

Thinking Styles and Coping when Caring for a Child with Severe Spina Bifida

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Abstract This study now designed to identify the cognitive dimensions involved in coping and the psychological adjustment of parents of children with myelomeningocele. The study included 118 adults who were parents of children diagnosed with myelomeningocele. Comparison of means and regression analyses were performed to analyze variables and their contribution to parental adjustment. Significant differences were found for four thinking styles; coping based on *Seeking Social Support* and *Positive Reappraisal* was used frequently. The *Internally Focused thinking style* contributed the most to adjustment. The thinking styles identified help to detect stable responses associated with caring for children with myelomeningocele. Such responses may be good indicators of the way parents cope with their situation, allowing us to determine their adaptive efficacy and shedding light on designing interventions targeted at enhancing development of coping strategies in these kinds of situations.

Keywords Parents of handicapped child · Myelomeningocele · Spina bifida · Disability · Personality styles · Thinking styles · Coping styles · Psychological adjustment · Caregiver

Studies on family and parental adjustment to disabled children with spina bifida began in the 1960 s. Initially, these studies were carried out in pediatric and hospital

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environments, they focused almost exclusively on the initial impact the birth of such a child had on the family and, specifically, on the parents (Solnit and Stark 1961; Hare et al. 1966; D'Arcy 1968; Drotar et al. 1975). Subsequently, researchers began to address other aspects related to family and parental psychological adjustment, such as parental stress, marital stability, family life, and the social adjustment of these children and their siblings (Freeston 1971; Kolin et al. 1971; Martin 1975; Tew and Laurence 1973, 1974; Tew et al. 1977; Walker et al. 1971). Overall, findings revealed a close relationship between stress and the psychological maladaptation of parents, as well as presence of emotional and behavioral problems in the children, highlighting importance of initial bonding and early feedback loops (Singh 2003)

In the 1980 s, studies investigated the psychosocial aspects of chronic stress in parents when faced with the changing demands of the disease during the lifespan of their child, paying special attention to the cyclic nature of the process (Breslau 1983; Breslau et al. 1982a, b; Evans et al. 1987). Towards the end of the 1980 s, Varni and Wallander (1988) proposed a conceptual risk and resilience model to explore parents' adjustment to their children's disabilities. The model attempted to identify disease-associated, social, and ecological factors as well as intrapersonal factors relating to the child and parents. In this sense, since the 1990 s, most studies have aimed at identifying stress predictors (Samuelson et al. 1992; Wallander and Noojin 1995; Noojin and Wallander 1996; Macias et al. 2001; Macias et al. 2003; Gupta 2007), as well as predictors of individual and family psychological adjustment (Barakat and Linney 1995; Brand 2002; Holmbeck et al. 2002; Holmbeck et al. 1997; Hortons et al. 2001; Kirpalani et al. 2000; Kronenberger and Thompson 1992a, b; Wallander and Varni 1998; Wallander and Venters 1995). This has contributed to identifying factors involved in parental adjustment in regard to three main areas: the child and his/her medical condition, parents and their personal resources, and social and family environmental resources.

Bearing in mind previous research, later models concerning parental adjustment to stress began to include several intrapersonal variables that influenced optimism, self-esteem, parental competence, resilience, gratification or satisfaction regarding caring for the child, and problem-solving skills (Schwartz 2003; Kearney and Griffin 2001; Noojin 1998; Holmbeck et al. 1997; Barakat and Linney 1995).

Findings derived from these models reveal some of the behavioral and cognitive resources that mediate in coping with stress. One of the most relevant findings is that the way people interpret and evaluate events plays a key role on how well they cope (Folkman et al. 1986; Moos and Schaefer 1993). However, no research has specifically focused on psychological factors related to selection and processing of information that mediate between parental stress due to having a disabled child and the actual psychological and psychosocial effects. Thus, we hypothesise that there are relevant cognitive mediation factors that may account for such psychological and psychosocial factors. To clarify this we need to examine three questions: does parental stress have a mid-term stable effect on their cognitive functioning? Is this effect related to the use of specific coping strategies? Finally, does the identification of such cognitive functioning improve our understanding of the processes involved in psychological adjustment?

