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Chaves, Covadonga; Vazquez, Carmelo; Hervas, Gonzalo
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Benefit finding and well-being in children with life threatening illnesses: An integrative study

Percepción de beneficios y bienestar en niños con enfermedades amenazantes para la vida: Un estudio integrador

Covadonga Chaves

Carmelo Vazquez

Gonzalo Hervás

Department of Clinical Psychology, School of Psychology,
Complutense University, Madrid, Spain

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Abstract

Objective. We examined whether benefit finding (BF) in children with a life-threatening illness (such as cancer or organ transplantation) would be related to a wide range of positive and negative measures of psychological functioning and some medical variables. **Methods.** A sample of children with a life threatening illness (N=67, ages 7-18 years) completed the Benefit Finding Scale for Children (BFSC) and other positive and negative measures of psychological functioning. **Results.** Children exposed to a moderate severity of their disease had the strongest levels of BF. While BF was positively associated with different dimensions of well-being, it was generally not related to distress with some exceptions in the health-related quality of life domain. **Conclusion.** Our results showed that BF reflects a positive outcome in its own right and not just a mere reduction of distress. Yet, there are some health-related domains of quality of life that should be considered in therapeutic intervention to facilitate BF.

Key words: benefit finding, childhood cancer, optimism, positive affect, personal strengths.

Resumen

Objetivo. Examinamos en qué medida la percepción de beneficios o *benefit finding* (BF) en niños con una enfermedad amenazante para la vida (como el cáncer o el trasplante de órganos) estaría relacionado con un rango de medidas positivas y negativas de funcionamiento psicológico así como con algunas variables médicas. **Método.** Una muestra de niños con una enfermedad amenazante para la vida (N=67, edad entre 7 y 18 años) completaron la Escala de Percepción de Beneficios para Niños (*Benefit Finding Scale for Children*, BFSC) y otras medidas positivas y negativas de funcionamiento psicológico. **Resultados.** Los niños expuestos a una enfermedad de gravedad moderada mostraron niveles más altos de BF. BF se asoció positivamente a diferentes dimensiones de bienestar. Sin embargo, no se encontró relación con medidas de malestar, a excepción de algunos dominios de calidad de vida relacionados con la enfermedad. **Conclusión.** Estos resultados mostraron que el BF refleja un resultado positivo en sí mismo y no una mera reducción de malestar. A pesar de eso, deben considerarse algunos dominios de calidad de vida relacionados con la salud a la hora de realizar intervenciones terapéuticas para facilitar la percepción de beneficios.

Palabras clave: percepción de beneficios, cáncer infantil, optimismo, afecto positivo, fortalezas personales.

Introduction

Improvements in diagnosis and increased survival rates of pediatric illnesses in recent decades have encouraged a growing interest in assessing and improving the quality of life of children (for review, see Klassen, Anthony, Khan, Sung, & Klaassen, 2011). Traditionally, research in the area has focused on the negative consequences of an illness, such as psychological and physical symptoms associated with the course of the disease or applied treatments (Aaronson & Beckman, 1987; Varni et al., 1998). However, research has consistently shown that, although a significant minority has some difficulties with adjustment and/or symptoms of psychological distress, the majority of children with a medical condition or a chronic illness are psychologically resilient (Canning, Canning, & Boyce, 1992; Phipps, 2007; Zebrack & Chesler, 2002). It seems that despite intense and often continuing stress and trauma, most children and adolescents diagnosed with a life-threatening illness adapt well.

Furthermore, over the last decades there has been a growing interest in the positive effects of stressful experiences (see review in Tedeschi, Park, & Calhoun, 1996; Vázquez, Pérez-Sales, and Hervas, 2008). Many cancer patients report gains, such as positive changes in views of the self (e.g., feeling stronger and wiser), in relationships with others (e.g., feeling closer with friends and family), and in priorities and goals (e.g., a deepened sense of purpose or a reappraisal of their life's priorities to emphasize enjoyment of life, relationships, and personal growth) (Antoni et al., 2001; Carver & Antoni, 2004; Cordova, Cunningham, Carlson, & Andrykowski, 2001; Tomich & Hegelson, 2004). From this perspective, the onset of a serious illness has been recognized not only as a potentially traumatic event for the patient, but also as a potential catalyst for resilience and even positive changes and growth (Phipps, Long, & Ogden, 2007). In this paper, we will specifically focus on the positive perspectives that children may have when diagnosed with a life-threatening illness. This perception of the positive consequences of suffering a potentially traumatic condition is known as benefit finding (Helgeson, Reynolds, & Tomich, 2006).

