Life stress vs. traumatic stress: The impact of life events on psychological functioning in children with and without serious illness

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Abstract

Objective—To determine the differential impact of potentially traumatic events (PTEs) and other stressful life events on psychological functioning in two groups of children: those with cancer, and those without history of serious illness.

Methods—Children with cancer aged 8–17 (*n*=254) and age-, sex-, and race/ethnicity-matched controls (*n*=142) completed self-report measures of stressful life events, and psychological functioning. Stressful life events included those that may meet DSM-IV A1 criteria (PTEs; 9 events) and others that would likely not (other events; 21 events).

Results—Children with cancer endorsed significantly more PTEs than control children. There were no differences between groups in number of other events experienced. Hierarchical regression analyses revealed that number of other events accounted for significant variance in psychological functioning, above and beyond group status, demographic factors (age and SES) and number of PTEs.

Discussion—The number of cumulative other events experienced is a significant predictor of psychological functioning in both youth with serious illness and controls. In contrast, cumulative PTEs appear to have a minor (albeit significant) impact on children's psychological functioning. Assessment of psychological functioning would benefit from a thorough history of stressful life events, regardless of their potential traumatic impact.

Keywords

life events; psychological functioning; potentially traumatic events; childhood cancer

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Stress is frequently highlighted as a cause of or contributor to mental and physical health problems across the life span. The stress reaction can come in many forms, but is often precipitated by a life event – albeit one that can be positive or negative, traumatic or non-traumatic. Past research has suggested that negative life events are particularly indicative of the development or intensification of mental health concerns (Cameron, Palm, & Follette, 2010; Furniss, Beyer, & Müller, 2009), with some debate regarding the necessary severity of those events (Lancaster, Melka, & Rodriguez, 2009; Robinson & Larson, 2010). For

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example, the diagnosis of post-traumatic stress disorder (PTSD) requires a traumatic precipitating negative life event, and in particular, one that "involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others" (DSM-IV A1 criteria; American Psychiatric Association, 2000, p. 467). In DSM-5, the diagnosis of PTSD is slightly more stringent and requires "exposure to actual or threatened death, serious injury or sexual violence" (DSM-5 A criteria; American Psychiatric Association, 2013, p. 271). However, recent research has suggested that negative life events that would not meet DSM-IV/ DSM-5 criteria may be just as, if not more, indicative of mental health concerns than those that do (Copeland, Keeler, Angold, & Costello, 2010; Furniss et al., 2009; Gold, Marx, Soler-Baillo, & Sloan, 2005; Van Hoof, McFarlane, Baur, Abraham, & Barnes, 2009; Verlinden et al., 2013).

Children with cancer have experienced a DSM-IV PTSD-qualifying negative life event, and as such, are assumed to meet A1 criteria. (Diagnosis of a medical illness such as cancer may no longer qualify under DSM-5). They have been diagnosed with an illness that is potentially life-threatening and, as part of their treatment, will likely undergo numerous procedures that pose a threat to their physical integrity (e.g., surgery, chemotherapy, radiation therapy). As such, a significant body of research has suggested that they are at risk for the development of PTSD and related symptoms (see Bruce, 2006 for a review). However, numerous studies have revealed that children diagnosed with cancer demonstrate no more symptoms of PTSD than controls (Barakat et al., 1997; Phipps, Jurbergs, & Long, 2009; Phipps et al., 2014). Indeed, these studies suggest that children with cancer demonstrate increased resilience in the face of this potential trauma, and may even exhibit fewer mental health symptoms than their non-affected peers (Howard Sharp, Rowe, Russell, Long, & Phipps, in press; Maurice-Stam et al., 2009; Phipps et al., 2014; Wechsler & Sánchez-Iglesias, 2013).

Past research has suggested that the interplay between the diagnosis of cancer and the accumulation of stressful life events may predispose children with cancer to experience symptoms of post-traumatic stress (Currier, Jobe-Shields, & Phipps, 2009). Specifically, in a study of 121 pediatric patients with cancer, the number of stressful life events experienced was a unique and significant predictor of symptoms of post-traumatic stress related to the cancer diagnosis. Notably, however, the authors did not attempt to determine the impact of events of varying severities on psychological functioning. Rather, they combined their assessment of events that were both potentially traumatic (e.g., the death of a parent), as well as those that were not (e.g., birth of a sibling). Additionally, Currier and colleagues' (2009) sample was limited to children with cancer and they did not have a comparison group. As such, it is difficult to determine whether their findings are reflective of all children, or just those affected by a serious illness, and thus those who have experienced a potentially traumatic event.