The cognitive variables used in this study are defined by the thinking styles of the Millon Index of Personality Styles (MIPS; Millon 1994): Externally Focused and

Internally Focused, Realistic/Sensing and Imaginative/Intuiting, Thought-Guided and Feeling-Guided, Conservation-Seeking and Innovation-Seeking. This instrument has an extensive theoretical and empirical foundation that we use to identify the stability of information-processing styles, compare them with values in the population, and determine their impact on the psychological adjustment of parents raising disabled children.

In our context, adjustment is understood as the capacity of parents to maintain an adaptive balance between the exhausting demands of the disease and the availability of personal, social, and environmental resources (Vermaes et al. 2005). Parental adjustment is defined in an operational way and was measured using the *Clinical Index* included in the *Index of Personality Styles* (MIPS; Millon 1994). This measures a person's level of adaptability to his/her reference group.

This study aimed at identifying the thinking styles and coping strategies most widely used by these parents, being the main carers of a child with severe spina bifida. We also investigate association between both variables and level of psychological adjustment of such parents

The study attempts to gather relevant and novel information on such cognitive processes that might contribute to designing professional interventions able to facilitate the development of effective parenting strategies for these kinds of situations.

Method

Participants

The study included 118 adults who were the parents of children diagnosed with myelomeningocele; 54 were men (45.8%) and 64 women (54.2%). Their age ranged between 35 and 50 years, (mean age, 41 years). Most participants were married, of whom 4% were separated or divorced, and approximately 6% were single. In 89.8% of cases both parents participated in the research, in 9.3% only the mother participated, and in one case (0.8%) the father was the only participant. Educational levels were evenly distributed (34.5% primary school, 28.3% secondary school, and 34.5% university/college level) except for the lowest level (no studies), where the figures were significantly lower (2.7%). Percentage of working people (72.2%) was significantly higher than any other labour status, and only 21.7% were housewives, a group made up exclusively of women.

A total of 68 children diagnosed with myelomeningocele participated in the study; 47.1% were male and 52.9% female, and the mean age was around 10 years ($SD=8.8$), ranging between 4 months to 38 years. Despite such a wide age range, all of the parents were the main carers of the disabled child. Although statistical tests were done a priori to determine potential effects of the child's age on the cognitive variables used in this study, no relevant effects were found. Mean disability, understood as the child's degree of functional limitation, was 55.67% compared to the reference population obtained with official Spanish instruments based on the WHO international guidelines (WHO 1980). Of this percentage, 61.8% presented a lumbosacral lesion (L5-S1), 27.9% mid-lumbar lesions (L3-L4), 7.4% an upper

lumbar lesion (L1–L2), and only 2.9% had dorsal lesions (D6–D8). The most frequently associated clinical disorders were hydrocephalus (86.8%) and urological, intestinal, and orthopedic disorders (91.2%). Mobility, and therefore the opportunity of full functional independence without aid, was available to only 4.6% of the sample, whereas 43% could move with the help of orthosis and crutches and 40% used a wheelchair. Mean surgical interventions, including hospitalization, were around five per person, with a recorded maximum of 17 interventions. Of the sample, 91% required medication at the time of the study, 97% followed physiotherapeutic rehabilitation programs, and 47.8% needed special medical care. Previous analysis showed no significant effect of these sociodemographic and clinical variables on the study variables.

Procedure

The selective criterion used to recruit participants was having a child diagnosed with severe spina bifida (i.e., myelomeningocele). The study was both introduced to parents and informed consent obtained through parent associations following standard bioethical regulations. Tests were administered by the clinical psychologist who was responsible for the study. Parent associations provided space in their own centres, sent out the invitations by post, and scheduled the interviews and test administration sessions with both parents, who filled in the tests independently. The participating associations were as follows: the Asociación de Espina Bífida e Hidrocefalia de Alicante (Alicante Spina Bífida and Hydrocephalus Association; AEBHA), Asociación de Espina Bífida de Tenerife (Tenerife Spina Bífida Association), the Asociación Murciana de padres con hijos Espina Bífida (Murcia Parents of Children with Spina Bífida Association; AMUPHEB), the Asociación Malagueña de Espina Bífida (Malaga Spina Bífida Association; AMAEB), Asociación Valenciana de Espina Bífida (Valencia Spina Bífida Association; AVEB), the Asociación Madrileña de Espina Bífida (Madrid Spina Bífida Association; AMEB), and the Asociación de Espina Bífida e Hidrocefalia de Bilbao (Bilbao Spina Bífida and Hydrocephalus Association; ASEBI).

