

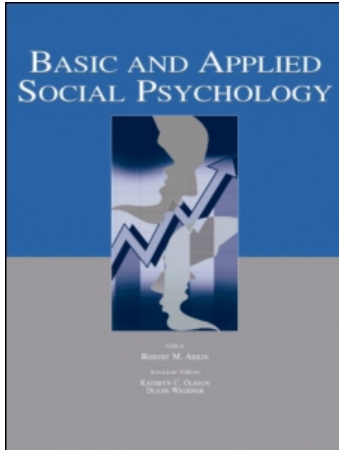
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Access details: Access Details: [subscription number 912280237]

Publisher Psychology Press

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Basic and Applied Social Psychology

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t775648090>

Parents' Empathic Responses and Pain and Distress in Pediatric Patients

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To cite this Article Penner, Louis A., Cline, Rebecca J. W., Albrecht, Terrance L., Harper, Felicity W. K., Peterson, Amy M., Taub, Jeffrey M. and Ruckdeschel, John C. (2008) 'Parents' Empathic Responses and Pain and Distress in Pediatric Patients', *Basic and Applied Social Psychology*, 30: 2, 102 – 113

To link to this Article: DOI: 10.1080/01973530802208824

URL: <http://dx.doi.org/10.1080/01973530802208824>

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Parents' Empathic Responses and Pain and Distress in Pediatric Patients

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We investigated the relationship between parents' empathic responses prior to their children undergoing cancer treatment procedures and children's pain/distress during the procedures. We hypothesized: (1) parents' empathic distress would be positively associated with children's pain/distress, (2) parents' empathic concern would be negatively associated with children's pain/distress; and (3) parents' enduring dispositions and social support would be associated with their empathic responses. Parents completed: (1) measures of dispositions and perceived social support several weeks before their children underwent the procedures, and (2) state measures of empathic distress and empathic concern just before the procedures. Empathic distress was positively associated with children's pain; empathic concern was negatively associated with children's pain/distress. Predictions about dispositions and social support were also substantially confirmed.

Surveys of pediatric patients and their parents find that treatment-related discomfort is a greater problem than discomfort because of disease itself (Hedstrom, Haglund, Skolin, & von Essen, 2003; Ljungman, Gordh, Sorensen, & Kreuger, 2000). Prolonged experience with difficult medical procedures may reduce children's adherence to other aspects of their treatment and extract a serious psychological toll from them and their parents (Barakat et al., 1997; Stuber et al., 1997). Thus, managing pain and distress associated with medical procedures is a high priority for health care professionals who serve

pediatric patients (Kazak et al., 1997; Walco, Sterling, Conte, & Engel, 1999).

Children vary substantially in how much pain and distress they experience in response to treatment-related procedures (Chen, Craske, Katz, Schwartz, & Zeltzer, 2000). One consistent correlate of this variability is how parents feel and act before and during the procedures (Dahlquist, Power, Cox, & Fernbach, 1994; Dahlquist, Power, & Carlson, 1995). In this study we focus on the relationship between parents' empathic responses just before their children undergo stressful and invasive cancer treatment-related procedures and their children's subsequent pain/distress during those procedures. In doing so, we apply a construct from basic research on bystander intervention by strangers to the applied

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question of how parents may affect the pain and distress of pediatric cancer patients.

Parents' Emotional States

It seems reasonable to characterize parents' emotional states just before their children's treatment-related procedures as empathic responses, as these states are largely caused by their children's actual or inferred affective states and thus fit most definitions of empathic responses (see Goubert et al., 2005). Not surprisingly, researchers interested in reducing pediatric pain and distress have focused most of their attention on negatively toned parental empathic responses (henceforth called *empathic distress*). They found that parents' empathic distress immediately prior to their children receiving a treatment-related procedure to be positively associated with the children's pain and distress during the actual procedure (e.g., Blount, Landolf-Fritsche, Powers, & Sturges, 1991; Dahlquist & Pendley, 2005; Dahlquist et al., 1994; Dahlquist et al., 1995; Srivastava, Betts, Rosenberg, & Kainer, 2001). Thus, researchers concerned with reducing children's pain and distress have been interested either in reducing parents' empathic distress or minimizing its impact on children during medical procedures (McMurtry, McGrath, & Chambers, 2006).

A core argument in our study is that prior research on pediatric treatment-related pain/distress has largely ignored the social psychological literature on prosocial behavior. This literature raises the possibility that parents might experience positively toned empathic responses immediately before their children receive treatment (henceforth called *empathic concern*) and such responses may have a positive beneficial relationship with children's pain/distress. Thus, this study sought to extend the basic research literature on observer's empathic reactions to distress in others to the applied problem of reducing pain and distress in pediatric cancer patients.

Empathic Responses to Distress in Others

Two closely related theoretical and empirical literatures guided this study: Studies of empathic responses to observed or anticipated pain/distress in others (e.g., Batson, 1991; Goubert et al., 2005), and the social psychological literature on bystander interventions in emergencies (see Penner, Dovidio, Piliavin, & Schroeder, 2005). With regard to the former, Goubert et al. argued that both bottom-up and top-down processes produce two distinct types of empathic responses among people who observe/anticipate pain/distress in another. The first is a self-oriented response primarily concerned with the observer's own distress; the second is an other-oriented response primarily concerned with the

well-being of the person in pain/distress. We labeled the first response (state) empathic distress, which Batson (1991) described as an unpleasant and aversive affective state brought on by observing distress in another person. It involves emotions such as anxiety, nervousness, and distress. According to Piliavin, Dovidio, Gaertner, and Clark (1981), it occurs because humans find the experience of distress in others unpleasant and upsetting.

Batson labeled the latter kind of empathic response (state) empathic concern, which he defined as "an other-oriented emotional response congruent with the welfare of another person" (Batson & Oleson, 1991, p. 63). Empathic concern involves positively toned emotions such as warmth, tenderness, and soft-heartedness directed at the person in distress. The bystander intervention literature shows that both types of empathic responses lead to helping, but the motivational processes responsible for the aid are quite different. Empathic distress increases the probability of helping because such behavior provides a means for helpers to reduce their own anxiety/distress by reducing distress in another person (Piliavin et al., 1981). This is typically referred to as an "egoistic" motivation for helping because helpers are primarily striving to reduce their own distress and helping is merely instrumental to this goal (Penner et al., 2005). In contrast, empathic concern is thought to produce "altruistic" helping motivated by concern for the welfare of the person in distress; thus, helping is focused almost exclusively on this goal (Batson & Oleson, 1991).