Research on the role of benefit finding (BF) in adaptation to a serious illness has largely focused on adult patients, with only a few pediatric studies (Phipps, Steele, Hall and Leigh, 2001; Barakat, Alderfer, & Kazak, 2006; Phipps et al., 2007; Currier, Hermes, & Phipps, 2009; Meyerson, Grant, Carter & Klimer, 2011). The construct of BF would appear particularly salient to children with a life threatening illness, given the different pathways in which BF

may improve physical and psychological health (Bower, Moskowitz & Epel, 2009).

Regarding the relation between BF and trauma severity, different findings have been found. While some studies reported a positive relation between trauma severity and BF (Barakat et al., 2006), others found a curvilinear relation (Laufer & Salomon, 2006; Levine, Laufer, Hamama-Raz, Stein, & Solomon, 2008). This curvilinear relation suggests that children exposed to a moderate severity of disease have the strongest levels of BF compared with those with higher and lower severity scores.

As for the relationship with psychological variables, BF is associated to dispositional optimism (Phipps et al., 2007; Currier et al., 2009) and self-esteem (Phipps et al., 2007). BF also generates changes in patient's perceptions of future stressors (appraisal processes), their ability to manage these stressors (coping strategies and resources), their relationships with others, and/or their priorities and goals (Bower et al., 2009). Furthermore, it seems contribute to the development of positive interpretations of the trauma itself (Nolen-Hoeksema & Davis, 2004).

Conversely, results on the relationship between BF and negative psychological states are more mixed. Although a handful of studies has found that BF is associated with decreases in symptoms (Milam, Ritt-Olsen, Tan, Unger & Nezami, 2005; Phipps et al., 2007), these effects have not been consistently observed. For instance, Phipps and colleagues (2007) reported that BF was unrelated to PTSD, global quality of life and pessimism. Moreover, other studies showed that BF was also unrelated to anxiety (Currier et al., 2009; Helgeson et al., 2006), depressive symptoms (Currier et al., 2009; Vaughn, Roesch, & Aldridge, 2009) and aggressive beliefs (Park, 2006). In sum, the relation between BF and measures of psychological distress is still controversial.

Common measures of distress in this research area have included global measures of quality of life that do not distinguish between the different domains of the quality of life construct (Helgeson et al., 2006). Thus, the inconsistent findings for distress are not surprising given the fact that global quality of life typically includes outcomes that tap varied aspects. Similarly, affect measures have typically included positive and negative affect without separating dimensions such as depression, anxiety, anger, and other negative mood states. These global measures may include too many constructs with different associations to BF, which may impede on finding clear and consistent relations to BF (Helgeson et al., 2006).

Whereas benefit finding among children and adolescents is starting to have a significant presence in the study of well-being in serious diseases of childhood (for review, see Meyerson et al., 2011), other dimensions of well-being have received little research attention. There are several constructs that are particularly relevant in life-threatening diseases research: positive affect (Pressman and Cohen, 2005), satisfaction with life (Diener, Emmons, Larsen & Griffin, 1985), dispositional optimism (Carver and Scheier, 2001), eudaimonic well-being (Ryff, Singer, & Love, 2004), personal strengths (Peterson & Seligman, 2004) or beliefs in a just world (Park, Edmondson, Fenster, & Blank, 2008). Most of these constructs have been broadly studied in adults (for review, see Helgeson et al., 2006), but less so in pediatric research. Although some previous studies included some of these constructs (Currier et al., 2009; Phipps et al., 2007; Hedström, Skolin & von Essen, 2004), their association with BF is still poorly understood.

