



Books Written by Parents of Children With Developmental Disabilities: A Quantitative Text Analysis

Abstract

This research explored how parents of children with developmental disabilities construct narratives of their family experience. Books written by parents of children with developmental disabilities and healthy children were analyzed using quantitative text analysis. Books written by parents of children with developmental disabilities used fewer first person singular and second person pronouns but more first person plural and third person pronouns. In addition, parents of children with disabilities were more optimistic, less angry, and made fewer references to family and home than parents of healthy children. The study is consistent with research that identifies positive adjustments to the challenges of parenting a child with developmental disabilities.

Becoming a parent represents a time of significant change and may exert a profound effect on family functioning. When the child has a developmental disability, the changes are more pronounced and often lead to high levels of parental stress (Dyson, 1997). This stress may be displayed as depression (Wanamaker & Glenwick, 1998), alcohol abuse (Seltzer, Greenberg, Floyd, Pettee, & Hong, 2001), chronic sorrow (Mallow & Bechtel, 1999) and anger (Atkinson et al., 1995). There have also been reports of families that adjusted well to the birth of a child with developmental disabilities (Trute & Hauch, 1988).

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In this paper, I examine how parents of children with developmental disabilities and parents of healthy children construct narratives of their family experience. I first review models of the effects of children with developmental disabilities on family stress and functioning. I then discuss the use of text analysis as a means of investigating cognitive, emotional, and social phenomena and review representative studies using this approach. Next, I report a study that examines books written by parents of children with developmental disabilities as well as by parents of developmentally healthy children. Finally, I examine the implications of the current findings with respect to the current literature on families with children with developmental disabilities.

Perry (2004) outlined a model of stress in families of children with developmental disabilities that assumes four major components: stressors, resources, supports, and outcomes. Stressors include characteristics of the child as well as other life stressors. Resources include the individual and family resources for dealing with stress. Supports include both informal family supports and formal support services. Finally, the model assumes that there are both positive and negative parental outcomes.

Perry's model integrates much of the research literature. For example, research indicates that the presence of family and friend support networks may moderate the effects of stressors on parents. Florian and Findler (2001) found that the marital adaptation of mothers of children with cerebral palsy was influenced by the size of the family's support network. Similarly, Smith, Oliver, and Innocenti (2001) found that parents' perception of support from family, friends, social groups, and

professional services was correlated with degree of parental distress. Trute and Hauch (1988) examined families with positive adaptations to the birth of a developmentally disabled child. They found that positive adjustments were unrelated to the degree of disability, nor directly linked to family income. However, they found that two-parent families with few children were at a distinct advantage. Positive family adaptation appeared to be tied to the parents' skillful utilization of family and friends as informal network resources.

Similarly, the coping styles of parents may significantly influence the extent of positive and negative outcomes. Atkinson et al. (1995) found that mothers who monitored stressors reported greater affective distress than did mothers who adopted a less vigilant coping style. Jones and Passey (2004) found that parents who adopted a more internal locus of control experienced less overall stress. Trute and Hiebert-Murphy (2002) developed a 15-item scale that assesses parental appraisal of the family implications of raising a child with a developmental disability. The scale included positive ("The experience has made us come to terms with what should be valued in life") as well as negative ("It has led to limitations in social contacts outside the home") appraisals. The authors found the net score predicted long-term parenting stress, even when other relevant variables (e.g., marital adjustment) were controlled.

The observation that parenting a child with developmental disabilities can lead to positive outcomes may be related to recent research in positive psychology (Seligman & Csikszentmihalyi, 2000; Seligman, Steen, Park, & Peterson, 2005). Seligman and colleagues argue that much of the psychological literature is devoted to pathology, and has neglected positive

psychological traits such as hope, courage, and perseverance. Some of these traits would appear to be pertinent to the life of a parent of a child with a developmental disability.

Positive psychological traits may emerge from challenging life situations. An example is Milo's (1997) study of mother's responses to the life and death of a child with a developmental disability. Milo interviewed mothers after the death of their children and found that although many described high levels of stress, they also reported that the experience of parenting their children led them to examine their religious or spiritual values more fully. Many of the mothers found meaning and benefit in the life and death of their children and were able to continue to see the world as a benevolent and purposeful place.