As noted earlier, previous research has focused on the empathic distress parents experience immediately before their children receive invasive and stressful medical treatments. However, prosocial researchers would argue that in these circumstances it is equally if not more likely that parents would also experience substantial empathic concern. Indeed, Batson, Eklund, Chermok, Hoyt, and Ortiz (2007) take it as more or a less a given that empathic concern is heightened when people see family members and/or loved ones stressed. Thus, in our study we measured parents' empathic concern as well as their empathic distress and examined the relationship between these empathic responses and children's subsequent reactions to stressful/invasive cancer treatment-related procedures.

It seems reasonable to expect that these empathic responses would be reflected in parents' behavior when they interacted with their children during the procedures. The behavior of parents who were experiencing high levels of empathic distress would be quite different from the behavior of parents who were experiencing high levels of empathic concern. We can offer some conceptual descriptions of each set of behaviors and then make some specific predictions about what their effects will be.

We might expect, for example, that because of their own feelings, parents experiencing high empathic distress would be hypersensitive to the stressful aspects of the procedures and to their children's reactions to them. Thus, they may unintentionally draw the children's attention to these stressors, as some pediatric researchers suggest (e.g., McMurtry et al., 2006), or unintentionally reinforce the child's distress, as others have suggested (e.g., Manne et al., 1992). Prosocial researchers (e.g., Piliavin et al., 1981) might explain these behaviors by proposing that the high empathic distress parents' behaviors are primarily directed at reducing their own rather than the children's distress. But whatever the reason, there should be, as has been found, a positive relationship between parents' empathic distress and their children's pain/distress.

In contrast, we might expect that parents who experience high levels of empathic concern, relative to those who experience little empathic concern, would spend more time calming or making their child comfortable than reacting to stressful aspects of the situation or their child's distress. We propose this because the prosocial behavior literature suggests that empathic concern leads to a desire to increase another person's well-being. Thus, high empathic concern parents would focus their attention on this task rather than on other aspects of the situation. One possible result would be less pain/distress displayed by their children. Therefore we predicted the following:

- H1a: Parental empathic distress immediately before treatment-related procedures would be *positively* associated with children's pain/distress during the actual procedures.
- H1b: Parental empathic concern immediately before treatment-related procedures would be *negatively* associated with children's pain/distress during the actual procedures.

Dispositional Correlates of Empathic Responses

Our second goal was to examine whether parents' enduring attributes covaried with their empathic responses in the treatment setting. Most research on observers' empathic responses to distress in others focuses solely on the situational determinants of these responses. We would concur that situational variables are typically the most powerful determinants of what kind of empathic response an observer displays. However, there is substantial evidence that enduring personal attributes also contribute to differences in empathic responses (Graziano, Habashi, Sheese, & Tobin, 2007). Thus we examined some dispositional correlates of the parents' empathic responses.

With regard to empathic distress, there is a large literature that reports significant, positive associations between the dispositional variable of trait anxiety and state measures of anxiety and distress (see Spielberger, 1983). More important, other researchers (e.g., Srivastava et al., 2001) also found that trait anxiety predicted state anxiety among parents of children awaiting treatments for pediatric cancer. We expected to replicate these findings in our study. However, we also thought that this relationship involves more than just anxiety and may also reflect the more general influence of enduring negative affect on reactions to situational stressors (e.g., Weems et al., 2007). Thus we included an additional measure of more general negative affect, which measured the extent to which the parents experienced negative emotions on a daily basis. We expected both dispositions to be positively associated with empathic distress.

Turning to empathic concern, our choices for the dispositional correlates were influenced by recent research on intrapersonal and interpersonal resources and responses to stress.¹ This research suggests that individual differences in such resources may result in differences in how people react both to stressors they confront themselves and to the distress they observe in others (e.g., DeLongis & Holtzman, 2005; Linley & Joseph, 2004). Accordingly, we examined three of these resources.

The first was an intrapersonal resource, resilience. Frederickson, Tugade, Waugh, and Larkin (2003) defined resilience as "a relatively stable personality trait characterized by the ability to bounce back from negative experiences and by flexible adaptation to the ever-changing demands of life" (p. 367). Prior research has found that resilience enables people to better cope with both transitory situational stressors (Tugade & Fredrickson, 2004; Tugade, Fredrickson, & Barrett, 2004) and more enduring traumatic events (e.g., the September 11, 2001, terrorist attacks; Fredrickson et al., 2003). Further, in work with children, Eisenberg and her colleagues identified dispositional resilience as one of the consistent correlates of positively toned empathic responses to others in need (e.g., Guthrie et al., 1997). Together, these findings suggest that, relative to others, high-resilient parents, confronted with the stress of a child about to receive treatment-related procedures, might focus more on the needs of their children. This suggests a *positive* association between resilience and empathic concern among the parents in this study.

¹Our original intention was also to measure dispositional empathy, using a shortened version of Davis's (1980) Interpersonal Reactivity Index. Although this version was quite reliable in earlier studies (Penner, 2002), the coefficient alpha in our study was so low (.41) that we chose not to include this measure as a predictor of empathic responses in our study.

The second intrapersonal resource examined was enduring positive emotions, that is, an enduring predisposition to maintain a positive mood. Positive emotions typically covary with dispositional resilience and may mediate the relationship between resilience and affective responses to stressors (Fredrickson et al., 2003). However, this is not the primary reason why positive emotions were included in this study. A number of researchers have argued that positive emotions are important psychological resources that a person may accumulate over time and then use in coping with stressful events (Fredrickson & Losada, 2005; Fredrickson & Joiner, 2003; Zautra, Johnson, & Davis, 2005). Extrapolating from these findings, we expected that parents predisposed toward positive emotions should be better able to cope with their own stress associated with their child receiving an invasive and stressful procedure. Thus, such parents should be able to focus more of their attention on the needs and well-being of their children. This would suggest a *positive* association between enduring positive emotions and empathic concern among the parents.

The third resource we examined was an interpersonal one, social support, defined as the subjective sense of being supported by family, friends, and neighbors, in times of need (Burlison, Albrecht, & Sarason, 1994). Social support has been found to moderate stress due to family illnesses, in general (Albrecht & Goldsmith, 2003), and stress among parents of pediatric cancer patients, in particular (e.g., Kazak et al., 1997). As with the intrapersonal resources, social support should serve as a resource to help parents cope with their own stress and enable them to focus more on the needs of their children and less on their own distress. This leads us to expect a *positive* association between social support and empathic concern. Therefore we predicted the following:

- H2a: Negative affect: There will be *positive* associations between parents' trait anxiety, enduring negative emotions, and their empathic distress immediately before their children's treatment-related procedures.
- H2b: Resources: There will be *positive* associations between parents' resilience, enduring positive emotions, social support and their empathic concern immediately before their children's treatment-related procedures.