In the present study, which is part of a larger longitudinal study on the dynamics of BF in children with serious illnesses, we used a wide array of specific measures in order to disclose more detailed associations between BF and several medical and psychological dimensions. A multidimensional assessment is relevant in order to improve our knowledge of childhood well-being and the association between its different components in the context of life-threatening illnesses. In regard to the controversy on the linearity of the relation between BF and the severity of the condition, and taking into account the recent literature, we hypothesized that the relation between BF and severity would be nonlinear. Our hypothesis was that benefit experiences will be more likely when trauma severity is moderate rather than very low or very high. Moreover, we hypothesized that BF would be positively associated with different dimensions of well-being, such as positive emotions, satisfaction with life, eudaimonic well-being, personal strengths and dispositional optimism. Finally, we expected that BF would not be related to distress or other negatively-valenced resources, such as negative affect, depressive symptoms or general problems with functioning.

Methods

Participants

Sixty-seven children with a variety of severe illnesses participated in the study. Children range from 7 to 18 years of age (mean 12.30; SD: 2.86 years). Thirty eight participants

were males (56.7%). In terms of pathology, 67.2% of participants were diagnosed with cancer disorders, 14.9% had undergone or were about to undergo organ transplantation and 17.9% suffered from other life-threatening diseases¹. Regarding the stage of the disease, the percentages were distributed as follows: 38.2% were disease-free, 44.1% in active treatment, and 17.6% in relapse. The mean of the months since diagnosis was 56.53 (SD = 65.03). The severity of the disease, which was assessed by doctors on a scale from 0 to 10, was 6.18 (SD: 2.76). Regarding the prognosis, the percentages were distributed as follows: 20% unfavorable, 17.1% favorable, 62.9% intermediate risk.

Measures

- *Benefit finding.* The *Benefit Finding Scale for Children, BFSC* (Phipps et al., 2007) includes 10 items (e.g. "Having had my illness has helped me become a stronger person") depicting potential benefits of the illness rated on 5-point Likert scales (1 = "not true at all" to 5 = "very true for me"). In a prior investigation with a childhood cancer sample, the BFSC was shown to be a unidimensional measure with excellent internal consistency (Phipps et al., 2007). In our study, the level of internal consistency was $\alpha=.91$.

Well-being dimensions:

- a) *Positive and Negative Emotions.* We used a measure of emotions based on the *Positive and Negative Emotional Style Scale, PNES* (Cohen, Alper, Doyle, Treanor, & Turner, 2006). It contains twelve adjectives (six positive and six negative). The six positive adjectives represented three subcategories of positive emotion: vigor, well-being, and calm (Cohen et al., 2006). The six negative adjectives represented three subcategories of negative emotion: depression, anxiety, and hostility (Cohen et al., 2006). Participants were asked to what extent (0 = "nothing" to 4 = "extremely") they felt each emotions on the day of the assessment. In the current sample, both the positive emotions scale ($\alpha=.92$) and the negative emotions scale ($\alpha=.88$) showed strong internal consistency.

¹ Diagnostics in cancer patients were: Leukemia, Blastoma, Lymphoma, Sarcoma, CNS and Tumor. Diagnoses in organ transplantation patients were: Liver transplantation, Heart transplantation, Intestine transplantation, Renal transplantation and Myelodysplasia (Bone Marrow Transplantation). Other life threatening diseases were: Congenital Heart Disease, Congenital Dextrocardia, Duncan's syndrome, Fanconi Anemia, Sickle Cell Anemia, Spina Bifida, Hemiparesis, Osteogenesis Imperfecta and Systemic Lupus Erythematosus.

