Adaptive Style and Symptoms of Posttraumatic Stress in Children with Cancer and Their Parents

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Objective To examine symptom levels of posttraumatic stress (PTS) in children with cancer and their parents as a function of patient and parent adaptive style. **Method** Participants included 162 pediatric cancer patients and their parents. Patients completed self-report measures of PTS and adaptive style. Parents reported on their own adaptive style and PTS, as well as levels of PTS in their child. **Results** Adaptive style was a significant correlate of PTS. Children identified as low anxious (LA) or repressors (REP) obtained lower levels of PTS than did high anxious (HA) children, both by self-report and parent report. Parents identified as LA or REP self-reported lower levels of PTS than HA and also reported lower levels of PTS in their children. **Conclusions** Patient and parent adaptive style are significant determinants of PTS in the pediatric oncology setting. These findings, in combination with the generally low levels of PTS in the pediatric oncology population, raise questions about the utility of the posttraumatic stress model for understanding the experiences of children with cancer, although such a model may be more applicable to parental response.

Key words adaptive style; anxiety; childhood cancer; posttraumatic stress; repression.

Childhood cancer has been viewed as one of the most traumatic events that a child and his/her family can endure (Stuber, Kazak, Meeske, & Barakat, 1998). Accordingly, the listing of traumatic stressors felt to be of sufficient magnitude to lead to posttraumatic stress disorder (PTSD) was expanded in the 4th edition of the diagnostic and statistical manual of the American Psychiatric Association (DSM-IV; American Psychiatric Association, 1994) to include "diagnosis of a life-threatening illness" and "learning that one's child has a life-threatening illness". Nir (1985) was the first to describe the clinical picture of PTSD in children with cancer and reported that this was the most common psychiatric diagnosis in childhood cancer patients. However, empiric work published since then has failed to confirm this conclusion, and generally points to relatively low levels of PTSD in childhood cancer patients, although moderate levels of PTSD have been observed in the parents of these children, particularly their mothers (Barakat et al., 1997; Brown, Madan-Swain, & Lambert, 2003; Butler, Rizzi, & Handwerger, 1996; Kazak et al., 1997; Kazak, 1998; Manne, DuHamel, Gallelli, Sorgen, & Redd, 1998; Stuber, Meeske, Gonzales, Houskamp, & Pynoos, 1994). These findings have led to a focus on subclinical levels of posttraumatic stress symptomatology (PTSS) rather than the full syndrome of PTSD in the pediatric oncology population.

Survivors of childhood cancer demonstrate fewer symptoms of PTSD by self-report when compared with survivors of other stressful events during childhood, such as natural disasters, major accidents, and serious physical injury (Aaron, Zagul, & Emery, 1999; LaGreca, Silverman, & Wasserstein, 1998; Lonigan, Shannon, Taylor, Finch, & Sallee, 1994; Yule, 1992). Such low levels of PTSS may relate to differences in preexisting child characteristics that are specific to populations of children with cancer. For example, premorbid trait anxiety has been shown to be a significant predictor of

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subsequent development of posttraumatic stress symptoms, with high anxious (HA) children showing higher levels of posttraumatic stress symptoms (LaGreca et al., 1998). Likewise, in survivors of childhood cancer, general anxiety level has been a consistent correlate of PTSS (Hobbie et al., 2000; Stuber et al., 1997). Concurrently, prior research has consistently shown lower levels of trait anxiety in children with cancer in comparison with healthy control children (Canning, Canning, & Boyce, 1992; Phipps & Srivastava, 1997; Phipps, Steele, Hall, & Leigh, 2001). The lower trait anxiety has been conceptualized as part of the larger construct of adaptive style, whereby an increased incidence of repressive adaptive style (low anxiety and high defensiveness) and relative deficit of HA adaptive style (high anxiety and low defensiveness) have been demonstrated in children with cancer relative to healthy comparison children (Canning et al., 1992; Phipps & Srivastava, 1997; Phipps et al., 2001). Thus, the low levels of PTSS by self-report in children with cancer may relate to differences in patient anxiety levels, and more specifically, to differences in adaptive style, and the higher levels of repressive adaptation observed in this population.

In contrast to the studies of PTSS in children with cancer, studies of parents of childhood cancer patients have more consistently shown an increased incidence of PTSD and PTSS in comparison with parents of healthy children (Barakat et al., 1997; Brown et al., 2003; Kazak et al., 1997; Manne et al., 1998). Levels of parental PTSS have been significantly correlated with child-reported PTSS in populations of families surviving childhood cancer (Barakat et al., 1997). Other correlates of parental PTSS that have been reported include the respondent's general levels of emotional distress and cancer-related fears (Manne et al., 2002; Manne, DuHamel, & Redd, 2000). Thus, general anxiety levels also appear to be a primary determinant of levels of PTS in parents of children with cancer.