In summary, prior research on the role parents play in pediatric patients' pain/distress has focused exclusively on parents' empathic distress. In this study, we looked at *both* state empathic *distress* and empathic *concern*. We hypothesized there would be a *positive* association between empathic distress and children's pain/distress but a *negative* association between

empathic concern and children's pain/distress during the procedures. In addition, we hypothesized that individual differences in parents' dispositions would be associated with differences in parents' empathic responses to their children's treatment-related procedures.

METHOD

Participants

The adults were 41 primary caregivers (henceforth called parents) of children with cancer, who were receiving outpatient treatment-related procedures at a comprehensive children's hospital in the Midwest; 90% of the parents (37) were women.² Mothers were the primary parent in 30 cases, followed by fathers ($n=4$), grandmothers ($n=5$), and a cousin and a guardian. The primary parent's average age was 37.24 ($SD=11.01$). Thirty parents were European Americans, 9 were African Americans, and 2 were of mixed ethnicities.

The children were between the ages of 3 and 12; 28 (68%) were European American, 9 African American (22%), and the remainder were of varied ethnicities. Their average age was 6.69 years ($SD=3.13$); 54% were male. Mean length of time in cancer treatment was 13.74 months ($SD=15.55$). The most frequent diagnosis was acute lymphocytic leukemia ($n=22$), followed by tumors ($n=13$), lymphomas ($n=3$), and specific cancer not identified ($n=3$). With regard to procedures, 24 received only port starts (insertion of needle into an existing port in child's chest) and 17 received lumbar punctures (1 of these also had a bone marrow aspiration and 2 also had a port start). Children undergoing port starts typically had topical anesthetic prior to the procedure. Children undergoing lumbar punctures and bone marrow aspirations received both a topical anesthetic and a lidocaine injection to numb tissue at the needle insertion point. In addition, these children underwent conscious sedation; they were given an opioid (e.g., morphine) and a sedative hypnotic in an effort to help decrease pain and calm them. However, all children were awake and responsive during the procedures. The average time children were in the treatment room was 79.79 min ($SD=54.99$).

Study Overview

A nurse initially approached parents and obtained oral permission for the researchers to speak with them. Parents signed informed consent and Health Insurance

²Although 41 children were observed, we do not have complete pain/distress ratings and/or questionnaire data for all 41 children. Therefore the number of cases in the analyses varies from 32 to 41.

Portability and Accountability Act documents; where appropriate, children provided verbal assent. Seventy-six percent of eligible parents and their children agreed to participate. Parents with primary responsibility for the child's care completed a battery of questionnaires about themselves (see next) and agreed to video recording of a subsequent treatment-related procedure. On the day of the procedure, primary parents provided self-reports of their empathic responses immediately before they and their children entered the room where the procedure was performed. Video recordings of procedures started when families entered the treatment room and ended when they left the room or lights were turned off and the child went to sleep. Immediately following the procedure, a research assistant obtained ratings of the children's pain/distress during the procedure from parents, nurses who administered the procedure, and children. Children received \$10 gift certificates for them and their parents participating in each stage of data collection.

Parents' attributes. Approximately 3 to 5 weeks before the recording of the procedures, primary parents completed the dispositional measures in their homes as part of a larger questionnaire. We measured trait anxiety using the 20-item trait portion of State Trait Anxiety Inventory (Spielberger, 1977), which measures stable individual differences in the people's tendency to respond anxiously in threatening situations ($\alpha = .85$; all alphas reported were obtained in our study). Resilience was assessed with Block and Kremen's (1996) 14-item measure of Ego Resilience, which measures one's capacity to modify to changing situational demands of stressful encounters ($\alpha = .75$). Enduring positive affect and negative affect were measured with 14 positive emotions and six negative emotions taken from Fredrickson et al.'s (2003) measure of Positive and Negative Affect. Parents responded to the items in terms of their modal emotions over the past few weeks (α positive = .79; α negative = .76). A six-item version of Sarason's Social Support Questionnaire (Sarason, Sarason, Shearin, & Pierce, 1987) assessed parents' satisfaction with six areas of social support ($\alpha = .93$). All dispositional scales used a 6-point Likert response format. Parents also answered other questions about their own and their children's demographic characteristics and personal attributes and provided their children's medical history information.

Parents' empathic responses. Primary parents completed the empathic response scales while in the clinic waiting area, just before they and the children entered the treatment room. They were instructed to answer the items in terms of how "you feel right now." Two measures were used to assess empathic

distress. This was necessary because prior pediatric cancer studies and prosocial behavior studies have measured this empathic response in different ways, and we wanted to be able to compare our findings to both literatures. Pediatric cancer researchers almost exclusively use a measure of state anxiety in their studies of parents' reactions to their children's treatments. Social psychological researchers, however, typically use a measure of personal distress to assess essentially the same kind of empathic response in bystander intervention studies. Therefore, we used the state portion of Spielberger (1977). State-Trait Anxiety Inventory, a 20-item measure assessing anxiety in response to a specific stimulus or situation ($\alpha = .94$). Examples of items from the state anxiety measure are *anxious*, *nervous*, *tense*, and *jittery*. In addition, we used Batson's (1991) eight-item personal distress measure ($\alpha = .91$). The items in the personal distress measure are *alarmed*, *grieved*, *distressed*, *disturbed*, *perturbed*, *troubled*, *upset*, and *worried*. (The last two items are also in the anxiety measure.)

Empathic concern was measured with four items from Batson's (1991) original empathic concern measure (*softhearted*, *warm*, *tender*, and *moved*) and a fifth item, which, because of an error in preparing the questionnaire, combined two terms from the original measure (*sympathy* and *compassion*; $\alpha = .82$). All empathic response measures used 5-point Likert response formats and were intermixed with other items in a larger questionnaire.

Pain and distress. The Wong-Baker (Wong & Baker, 1988) Faces scale was used to assess children's pain and distress. It consists of six schematic drawings of a human face with varied expressions, suggesting reactions from *no pain (distress) at all* to *extreme pain (distress)*, accompanied by verbal and numerical descriptions. Parents and nurses rated both pain and distress. (When multiple parents or nurses were present, their ratings were averaged for analyses.) Children rated only their pain.³ These three sets of respondents independently completed their ratings immediately following the procedure and were specifically instructed to rate the child's pain and distress *during the procedure that had just taken place*.

³Originally we planned to have the parents and the nurses only rate the children's global distress (pain and distress combined), but the nurses insisted that pain and distress were two separate and important dimensions. Thus, we had parents and the nurses rate both the children's pain and distress separately. Children, however, only rated pain, as we thought it might be difficult, especially for the younger children to distinguish between pain and distress. Finally, independent raters only rated distress, because during their initial training they reported great difficulty distinguishing pain from distress. Thus the rating dimensions were not equivalent across raters.