- b) *General Life Satisfaction*. The *Student Life Satisfaction Scale, SLSS* (Huebner, 1991) consists of seven items designed to measure overall satisfaction with life, without making any specific reference to any particular domain (e.g., "In my life things are going well"). Each item is answered on a 4-point Likert scale ranging from 0 = "never" to 3 = "almost always". In our study, internal consistency was $\alpha=.79$.
- c) *Domains of Life Satisfaction*: We used *The Brief Multidimensional Students' Life Satisfaction Scale, BMSLSS* (Seligson, Huebner & Valois, 2003). This scale assesses six different aspects of life such as family, school, personal relationships, self-esteem, neighborhood and general satisfaction. For this study, we added other relevant dimensions (e.g. standard of living, health, life achievements, and personal safety) included in the *Personal Well-being Index* (Cummins & Lau, 2005). Finally, seventeen questions were asked to inquire about different domains of life satisfaction. Each item is answered on a 10-point Likert scale ranging from 0 = "lowest level of satisfaction" to 10 = "highest levels of satisfaction".
- d) *Eudaimonic well-being*. The eudaimonic conception establishes that well-being lies in the performance of actions coherent with deep values that imply a full commitment with which people feel alive and real (Waterman, 1993). To evaluate components of eudaimonic well-being we created a 6-item *Eudaimonic Well-being Scale* covering the six dimensions proposed by Ryff and Keyes (1995) in their Psychological Well-being model. Thus, we included six items assessing: self-acceptance ("I like myself"), positive relations ("I feel close to people around me"), purpose in life ("I find sense to the experiences that I live"), autonomy ("I have freedom to be myself and do things my way"), environmental mastery ("I am able to solve the difficulties I meet every day") and personal growth ("I am learning new things in life"). Participants rated their degree of agreement with each sentence in a 10-point Likert scale (0 = "totally disagree" to 10 = "totally agree"). The scale had an internal consistency of $\alpha=.77$.
- Psychological resources*
- a) *Optimism*. The *Youth Life Orientation Test, YLOT* (Ey et al., 2005) is a measure of dispositional optimism developed as a child analogue of the widely used Life Orientation Test (Scheier & Carver, 1985). The 16-item measure (with 2 filler items) contains seven optimism and seven pessimism items. We added one item specifically related to the child's illness (i.e. "I think I am going to recover from my illness"). Cronbach's alpha for optimism was 0.80, and for pessimism 0.78.
- b) *Personal Strengths*. The *Values in Action Inventory of Character Strengths for Youth, VIA-Y* (Park & Peterson, 2006) is a 240-item scale that allows for the evaluation of 24 personal strengths. For this study, we selected strengths most strongly associated with life satisfaction (Gimenez, 2010): love, perseverance, vitality, gratitude and love of learning. This scale contains 25 items (five items for each strength). Each item is answered on a 5-point Likert scale ranging from 1 = 'not true at all' to 5 = 'very true for me'. In our study, total internal consistency was $\alpha=.91$. Levels of internal consistency of subscales were $\alpha=.56, .78, .84, .73$ and $.76$, respectively
- Psychological functioning and symptoms*
- a) *Problems with functioning*. We used *The Pediatric Quality of Life Scale, PedsQoL* (Varni, Burwinkle, Katz, Meeske, & Dickinson, 2002), a 50-item scale based on a modular approach to assess quality of life in children and adolescents with health problems. The scale covers general functioning and functioning related to the health problem. General quality of life scale assesses physical, social, educational and emotional functioning problems. The health-related questionnaire assesses how often in the past month children have had problems with pain, anxiety related to medical procedures and treatment, nausea, cognitive problems, and concerns about the disease, physical appearance and communication with others about their disease. Items are presented on a 5-point Likert scale ranging from 0 = never to 4 = almost always. In the present study Cronbach's were $\alpha=.89$ and $\alpha=.86$ for general and health-related measures, respectively.
- b) *Depression*. We used the abbreviated 7-item version of *The Center for Epidemiologic Studies-Depression Scale, CESD-7* (Santor and Coyne, 2007). This scale measures the severity of symptoms of depression during the week prior to the day of the assessment (e.g. "I felt that I could not shake off the blues even with the help from my family or friends") using a 4-point Likert scale ranging from 0 = never or rarely to 3 = almost always. In our study, level of internal consistency was $\alpha=.87$.
- *Medical status*: Through an interview with doctors, we collected information about diagnosis, severity (measured by a scale from 0 to 100), the stage of disease (i.e., disease-free / active treatment / relapse / palliative), perceived probability of survival at 1 and 5 years, and physical and psychological reactions to treatment and their adherence to it (measured by a scale from 0 to 10).