This study was designed to examine the relationship of adaptive style to levels of PTS in children with cancer and their parents. The adaptive style paradigm, developed initially by Weinberger (Weinberger, 1990; Weinberger, Schwartz, & Davidson, 1979), involves the simultaneous use of two measures; a measure of subjective distress (e.g., trait anxiety) and a measure of defensiveness, typically assessed using social desirability scales. Cutoffs are made on these measures to assign respondents into four categories, labeled as HA, low anxious (LA), DHA, and repressor (REP). The repressor cell has been the primary focus of the study. REP tend to present themselves in a favorable light and thus to look good on most self-report measures. However, research has shown that repressive adaptation is not merely the indication of a response style, but reflects a substantive personality variable (Derakshan & Eysenck, 1997; Myers, 2000; Weinberger, 1990). When REP respond positively to self-report inventories, they are not simply engaging in denial or impression management, but genuinely think of themselves as well adjusted, self-controlled, and content, and organize their behavior to protect that self-image.

Several studies have reported increased levels of a repressive adaptive style, and conversely, low levels of a "high anxious" style in children with cancer relative to healthy control populations (Canning et al., 1992; Erickson & Steiner, 2001; Phipps & Srivastava, 1997; Phipps et al., 2001). A high incidence of repressive adaptation in children with cancer might help to explain several findings in the literature, including (a) lower levels of PTSS found in children with cancer relative to other child traumas; (b) the lower levels of PTSS in children with cancer relative to their parents; and (c) lower levels of PTSS in patients by self-report than by parent report. Erickson and Steiner (2001) obtained measures of PTSD and adaptive style from a small group of adolescent and young adult long-term survivors of childhood cancer. They found that group means on the Impact of Events Scale (IES; Weiss & Marmar, 1997) were in the normative range. They used the Weinberger Adjustment Inventory (Weinberger, 1991) to measure adaptive style, reported relatively low levels of distress and high levels of restraint in their cohort, and found that PTSD symptoms were positively correlated with distress and negatively correlated with restraint. This is the only study to date that has examined adaptive style as a determinant of PTSS, but they reported only on the "Restraint" dimension and not the "Repressive Defensiveness" (RD) or "Denial of Distress" (DD) dimensions of the Weinberger measure.

For the present report, we obtained measures of PTSS in several groups of children with cancer differing in time elapsed since diagnosis. Patient PTSS was assessed by both self report and parent report. Parents also provided self-report of their own PTSS. Measures were also obtained of both patient and parent adaptive style. This allows for differential examination of PTSS as a function of adaptive style in four contexts: (a) patient self-reported PTSS as a function of patient adaptive style; (b) parent report of child PTSS as a function of patient adaptive style; (c) parent report of patient PTSS as a function of parent adaptive style; and (d) parent self-reported PTSS as a function of parent adaptive

style. We hypothesized that among both patients and parents, overall levels of PTSS will be lower in the LA and repressor groups relative to the HA and DHA groups. Regarding symptom subclusters, REP were predicted to demonstrate the lowest levels of intrusion/reexperiencing and arousal symptoms, with LA subjects showing intermediate levels, whereas LA subjects were predicted to show the lowest levels of "numbing/avoidance" symptoms, with REP intermediate.

Method

Participants

Patients with a diagnosis of malignant disorder were recruited from outpatient clinics of a major children's cancer center. Participants were recruited in four discrete groups to obtain a wide cross section of patients according to time elapsed from diagnosis. The first three groups involved children in the age range of 7–17, delineated as follows: *Group 1 (recently diagnosed)*—These patients were diagnosed at least 2 months, but no more than 6 months previously, and all were in active treatment at the time of assessment; *group 2 (2 years)*—Patients in this group were diagnosed 2 years ± 6 months previously, that is, 18–30 months from diagnosis; *group 3 (long-term survivors)*—Patients in this group were at least 5 years from diagnosis and 2 years since completion of all therapy. In groups 1–3, for each patient enrolled, one parent was also asked to participate. No preference was indicated for whether this be mother or father, although we anticipated that most of the parent participants would be mothers.

In addition to the three groups described above, a fourth group—*group 4 (young adult survivors)*—of young adult survivors was also obtained. These patients were aged 18 and up, with no upper age limit, who were at least 5 years from diagnosis, and 2 years since completion of all therapy. No parent data were obtained from this group because they frequently present to the hospital for follow-up unaccompanied by a parent.

Participants were recruited to obtain an equal number in each group, with a targeted *N* of 160. The rationale for this four discrete-group design was an attempt to address the impact of time since diagnosis in a cross-sectional study. Findings related to time since diagnosis, along with the effects of other medical and demographic variables have been presented elsewhere (Phipps, Long, Hudson, & Rai, in press). A total of 177 patients were approached, and 162 (91%) agreed to participate. The demographic and medical background of the sample is presented in Table I. The sample was representative of the patient population of the institution. There was a slight excess of male patients, and approximately 80% of the population was Caucasian. There was a balanced distribution of socioeconomic backgrounds, with roughly equivalent numbers in groups I/II, III, and IV/V. (Hollinshead, 1975) Slightly more than 80% of the parental respondents were mothers.