In addition, three coders made independent ratings of the children's distress. Each coder observed video recordings of the entire time a child was in the treatment room; after viewing a recording, they independently rated a child's distress during the actual treatment. All raters were blind to each other's ratings and to the parents' responses on the self-report measures.

RESULTS

Reliability and Validity of Pain/Distress Ratings

Unless otherwise noted, only relationships significant at $p < .05$ are reported. Before turning to hypothesis-related results, we briefly discuss the reliability and validity of the pain/distress ratings. With regard to within-source agreement, correlations between two parents' ratings were, $r(6) = .96$ for pain and $.96$ for distress. Correlations between two nurses' ratings were $r(11) = .75$ for pain and $.94$ for distress. The reliability estimates for the three independent coders was based on a subset of 10 recordings that all coders rated independently. The first pair of coders had 100% agreement on their ratings of the 10 recordings. The third coder's ratings correlated $.98$ with the other two coders. For the second and third coders we also obtained an estimate of their *intracoder* reliability for 10 recordings (same coder/same recordings, at different times). For both, it was 100%.

Correlations among the three rating sources' (children, parents, and nurses) ratings of the children's pain were all significant ($M_r = .48$), as were the correlations among the three rating sources (i.e., nurses, parents, independent coders) of the children's distress ($M_r = .76$). The average correlation among the pain and distress ratings ($r = .64$) was larger than the average correlation among just the pain ratings but less than the average among just the distress ratings.

Demographic Characteristics and Medical Histories

Parents' gender, age, and ethnicity were unrelated to the measures of empathic responses (i.e., empathic distress, empathic concern), and to ratings of their children's pain/distress. Parents' empathic responses did not differ as a function of children's gender, age, or ethnicity. Pain/distress ratings did not differ for boys and girls, but significant negative and fairly strong relationships ($M_r = -.39$) existed between all six pain/distress ratings and children's age. As others have found (e.g., Fradet, McGrath, Kay, Adams, & Luke, 1990), older children were consistently rated (and reported themselves) as having less pain/distress than younger children. African American children received significantly lower distress ratings from their parents and rated their

pain as significantly lower than European American children. However, a t test disclosed that African American children were marginally older ($M_{AA} = 8.67$ years, $SD = 2.83$) than European American children ($M_{EA} = 6.32$ years, $SD = 3.12$), $t(38) = 2.21$, $p = .052$. When age was controlled in subsequent analyses, these ethnic differences were no longer significant. Because of the consistent negative associations between children's age and pain/distress ratings, all significant correlations between empathic responses and pain/distress were recomputed with age partialled out of the relationship.

Neither parents' empathic responses nor ratings of children's pain/distress differed as a function of length of time children had been in treatment, number of procedures received in the past 2 months (or since diagnosis), or length of procedure on the day treatments were recorded. Type of procedure (i.e., port start vs. lumbar puncture) also did not produce significant differences in parents' empathic responses or in pain/distress ratings.

Empathic Responses and Pain and Distress

Parents' state anxiety and personal distress were significantly correlated, $r(39) = .79$, $p < .001$ (.77 if the items they shared in common were excluded), but neither measure correlated significantly with empathic concern: state anxiety, $r(39) = .02$, *ns*; personal distress, $r(39) = .12$, *ns*.

As predicted in H1a, state anxiety was significantly and positively associated with parents' rating of children's pain, $r(38) = .36$, $p = .025$, and there was a trend in this direction for the relationship between state anxiety and parents' rating of distress, $r(37) = .29$, $p = .077$. None of the correlations between parents' personal distress and ratings of children's pain/distress was significant. Partialling age out of the state anxiety-parent pain rating correlation did not meaningfully change it, $r_{par}(35) = .34$, $p = .038$.

As also predicted, all six of the correlations between parents' empathic concern and children's pain/distress were negative. Four of the six correlations with pain and distress were significant at the established alpha level and there was a trend in this direction for a fifth correlation. Specifically, the correlations with empathic concern were: nurses' pain ratings, $r(37) = -.47$, $p = .003$; nurses' distress ratings, $r(37) = -.40$, $p = .032$; children's pain rating, $r(36) = -.36$, $p = .032$; and observers' distress ratings, $r(39) = -.54$, $p < .001$. Parents' distress rating correlated $-.29$ with empathic concern, $p = .076$. (Parents' pain rating correlated $-.27$ with empathic concern, *ns*.)

When children's age was partialled out, the relationship between empathic concern and children's self-rating

of pain was reduced, $r_{\text{par}}(33) = -.30$, $p = .083$. The other significant negative relationships between parents' empathic concern and children's pain/distress remained significant at beyond the .05 level and did not substantially differ in magnitude from the original zero-order correlations.

Dispositional Variables and Empathic Responses

Table 1 presents the correlations among the dispositional variables and empathic responses. Table 1 shows that, as predicted, trait anxiety correlated positively and significantly with both parents' state anxiety, $r(34) = .40$, $p = .018$, and personal distress, $r(35) = .44$, $p = .008$. Enduring negative emotions also correlated positively and significantly with both state anxiety and personal distress, $r(35) = .38$, $p = .026$; $r(36) = .37$, $p = .027$, respectively.

Turning to parental resources, the predicted correlation between resilience and empathic concern was positive but not significant. Enduring positive emotions, and social support were both, as predicted, positively and significantly associated with empathic concern, $r(36) = .33$, $p = .046$, and $r(36) = .43$, $p = .009$, respectively. Also enduring positive emotions correlated significantly and *negatively* with personal distress, $r(37) = -.35$, $p = .035$. Thus, with the exception of the null relationship involving resilience, the results were consistent with the second hypothesis.

DISCUSSION

Reliability and Validity of Pain/Distress Ratings

Although the within-rater reliabilities for pain/distress were quite good, the convergent validity of the pain ratings was poor. The average correlation among the pain ratings was lower than the average correlation between pain and distress ratings. The source of the problem

was the low correlation between parents and children's pain ratings. Although significant, this correlation (.39) was substantially lower than any of the correlations between pain and distress ratings. The current findings and similar findings from other studies (e.g., Kelly, Powell, & Williams, 2002) strongly suggest that when studying ratings of pain/distress, one should (as we did in this study) use multiple rating sources and closely examine convergence and divergence among those sources. One reason for recommending this approach is that in contexts such as the one studied here, raters may have very different perspectives and prior experiences that influence their ratings of pain/distress. For example, nurses, who routinely administer cancer treatment-related procedures may have different internal criteria than do parents for what constitute high levels of pain and/or distress. However, despite the poor convergent validity, negative correlations were found between empathic concern and pain/distress across all the raters.