Table 1. *Demographic and medical factors assessed in the study. Mean, standard deviations, and correlations with Benefit Finding Scale for Children*

	Mean	Standard deviation	Correlation with BFSC	Means comparison (t /F)
Age	12.30	2.86	.22	-
Sex				
-Girls	28.93	10.61	-	.77
-Boys	30.66	6.44		
Diagnosis				
- Cancer	30.29	8.16	-	.18
-Transplantation	28.50	11.32		
- Other	29.67	7.55		
Stage of disease				
-Free of disease	31.54	6.24	-	1.32
-Active treatment	29.33	8.70		
-Relapse	25.50	6.95		
Age at time of diagnosis	8.54	5.67	.20	-
Time elapsed since diagnosis (months)	56.53	65.03	-.20	-
Severity of diagnosis (0-10)	6.18	2.76	-.21	-
Prognosis				
-Unfavorable	23.29	12.54	-	1.95
- Intermediated risk	30.59	8.03		
- Favorable	29.83	3.82		
Probability of survival (at 1 year)	82.35	19.97	.28	-
Probability of survival (at 5 year)	70.75	23.72	.50**	-
Physical reactivity to treatment	6.06	2.07	.04	-
Psychological reactivity to treatment	6.00	2.71	.02	-
Adherence to treatment	7.56	1.94	-.05	-

** $p < .01$

Procedure

Children in the study were recruited from four public hospitals in Madrid (Spain). Participants who were unable to answer this scale due to their cognitive development ($n=6$), health status ($n=5$) or who were unwilling to participate ($n=3$) in the study were excluded. Children who agreed to participate completed self-report measures in

their hospitals. Instruments were administered verbally when needed. They were hospitalized or assessed in a ward hospital. In order to ensure that children understood the scales' response format to give the correct answer, we pre-tested competence of participants to use and understand Likert-format scales (Cummins & Lau, 2005). We also used visual cards so that children could physically point out their answer if needed.

Table 2. *Study Measures; Mean, Standard Deviations, and Correlations with BFSC*

	Minimum- Maximum	Mean	Standard deviation	Correlation with BFSC
Positive Emotions				
-Vigor	0-8	4.53	2.24	.31*
-Well-being	0-8	5.24	2.17	.27*
-Calm	0-8	4.77	1.93	.26*
Total	0-24	14.54	5.46	.33**
Satisfaction with life (SLSS)	0-21	13.83	3.91	.25*
Multidimensional Satisfaction with life (BMSLSS)	0-170	143.29	23.66	.06
Optimism (YLOT)	0-32	21.88	3.99	.25*
Eudaimonic Well-being	0-60	50.74	7.41	.27*
Personal Strengths (VIA-Y)				
-Love	0-25	16.57	2.62	.32*
-Perseverance	0-25	10.58	3.17	.29*
-Vitality	0-25	17.45	4.35	.50***
-Gratitude	0-25	20.18	3.05	.49***
-Love of learning	0-25	12.03	2.90	.37**
Total	0-125	76.17	13.21	.53***
Negative Emotions				
-Depression	0-8	.74	1.51	-.06
-Anxiety	0-8	.67	1.45	-.01
-Hostility	0-8	.53	1.17	-.11
Total	0-24	1.94	3.75	-.06
Depression (CESD-7)	0-21	3.91	4.49	.12
Pessimism (YLOT)	0-28	7.41	4.94	-.00
Functioning problems (General PedsQoL)	0-32	12.95	8.11	.07
-Physical problems	0-20	4.77	3.70	-.03
-Social problems	0-20	8.29	4.19	-.00
-Education problems	0-20	6.29	3.86	-.01
-Emotional problems	0-92	31.95	15.63	-.01
Total				
Functioning problems (Health-related PedsQoL)	0-8	2.33	2.25	-.01
- Pain	0-20	3.05	3.27	-.30*
- Procedures anxiety	0-12	1.44	2.45	.03
- Treatment anxiety	0-20	6.73	5.16	-.05
- Nausea	0-12	4.82	3.29	-.01
- Concerns about disease	0-20	5.87	4.11	-.16
- Cognitive problems	0-12	2.89	2.95	-.52***
- Appearance	0-12	3.30	3.24	-.29*
- Communication	0-116	30.32	16.17	-.27*
Total				