Measures

UCLA PTSD Index for DSM-IV

PTSD Index (PTSDI; Pynoos, Rodriguez, Steinberg, Stuber, & Frederick, 1998) is a revised version of a measure formerly known at the PTSD Reaction Index (Pynoos et al., 1987). The Reaction Index measure was originally designed to assess DSM-IIIR PTSD criteria, and the PTSDI has been revised for the DSM-IV. Similar versions

Table I. Demographic and Medical Variables

Age (*M* ± *SD*)	
Mean age groups 1–3	12.9 ± 3.0
Mean age group 4	22.5 ± 3.6
Group [n (%)]	
1	39 (24.1)
2	42 (25.9)
3	40 (24.7)
4	41 (25.3)
Gender	
Male	89 (54.9)
Female	73 (45.1)
Race	
White	129 (79.6)
Black	29 (17.9)
Other	4 (2.4)
SES[a]	
I & II	53 (33.8)
III	49 (31.2)
IV & V	55 (35.0)
Diagnosis	
ALL	48 (29.6)
Other leukemia	20 (12.3)
HD/NHL	28 (17.3)
Solid tumor	53 (32.7)
Brain tumor	13 (8.0)
Parent Participant	
Mother	99 (81.8)
Father	18 (14.9)
Other[b]	4 (3.3)

ALL, Acute lymphocytic leukemia; HD/NHL, Hodgkin's disease/non-Hodgkin's lymphoma.

[a]Socioeconomic status per Hollingshead four-factor index (Hollingshead, 1975).

[b]Stepparent or grandparent as custodial guardian.

are available for self-report by children and adolescents and by parent report. The items are grouped into DSM-IV criteria clusters B (reexperiencing/intrusion), C (avoidance/numbing), and D (arousal). Several minor modifications of the instrument have been used in different research settings, and the items can be reworded from a generic reference to refer to a specific trauma (i.e., diagnosis of cancer). Excellent internal reliability and test–retest reliability have been reported, and considerable data is available regarding its validity for screening, clinical evaluation, and treatment outcome evaluation (Steinberg, Brymer, Decker, & Pynoos, 2004). We used a 22-item version that was made specific for childhood cancer, using the same version for all patient participants, regardless of age. Patients completed the PTSDI referring to their own symptoms, and parents completed an identical version that referred to their child's symptoms. In this study, internal reliability (coefficient α) for the total scale was .898 by child report and .888 by parent report. Reliability for the reexperiencing (.837 child report; .836 parent report) and numbing (.797 child report; .791 parent report) subscales was adequate. However, reliability was poor for the arousal subscale by both child (.586) and parent (.439) report. Thus, for this study we report only on the reexperiencing and numbing subscales, although the arousal items were maintained in calculating the total score.

Impact of Events Scale–Revised

The 22-item Impact of Events Scale–Revised (IES-R; Horowitz, Wilner, & Alvarez, 1979; Weiss & Marmar, 1997) includes three subscales, intrusion, avoidance, and hyperarousal, which measure PTSS in response to a specified traumatic event which is designated in the instructions (Weiss & Marmar, 1997). The IES and IES-R have been used in studies of childhood cancer survivors and their parents (Barakat et al., 1997; Kazak et al., 1997; Manne et al., 1998). Identical versions have been used by both parent and child, with just minor rewording of some items in the child version. The internal reliabilities of the Intrusion, Avoidance, and Hyperarousal scales have been reported as .91, .84, and .90 respectively, and good test-rest reliability have been reported (Weiss & Marmar, 1997). In this study, internal reliability for the total scale was .930 by child report and .954 by parent report. Reliability was also good for all subscales by both parent and child report, with all $\alpha > .80$. Both parents and patients completed this measure as a self-report of their posttraumatic stress symptoms. Thus, patients completed both the PTSDI and IES-R as self-reports, and the parents completed the PTSDI referring to their child's symptoms and the IES-R referring to their own symptoms.

Children's Social Desirability Scale

The Children's Social Desirability Scale (CSD; Crandall, Crandall, & Katkovsky, 1965; Phipps & Srivastava, 1997) is used as the measure of child defensiveness in the adaptive style paradigm. It consists of items representing behaviors and attitudes that are socially desirable but improbable (e.g., "I always do as I am told" and "I never tell a lie"). We utilized a revised 25-item version that has been used previously in populations of children with cancer (Phipps & Srivastava, 1997). The internal reliability (α) of this version was .870 in this study.

The State-Trait Anxiety Inventory for Children

The State-Trait Anxiety Inventory for Children (STAIC; Speilberger, 1973) is a widely used and well-validated measure of anxiety in children. Only the trait scale was administered. It consists of 20 anxiety-related statements that are responded to on a three-point scale (hardly ever, sometimes, often). Internal reliability (α) in this study was .850. Splits on the CSD and STAIC measures are used to create the four adaptive style groups.