We should also briefly comment on the fact that the more invasive procedure, the lumbar puncture, did not produce significantly higher pain/distress ratings than the port start. We have no ready explanation of these null results, but we do not think they reflect validity problems in our pain/distress ratings. Rather we think they may simply be because of the relative effectiveness of the analgesics used. As previously noted, children who receive lumbar punctures also receive both a topical anesthetic and a lidocaine injection to numb tissue at the needle insertion point, as well as an opioid. Children who receive port starts receive only a topical anesthetic. Thus, the pain and distress caused by the two procedures may actually be equivalent.

Parents' Empathic Responses and Children's Pain/Distress

As predicted, both (state) empathic distress and empathic concern were associated with ratings of pain

TABLE 1
Correlations Between Dispositional Variables and Empathic Responses to Children's Pain/Distress

<i>Support</i>	<i>Negative Emotions</i>	<i>Trait Anxiety</i>	<i>Resilience</i>	<i>Positive Emotions</i>	<i>Satisfaction With Social Support</i>	<i>State Anxiety</i>	<i>Personal Distress</i>	<i>Empathic Concern</i>
Negative emotions	(.76)							
Trait anxiety	.69**	(.85)						
Resilience	-.13	-.28	(.75)					
Positive emotions	.00	-.36*	.26	(.79)				
Satisfaction with social support	-.46	-.23	.18	.11	(.93)			
State anxiety	.38	.40*	-.08	-.25	-.07	(.94)		
Personal distress	.35	.44**	-.19	-.37*	-.07	.79**	(.91)	
Empathic concern	.05	-.16	.25	.33*	.43**	.02	.12	(.82)

Note. Entries in diagonal are estimates of internal consistencies. Sample sizes range 32 to 41.

* $p < .01$, ** $p < .05$.

and/or distress. However, for empathic distress, the only significant relationship was between parents' state anxiety and parents' ratings of children's pain. We note that the same individuals produced the ratings of their state anxiety and their children's pain. This significant association must therefore be treated with some caution because of common raters across the two measures. However, this relationship is consistent with other studies that have independently assessed parents' state anxiety and children's pain and/or distress (e.g., Blount et al., 1991). Thus, this finding can be seen as providing at least weak or marginal support for H1a.

Turning to H1b, the support is much stronger. All four of the significant zero-order correlations between empathic concern and pain/distress were based on pain/distress ratings from individuals other than the parents. Higher levels of empathic concern among the parents immediately before the procedure began were associated with lower levels of subsequent pain/distress in the children during the procedure. The relationships remained significant for three of the pain/distress ratings even when the strongest independent correlate of children's pain/distress, age, was partialled out of these correlations; and the other relationship trended toward significance ($p = .083$), using the alpha level set for this study.

As far as we know, this is the first time in either a laboratory or clinical setting that an observer's empathic concern for a person was found to be negatively associated with subsequent pain/distress displayed by that person. However, before we can assign any theoretical or practical significance to these findings, we must consider some alternative explanations of our results. The most obvious alternative explanation of the empathic concern—pain/distress findings is that rather than the parents influencing the children, the children were influencing the parents. This alternative explanation is predicated on the fact that the children had been in treatment for quite a while and makes two assumptions. First, the children's pain/distress during the procedure we video recorded was highly correlated with their pain/distress during previous procedures. Second, the parents' knowledge of their children's *previous* pain/distress was responsible for the parents' level of empathic concern on the day we measured it. Specifically, relative to parents of children who consistently displayed high levels of pain/distress during *previous* procedures, the parents of children who displayed low levels of pain/distress during *previous* procedures had higher levels of empathic concern on the day we measured their empathic responses. Thus, because both empathic concern and children's pain/distress on the day of the procedures were correlated with parents' knowledge of their children's previous or typical pain/distress, this resulted in significant correlations between empathic concern and pain/distress.

We were only able to measure empathic concern and pain/distress during one procedure and, therefore, we cannot directly test this alternative explanation. That is, because we used a cross-sectional rather than a longitudinal design, we cannot conduct analyses in which we control for children's prior pain/distress and/or parents' previous ratings of pain/distress and then examine the relationship between empathic concern and pain/distress on the day we measured these variables. However, we can indirectly evaluate the viability of this alternative explanation by looking at some variables that might serve as proxies for parent's knowledge of prior pain/distress and see if controlling these variables affects the empathic concern-pain/distress correlations.

The first such variable was the parents' preprocedure self-reports of their state personal distress. It is possible that parents' self-reports of personal distress might in part be determined by their knowledge of how much pain/distress their children displayed during prior procedures. Batson and Oleson (1991) reported that this measure of personal distress is often associated with greater helping. Indeed, we did find nonsignificant but *negative* correlations between parents' personal distress and two pain/distress ratings (children's self-ratings and observers' ratings). Thus, we examined whether controlling for personal distress might substantially reduce the strength of empathic concern's association with ratings of children's pain/distress. Specifically, we computed partial correlations between empathic concern and the pain/distress ratings, in which we controlled for parents' personal distress. Controlling for parents' personal distress had no effect on the empathic concern-pain/distress relationships; for all six pain/distress ratings, the partial correlations were essentially identical to the original zero-order correlations. Following this, we performed a second set of partial correlations, controlling for parents' state anxiety, which also might be influenced by the parents' knowledge of children's prior responses to the procedures. Again we found no changes in the size or direction of the correlations between empathic concern and pain/distress ratings. This is not surprising given that state anxiety correlated less than .03 with empathic concern and all original, zero-order, state anxiety-pain/distress correlations were *positive*.

Children's age was another variable that might be considered a proxy for parents' prior knowledge of their children's typical level of pain/distress during the procedures. Recall that children's age was significantly and negatively associated with all six ratings of children's pain/distress; invariably, the younger the children were, the higher the pain/distress ratings. Thus, children's age might be correlated with parents' knowledge of their children's usual level of pain/distress in response to the kind of procedure we observed. However, as already reported, age was not significantly correlated with empathic concern, and three of the four significant

correlations between empathic concern and the pain/distress ratings remained significant when age was partialled out of the relationship. Thus, although we cannot definitely exclude parents' prior knowledge as the source of the significant negative empathic concern–pain/distress relationship, controlling for reasonable proxy measures of parents' knowledge did not substantially affect this relationship.

Empathic Concern and Parental Behaviors

To further explore the relationship between empathic concern and the children's pain/distress we examined the relationship between parents' preprocedure self-reports of empathic concern and their communication behaviors while their children received the treatment-related procedures. Other investigators associated with this research project have studied general communication patterns (Cline et al., 2006) and specific nonverbal behaviors (Peterson et al., 2007) displayed by the parents during the treatment-related procedure. (Coders of communication behaviors were blind as to the measurement of parents' empathic concern and blind to the ratings of pain/distress.) We used these data to examine relationships between parents' communication behaviors during the procedures and their preprocedure empathic concern.