Most studies of families of children with developmental disabilities employ observational, interview, or questionnaire methodologies. In this study, I explore the experience of parenting a child with developmental disabilities from the perspective of the narratives that parents have written about their children and the impact of their children's disabilities on their families. Narratives may take a number of different forms, including magazine articles, diaries, blogs, and books. In this paper, I examine books written by parents of children with developmental disabilities using the methodology of quantitative text analysis (Mehl, 2006).

Building on the work of Biber (1988), Pennebaker, Francis, and Booth (2001) developed the Linguistic Inquiry and Word Count (LIWC) software. LIWC receives text files as input and produces measures of 74 linguistic and psychological variables. Most measures are the percentages of various word types (e.g., articles, emotion words) in

the text. Previous studies have explored the relationships between LIWC measures and variables such as age (Pennebaker & Stone, 2003), personality (Pennebaker & King, 1999), and depression (Stirman & Pennebaker, 2001). For example, Stirman and Pennebaker (2001) studied poems written by writers who committed suicide compared to a group of poets matched in age and other variables. Suicidal poets used more first person singular pronouns than nonsuicidal poets, which is consistent with theories that posit that self-absorption is a factor in suicide. Rude, Gortner, and Pennebaker (2004) found similar results in a sample of college students.

Although Pennebaker and colleagues have examined the usefulness of the LIWC in a wide variety of contexts, the software has not been applied to parent narratives. In this study, I examined samples of books written by parents of children with developmental disabilities (hereafter, PCDD) and parents of healthy children (hereafter, CTL). I chose 25 variables from six LIWC categories: pronouns, emotion, cognitive, social, leisure, and metaphysical. I chose the first three categories due to previous LIWC research and the latter three due to potential relevance to families with a disabled child.

Regarding the first three categories, considerable research has established that the use of pronouns is related to a number of psychological variables. For example, Sillars, Shellen, McIntosh, and Pomegranate (1997) found that more traditional (interdependent) married couples showed increased usage of "we" as compared to "I" usage in more autonomous couples. Similarly, Cohn, Mehl and Pennebaker (2004) found that the use of the first person plural increased and the first person singular decreased in the days immediately after the September 11 attacks. In addition,

Pennebaker, Mehl, and Niederhoffer (2003) reported that emotion and cognitive words are associated with improved physical and psychological health. In particular, reductions in physician visits tended to follow narratives that included a high number of positive emotion words, a moderate number of negative emotion words, and a high number of cognitive words. It seemed reasonable to presume that examination of pronouns, emotion words, and cognitive words may help reveal some of narrative patterns in PCDD families.

The choice of social, leisure, and metaphysical LIWC categories was based on their potential relevance for PCDD families. Because parenting a child with developmental disabilities can be extremely demanding, it may limit the social and leisure opportunities for parents and thus the quantity of references to such issues in their narratives. The metaphysical category includes references to religion and death. Since it has been found that the experience of parenting a disabled child may encourage parents to examine their religious or spiritual values (Milo, 1997), the metaphysical category was included to examine the possibility that references to spirituality are more prominent in PCDD narratives.

I examined four hypotheses. First, on the basis of previous studies of parents of children with developmental disabilities, I predicted that PCDD authors would make fewer references to positive emotions (e.g., optimism) and more to negative emotions (e.g., anger) than their CTL counterparts. However, the positive psychology literature might suggest that both positive and negative emotions are more common in PCDD authors.

Second, I hypothesized that PCDD authors would make more references to cognitive processing due to the additional problem solving often associated with children with disabilities. Parents of children with developmental disabilities are often faced with decisions regarding such matters as educational placement, placement in a community facility, and medical procedures. As a consequence, I expected more common reference to cognitive words such as *think*, *consider*, and *decide*.

Third, I predicted that PCDD authors would make fewer references to social and leisure activities. PCDD have presumably less time for such matters than parents of children whose development is more typical.

Finally, I expected that PCDD authors would make more references to religious and metaphysical issues. I expected PCDD authors to use words such as *God*, *church*, and *rabbi* more often as a consequence of increased attention to spiritual issues following the parenting of a child with a developmental disability.