The Weinberger Adjustment Inventory

Weinberger Adjustment Inventory (WAI, Weinberger & Schwartz, 1990; Weinberger, 1991) instrument was used to assess adaptive style in parents and the young adult patients in group 4. It was designed to assess adaptive style in adolescents and adults in a single instrument. It contains four subscales labeled subjective distress, restraint, DD, and RD. Several short forms have been validated (Weinberger & Schwartz, 1990; Weinberger, 1991). We utilized a 46-item short form consisting of 12-item short forms of the Subjective Distress and Restraint scales, and the entire 11-item versions of the DD and RD scales. Internal reliabilities on these short forms have ranged from .77 to .82. In this study the reliabilities were .797 for subjective distress; .783 for restraint; .757 for RD; and .699 for DD. The composite score of RD and DD, which was used for adaptive style classification showed an α of .810.

Procedure

Informed consent from parents and adult patients, and assent from minor participants was obtained by institutional guidelines. Participants were recruited during outpatient clinic visits. Clinic schedules were

examined to identify eligible patients in each of the four groups, and, based on the availability of research assistants, the first eligible patient within each group was recruited. All data were obtained in the hospital setting.

Creation of Adaptive Style Groups

For patients in groups 1–3, adaptive style groups were created using cutoffs on the CSD and STAIC as previously described (Phipps & Srivastava, 1997). CSD cutoffs were age-corrected, with a cutoff of 15 for children aged 7–9; 12 for those aged 10–13, and 10 for those aged 14–17. STAIC scores were not age-corrected and were split at the median, with a score of 37 or below indicating low anxiety. For parents and patients in group 4, adaptive style categories were based on the WAI. The "Repressive Defensiveness" and "Denial of Distress" scores were summed to provide the index of defensiveness, and cutoffs were made using splits based on the current distributions. These cutoffs were then used to categorize all participants as REP (high defensiveness/low anxiety), LA (low defensiveness/low anxiety), HA (low defensiveness/high anxiety), and DHA (high defensiveness/high anxiety). This resulted in the following breakdowns: For patients, 31.8% were categorized as REP, 39.5% as LA, 22.3% as HA, and 6.4% as DHA. For parents, the breakdowns were similar, with 28.3% categorized as REP, 38.3% as LA, 25.8% as HA, and 7.5% as DHA.

Results

Examination of Demographic and Medical Variables

There were no significant relationships observed between child age, gender, race, or socioeconomic status and any PTSS measures. There were also no significant differences according to parental respondent, although there were some trends observed. Mothers tended to report slightly higher levels of PTSS for their children on the PTSDI (18.9, ± 12.1) than did fathers (15.4 ± 8.7), though not reaching significance. Mothers also self-reported higher levels of PTSS on the IES-R than did fathers (21.9 ± 17.9 vs. 14.2 ± 17.2), but again this did not reach a level of significance. Significant effects of time from diagnosis group were observed on all PTSS measures, indicating generally higher levels of PTSS for those more recently diagnosed and on active therapy in comparison with long-term survivors. There were also some marginally significant differences observed between diagnostic groups. The impact of these medical variables on PTSS are presented in more detail elsewhere (Phipps et al., in press). For the present report focusing on the effects of adaptive style, we found that whether or not they included demographic and medical variables as covariates in the ANOVA models (or as independent variables in regression models) had little effect on the dependent variables of interest, and had no bearing on the interpretation of the data regarding adaptive style. Thus for ease of presentation, we report here only the effects of adaptive style, without correcting for demographic or medical variables.

Correlation Between Measures of PTSS and Adaptive Style

Prior to looking at adaptive style categorically, the researchers examined the simple correlations between the measures of PTSS and adaptive style (Table II). Moderate positive correlations were observed between the adaptive style measures of anxiety/subjective distress and all PTSS indices. Smaller, inverse correlations were found between the PTSS measures and defensiveness. Generally, correlations with the adaptive style measures were higher with the PTSDI than with the IES-R.

Patient PTSS and Patient Adaptive Style

Next we utilized a categorical approach to adaptive style and examined the effects of child adaptive style on patient-reported PTSS with a series of one-way

Table II. Correlations Between Measures of Adaptive Style and PTSS

	CSD[a]	STAIC[a]	WAI RD/DD[b]	WAI SD[b]
Posttraumatic Stress Disorder Index				
Reexperiencing	–.194*	.443***	–.142	.259**
Arousal	–.288**	.548***	–.161	.240**
Numbing	–.254**	.516***	–.241**	.328**
Total	–.289**	.602***	–.222*	.337***
Impact of Events Scale-Revised				
Intrusion	–.204*	.508***	–.096	.351***
Arousal	–.178*	.462***	–.015	.311**
Avoidance	–.030	.272**	–.047	.339***
Total	–.147	.469***	–.060	.366***

CSD, Children's Social Desirability Scale; PTSS, posttraumatic stress symptomatology; STAIC, State-Trait Anxiety Inventory for Children; WAI RD/DD, Weinberger Adjustment Inventory, sum of Repressive Defensiveness and Denial of Distress scales; WAI SD, Weinberger Adjustment Inventory, Subjective Distress.

[a]Correlations with child-report.

[b]Correlations with parent-report.