Empathic concern and communication patterns.

Cline et al. (2006) developed a typology that identified qualitative differences in parents' global communication patterns while they and their children were in the treatment room. Specifically, Cline et al. observed parents' interactions with their children during each of three phases of the treatment-related procedures (i.e., preparation for the procedure, performing the procedure, and after the procedure) and, for each phase, placed parents into distinct communication pattern categories.

One category was supportive communication. In this pattern, "(Parents engage) in empathic, supportive, and/or comforting responses . . . the parent is (a) partner, protector, and/or comforter" (p. 890). Another communication pattern was "normalizing," in which parents engage the child in everyday (nonmedical) activities, such as reading/learning, play, and nonmedical conversation. Cline et al. (2006) also identified an invalidating communication pattern. It is characterized by communication that "denies, invalidates, and/or challenges the validity (merit, worth, or accuracy) of the child's experience" (p. 890). Invalidation may involve showing displays of anger and frustration; minimizing the child's pain/distress responses; and name calling, ridicule, or criticism of the child. Because of the potency of this communication pattern, Cline et al.

classified parents who displayed this pattern during any phase of the procedure as invalidators. Cline et al. reported that children of invalidators were rated as significantly higher on five of six pain/distress ratings than children of parents with other communication patterns. We also found this in an analysis of our data, and we found that children of parents who were consistently supportive across all phases of the procedure were rated significantly lower than children of other groups of parents on two pain/distress ratings (nurses' distress rating, children's self-report); differences on the other ratings were in same direction but not significant.

Given Cline et al.'s (2006) descriptions of the differences between the communication patterns of the invalidators and the other parents, it seems reasonable to examine whether parents who displayed these three communication patterns differed from one another in their empathic concern prior to entering the treatment room. Thus, we compared the levels of empathic concern among invalidating parents ($n=8$) with parents who were consistently normalizing across all three phases of the treatment ($n=4$) and parents who were consistently supportive ($n=6$). The mean level of empathic concern among invalidating parents ($M=10.00$, $SD=4.24$) was nonsignificantly lower than the mean empathic concern among normalizing parents ($M=16.75$, $SD=5.37$); it was significantly lower than the mean empathic concern among supportive parents ($M=17.75$, $SD=4.42$), $t(12)=3.33$, $p<.05$.

We are not claiming that differences in empathic concern *caused* differences in parents' communication patterns during the procedure. To do this we would need to do a mediational analysis with a larger sample of parents. And even if we had a larger sample, Cline et al.'s typology does not lend itself to such an analysis because the categories reflect qualitative differences in patterns of communication rather than an underlying continuum on some specific set of behaviors (e.g., supportiveness). However, the associations between the communication patterns and empathic concern suggest that parents who acted differently during the procedure also showed differences in their preprocedure empathic concern. These differences in empathic concern were theoretically consistent with the behavioral differences. Thus, the hypothesized behavioral link between the parents' empathic concern and their children's pain/distress is viable.

Empathic concern and nonverbal behaviors.

Peterson et al. (2007) coded the proportion of time during each phase of the procedure that parents engaged in two types of nonverbal behaviors: interpersonal distance (from the children) and touch. Distance was divided into "close" (1 to 3 ft from the child's

head) and distances greater than this. Touch was divided into “supportive,” touch likely intended to provide the child with emotional support while in the treatment room, and “instrumental,” touch that was likely part of carrying out some task (e.g., restraining the child). There were 29 parents in Peterson et al.’s study.

Using Peterson et al.’s data, we examined whether nonverbal behaviors that were significantly correlated with ratings of children’s pain/distress also correlated with empathic concern. The more time the parents spent at a close distance during the procedure phase, the higher nurses’ ratings of the children’s distress. Empathic concern was significantly and *negatively* correlated with this nonverbal behavior, $r(27) = -.44$, $p = .023$. Turning to touch, the proportion of time the parents’ engaged in instrumental touch during the procedure phase was significantly and positively correlated with: nurses’, children’s, and observers’ ratings of children’s pain/distress. Empathic concern was also significantly and *negatively* correlated with this nonverbal behavior, $r(28) = -.40$, $p = .035$.

We must again be very cautious in interpreting these correlational relationships. They do not show that empathic concern was *causing* nonverbal behaviors that reduced the children’s pain/distress but only that some differences in parents’ nonverbal behavior during treatment-related procedures covaried with differences in empathic concern. However, the covariation would be consistent with other findings regarding the kinds of parental behaviors associated with less distress in pediatric cancer patients (e.g., Manne et al., 1992; McMurtry et al., 2006). Thus, it provides some more indirect evidence in support of a possible behavioral link between parents’ empathic concern and their children pain/distress.

Dispositional Variables and Empathic Responses

As predicted, trait anxiety and enduring negative emotions both predicted parents’ empathic distress (i.e., state anxiety and personal distress) immediately before the children received the treatment-related procedures. These findings are consistent with pediatric cancer studies that find significant correlations between parental trait and state anxiety in this setting (Srivastava et al., 2001), bystander intervention studies that find trait anxiety predicts state anxiety in response to a stranger’s distress (e.g., Marks, Penner, & Stone, 1982), and other findings about how general negative affectivity affects reactions to specific stressors (e.g., Weems et al., 2007). These findings lend further support to the proposition that dispositional variables contribute to variability in empathic responses to distress in others (Graziano et al., 2007).

Turning to the measures of resources, we first consider the relationship between dispositional resilience and empathic concern. We have no ready explanation of why it was not significant. One possibility is that resilience is not the kind of psychological resource most useful in this situation. Specifically, Block and Kremen’s (1996) measure of ego-resilience asks the respondents how quickly they “get over and recover from new situations” and whether they “enjoy dealing with new and unusual situations.” These items clearly assess a psychological resource, but maybe this resource may not be as relevant within the context of coping with pediatric cancer as the other two resources we measured.

The results for enduring positive emotions were consistent with current theorizing about the role of positive emotions in dealing with stressors. Researchers such as Fredrickson (e.g., Fredrickson & Losada, 2005) believe that positive emotions can increase the resources on which people can draw in times of stress and broaden their perspective and scope of attention (the “Broaden and build” model). It seems reasonable to propose that parents who feel they have the resources to deal with the stresses of their children’s treatment and are inclined to look beyond their own needs to the needs of their children would show relatively high levels of empathic concern for their children. Indeed, this is what we found in our study. A theoretically consistent, but not predicted finding was that parents who reported a higher level of enduring positive emotions also reported a lower level of personal distress in the time immediately preceding their children’s treatment. Thus, positive emotions were significantly associated with higher levels of empathic concern and lower levels of empathic distress as well.