Method

Materials

I selected 18 PCDD and 18 CTL books (see Table 1 for the books in each category, as well some that were considered but excluded). All of the books were written for a general audience and most (15 in each group) were written by mothers. I also made an effort to match the books on publication date, but this effort was compromised by the fact that PCDD books (mean date = 1989) appear to remain in print longer than CTL books (mean date =

2000). The PCDD books discussed a range of disabilities, including autism, deafness, and cerebral palsy.

Procedure

I identified potential books over a period of five months between January and June of 2006. I began by using the advanced search on Amazon.com for possible books. I selected the “parenting and families” topic and used keywords such as “parenting,” “stories,” and “families for the CTL books and these keywords plus “developmental

disabilities” for the PCDD books. I chose books that were written by parents and that described one family’s experience, and excluded books that provided narratives from multiple parents (e.g., Featherstone, 1980; Table 1) or attempted to describe parenting experiences more generally (e.g., Naseef, 2001; Table 1). As I found books that met my criteria, I used several search features on Amazon.com (e.g., keywords, suggestions for other books bought by customers) to identify similar books. I chose the first 18 PCDD and CTL books that met my criteria.

Table 1
PCDD and CTL books used in the analysis

PCDD Books

- Buck, P. S. (1950). *The child who never grew*. Rockville, MD: Woodbine.
- Dorris, M. (1989). *The broken cord*. New York: HarperPerennial.
- Fletcher, L. (1987). *Ben's story: A deaf child's right to sign*. Washington, DC: Gallaudet University Press.
- Greenfield, J. (1970). *A child called Noah*. NY: Pocket Books.
- Jablow, M. M. (1982). *Cara: Growing with a retarded child*. Philadelphia: Temple University Press.
- Kennedy, M. A. (1999). *My perfect son has cerebral palsy: A mother's guide of helpful hints*. 1stBooks Library.
- Kephart, B. (1998). *A slant of sun: One child's courage*. NY: Quill.
- Kupfer, F. (1982). *Before and after Zachariah: A true story about a family and a different kind of courage*. Chicago: Academy Chicago Publishers.
- Maurice, C. (1993). *Let me hear your voice: A family's triumph over autism*. NY: Fawcett Columbine.
- McDonnell, J. T. (1993). *News from the border: A mother's memoir of her autistic son*. NY: Ticknor & Fields.
- Noble, V. (1993). *Down is up for Aaron Eagle: A mother's spiritual journey with Down Syndrome*. New York: HarperCollins.
- Palmer, G. (2005). *Adventures in the mainstream: Coming of age with Down Syndrome*. Bethesda, MD: Woodbine.
- Papazian, S. (1997). *Growing up with Joey: A mother's story of her son's disability and her family's triumph*. Santa Barbara, CA: Fithian Press.
- Park, C. C. (1967). *The siege: The first eight years of an autistic child*. Boston: Little Brown.
- Rogers, C., & Dolva, G. (1998). *Karina has Down Syndrome: One family's account of the early years with a child who has special needs*. London; Jessica Kingsley Publishers.
- Rose, C. (1995). *Step by step: Real life experiences with cerebral palsy*. Toronto: Rose Publishing.
- Wolfson, P. (2003). *Moonrise: One family, genetic identity, and muscular dystrophy*. NY: St. Martin's Press.
- Zimmerman, S. (1996). *Keeping Katherine: A mother's journey to acceptance*. New York: Three Rivers Press.
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CTL Books