* $p < .05$; ** $p < .01$; *** $p < .001$

Note: CESD-7 (*Center for Epidemiologic Studies-Depression Scale*), PedsQoL (*Pediatric Quality of Life Scale*), SLSS (*The Student Life Satisfaction Scale*), BMSLSS (*The Brief Multidimensional Student Life Satisfaction Scale*), Y-LOT (*Youth Life Orientation Test*), VIAY (*Values in Action for Youth*).

Results

Benefit finding and demographic and medical variables

As described in Table 1, analyses showed no significant differences in BF scores as a function of age, gender, diagnostic category, stage of disease, age at time of diagnosis, time elapsed since diagnosis, prognosis, probability of survival at 1 year, physical or psychological reactivity to treatment or adherence to treatment. BF scores were significantly related to the probability of survival at 5 years, which was reported by doctors², $r(32) = .50$; $p = .003$.

The correlation between BF and disease severity, as judged by patient's doctors, was not significant. Since there is a controversy on the linearity of the relation between BF and the severity of the condition, we explored alternative nonlinear relations. Additional analyses revealed a significant quadratic relation [$R^2 = .18$; $F(2,31) = 3.40$; $p < .05$], which suggests that the relationship between severity of diagnosis and BF is curvilinear and can be represented as an inverted "U".

Benefit Finding and Psychological Variables

Correlation analyses between BF and psychological functioning variables are presented in Table 2. BF was positively associated with greater positive affect (in all its components: vigor, well-being and calm), general satisfaction with life, optimism, eudaimonic well-being, and personal strengths (vitality, gratitude, perseverance, love of learning, love). Likewise, there was a significant negative association between BF and some domains of the health-related quality of life measure (i.e., anxiety evoked by medical procedures, physical appearance and communication with others about their disease).

In contrast, BF did not yield significant relations with negative affect (anxiety, depression or hostility), pessimism, depressive symptoms, all areas of general quality of life and most of the domains related to the specific health problem (i.e., pain, treatment anxiety, nausea, concerns about their disease and cognitive problems – e.g. *Difficulty paying attention to things*).

Discussion

The study of BF in children with life threatening illnesses is relatively recent. In the last decade, there has been a shift in focus from the study of psychological symptoms to positive mental health resources. As a way of addressing some gaps in the BF literature, we examined some factors that seems to be related to and/or influence BF among children (Currier et al., 2009; Meyerson et al., 2011).

Consistent with most studies, we did not find significant association between BF and age (Barakat et al., 2006), gender (Currier et al., 2009; Phipps et al., 2007), time elapsed since diagnosis (Currier et al., 2009; Milam, Ritt-Olsen & Unger, 2004) or disease stage. Only some previous studies had found significant relations between BF and these domains. For example, Barakat et al. (2006) and Phipps et al. (2007) found that age at the time of the cancer diagnosis was positively related to BF. This association was not confirmed in this study.

As we hypothesized, the relation between severity of disease and BF was nonlinear. A recent meta-analysis (Meyerson et al., 2011) has shown that findings regarding the relation between trauma exposure severity and BF are mixed. Some studies have found a positive relation (Barakat et al., 2006) whereas others have not (Park, 2006; Kilmer & Gil-Rivas, 2010). These inconsistencies could be partly due to the fact this correlation is not linear. In fact, we found evidence of an inverted "U" curvilinear relation between severity of the illness, as reported by the child's doctors, and BF. These results are consistent with previous studies (Laufer & Solomon, 2006; Levine et al., 2008) that found an inverted "U" curvilinear with trauma exposure and post-traumatic growth. It suggests that benefit experiences may be optimal when trauma severity is moderate. Children exposed to moderate severity of their disease had the strongest levels of BF compared with high and low severity.

A priority in the design of our study was to include a variety of specific measures of BF and other variables related to negative and positive psychological states (including well-being) to obtain a better picture of the relations between variables.