In a somewhat related fashion, higher levels of perceived social support seemed to do more than simply provide parents with resources to cope with stressors. There was a significant positive association between social support and empathic concern. This suggests that higher perceived social support appears to have resulted in parents having a broader perspective on the situation and more concern about the well-being of their children.

Of course, we are not suggesting that parents’ level of empathic concern on a treatment day is totally or even primarily determined by dispositional variables. The ease or difficulty of dealing with the child that day, problems and difficulties associated with getting the child to the clinic that day, objective characteristics of the treatment setting, behavior of the staff, and any number of other as yet unidentified situational variables would all likely contribute to differences among parents in their levels of empathic concern before the procedures begin. An additional likely source of differences in parents’ empathic concern is their ongoing relations with their children. We strongly suspect that the parents show some

consistency in their levels of empathic concern for their children across treatment days, and indeed in their day-to-day interactions with their children.

Future research needs to systematically identify the different sources of variance in parents' empathic concern and explore how they interact to affect parents' empathic responses on a treatment day. Further, this research should address whether the differences in empathic concern are primarily because of differences among parents in how they respond to an equally distressing situation or to differences in how they construe the situation. Addressing this issue would help us better understand the relationships between dispositional variables and the parents' empathic responses.

SUMMARY AND CONCLUSIONS

Our summary statements are, of course, qualified by the cross-sectional study design and the relatively small sample size. However, with these limitations in mind, several conclusions seem appropriate. First, as others have found, parents' empathic responses immediately before cancer treatment-related procedures were associated with children's pain/distress during the procedures. However, the new and unique finding was the negative relationship between empathic concern and children's pain/distress. We cannot precisely identify the mediational processes responsible for empathic concern's effects on the children's pain/distress during the treatment-related procedures. However, we have preliminary evidence that high and low empathic concern parents differed in both their verbal and nonverbal behaviors as they interacted with their children during the actual procedures. Further research is needed to confirm the proposed causal direction of the empathic concern-pain/distress relationship and to more fully identify specific behaviors responsible for it. If successful, this line of research might lead clinicians who work with pediatric patient populations to develop interventions to increase situation-specific empathic concern among parents whose children are undergoing painful procedures.

At a more theoretical level, our findings may have implications for evolutionary theories of the causes of prosocial behavior. For example, they raise the possibility that empathic concern could be a mechanism that facilitates kin-based helping. It might be useful to conduct studies that address this issue directly. The results of these studies could provide insight into the mediational processes that link evolutionary tendencies and prosocial actions.

Our findings also suggest that enduring parental attributes may contribute to variability in parents' empathic responses when their children undergo painful

procedures. As noted, the relationship between enduring negative affect and empathic distress has been previously found. However, the findings regarding personal and interpersonal resources and empathic concern have not. The theoretical contribution of these findings is that they lend further support to those who argue for the psychological and interpersonal benefits of positive emotions and other kinds of resources. They may have practical importance for parents coping with their child's pediatric cancer. In some respects, the experience of pediatric cancer may be more stressful for parents than for their children (see Phipps, Dunavant, Lensing, & Rai, 2005). Future research might investigate whether it would be possible to increase these resources among parents and examine the short and long-term benefits for both them and their children.

ACKNOWLEDGMENTS

This research was supported by a grant from the National Cancer Institute research Grant RO 1 CA 100027-03. Terrance L. Albrecht, Principal Investigator. Portions of this research were presented at the Annual Meeting of the Society for Behavioral Medicine, San Francisco, CA, March 23–25, 2006.

REFERENCES

- Albrecht, T. L., & Goldsmith, D. J. (2003). Social support, social networks, and health. In T. L. Thompson, A. M. Dorsey, K. I. Miller, & R. Parrott (Eds.), *Handbook of health communication* (pp. 263–284). Hillsdale, NJ: Erlbaum.
- Barakat, L. P., Kazak, A. E., Meadows, A. T., Casey, R., Meeske, K., & Stuber, M. L. (1997). Families surviving childhood cancer: A comparison of posttraumatic stress symptoms with families of healthy children. *Journal of Pediatric Psychology*, *22*, 843–859.
- Batson, C. D. (1991). *The altruism question: Toward a social-psychological answer*. Hillsdale, NJ: Erlbaum.
- Batson, C. D., Eklund, J. H., Chermok, V. L., Hoyt, J. L., & Ortiz, B. G. (2007). An additional antecedent of empathic concern: Valuing the welfare of the person in need. *Journal of Personality and Social Psychology*, *93*, 65–74.
- Batson, C. D., & Oleson, K. C. (1991). Current status of the empathy–altruism hypothesis. In M. S. Clark (Ed.), *Review of personality and social psychology* (Vol. 2, pp. 62–85). Newbury Park, CA: Sage.
- Block, J., & Kremen, A. M. (1996). IQ and ego-resiliency: Conceptual and empirical connections and separateness. *Journal of Personality and Social Psychology*, *70*, 349–361.
- Blount, R. L., Landolf-Fritsche, B., Powers, S. W., & Sturges, J. W. (1991). Differences between high and low coping children and between parent and staff behaviors during painful medical procedures. *Journal of Pediatric Psychology*, *16*, 795–809.
- Burleson, B., Albrecht, T., & Sarason, I. (Eds.). (1994). *Communication of social support*. Thousand Oaks, CA: Sage.
- Chen, E., Craske, M. G., Katz, E. R., Schwartz, E., & Zeltzer, L. K. (2000). Pain-sensitive temperament: Does it predict procedural