- Batdorf, L. (2003). *Stop and smell the asphalt: Laughter and love along the highway of parenthood*. Kandiyohi, MN: Filbert Publishing.
- Brockenbrough, M. (2002). *It could happen to you: Diary of a pregnancy and beyond*. Kansas City: Andrews McMeel.
- Buchanan, A. J. (2003). *Mother shock: Loving every (other) minute of it*. Emeryville, CA: Seal.
- Erdich, L. (1995). *The blue jay's dance: A birth year*. NY: HarperCollins.
- Fox, F. (2003). *Dispatches from a not-so-perfect life: Or how I learned to love the house, the man, the child*. NY: Harmony Books.
- Gore, A. (2000). *The mother trip: Hip mama's guide to staying sane in the chaos of motherhood*. Seattle, WA: Seal.
- Greene, B. (1984). *Good morning, merry sunshine: A father's journal of his child's first year*. NY: Penguin.
- Halliday, A. (2002). *The big rumpus: A mother's tale from the trenches*. NY: Seal.
- Hohlbaum, C. L. (2003). *Diary of a mother: Parenting stories and other stuff*. NY: iUniverse.
- Hull, J. B. (2004). *Beyond one: Growing a family and getting a life*. Emeryville, CA: Seal.
- Ingman, M. (2005). *Inconsolable: How I threw my mental health out with diapers*. Emeryville, CA: Seal.
- Leonard, J. (1991). *Tales from toddler hell: My life as a mom*. New York: Pharos Books.
- Mead-Ferro, M. (2004). *Confessions of a slacker mom*. Cambridge, MA: Da Capo.
- Meyer, L. L. (1989). *My summer with Molly: The journal of a second generation father*. Huntington Beach, CA: Calafia Press.
- Newman, C. (2005). *Waiting for birdy: A year of frantic tedium, neurotic angst, and the wild magic of growing a family*. NY: Penguin.
- Perricone, M. (1992). *From deadlines to diapers: Journal of an at-home father*. Chicago: Noble.
- Singer, J. (2004). *14 hours 'til bedtime: A stay-at-home mom's life in 27 funny little stories*. Deadwood, OR: Wyatt-MacKenzie.
- Wilder-Taylor, S. (2006). *Sippy cups are not for chardonnay: And other things I had to learn as a new mom*. NY: Simon.
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Books Considered But Not Used

- Appleton, A. B. (2005). *The disabled father: The story of a father and his son*. NY: iUniverse.
- Callanan, C. R. (1990). *Since Owen: A parent-to-parent guide for care of the disabled child*. Baltimore: Johns Hopkins.
- Dunn, J. (1995). *From one child to two: What to expect, how to cope, and how to enjoy your growing family*. NY: Fawcett Columbine.
- Featherstone, H. (1980). *A difference in the family: Living with a disabled child*. New York: Penguin.
- Kushner, H. S. (1981). *When bad things happen to good people*. NY: Avon.
- Naseef, R. A. (2001). *Special children, challenged parents: The struggles and rewards of raising a child with a disability*. Baltimore, MD: Paul H. Brookes.
- Wagner, H. (1998). *And baby makes four: Welcoming a second child into the family*. NY: Avon Books.
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I sampled every 10th page of each book (skipping over pages with less than 50 words of text, since LIWC is more reliable with larger text samples) until I had 12 samples from each book. When books included material before and after the child

was born, I began sampling pages after the child was born.

I selected 25 LIWC variables for this study (see Table 2). These included all of the variables within the following LIWC categories: pronouns (first person singular,

first person plural, second person, and third person), emotion (words related to optimism, anger, anxiety, and sadness), cognition (words pertaining to cause, insight, discrepancy, inhibition, tentativeness, and certainty), social (references to communication, others,

friends, family, and humans), leisure (references to home, sports, TV, and music), and metaphysical (religion and death words). The psychometric properties of the LIWC and means for LIWC variables in different forms of text are reported in Pennebaker, Francis, and Booth (2001).

Table 2
Examples of LIWC Variables

Variable	Examples
Pronouns	
First person singular	<i>I, my, me</i>
First person plural	<i>we, our, us</i>
Second person	<i>you, you'll</i>
Third person	<i>she, their, them</i>
Emotion	
Optimism	<i>certainty, pride, win</i>
Anxiety	<i>nervous, afraid, tense</i>
Anger	<i>hate, kill, pissed</i>
Sadness	<i>grief, cry, sad</i>
Cognitive	
Causation	<i>because, effect, hence</i>
Insight	<i>think, know, consider</i>
Discrepancy	<i>should, would, could</i>
Inhibition	<i>block, constrain</i>
Tentative	<i>maybe, perhaps, guess</i>
Certainty	<i>always, never</i>
Social	
Communication	<i>talk, share, converse</i>
Other reference	<i>anybody, everyone, them</i>
Friends	<i>pal, buddy, coworker</i>
Family	<i>mom, brother, cousin</i>
Humans	<i>boy, woman, group</i>
Leisure	
Home	<i>house, kitchen, lawn</i>
Sports	<i>football, game, play</i>
Television	<i>TV, sitcom, cinema</i>
Music	<i>tones, song, CD</i>
Metaphysical	
Religion	<i>God, church, rabbi</i>
Death	<i>dead, burial, coffin</i>