Our results showed that BF was strongly linked to well-being constructs and psychological resources. Consistent with broad trends in the literature (see reviews in Meyerson et al., 2011; Helgeson et al., 2006; Vázquez and Hervás, 2010), we found that BF is associated with positive emotions (Currier et al., 2009), dispositional optimism (Phipps et al., 2007; Currier et al., 2009). Furthermore, novel results

² We gathered data from doctors in only 32 cases.

of our study showed that satisfaction with life (Diener et al., 1985), eudaimonic well-being (Ryff et al., 2004) and personal strengths (Park & Peterson, 2006), such as love, perseverance, gratitude, love of learning and vitality were also positively related to BF.

Although some studies have found a significant or marginally significant negative relation between BF and psychological symptoms (Milam et al., 2005; Phipps et al., 2007), most of the existing literature supports that BF is unrelated to measures of psychological distress (see review in Meyerson et al., 2011). Consistent with this pattern, we found that BF was unrelated to pessimism (Phipps et al., 2007), negative emotions and depressive symptoms (Currier et al., 2009). Likewise, examining specific outcomes regarding quality of life, we found different patterns of relation depending on the dimension measured. BF was unrelated to global quality of life deficits (which include general problems in physical, social, educational and emotional functioning). However, we found a significant negative relation between BF and procedures anxiety, physical appearance and communication with others about their disease. These results confirm the quantitative review of the literature by Helgeson et al., (2006) that suggested that quality of life measures included in studies of BF are composed of too many different constructs which may have different relations with BF. As expected, there was no relation with general quality of life. Yet, the perception of quality of life in health-related domains seems to be relevant when reporting positive changes of the disease. It is interesting to note that there are few components of a deficit in quality of life associated to BF and, with the exception of anxiety induced by medical procedures, the other two variables associated are related to social aspects related to the illness (i.e., concerns on physical appearance and difficulties to communicate to others one's own disease) rather than psychological or physical symptoms (i.e., depression, distress, pain, etc.). These results support the importance of specific therapeutic interventions on these social components related to the disease.

Our overall pattern of results highlights the notion that BF is genuinely associated with greater positive well-being (Meyerson et al., 2011), which suggests that BF and other positive changes following highly stressful events seem to reflect a positive outcome in its own right and not a mere lack or a reduction of distress. Even under circumstances when children may feel an ongoing sense of struggle to maintain high levels of functioning, they may also experience benefits from their illness or other trauma. That is particularly relevant given the different pathways through which BF may improve physical and psychological health. In addition to

psychological variables measured in our study, BF is also associated with positive changes in physical health through a reduction in the activity in the body's stress response systems and through minimizing the deleterious effects of excessive or prolonged exposure to stress hormones on the body (i.e. more rapid habituation to the same stressor, fewer physiological responses to minor stressors and faster recovery to baseline following termination of the stressor) (see Bower et al., 2009)

There are some limitations to the present study. First, we focused on children with life threatening illnesses, which may limit generalization to other populations of children experiencing trauma or other significant life events. Second, our results are based on cross-sectional data. Hence, we do not know whether BF is a cause or a consequence of other positive psychological outcomes. Consistent with Fredrickson's (2003) "broaden and build" theory, positive emotions generate psychological resources by promoting resilience. Thus, BF could to be a consequence of other positive dimensions. Further longitudinal research will help to identify specific causal pathways between BF and other relevant variables.

Despite these limitations, this multidimensional assessment provides a clearer and broader picture of children's responses to highly stressful events. As medical treatments progress and improve, expectations of how children and families can manage themselves in terms of well-being have also increased. According to our data, significant reductions in psychological difficulties or distress associated with illness do not automatically guarantee a positive psychological status which, furthermore, needs specific assessment tools. Psychopathology and well-being are more than merely opposite poles of the same dimension (Huppert & Whittington, 2003; Keyes, 2007). It is important to focus our interest in the study of well-being dimensions in order to provide an additional input needed to support children who find themselves coping with complex and demanding treatments, a scenario that has been described as "ordinary children facing extraordinary challenges" (Houghton, 2005).

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