- distress and response to psychological treatment among children with cancer? *Journal of Pediatric Psychology*, 25, 269–278.
- Cline, R. J. W., Harper, F. W. K., Penner, L. A., Peterson, A. M., Taub, J. W., & Albrecht, T. L. (2006). Parent communication and child pain and distress during painful pediatric cancer treatments. *Social Science and Medicine*, 63, 883–898.
- Dahlquist, L. M., & Pendley, J. S. (2005). When distraction fails: Parental anxiety and children's responses to distraction during cancer procedures. *Journal of Pediatric Psychology*, 30, 623–628.
- Dahlquist, L., Power, T., & Carlson, L. (1995). Physician and parent behavior during invasive cancer procedures: Relationships to child behavioral distress. *Journal of Pediatric Psychology*, 20, 477–490.
- Dahlquist, L. M., Power, T. G., Cox, C. N., & Fernbach, D. J. (1994). Parenting and child distress during cancer procedures: A multidimensional assessment. *Children's Health Care*, 23, 149–166.
- Davis, M. H. (1980). A multidimensional approach to individual differences in empathy. *JSAS: Catalog of Selected Documents in Psychology*, 10, 85.
- DeLongis, A., & Holtzman, S. (2005). Coping in context: The role of stress, social support, and personality in coping. *Journal of Personality*, 73, 1–24.
- Fradet C., McGrath P. J., Kay, J., Adams, S., & Luke B. (1990). A prospective survey of reactions to blood tests by children and adolescents. *Pain*, 40, 53–60.
- Fredrickson, B. L., & Joiner, T. (2002). Positive emotions trigger upward spirals toward emotional well-being. *Psychological Science*, 13, 172–175.
- Fredrickson, B. L., & Losada, M. F. (2005). Positive affect and the complex dynamics of human flourishing. *American Psychologist*, 60, 678–686.
- Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crisis? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology*, 84, 365–376.
- Goubert, L., Craig, K. D., Vervoort, T., Morley, S., Sullivan, M. J. L., Williams, A., et al. (2005). Facing others in pain: The effects of empathy. *Pain*, 118, 285–288.
- Graziano, W. G., Habashi, M. M., Sheese, B. E., & Tobin, R. (2007). Agreeableness, empathy, and helping: A person \times situation perspective. *Journal of Personality and Social Psychology*, 93, 583–599.
- Guthrie, I. K., Eisenberg, N., Fabes, R. A., Murphy, B. C., Holmgren, R., Mazsk, P., et al. (1997). The relations of regulation and emotionality to children's situational empathy-related responding. *Motivation and Emotion*, 21, 87–108.
- Hamilton, W. D. (1964). The genetical evolution of social behavior. *Journal of Theoretical Biology*, 7, 1–52.
- Hedstrom, M., Haglund, K., Skolin, I., & von Essen, L. (2003). Distressing events for children and adolescents with cancer: Child, parent, and nurse perceptions. *Journal of Pediatric Oncology Nursing*, 20, 120–132.
- Kazak, A. E., Barakat, L. P., Meeske, K., Christakis, D., Meadows, A. T., Casey, R., et al. (1997). Posttraumatic stress, family functioning, and social support in survivors of childhood leukemia and their mothers and fathers. *Journal of Consulting and Clinical Psychology*, 65, 120–129.
- Kelly, A., Powell, C. V., & Williams, A. (2002). Parent visual analogue scale ratings of children's pain do not reliably reflect pain reported by child. *Pediatric Emergency Care*, 18, 159–162.
- Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress*, 17, 11–21.
- Ljungman G., Gordh, T., Sorensen S., & Kreuger, A. (2000). Pain variations during cancer treatment in children: A descriptive survey. *Pediatric Hematology and Oncology*, 3, 195–197.
- Manne, S. L., Bakeman, R., Jacobsen, P. B., Gorfinkle, K., Bernstein, D., & Redd, W. H. (1992). Adult-child interaction during invasive medical procedures. *Health Psychology*, 11, 241–249.
- Marks, E. L., Penner, L. A., & Stone, A. V. (1982). Helping as a function of empathic responses and sociopathy. *Journal of Research in Personality*, 16, 1–20.
- McMurtry, C., McGrath, P., & Chambers, C. (2006). Reassurance can hurt: Parental behavior and painful medical procedures. *The Journal of Pediatrics*, 148, 560–561.
- Penner, L. A. (2002). Dispositional and organizational influences on sustained volunteerism: An interactionist perspective. *Journal of Social Issues*, 58, 447–467.
- Penner, L. A., Dovidio, J. F., Piliavin, J. A., & Schroeder, D. A. (2005). Prosocial behavior: Multilevel perspectives. *Annual Review of Psychology*, 56, 365–392.
- Peterson, A. M., Cline, R. J. W., Foster, T. S., Jones, E. M., Penner, L. A., Parrott, R. L., et al. (2007). Parents' interpersonal distance and touch behavior and child pain and distress during painful pediatric oncology procedures. *Journal of Nonverbal Behavior*, 31, 79–97.
- Phipps, S., Dunavant, M., Lensing, S., & Rai, S. N. (2005). Psychosocial predictors of distress in parents of children undergoing stem cell or bone marrow transplantation. *Journal of Pediatric Psychology*, 30, 139–153.
- Piliavin, J. A., Dovidio, J. F., Gaertner, S., & Clark, R. D. (1981). *Emergency intervention*. New York: Academic.
- Sarason, I. G., Sarason, B. R., Shearin, E. N., & Pierce, G. R. (1987). A brief measure of social support: Practical and theoretical implications. *Journal of Social and Personal Relationships*, 4, 497–510.
- Spielberger, C. D. (1977). *State-Trait Anxiety Inventory for Adults*. Redwood, CA: Mind Garden Inc.
- Spielberger, C. D. (1983). *Manual for the State-Trait Anxiety Inventory: STAI (Form Y)*. Palo Alto, CA: Consulting Psychologist Press.
- Srivastava, T., Betts, G., Rosenberg, A. R., & Kainer, G. (2001). Perception of fear, distress and pain by parents of children undergoing a micturating cystourethrogram: A prospective study. *Journal of Paediatrics & Child Health*, 37, 271–273.
- Stuber, M. L., Kazak, A. E., Meeske, K., Barakat, L., Guthrie, D., Garnier, H., et al. (1997). Predictors of posttraumatic stress symptoms in childhood cancer survivors. *Pediatrics*, 100, 958–964.
- Tugade, M. M., & Fredrickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology*, 86, 320–333.
- Tugade, M. M., Fredrickson, B. L., & Barrett, L. F. (2004). Psychological resilience and positive emotional granularity: Examining the benefits of positive emotions on coping and health. *Journal of Personality*, 72, 1161–1190.
- Walco, G. A., Sterling, C. M., Conte, P. M., & Engel, R. G. (1999). Empirically supported treatments in pediatric psychology: Disease-related pain. *Journal of Pediatric Psychology*, 24, 155–167.
- Weems, C. F., Pina, A. A., Costa, N. M., Watts, S. E., Taylor, L. K., & Cannon, M. F. (2007). Predisaster trait anxiety and negative affect predict posttraumatic stress in youths after hurricane Katrina. *Journal of Consulting and Clinical Psychology*, 75, 154–159.
- Wong, D., & Baker, C. (1988). Pain in children: Comparison of assessment scales. *Pediatric Nursing*, 14, 9–17.
- Zautra, A. J., Johnson, L. M., & Davis, M. C. (2005). Positive affect as a source of resilience for women in chronic pain. *Journal of Consulting and Clinical Psychology*, 73, 212–220.