I studied individual LIWC variables (e.g., the four types of pronouns) rather than larger LIWC categories (e.g., pronouns, emotion words, etc.) for two reasons. First,

since this was the first LIWC study of PCDD narratives, I believed it was important to examine a wide range of potentially relevant variables. Second,

previous research has found significant differences in variables within categories. As noted, first person singular and plural pronouns vary in their prominence in different writing samples. An analysis that examined the prevalence of the pronoun category would obscure these differences. Statistical analyses were conducted on data from a total of 36 books (18 PCDD, 18 CTL).

Results

Means for each LIWC variable for each author were calculated and submitted to a one-way multivariate analysis of variance

(MANOVA). The MANOVA was conducted to determine the effects of family type on the 25 LIWC variables. Significant differences were found between PCDD and CTL family books on the dependent measures, Wilks's $\Lambda = .11$, $F(25, 10) = 3.31$, $p = .026$.

Analyses of variance (ANOVA) on each dependent variable were conducted as a follow-up to the MANOVA. Fifteen of the 25 LIWC variables showed a significant difference between PCDD and CTL books. Table 3 shows the means and standard deviations for the 15 LIWC variables, and the p value and Cohen's d , a measure of effect size, for each ANOVA.

Table 3
Significant differences on LIWC measures for PCDD and CTL books

Variable	PCDD ^a		CTL ^a		p	d^c
	M	SD	M	SD		
First person singular	3.66	1.27	5.22	1.37	.001	1.18
First person plural	1.84	.71	1.26	.61	.012	.88
Second person	.37	.25	1.01	.75	.001	1.14
Third person	4.98	1.07	3.41	.93	.001	1.57
Optimism	.60	.20	.45	.17	.017	.81
Anger	.24	.14	.39	.18	.011	.93
Inhibition	.56	.18	.38	.14	.002	1.12
Tentativeness	1.85	.31	2.17	.59	.048	.68
Certainty	1.07	.27	.88	.20	.022	.80
Otherref ^b	7.33	1.42	5.87	1.44	.004	1.02
Family	.53	.19	1.06	.37	.001	1.80
Home	.54	.20	.75	.23	.007	.97
TV	.05	.04	.13	.09	.002	1.15

^a $n = 18$ in the PCDD and CTL groups.

^bOtherref stands for "Other reference" (words such *anyone, everyone, them*); see Table 2.

^c d (Cohen's d) is a measure of effect size; it is equal to the difference between the means for the PCDD and CTL groups divided by the pooled standard deviation.

See Becker (2000) for additional information.

With regard to pronouns, PCDD books contained more third person pronouns, $F(1, 34) = 22.37$, $p = .001$, and more first person plural pronouns, $F(1, 34) = 3.07$, $p = .012$. In

addition, PCDD books contained fewer first person singular, $F(1, 34) = 12.55$, $p = .001$, and fewer second person pronouns, $F(1, 34) = 12.02$, $p = .001$.

With regard to emotion words, PCDD books contained more references to optimism, $F(1, 34) = 6.31, p = .017$ and fewer references to anger, $F(34) = 7.19, p = .011$. There were three significant cognitive differences: PCDD books made more references to inhibition, $F(1, 34) = 11.08, p = .002$ and certainty, $F(1, 34) = 5.76, p = .022$, but fewer references to tentativeness, $F(1, 34) = 4.20, p = .048$.

Within the social category, PCDD books contained more references to others, $F(1, 34) = 9.50, p = .004$ and fewer references to family, $F(1, 34) = 29.81, p = .001$. Within the leisure category, PCDD books made fewer references to home, $F(1, 34) = 8.36, p = .007$ and TV, $F(1, 34) = 11.08, p = .002$.

Discussion

This study found a number of differences between PCDD and CTL narratives. Some of the differences were small or unexpected, and thus require additional study. However, the results as a whole support the view that PCDD authors display positive adjustments to the challenges of parenting a child with developmental disabilities.