Measures

Questionnaire on Socio-Demographic Data and the Child's Disease Parents completed a socio-demographic questionnaire that collected data on variables such as the age of the participants, number of children, sex, marital status, place of residence, educational level, working situation and profession, as well as on variables related to their child's disease and its consequences, associated disorders and disabilities in terms of limiting his/her activity and the child's social participation.

Ways of Coping Questionnaire (Folkman and Lazarus 1988). Coping was measured using a shortened version of the Ways of Coping Questionnaire (WCQ; Folkman and Lazarus 1988; Folkman et al. 1986), adapted by Sánchez Cánovas (1991) to the Spanish context, and administered to both fathers and mothers when available. The questionnaire is made up of 50 items divided into eight subscales that describe a

series of cognitive, affective, and behavioral strategies used by people to cope with internal or external demands. Subscales are: *Confrontive Coping*, *Distancing*, *Self-Controlling*, *Seeking Social Support*, *Accepting Responsibility*, *Escape-Avoidance*, *Planful Problem-Solving*, and *Positive Reappraisal*. Confrontive Coping includes direct actions to alter the situation. Distancing and Self-Controlling allow parents to distance themselves from and control their own feelings and actions. Planful Problem-Solving—a more analytical approach—involves the generation of ideas and alternative action courses. Seeking Social Support entails problem-related efforts to seek support, assistance or information. Accepting Responsibility means recognizing one's own role in the problem. Escape-Avoidance focuses on avoiding emotions and involves wishful thinking. Finally, Positive Reappraisal describes efforts to create a positive meaning. The internal consistency of alpha coefficients in this adaptation for each scale are: Confrontation $\alpha=.60$, Distancing $\alpha=.61$, Self-control $\alpha=.62$, Seeking Social Support $\alpha=.74$, Accepting Responsibility $\alpha=.71$, Escape-Avoidance $\alpha=.61$, Planful Problem-Solving $\alpha=.75$, and Positive Reappraisal $\alpha=.71$. Due to participant dropout, we obtained data for 83% of the total sample.

Millon Index of Personality Styles (MIPS; Millon 1994). Parents' thinking styles were measured by completing the *Millon Index of Personality Styles*, adapted and validated for use in the Spanish population by Sánchez-López. This instrument provides a measure of personality styles organized according to three main dimensions: *Motivating styles*, *Thinking styles*, and *Behaving styles*, and includes a total of 24 scales, plus three validity control indexes. The scales are organized in bipolarities: that is, 12 pairs of items/scales that define opposites from a theoretical viewpoint, although not in the psychometric sense, because each scale was built to be measured independently from its opposite. The MIPS also incorporates an adjustment Index created by Millon (1994) to measure the person's adaptability to his or her reference group (which is called the *Clinical Index*). This index is obtained using items from other MIPS scales which are independent from the thinking styles scales, and thus potential communality effects between variables are avoided. The MIPS assesses dimensions of normal personality in adults aged between 18 and 65 years, and is made up of 180 elements with a True/False response format. For this study, we obtained a measure of cognitive variables using the four pairs of scales of the *thinking styles* dimension (Externally Focused and Internally Focused, Realistic/Sensing and Imaginative/Intuiting, Thought-Guided and Feeling-Guided, Conservation-Seeking and Innovation-Seeking), and evaluated psychological adjustment by means of the *Clinical Index* provided by the test. In the Spanish adaptation, adults and university students were normalized separately, and then each version was again divided according to sex. This study used the adult version. Prevalence scores (PS) were between 0 and 100 for each scale. The internal consistency of this instrument was calculated by the split-half method, obtaining a mean reliability index (Guttman's statistic) of .77 (.78 for women and .76 for men) for the total adult sample, which is slightly lower than the one obtained by Millon (1994), where this was .82. This difference is expected, as this is an adaptation to the Spanish adult population. The test-retest reliability indexes show that the Spanish adaptation is suitable for application to the Spanish population (Millon 1994).