The objective of the current paper was to determine the unique and differential impact of potentially traumatic events that could meet DSM-IV A1 criteria and other events (non-traumatic, non A-1) on the psychological functioning (PTSD/PTSS, anxiety and depression) of children with cancer as compared to community controls. As such, we aimed to both replicate and extend the work of Currier and colleagues (2009). Based on the extant

literature, it was hypothesized that non-traumatic significant life events would have a similar impact on psychological functioning as potentially traumatic events. Secondly, it was hypothesized that there would be a greater impact of events, both PTEs and other events, on the psychological functioning of children with cancer in comparison to their healthy peers.

Methods

Participants

Cancer—Children with cancer (*n*=254) were recruited from the outpatient clinics of a large children's cancer center in the mid-South to participate in the current study. Eligibility criteria included: 8–17 years old, able to read and speak English, 1 month from diagnosis of a malignancy, and no significant cognitive deficits that would prevent completion of measures. Of 378 patients approached, 258 (68%) agreed to participate and 254 provided usable data. Those who declined cited lack of interest or lack of time. There were no differences between those who participated and those who declined with regards to age, gender, race/ethnicity, and diagnosis.

Community Controls—Children without a history of a chronic or life threatening illness were recruited from local schools via a two-step process. First, permission slips were provided to children to create a database of possible participants. Then, children from this database were contacted on the basis of demographic match on age, sex, and race/ethnicity. Similar to cancer patients, community controls were required to be between the age of 8–17, able to read and write English, and to have no significant cognitive deficits that would prevent completion of measures. Of 169 potential participants contacted, 142 (84%) agreed to participate and completed study measures.

Demographic information for all participants and diagnostic and treatment information for the cancer group is available in Table 1. There were no differences between the two groups on age, race/ethnicity or gender. However, there was a significant difference in SES (χ^2=12.54, *p*<.01), such that there were more participants in the cancer group in the low SES category.

Procedure

Participants and an adult caregiver provided informed consent/assent using IRB-approved methods. Participants from the cancer group completed measures during a routine hospital visit. Control group participants also completed questionnaires during an individual appointment at the hospital; evening and weekend hours were available as necessary. All participants were generally able to complete questionnaires independently; however, trained research assistants were available to answer questions and to read aloud the forms if necessary. Youth were separated from their parent during questionnaire completion to prevent discussion. All participants and their caregivers were provided with a small monetary incentive for their time and participation.

Measures

Life Events Scale for Children (LESC)—The LESC is a 30-item measure that assesses the experience of different stressful life events. The scale is a modified version of the Coddington Life Events Questionnaire (Coddington, 1972) which includes both positive and negative life events. It was first amended by Johnston and colleagues (2003) to focus exclusively on 22 negative life events. An additional 8 items were added in this iteration. Children are asked to report on whether they had ever experienced the event, with the primary variable of interest being the total number of life events experienced. The 30 events include both normative significant stressful life events (e.g., argument with a parent, death of a pet, parental divorce), as well as those that would potentially meet DSM criteria (e.g., witnessed an act of violence, involved in a car accident). As such, additional variables of interest for the current study included the number of potentially A1 events, referred to as "PTEs" (9 possible) and number of non-A1 events, referred to as "other events" (21 possible). While the possibility of weighting individual events by severity of the event was considered, we elected to count events. Notably, in the Currier and colleagues (2009) study, analyses were completed with both events that were weighted by severity and with those that were simply summed. Results were very similar, suggesting that weighting events for severity did not add significant additional information. Moreover, the simple summing of events is a technique also used by the Adverse Childhood Experiences (ACE) study (Felitti et al., 1998) and other large cohort studies (e.g., Dube, Felitti, Dong, Giles, & Anda, 2003).

UCLA PTSD Reaction Index for DSM-IV (UCLA PTSDI; Pynoos, Rodriguez, Steinberg, Stuber, & Frederick, 1998; Steinberg, Brymer, Decker, & Pynoos, 2004)—The UCLA PTSDI is a 22-item self-report measure of how frequently in the past month children experienced the re-experiencing, avoidance, and arousal symptoms that characterize PTSD. Children are asked to identify their most stressful or traumatic event and then are directed to respond to all questions based on this event on a 4-point Likert scale. Children with cancer were not prompted to choose cancer as their most stressful event, but were allowed to independently identify an event of their choosing (as were controls; see Table 2 for events chosen by participants). The primary variable of interest was the total score; scores above 38 are considered clinically significant (Steinberg et al., 2004).