Hypothesis 1 was not supported. Contrary to expectations, PCDD authors were more optimistic and less angry than CTL authors. The relative absence of negative emotions (anger, anxiety, and sadness) in PCDD books was surprising, considering much of the literature on families of children with disabilities. The prevalence of optimism in PCDD books may reflect a coping strategy that enables PCDD parents to continue to care both for themselves and their children under difficult circumstances over a long period of time.

These results are important in light of evidence that optimism is related to better physical and mental health in mothers who cared for an adult child with Down syndrome, schizophrenia, or autism (Greenberg et al., 2004). Similarly, Jones and Passey (2004) found that parents who were more optimistic tended to show lower overall levels of stress (see also Affleck & Tennen, 1996).

The results partially supported Hypothesis 2 that PCDD books would show greater attention to cognitive words than CTL books. PCDD authors expressed more inhibition and certainty and less tentativeness than their CTL counterparts. PCDD parents tended to write more categorically, with fewer hedges than their CTL counterparts. The tendency for PCDD authors to be more certain and less tentative may be related to the need for PCDD parents to be assertive with health care professionals.

There is reason to believe that the particular combination of emotion and cognitive words found in PCDD authors may be adaptive. As noted earlier, Pennebaker et al. (2003) report that writing about emotional upheavals led to improved psychological and physical (e.g., fewer physician visits) health. Moreover, essays that combined high levels of positive emotions, moderate levels of negative emotions, and high levels of cognitive processing produced the greatest health benefits. PCDD books display a similar pattern, suggesting that the act of constructing a story about their children may have provided psychological and physical benefits to PCDD authors.

The hypothesis that PCDD authors would make fewer references to leisure was strongly supported. PCDD books showed significantly fewer references to family, home, and TV. It seems likely that the

presence of a child with a developmental disability has focused these parents' attention on issues pertaining to the care of the child and the relative neglect of issues that sometimes occupy the attention of CTL parents. The relative lack of reference to family in PCDD books is interesting in light of previously cited research that indicates that family members may provide a significant source of support for parents of children with developmental disabilities.

In contrast, the hypothesis that PCDD authors would make more references to religious and metaphysical issues was not supported. Milo's (1997) study of parents who experienced the death of a child with developmental disabilities found that many parents found personal meaning in their children's disability and in their family's stressful life. However, only one of the eighteen PCDD books in this study was written following the death of a child. The matter deserves further study.

Perhaps the most revealing difference between the groups was in the use of pronouns. PCDD authors used significantly more first person plural (*we*) and third person pronouns (*he, she, their*), but fewer first person singular (*I*) and second person pronouns (*you*). A more fine-grained analysis is needed to determine how often these third person references were to the child versus other people. Nonetheless, it appears that PCDD authors talked more about their children and others in their children's lives, whereas CTL authors talked more about themselves. That is, PCDD authors appeared to have immersed themselves in their children's lives and were more concerned with the family unit than their own personal concerns (see also Cohn et al., 2004).

The greater use of first person singular pronouns and negative emotion words in

CTL authors may be related to studies that find that excessive rumination can lead to a greater vulnerability for depression, particularly in women (Nolen-Hoeksema, 2000, 2001). Nolen-Hoeksema has found that a ruminative response style that emphasizes thinking repetitively and passively (i.e., without taking concrete actions) about negative emotions is a contributor to depression. It appears that PCDD authors have developed a less ruminative and more adaptive style of responding to changes in their family than CTL authors.

These results may be related to the emerging field of positive psychology (Seligman & Csikszentmihalyi, 2000; Seligman et al., 2005). Future research aimed at a balanced perspective of PCDD parents should explore the prevalence of these patterns, in concert with the less positive traits found in many earlier studies. Studies that have examined processes before and after personal upheaval and trauma suggest that some post-traumatic responses are related to dispositions that predate the traumatic event (Bonanno et al., 2002). It would be helpful to examine family processes before and after the birth of a child with developmental disabilities to determine if traits such as optimism predate the child's birth or emerge more strongly over time in response to stressful family life.