Data Analysis

Data analyses were carried out using the SPSS (v 12.0) statistical program. To determine significant differences in the parents' thinking styles, differences between the sample means and the population means were analyzed using the Student *t*-test for a single sample, taking 95% as the confidence interval for the difference and using as the test value the mean prevalence scores for the Spanish population (Millon 1994; Spanish adaptation: M.P. Sánchez-López; p. 144). The Spanish normative sample was made up of 1,184 adults, with 643 females (54.31%) and 541 males (45.69%), with a mean age of 37.60 years.

To determine significant differences in the parents' coping styles, the difference between the sample means and the population means were analyzed using the Student *t*-test for a single sample, taking 95% as the confidence interval for the difference and using as the test value the mean value from the Spanish version of the *Ways of Coping Questionnaire* (Folkman and Lazarus 1988) which was adapted by Sánchez Cánovas (1991) by replicating Lazarus's study (1984), and based on 930 observations.

We analyzed significant linear relationships using Pearson's correlation coefficient. We used stepwise multiple regression analysis to determine coping efficacy and which variables predicted better parental adjustment.

Results

Thinking Styles and Adjustment

Prevalence scores (PS) equal to or higher than 50 indicate the presence of the characteristics measured by the scale; the higher this score, the more pronounced the distinctive traits (Millon 1994). No score should be interpreted independently from its relationship with the scores from the other scales or if the scores are especially divergent (high and low) in the same bipolarity, as this provides more accurate information when interpreting personality (Millon 1994). As shown in Table 1, statistically significant differences were found in four of the eight MIPS thinking styles scales compared to the normative sample of the MIPS in Spain.

These parents use Internally Focused, Intuiting, Thought-Guided and Innovation-Seeking thinking styles less than the Spanish normative sample. Although the *Clinical Index*, had lower values than the normative mean value, it did not demonstrate statistically significant differences between these parents.

Coping Strategies

Results revealed statistically significant differences for six of the eight scales when compared with the Spanish population (see Table 1). These parents use more positive reappraisal and seek more social support than the normal Spanish population, and they use distancing, accepting responsibility, escape-avoidance and planful problem-solving less than the normal population.

Table 1 Statistics and differences of means

Thinking style ($N=118$)				Coping Strategies ($N=98$)			
	M	SD	$t(117)$		M	SD	$t(97)$
Externally focused	50.47	24.47	.84	Confrontation	5.73	2.95	-.22
Internally focused	44.96	23.96	-2.94**	Distancing	4.39	2.53	-5.29***
Realistic/Sensing	60.76	25.45	1.05	Self-control	7.07	3.72	-1.38
Imaginative/Intuiting	36.30	21.69	-3.27***	Social support seeking	10.16	3.69	10.64***
Thought-Guided	40.17	27.69	-3.64***	Accepting responsibility	1.41	1.85	-15.21***
Feeling-Guided	50.58	27.04	-.31	Escape-Avoidance	4.22	3.29	-4.35***
Conservation-Seeking	46.83	23.80	-1.58	Playful problem-solving	6.59	3.61	-3.48***
Innovation-Seeking	35.19	21.78	-3.73***	Positive reappraisal	10.46	4.69	11.54***
Clinical Index	48.05	13.11	-1.61				

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

Relationships Between Variables

Table 2 shows that statistically significant correlations were found between six of the WCQ coping strategies and the eight MIPS thinking styles, with low correlation coefficients. Accepting Responsibility and Escape-Avoidance were the only strategies that showed significant correlations with the Clinical Index, both with a negative sign. Significant correlations were also obtained between the Clinical Index and seven of the eight thinking styles (see Table 3). Moderate correlation coefficients were only obtained for the *Externally Focused* scale, with a positive sign, and for the *Internally Focused* scale, with a negative sign.

Tables 4, 5, and 6 show results of the regression analyses carried out to determine the relationship between variables and parental adjustment. The regression analysis of the effect of Thinking Styles on parental adjustment indicated that being Internally Focused was the best predictor of parental adjustment. The statistically significant negative relationship explained 41% of the variance of parental adjustment. In the successive steps, the styles *Conservation-Seeking*, *Feeling-Guided*, and *Externally Focused* were included in the analysis yielding increases of 5%, 3%, and 2%, in the explained variance, respectively. The variance analysis shows that the model has significant explanatory power, with an effect size of 0.51. In total, these four thinking styles explained 51% of the variance in parental adjustment.