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

Table III. Patient PTSS by Self-Report and Parent Report as a Function of Patient Adaptive Style

	High anxious ($n = 35$, 22.3%)	Defensive high anxious ($n = 10$, 6.4%)	Low anxious ($n = 62$, 39.5%)	Repressor ($n = 50$, 31.8%)	*F*	*p*
Patient report						
PTSDI reexperiencing	7.3 (5.7)	5.9 (4.8)	2.6 (3.2)	2.2 (2.2)	16.2	<.0001
Numbing	12.9 (7.6)	8.2 (7.0)	5.1 (4.4)	4.8 (4.2)	19.4	<.0001
Total	31.6 (15.7)	25.2 (14.0)	14.2 (8.8)	12.7 (7.2)	26.9	<.0001
IES-R intrusion	7.3 (7.2)	7.0 (5.7)	2.9 (3.9)	2.3 (2.6)	10.8	<.0001
Arousal	5.9 (5.6)	7.2 (5.4)	2.9 (4.0)	2.2 (2.3)	8.8	<.0001
Avoidance	8.2 (7.7)	8.1 (8.1)	4.7 (6.2)	4.8 (5.1)	3.0	.034
Total	21.3 (17.6)	22.3 (16.9)	10.5 (12.6)	9.2 (7.9)	17.2	<.0001
Parent Report						
PTSDI reexperiencing	6.6 (5.0)	3.3 (2.8)	3.9 (3.8)	2.4 (2.6)	6.5	<.0001
Numbing	11.5 (6.7)	10.1 (6.4)	6.2 (4.8)	4.6 (3.7)	10.5	<.0001
Total	28.8 (14.4)	22.6 (12.4)	17.2 (9.8)	13.0 (6.8)	12.3	<.0001

PTSDI, Posttraumatic Stress Disorder Index.

ANOVA.[1] On the PTSDI total score, there was a significant effect of adaptive style [$F(3, 156) = 26.9$, $p < .0001$]. As predicted, REP obtained the lowest scores, with HA patients reporting the highest levels of PTSS. Posthoc analyses indicated that REP and LA patients did not differ from each other, but differed significantly from both the HA and DHA groups ($p < .001$) who also did not differ from each other. Similar findings were obtained on the PTSDI subscales, with significant group effects, and posthoc tests indicating that repressor and LA patients differed significantly from the HA and DHA groups. Likewise on the IES-R total score, a significant effect of adaptive style was observed [$F(3, 156) = 17.2$, $p < .0001$], and REP and LA patients obtained lower scores, differing significantly from HA and DHA subjects, who did not differ from each other. Similar findings were found on the IES-R subscales. Descriptive data from these analyses are presented in Table III.

In the absence of control data in this study, descriptive comparisons were made with historical controls. Such data were available for the intrusion and avoidance subscales of the IES-R from the study of Kazak, Stuber et al. (Barakat et al., 1997; Kazak et al., 1997; Stuber et al., 1997). The control group in that study was similar to this study sample in age and gender, although the current sample has a somewhat lower proportion of minority participants and a lower proportion of participants from the upper end of socioeconomic strata. In their study, healthy controls obtained mean scores of 4.9 ($SD = 6.6$) on intrusion and 6.9 ($SD = 8.3$) on avoidance (Barakat et al., 1997). In comparison, the overall means for the patient cohort in this study were slightly lower: 3.9 ($SD = 5.0$) and 5.7 ($SD = 6.5$) for intrusion and avoidance, respectively. From Table III it can be seen that LA and repressor patients obtained mean scores approximately 2 points below those of historical control norms, whereas HA and DHA patients obtained mean scores approximately 1.5–2 points higher than normative data.

Patient adaptive style was also predictive of parent-reported child PTSS (Table III). On the parent-reported PTSDI total score, a significant effect of adaptive style was observed [$F(3, 114) = 12.3$, $p < .0001$]. Again, REP obtained the lowest levels of PTSS by parent report and HA children obtained the highest scores. Posthoc analyses indicated that REP differed marginally from the LA subjects ($p = .06$) and significantly from the HA and DHA subjects ($p < .01$). LA subjects also differed significantly from the HA ($p < .01$). Similar patterns were observed on the PTSDI subscales.

Parental Adaptive Style and PTSS

Parental adaptive style was examined as a predictor of the parents' self-reported PTSS, as well as of parent-reported child PTSS. On the parent-reported PTSDI total score (referring to child symptoms), a significant effect of parent adaptive style was observed [$F(3, 116) = 6.4$,

[1]Findings regarding the impact of time since diagnosis and the effects of other medical and demographic variables have been reported elsewhere (Phipps et al., in press). The researchers found that if these factors were included as covariates in their current analyses, they had no impact on the interpretation regarding the main effects of adaptive style. In some cases the *F* gets bigger, in some cases smaller, but in all cases they remained significant. Because the focus of this article is on adaptive style, and because the medical and demographic variables are addressed elsewhere, the researchers felt that presenting these as simple ANOVA was the most parsimonious approach.