There are other possible interpretations of these results regarding optimism and anger. It is possible that books that portray parenting a child with disabilities are more likely to be published if the tone of the book is positive. That is, although it may be socially appropriate for CTL authors to complain about the stress in their lives, including the stress caused by children, it may be less appropriate for PCDD authors to do so. If so, this constraint provides another source of stress for PCDD families--

the strain of presenting a positive public view in the midst of significant family stress.

There are several limitations to this study. Since this was the first study to examine PCDD narratives using LIWC analysis, I cast a rather wide net in examining 25 variables. Further studies will be needed to determine the reliability of the effects found in this study. Some of the variables reported in Table 3 (e.g., *anger*, *TV*) show very low base rates, and must be regarded as preliminary.

Additionally, although the study indicates differences between the two groups of parents, it does not reveal similarities or differences within the group of parents of children with developmental disabilities. It may be that parents experience different types of disabilities very differently. For example, Perry, Harris, and Minnes (2004) found higher levels of family harmony in families with children with relatively clear diagnoses (such as Down syndrome) than in families with children with less clear diagnoses (such as autism). Additional LIWC studies should examine subgroups of PCDD families to determine the extent to which the results of this study generalize to various PCDD subgroups.

A third limitation is that it is difficult to know how representative this sample of authors is of the larger PCDD population. It is possible that authors differ from non-authors in factors such as educational attainment and socioeconomic status, and that such differences might influence the way they tell their family stories. Additionally, this sample was not large enough to examine differences between female and male authors.

Despite these limitations, the present study indicates that a linguistic analysis of

parental narratives may yield important insights into the adaptive functioning of families of children with developmental disorders. Although self-report and observational techniques have proven useful in examining family dynamics, linguistic analysis may provide an alternative means of assessment that is less subject to biases such as social desirability. In certain respects (e.g., optimism), the present results support those of previous studies. In other respects (e.g., pronouns), the findings are more novel and deserving of further attention. Coupled with self-report and observational studies, studies of parental narratives may help identify some of the factors that help families successfully adapt to a child's disability.

In sum, these results paint a more positive picture of parents of children with developmental disabilities than is often seen in the literature. PCDD authors were less self-absorbed, more optimistic, and less angry than their CTL counterparts. The study is limited in terms of the baselines of some of the variables as well as the representativeness of the sample. Nonetheless, the perspective provided by quantitative text analyses may be a useful complement to existing studies of families with children with disabilities.