Regarding coping strategies, Accepting Responsibility explained 9% of variance in parental adjustment; including Confrontation and Escape-Avoidance yielded an increase of 5% and 7% in variance, respectively. Parental adjustment had a negative relationship with Acceptance and Escape-Avoidance, and a positive one with Confrontation. The effect size for these measures was lower than for the thinking styles. Together, these three coping strategies explained 20% of variance in parental adjustment.

Regression analysis for all the predictors showed that being Internally Focused had the highest explanatory power and was the best predictor of parental adjustment,

Table 2 Correlations between coping strategies and cognitive modes, and adjustment (clinical index)

Cognitive modes	Coping strategies							
	Confrontive	Distancing	Self-control	Social support seeking	Accepting responsibility	Escape-avoidance	Planful problem solving	Positive reappraisal
Externally focused	.23*	.02	.05	.27**	-.10	-.11	.18	.13
Internally focused	-.26**	-.07	-.05	-.23*	.12	.17	-.14	-.05
Realistic/Sensing	-.10	-.07	-.10	.00	-.20*	-.31**	-.05	-.15
Imaginative/Intuiting	.03	.10	.18	.09	.18	.37**	.15	.22*
Thought-Guided	-.05	.05	.08	-.16	-.20*	-.26**	.03	-.08
Feeling-Guided	.08	.09	.04	.23*	.23*	.38**	-.00	.20
Conservation-Seeking	-.01	.07	-.04	-.00	-.16	-.26**	.01	.07
Innovation-Seeking	.21*	.06	.14	.19	.17	.26**	.22*	.14
Clinical Index	.10	.11	.06	.01	-.29**	-.29**	.10	.03

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

accounting for 44% of the variance. The final model also includes the Conservation-Seeking style, and the Accepting Responsibility strategy. These results show an effect size (0.52) similar to that of the model that only included Thinking Styles. These three variables (Internally Focused, Conservation-Seeking and Accepting Responsibility) explained 52% of the variance in parental adjustment.

Discussion and Conclusion

The purpose of this investigation was to identify the cognitive dimensions involved in the coping and psychological adjustment of parents of a child with myelomeningocele.

Table 3 Correlations between thinking styles and parental adjustment (clinical index)

	Externally focused	Internally focused	Realistic/Sensing	Imaginative/Intuiting	Thought-Guided	Feeling-Guided	Conservation-Seeking	Innovation-Seeking
Clinical index	.58**	-.64**	.30**	-.33**	.23*	-.24**	.27**	-.07

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

Table 4 Regression analysis

Prediction of parental adjustment according to coping strategies							
Step		β	R^2	ΔR^2	<i>f</i> -change	<i>df</i>	<i>F</i>
1	Accepting responsibility	-.29**	.09	.09	9.20**	98	9.20**
2	Accepting responsibility	-.37***	.13	.05	5.14*	97	7.37**
	Confrontation	.23*					
3	Accepting responsibility	-.31**					
	Confrontation	.29**	.20	.07	8.28**	96	8.04***
	Escape-avoidance	-.28**					

p* ≤ .05. *p* ≤ .01. ****p* ≤ .001.

The first aim of this study was to identify the cognitive dimensions relating to the experience of taking care of a disabled child. The thinking styles identified by MIPS provides a stability measure of the processes involved in parents’ psychological adaptation, independently of the developmental stage of the subject or the disease, and allows us to establish the adaptiveness and efficiency of the cognitive strategies observed (Limiñana et al. 2007). Although no description of thinking styles can fully explain the great diversity of individual parental responses, the results of this study reveal significant behavioral tendencies in the cognitive dimension of these parents when compared to the Spanish adult population as a whole. These results identify a range of behaviors in the cognitive domain characterized by a lower tendency to be internally focused, to process abstract and symbolic information (Intuiting Style), and to trust more their direct experience and observable phenomena. There was also