Table IV. Parent PTSS and Parent-reported Patient PTSS as a Function of Parent Adaptive Style

	High anxious (*n* = 31, 25.8%)	Defensive high anxious (n = 9, 7.5%)	Low anxious (n = 46, 38.3%)	Repressor	*F*	*p*
Parent PTSS						
IES-R intrusion	10.5 (8.2)	12.1 (8.8)	7.1 (5.7)	6.4 (6.8)	3.2	.027
Arousal	7.2 (6.2)	9.8 (6.8)	4.6 (5.3)	5.3 (6.6)	2.6	.059
Avoidance	9.0 (7.4)	10.3 (8.3)	5.2 (4.3)	5.4 (5.8)	4.1	.008
Total	26.7 (20.0)	32.2 (21.7)	16.9 (13.6)	17.1 (17.6)	3.8	.012
Patient PTSS (parent report)						
PTSDI reexperiencing	5.6 (4.4)	5.1 (4.7)	2.8 (3.5)	3.3 (3.3)	3.9	.010
Arousal	7.9 (3.4)	7.0 (3.2)	6.2 (2.8)	5.6 (2.5)	3.5	.017
Total	25.1 (13.9)	21.6 (12.8)	16.0 (9.9)	14.6 (8.0)	6.4	<.0001

IES-R, Impact of Events Scale–Revised; PTSDI, Posttraumatic Stress Disorder Index and PTSS, posttraumatic stress symptomatology.

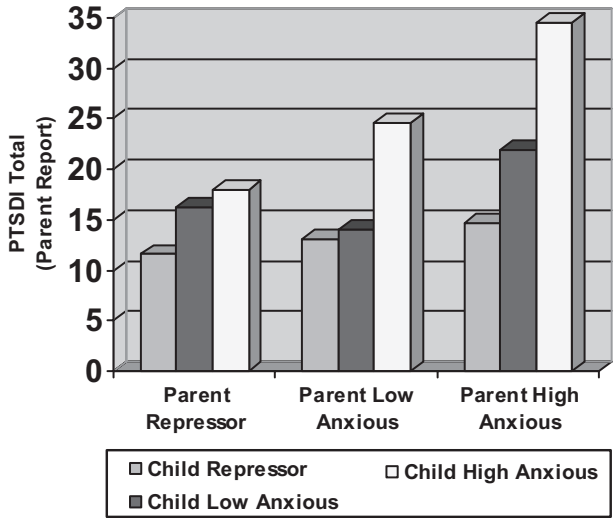

Figure 1. Parent report of child symptoms on the UCLA Posttraumatic Stress Disorder Index as a function of parent and child adaptive style.

$p < .0001$]. Parents identified as REP and LA reported significantly fewer PTS symptoms for their children than did HA parents. Similar results were found on the PTSDI subscales (Table IV). Given that child adaptive style was also a function of parent report on the PTSDI, we looked simultaneously at the effects of child and parent adaptive style on this using factorial ANOVA. Because of the small size of the DHA cells, the researchers combined the HA and DHA into a single group, resulting in a 3×3 factorial design. In this analysis, significant main effects were observed for both child adaptive style [$F(2, 106) = 14.3$, $p < .001$] and parent adaptive style [$F(2, 106) = 7.7$, $p = .001$]. The interaction effect was nonsignificant. These findings are presented graphically in Fig. 1.

Parent self-reported PTSS on the IES-R total score also differed as a function of their adaptive style, although only marginally [$F(3, 115) = 3.8$, $p = .012$]. Posthoc analysis indicated that both REP and LA parents, who did not differ from each other, differed significantly from HA and DHA parents, who also did not differ from each other. Descriptive data are presented in Table IV. Historical control data are available for comparison on the parent-reported IES-R intrusion and avoidance subscales (Barakat et al., 1997). The obtained means for *mothers* of healthy children were 4.4 ($SD = 7.1$) and 4.7 ($SD = 7.2$) respectively on intrusion and avoidance. In comparison, parents in the current cohort identified as LA or repressor obtained scores 2–2.5 points higher than controls on intrusion and approximately 1 point higher on avoidance, whereas HA and DHA parents obtained scores 6–8 points higher than control norms on intrusion and 4.5–5.5 points higher on avoidance.

Adaptive Style and PTSD "Cases"

Although the assessment methods do not allow for a diagnostic approach to PTSD, we attempted to identify likely "cases" of patient PTSD by selecting patients who scored at the 90th percentile or above on either the PTSDI or the IES-R. This approach yielded 23 such cases (14.3%). The likely cases obtained a mean total score of 42.8 ($SD = 10.7$) on the PTSDI and 41.1 ($SD = 9.6$) on the IES-R, compared with 14.0 ($SD = 7.9$) and 8.6 ($SD = 7.7$) respectively for the noncases. Not surprisingly, cases and noncases differed significantly in adaptive style [χ^2 (3, 157) = 29.7, $p < .0001$]. A prevalence of 40% of cases was observed among the HA subjects (14/35), 30% among the DHA (3/10), only 9.7% among the LA (6/62), and 0% among REP (0/50).

Discussion

Despite the many stresses associated with the diagnosis of cancer and its treatment, empiric studies have generally indicated low levels of PTSS in children with cancer, typically no higher than healthy comparison children.

