIVIDUAL UNIT				
Pain intensity	Bennet-Branson and Craig, 1993; Crombez et al, 2003; Thastum et al, 2005; Logan et al, 2005; Hermann et al, 2007; Guite et al, 2011; Libby and Glenwick, 2010; Simons et al, 2011a; Tripp et al, 2008; Vervoort et al 2011	Goubert et al, 2006; Hechler et al, 2011		12
Pain problems	Huguet et al, 2009a; Tsao et al, 2009			2
Disability	Walker et al, 1997; Vervoort et al, 2006; Crombez et al, 2003; Langer et al, 2006; Lynch et al, 2006; Vervoort et al, 2010a; Vervoort et al, 2011; Guite et al, 2011; Lynch-Jorndan et al, 2010; Simons et al, 2011a; Eccleston et al, 2004; Huguet et al, 2009a	Goubert et al, 2006; Sieberg et al, 2011; Simons et al, 2011a		15
Quality of life	Libby and Glenwick, 2010; Lynch-Jorndan et al, 2010; Tripp et al 2008; Huguet et al, 2009a; Huguet et al, 2009b			5
Somatic complaints	Vervoort et al, 2006; Walker et al, 1997; Simons et al, 2011a; Hermann et al, 2007; Tsao et al, 2009			5
Depression	Bennet-Branson and Craig, 1993; Walker et al. 1997; Eccleston et al., 2004; Kaminsky et al, 2006; Tripp et al 2008; Libby and Glenwick, 2010; Lynch-Jorndan et al, 2010; Hermann et al, 2007; Langer et al, 2009; Tremblay and Sullivan, 2010			10
Anxiety	Eccleston et al, 2004; Hermann et al, 2007; Simons et al, 2011a; Langer et al, 2009; Tremblay and Sullivan, 2010			5
Pain fear	Simons et al, 2011a; Huguet et al, 2011			2
Age	Tripp et al 2008; Tripp et al 2003			2
Sex	Keogh and Eccleston, 2006; Fuss et al, 2011			2
Information seeking coping strategy	Eccleston et al, 2004; Lynch et al, 2007			2
Seeking social support coping strategy	Lynch et al, 2007; Vervoort et al, 2008			2
Distraction coping strategy	Lynch et al, 2007; Eccleston et al, 2004			2
Parental distress about other's pain		Goubert et al. 2008	Goubert et al, 2008	2
Pain history of the parents or the family	Schanberg et al, 2001; Lynch et al, 2006			2
Parent's anxiety		Williams et al., 2009; Goubert et al, 2006		2
DYAD UNIT				
Youth pain-related behavior as reported by parents	Lynch-Jorndan et al, 2010	Lynch-Jorndan et al, 2010		2
Pain fear as reported by parents	Simons et al, 2011a	Simons et al, 2011b		2
Communicative pain behaviors as reported by parents	Vervoort et al, 2008; Vervoort et al, 2009			2
Parental solicitous responses	Guite et al 2011; Vervoort et al 2011; Vervoort et al, 2010b	Simons et al, 2011b; Sieberg et al, 2011; Heckler et al, 2011	Langer et al, 2009	7
Parental discouragement responses	Vervoort et al, 2011; Vervoort et al, 2010b			2
Secure attachment	Vervoort et al, 2010b; Tremblay and Sullivan, 2010			2
CONTEXT UNIT				
Physical recovery (assessed by nurses)	Bennet-Branson and Craig, 1993			1
Functional diagnosis		Williams et al, 2009		1
Biomedical orientation of the physician		Williams et al, 2009		1
Acceptance-based intervention	Wicksell et al, 2007			1
Cognitive behavioral training (CBT)	Trauttmann and Kröner-Herwig, 2010			1
Relaxation training	Trauttmann and Kröner-Herwig, 2010			1
Educational intervention	Trauttmann and Kröner-Herwig, 2010			1

Only variables that appeared in at least 2 papers are shown in the table but those related to the Context Unit.

Table 5. Levels of analysis.

Levels of Analysis	Physical	Behavioral	Affective	Cognitive
Number of variables	24	38	24	21
Examples of variables	<ul style="list-style-type: none"> • Pain intensity • Pain tolerance • Somatic complaints • Child's sex • Perceptual sensitivity 	<ul style="list-style-type: none"> • Child facial pain expression • Disability • Parental solicitous responses • Number of doctor room visits • Communicative pain behaviors reported by parents 	<ul style="list-style-type: none"> • Pain related fear • Secure attachment • Child's emotional problems reported by parent • Negative affectivity • Parental distress about other's pain 	<ul style="list-style-type: none"> • Parental overestimation of their child's pain. • Parental selective attention to children's facial display of pain • Cognitive distraction coping strategy • Parental assessment of the tendency to stop their child's pain inducing performance • Parental empathic concern