Table 5 Regression analysis

Prediction of Parental Adjustment in relationship to thinking styles							
Step		β	R^2	ΔR^2	<i>f</i> -change	<i>df</i>	<i>F</i>
1	Internally focused	-.64***	.41	.41	81.29***	116	81.29***
2	Internally focused	-.63***	.46	.05	11.22**	115	49.83***
	Conservation-Seeking	.23**					
3	Internally Focused	-.62***					
	Conservation-Seeking	.19**	.49	.03	6.67*	114	37.08***
	Feeling-Guided	-.18*					
4	Internally Focused	-.40***					
	Conservation-Seeking	.17**					
	Feeling-Guided	-.23**	.51	.02	4.75*	113	29.92***
	Externally Focused	.27*					

p* ≤ .05 *p* ≤ .01 ****p* ≤ .001

Table 6 Regression analysis

Prediction of parental adjustment in relation to all variables							
Step		β	R^2	ΔR^2	f -change	df	F
1	Internally focused	-.66***	.44	.44	76.85***	98	76.85***
2	Internally focused	-.65**	.49	.05	9.42**	97	46.43***
	Conservation-Seeking	.22**					
3	Internally focused	-.63***					
	Conservation-Seeking	.19**	.52	.03	6.56*	96	34.92***
	Accepting responsibility	-.18*					

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

a significantly lower tendency to use cognitive processes based on intellect, logic, and objectivity (Thought-Guided). Lastly, Innovating, which involves creativity, enhancing change and exploring new possibilities, was almost absent in these parents.

Scores obtained in the *Sensing/Intuiting* bipolarity were also noteworthy. According to the interpretative norms of the MIPS, high scores in sensing indicate a pronounced disposition to be receptive to tangible structured and well-defined sources of information that call upon the senses, whereas low scores in intuiting indicate a preference for intangible, unstructured or ambiguous information, feeling comfortable with emotions, judgments, abstract reasoning, and symbolic thoughts (Millon 1994). The latter cognitive pattern is related to a pragmatic behavior, reflecting the parents' clear preference for the present and the concrete aspects of the *here and now* (Irvin et al. 1976) such as attending to their child's daily needs as a way of being more effective.

For these parents, focusing on sensing has positive implications—their coping efficiency is greater—and negative implications—it predicts poorer psychological adjustment. Various studies have related this thinking style to improvements in the self-esteem and psychological development of the children (Harvey and Greenway 1982; Suls and Fletcher 1985), although, as Fishman and Fishman (1971) point out, this may not be entirely healthy for the children, as it does not meet their affective needs. On the other hand, Barakat and Linney (1995) believe this style helps parents to cope with stressors. Irvin et al. (1976) also consider this style an effective way for parents to meet demands and protect themselves from pain. However, this does not refer to the initial response, but to a stable behavior, probably generated by the chronic stress experienced by these parents as the main, and frequently the only, caretakers of a child with myelomeningocele.

The low scores (statistically significant) on implicit or intentional capacity for abstraction, measured by the MIPS Imaginative/Intuiting scale are striking. This style might make the parents less effective coping with the disease in the long term. According to Millon and Davis (1996), this capacity generates adaptive competences that allow an individual to transcend the immediate and concrete and

bring the past to the present, as well as the future into the present, which is extremely important for these parents. The challenges involved in caring for a child with myelomeningocele practically eliminates their capacity for anticipation and, together with this, their capacity to project their thoughts into the future. These parents are overwhelmed by external circumstances that weaken their own personal development and ability to think about the future, prevent them from processing internal representations, and transform the course of their actions and decision-making via rational and emotional deliberation. This higher order of abstraction (Millon and Davis 1996) would allow them to achieve a sense of identity, more flexibility, and openness to cognitive management in the face of the challenges involved in taking care of a child with myelomeningocele.

Mean values for the *Clinical Index* demonstrate normality. Contrary to the many studies that have focused on measuring pathology, disorder and maladjustment in these parents, our findings suggest the existence of protective and resilience factors. Investigating the way intrapersonal (Vermaes et al. 2005), and cognitive variables contribute to the process of psychological adjustment should help to better understand these adaptive processes and, more importantly, might help to identify adaptive strategies oriented to staying healthy.