We hypothesized that these low symptom levels might be explained, in part, by differences in adaptive style, given the high levels of repressive adaptive style and low levels of HA functioning that have consistently been observed in this population (Canning et al., 1992; Phipps & Srivastava, 1997; Phipps et al., 2001). As a first step in testing this hypothesis, we examined whether levels of PTSS by patient and parent report differ as a function of adaptive style, predicting that patients identified as LA and REP would report fewer symptoms of PTSS than those identified as HA or DHA. The current findings confirmed the predictions and thus provide support for the primary hypothesis.

Patient adaptive style was significantly related to self-reported PTSS. As predicted, patients identified as REP and LA report significantly less PTSS than do the HA or DHA patients. Although REP reported the lowest level of symptoms, they did not differ significantly from the LA patients. Thus, it appears that anxiety level is the primary factor accounting for the observed effects, and defensiveness plays a lesser role. From this perspective, the established four-group typology of the adaptive style paradigm may be less applicable to the context of PTSS, and a simple two-group approach (high vs. LA) may be sufficient.[2] On the basis of comparison with previously published control data, it appears that levels of self-reported PTSS in the patient group as a whole are very low, with REP and LA patients reporting scores considerably lower than healthy comparisons. The PTSS scores of the HA and DHA patients appear to be higher than normative data, but only marginally so, and these groups comprise less than a third of the population in the current sample.

Essentially the same pattern of results was observed on each of the PTSDI and IES-R subscales. Contrary to the prediction, REP did not show a pattern of higher numbing/avoidance symptoms, but reported lower levels of all symptom clusters. One possible explanation for this is that the absence of distress in REP is such a primary and fundamental aspect of their experience that no secondary psychic protective responses are necessary. That is, if numbing and avoidance behaviors are viewed as a contingent response to the experience of high levels of distress, then there would be no need for those whose distress never becomes unmanageable to adopt such behaviors. Alternatively, this finding may relate to levels of awareness. Endorsement of numbing and avoidance items on a questionnaire implies a conscious awareness of the experience of such behavior, whereas the avoidance of awareness of threat in REP is thought to occur automatically and generally outside of conscious awareness (Derakshan & Eysenck, 1997; Myers, 2000; Weinberger, 1990).

The finding that REP also obtained lower scores on the PTSDI by parent report provides further evidence that repressive adaptation is not merely a reflection of response style to questionnaires, but a substantive personality variable that, in at least some cases, can be observed by others. The general similarity of parent and child report as a function of child adaptive style argues that this is more than a self-report bias. Parent report actually appeared to be more sensitive to the defensiveness component of the child's adaptive style, as REP were marginally less symptomatic than LA children only by parent report.

Parental adaptive style was also predictive of parental self-report of their own PTS symptoms. In contrast to their children, parents do appear to experience elevations in PTSS. Mothers identified as REP or LA obtained IES-R scores somewhat higher than historical control mothers of healthy children (Barakat et al., 1997), but the HA and DHA mothers demonstrate substantial elevations relative to normative data. Finally, parental adaptive style was also associated directly with parental report of their child's symptoms. It is not surprising that parents identified as REP would tend be less aware of their child's distress and thus to report lower levels of symptomatology. However, LA parents also report lower levels of PTSS in their children relative to HA parents. This is consistent with studies indicating that parental distress is a major determinant of the parent's assessment of child functioning and behavior in both healthy and chronically ill populations (Engel, Rodrigue, &

[2]The effects of anxiety and defensiveness could have been addressed separately as two independent main effects in a 2 (high/low anxiety) by 2 (high/low defensiveness) factorial ANOVA. For several reasons we chose not to do this. First, adaptive style has historically been treated as a categorical variable with four groups. In some studies, the defensiveness variable has a stronger effect and the repressor group may stand out as distinct. In other studies, such as this one, the anxiety dimension appears to be primary, and consequently there is little difference between LA and repressor groups. Secondly, anxiety and defensiveness are not orthogonal variables. In this study there is a significant inverse correlation ($r = -.32$) between the two variables, and a relationship of that magnitude has been found fairly consistently across studies. Finally, the treatment of adaptive style as a categorical variable with four levels reflects our a priori thinking and how we approached the design and analysis of the data. In the current data set, although the simple correlations between anxiety and PTSS measures are larger than those between PTSS and defensiveness, the defensiveness correlations are still significant. Also, on some variables, for example parent-reported child PTSS, REP were marginally different from LA ($p = .06$).

Geffken, 1994; Sanger, MacLean, & Van Slyke, 1992). However, parental adaptive style accounts for only part of the variance in parent-reported PTSS, and child adaptive style accounts for significant amount of variance in this symptom as well. Within each parent adaptive style group, children identified as HA obtained the highest PTSS scores, and children identified as REP the lowest. No interaction effect was observed, so that the effects of parent and child adaptive style are essentially additive.