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References

- Affleck, G., & Tennen, H. (1996). Construing benefits from adversity: Adaptational significance and dispositional underpinnings. *Journal of Personality, 64*, 899-922.
- Atkinson, L., Scott, B., Chisholm, V., Blackwell, J., Dickens, S., Tam, F., & Goldberg, S. (1995). Cognitive coping, affective distress, and maternal sensitivity: Mothers of children of Down Syndrome. *Developmental Psychology, 31*, 668-676.
- Becker, L. A. (2000). Effect size (ES). Retrieved September 24, 2008, from <http://web.uccs.edu/lbecker/Psy590/es.htm>
- Biber, D. (1988). *Variation across speech and writing*. Cambridge, England: Cambridge University Press.
- Bonanno, G. A., Wortman, C. B., Lehman, D. R., Tweed, R. G., Haring, M., Sonnega, J., Carr, D., & Nesse, R. M. (2002). Resilience to loss and chronic grief: A prospective study from preloss to 18-months postloss. *Journal of Personality and Social Psychology, 83*, 1150-1164.
- Cohn, M. A., Mehl, M. R., & Pennebaker, J. W. (2004). Linguistic markers of psychological change surrounding September 11, 2001. *Psychological Science, 15*, 687-693.
- Dyson, L. L. (1997). Fathers and mothers of school-age children with developmental disabilities. Parental stress, family functioning, and social support. *American Journal on Mental Retardation, 102*, 267-279.
- Florian, V., & Findler, L. (2001). Mental health and marital adaptation among mothers of children with cerebral palsy. *American Journal of Orthopsychiatry, 71*, 358-367.
- Greenberg, J. S., Seltzer, M. M., Krauss, M. W., Chou, R. J.-A., & Hong, J. (2004). The effect of quality of the relationship between mothers and adult children with schizophrenia, autism, or Down Syndrome on maternal well-being: The mediating role of optimism. *American Journal of Orthopsychiatry, 74*, 14-25.
- Jones, J., & Passey, J. (2004). Family adaptation, coping and resources: Parents of children with developmental disabilities and behaviour problems. *Journal on Developmental Disabilities, 11*, 31-46.
- Mallow, G. E., & Bechtel, G. A. (1999). Chronic sorrow: The experience of parents with children who are developmentally disabled. *Journal of Psychosocial Nursing and Mental Health Services, 37*, 31-35.
- Mehl, M. R. (2006). Quantitative text analysis. In M. Eid & E. Diener (Eds.), *Handbook of multimethod measurement in psychology* (141-156). Washington, DC: APA.
- Milo, E. M. (1997). Maternal responses to the life and death of a child with a developmental disability: A story of hope. *Death Studies, 21*, 443-476.
- Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology, 109*, 504-511.
- Nolen-Hoeksema, S. (2001). Ruminative coping and adjustment to bereavement. In M. S. Strobe & R. O. Hanson (Eds.), *Handbook of bereavement research: Consequences, coping, and care* (pp. 545-562). Washington, DC: American Psychological Association.
- Pennebaker, J. W., Francis, M. E., & Booth, M. J. (2001). *Linguistic inquiry and word count*. Mahwah, NJ: Erlbaum.
- Pennebaker, J. W., & King, L. A. (1999). Linguistic styles: Language use as an individual difference. *Journal of Personality and Social Psychology, 77*, 1296-1312.
- Pennebaker, J. W., Mehl, M. R., & Niederhoffer, K. G. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology, 54*, 547-577.
- Pennebaker, J. W., & Stone, L. D. (2003). Words of wisdom: Language use over the life span. *Journal of Personality and Social Psychology, 85*, 291-301.
- Perry, A. (2004). A model of stress in families of children with developmental

- disabilities: Clinical and research applications. *Journal on Developmental Disabilities*, 11, 1-15.
- Perry, A., Harris, K., & Minnes, P. (2004). Family environments and family harmony: An exploration across severity, age, and type of DD. *Journal on Developmental Disabilities*, 11, 17-30.
- Rude, S. S., Gortner, E.-M., & Pennebaker, J. W. (2004). Language use of depressed and depression-vulnerable college students. *Cognition and Emotion*, 18, 1121-1333.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55, 1-14.
- Seligman, M. E. P., Steen, T. A., Park, N., & Peterson, C. (2005). Positive psychology progress: Empirical validation of interventions. *American Psychologist*, 60, 410-421.
- Seltzer, M. M., Greenberg, J. S., Floyd, F. J., Pettee, Y., & Hong, J. (2001). Life course impacts of parenting a child with a disability. *American Journal on Mental Retardation*, 106, 265-286.
- Sillars, A., Shellen, W., McIntosh, A., & Pomegranate, M. (1997). Relational characteristics of language: Elaboration and differentiation in marital conversations. *Western Journal of Communication*, 61, 403-422.
- Smith, T. B., Oliver, M. N. I., & Innocenti, M. S. (2001). Parenting stress in families of children with disabilities. *American Journal of Orthopsychiatry*, 71, 257-261.
- Stirman, S. W., & Pennebaker, J. W. (2001). Word use in the poetry of suicidal and nonsuicidal poets. *Psychosomatic Medicine*, 63, 517-522.
- Trute, B., & Hauch, C. (1988). Building on family strength: A study of families with positive adjustment to the birth of a developmentally disabled child. *Journal of Marital and Family Therapy*, 14, 185-193.
- Trute, B., & Hiebert-Murphy, D. (2002). Family adjustment to childhood developmental disability: A measure of parent appraisal of family impacts. *Journal of Pediatric Psychology*, 27, 271-280.
- Wanamaker, C. E., & Glenwick, D. S. (1998). Stress, coping, and perceptions of child behavior in parents of preschoolers with cerebral palsy. *Rehabilitation Psychology*, 43, 297-312.
- Zimmerman, S. (1996). *Keeping Katherine: A mother's journey to acceptance*. New York: Three Rivers Press.