As for the second objective of identifying potential relationships between the cognitive variables of the study and the use of specific coping strategies, the results confirm that such parents, when faced with the stress involved in caring for a child with myelomeningocele, frequently use problem-focused coping strategies based on *seeking social support* and *positive reappraisal*. On the other hand, the use of avoidance mechanisms that focus mainly on emotions, such as *Distancing* and *Escape-Avoidance*, were much less frequent. Planful problem-solving, understood as a problem-centred cognitive strategy, was also significantly lower than in the general population. This involves fewer deliberate efforts to change the situation based on a more analytical approach and is strongly consistent with the low tendency—identified by the MIPS—to use cognitive processes based on intellect and logic. The lowest values were obtained in Accepting Responsibility, a strategy that is barely represented in this sample. In this sense, the study yields contradictory conclusions (Cleve 1989; Barakat and Linney 1995; Holmbeck et al. 1997; Samuelson et al. 1992; Vermaes et al. 2005; Bourdeau et al. 2007), probably because coping with chronic stress changes over time, and the changing demands of the disease merge with the demands of the developmental stages of the child and the family (Breslau et al. 1982a, b; Lazarus 2000). In this case, we confirmed that Seeking Social Support, the coping strategy most frequently used by these parents, is consistent with the Externally Focused thinking style, which was the style most frequently used.

We observed that some thinking styles seemed to contribute moderately to the use of specific coping strategies, and this should be taken into account when designing interventions that can optimize and diversify the parents' adaptive responses. In this sense, we found a slight but significant relationship between intuiting-guided and feeling-guided thinking styles and the use of *Escape-Avoidance coping strategies*. Likewise, presence of Externally Focused and Innovation-Seeking thinking styles seemed to be associated with the use of active and changing coping strategies such as Confrontation.

Our last aim was to find out whether some of the thinking styles used by the parents in this study, combined with their coping strategies, led to better psychological adjustment and whether this provided useful information to better understand the adaptive process.

Parental adjustment was best predicted by the Internally Focused and the Feeling-Guided thinking styles with a negative sign, and by Conservation-Seeking and Externally Focused with a positive sign. The greater tendency towards the Externally Focused thinking style in this group reveals the existence of an important protective factor regarding how these parents adapt to stress. On the other hand, low use of a reflective and systematic thinking style (Conservation-Seeking), and the near absence of Innovation-Seeking predicts lower psychological adjustment, which makes these parents' coping strategies less effective.

Concerning coping, not accepting responsibility—understood as not assuming responsibility for the cause of the illness (Folkman and Lazarus 1988)—low values of escape or avoidance of the problem, and high confrontation are coping strategies that most contribute to parental adjustment (see Table 4). However, these parents make little use of confrontation and this is a key finding. In this sense, although research findings are not very consistent, a relationship between avoidance and worse psychological adjustment has been reported (Barakat and Linney 1995), whereas the use of confrontation has been associated with better parental adjustment (Brand 2002).

One of the most interesting findings of this study is that despite the large number of variables, the absence of an Internally Focused style contributed most (44%) to the psychological adjustment of parents. This result underlines the differential relevance of the variables involved, providing useful data both for psychological diagnosis and interventions aimed at optimizing parental resources. The Internally Focused thinking style, defined as a tendency to withdraw into the inner world, use one's own thoughts and feelings as resources, and having a preference for inner rather than external inspiration or information, is a key indicator of potential psychological difficulties in parents. To a lesser extent, other variables (Conservation-Seeking and the absence of Accepting Responsibility) contribute to improving this predictive model and offer a global picture of the traits observed in parents with better psychological adjustment.

The predictive capacity of this model, which has a large number of variables, may help to identify the most relevant aspects or factors when creating therapeutic interventions for parents of chronically ill children. Compared to classic models which only focus on coping strategies, a combined intervention model which also focuses on thinking styles could strongly optimize intervention efficiency.

This study attempts to compensate for the existing lack of research into the intrapersonal resources of parents of children with myelomeningocele and their effect on psychological adjustment (Vermaes et al. 2005). Results also open new lines of research to further examine the way people dynamically adapt to the ongoing stress generated by their child's incapacity.

However, working with a sample of parents actively involved with a parent association and who wanted to participate in the study restricts the applicability of the results to the general population of parents with a spina bifida child. Another limitation of this study is the lack of a direct comparison group formed by parents

with children suffering from other types of disabilities. This is a potential new line of future research.

As for the clinical implications of this research, the stable, but not definitive, thinking styles identified in this study may be good indicators of the way these parents respond to and cope with stressful situations, the efficacy of such coping strategies, and their effect on psychological adjustment. Furthermore, our findings provide more precise information of these coping strategies and help us to understand the cognitive dimensions involved in coping. Finally, our study might lead to designing intervention strategies better adapted to the specific needs of parents dealing with children suffering this chronic disease and to optimizing personal resources during counseling and supporting these families.

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