The current findings raise questions about the relevance of posttraumatic stress as a model for understanding the responses of children with cancer. The available empiric data have demonstrated very low levels of PTSS in this population, and the current findings are consistent with this view. Levels of PTSS also appear to be largely dependent on personality characteristics such as trait anxiety or adaptive style, which provides a potential explanation for the relative absence of PTSS in pediatric oncology patients. Low levels of distress have been observed more generally in children with cancer across all phases of treatment. For example, very low levels of depressive symptomatology have been reported by children with cancer, both during the acute period of diagnosis and treatment, as well as during long-term follow-up (Canning et al., 1992; Elkin, Phipps, Mulhern, & Fairclough, 1997; Frank, Blount, & Brown, 1997; Phipps & Srivastava, 1997; Worchel et al., 1988). This finding has also been explained, in large part, by cancer-control differences in adaptive style. The lack of evidence of distress was thought to imply that traditional measures of psychopathology failed to capture the unique stresses of children with cancer and that measures of posttraumatic stress would offer an alternative to more precisely capture their distress (Kazak, 1998). Yet measures of PTSS have yielded findings very similar to those obtained with measures of childhood depression. From the framework of the adaptive style paradigm, this is not surprising. In order for symptoms of a posttraumatic nature to develop, there should be some evidence of acute traumatic stress initially, but such responses are infrequent in children with cancer and appear to occur only amongst the small percentage of patients with a HA adaptive style. Moreover, as previously reported (Phipps et al., in press), relatively higher levels of PTSS in patients, who are recently diagnosed, in comparison with long-term survivors, suggest that the symptoms reported reflect primarily a concurrent response to ongoing acute stressors rather than a posttraumatic response.

While posttraumatic stress does not appear to be a particularly informative model for children with cancer, it is more relevant for their parents. Although parental adaptive style is significantly associated with PTSS levels, even REP and LA parents appear to experience greater symptomatology than control comparisons. Why parents appear to be at much higher risk for developing PTSS than their children remains a very intriguing question for future research.

This study has several limitations. First is the absence of a healthy or nontraumatized control group. Our use of historical control data provides an approximate yardstick for comparison, but must be interpreted cautiously, particularly because there was not a strong demographic match between samples. Moreover, a design that included assessment of adaptive style and PTSS in a healthy comparison group would provide a more direct test of whether the observed low levels of PTSS in children with cancer are attributable to cancer-control differences in adaptive style. However, the significant association of patient adaptive style with PTSS reported here, coupled with prior research indicating higher levels of repressive adaptation in children with cancer relative to controls (Canning et al., 1992; Phipps & Srivastava, 1997; Phipps et al., 2001), provides strong support for this hypothesis, which can be more directly tested in a future study.

This study design also included only survey measures of symptom levels and did not include any diagnostic assessment of PTSD. Our decision to use survey data only was based, in part, on the anticipation of very low levels of diagnosable PTSD in the patient population, making a diagnostic assessment difficult to justify given the logistical demands and labor intensity of structured interview approaches. This design limitation appears more salient to the parental data, where a higher incidence of PTSD would be expected. In the absence of diagnostic interview data, we believe that their approach to the identification of potential "cases" of PTSD in the patient population is a reasonable approximation. The influence of adaptive style on PTSS is perhaps most striking using a case approach, where a 40% prevalence of cases was found in the HA group compared to a complete absence of cases among children identified as REP.

Another design limitation is the decision to obtain data from only one parent. Prior investigators have made efforts to obtain data from both parents (Barakat et al., 1997; Kazak et al., 1997) or limited their sample to mothers (Manne et al., 1998; Manne et al., 2000). The current approach results in a "mixed" sample of parents that includes biological mothers, fathers, and a few others, including custodial stepparents and grandparents. In our setting setting, it is relatively rare that both parents are available during clinic visits. A commitment to obtain data from both parents would thus necessitate data collection through mail or telephone, which we

chose to avoid. When the researchers chose this approach, they expected that the sample would include a majority of mothers, but were hopeful that it would include perhaps 20–25% fathers. Unfortunately, there were too few "nonmothers" to allow for meaningful separate analysis of these caregivers. We considered limiting the analyses to the subsample of mothers, but felt that this would be inappropriate, because our intent was to obtain an unbiased sample of primary caregivers regardless of gender and because the fathers and "others" had participated in good faith. Moreover, analyses of results from the entire sample and from the sample limited to mothers were comparable, and whether others were included ultimately had no bearing on the interpretations regarding the main effects of adaptive style. Thus, we chose to report here results from the entire sample. The inclusion of fathers (or both parents) in research remains a challenge for investigators in pediatric psychology settings. Our approach of including the available parent is far from ideal, but may have some ecological justification. This issue is likely to engender continued debate among researchers in pediatric settings.

In summary, the researchers have found that adaptive style is significantly associated with PTSS in children with cancer and their parents. The influence of adaptive style on PTSS in the pediatric oncology setting was seen in all measurement contexts. That is, child adaptive style predicts child self-reported PTSS as well as parent report of child PTSS. Likewise, parental adaptive style predicts parental self-reported PTSS as well as parental report of child PTSS. Consistent with prior research, levels of PTSS in children with cancer appear very low, and, in combination with their association with adaptive style, raise questions about the relevance of a posttraumatic stress model applied to this patient population. A PTS model may be more appropriately applied to parents of children with cancer, who have consistently shown elevations of PTSS.

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