Children's Depression Inventory (CDI; Kovacs, 1992)—The CDI is a frequently used measure of children's depressive symptoms. Respondents choose one of three items that best applies across 27-items, with scores above 16 indicating clinically-significant symptomatology (Timbremont, Braet, & Dreessen, 2004). The total score was used for the current study.

Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997)—The SCARED is a 41-item measure of anxiety, with items rated using a 3-point Likert scale. Subscales assess five specific anxiety disorders (e.g., Generalized Anxiety Disorder, School Avoidance) and the measure demonstrates sound psychometric properties (Birmaher et al., 1999). A total score was used, with scores above 25 considered clinically significant (Birmaher et al., 1999).

Analytical Plan

To assess group differences in life events, chi-square analyses were used to determine statistical differences in the proportion of youth from each group who endorsed each event. Independent sample *t*-tests were conducted to determine group differences in cumulative life events, including PTEs, other events, and total events. To assess possible influences of demographic factors on life events, a multiple regression analysis was conducted to determine the impact of group status (cancer vs. control) and theoretically relevant demographic factors (age, gender, SES, race).

The differential impact of PTEs and other events on psychological functioning was assessed via a two-step approach. First, Pearson correlations were computed to determine the association between frequency of life events (PTEs, other events, total events) and psychological functioning. Analyses were completed both with the sample as a whole and separately for each group (cancer and control). Fisher's *z* comparisons were conducted to determine the difference in magnitude for correlations with PTEs and other events. Second, a series of hierarchical regression analyses were conducted to determine the impact of PTEs versus other events on psychological functioning. Order of entry was consistent for each outcome measure: 1) group status (cancer vs. control); 2) significant demographic factors from the above multiple regression; 3) number of PTEs; and 4) number of other events. Exploratory analyses assessed the potential moderation of group status on the impact of events on psychological functioning.

Results

Preliminary Analyses

Preliminary analyses were completed to characterize the psychological functioning of our sample with descriptive analyses for the UCLA PTSDI, SCARED, and CDI in Table 3. Mean scores are well below the clinical cutoff and within the normative range for both groups. There was a range of levels of distress, with 6 to 33% of the sample (depending on the measure) scoring above clinical cutoffs. There were no group differences across measures, both with regards to means as well as the proportion of the sample that was above the clinical cutoff.

Frequency of Events

The frequency of life events is listed in Table 4. Out of 30 possible events, children with cancer indicated an average of 8.12 events (SD = 3.84, range 2–22), whereas control children reported an average of 7.25 events (SD = 3.42, range 0–18). Importantly, one of the events listed is "serious illness." Since all children with cancer could endorse this event (79.5% did), and no comparison children should have endorsed this event (9.9% did), we elected to temporarily remove this item from the scale. With that item removed, the average number of events endorsed by children with cancer (7.33 ± 3.76) and control children (7.15 ± 3.36) was comparable.

Given our interest in the influence of potentially traumatic events (PTEs), the 30 life events were subdivided into events that could meet A1 criteria (PTEs; 9 events) and those that

would likely not (other events; 21 events). Children with cancer endorsed significantly more PTEs than control children (3.16 ± 1.51 vs. 2.17 ± 1.17, $t = 6.815$, $p < .001$). This difference remained when "serious illness" was removed ($t = 2.22$, $p < .03$). Items more commonly endorsed by children with cancer included: death of a parent, witnessing an act of violence, involvement in a natural disaster, and emergency room visits. No PTEs were more commonly endorsed by control children. See Table 4 for all items.

In contrast, there were no significant differences in the number of other events reported by children with cancer and control children, though there was some variability in the individual events endorsed by each group (Table 4). Specifically, children with cancer were more likely to endorse: parental separation, parent jailed, drug/alcohol problems in the family, and death of a pet. In contrast, control children were more likely to endorse: change in a parent's job, parents' increased worry about money, and bullying at school.

Given the significant difference in SES between the two participant groups, questions were raised regarding the potential impact of demographic variables on cumulative life events. As such, a multiple regression was computed with demographic variables – group status (cancer vs. control), age, gender, SES, and race – as predictors of cumulative life events. Results revealed that the overall model was significant [$F(5, 390) = 8.94$, $p < .001$, $R^2 = .091$]; however only two individual predictors reached significance. Specifically, there was a significant impact of age at evaluation (*Std* $\beta = .22$, SE $= .06$, $t = 4.50$, $p < .001$) and SES (*Std* $\beta = -.20$, SE $= .02$, $t = -4.08$, $p < .001$) such that older age and lower SES were associated with a greater number of events. When regressions were run with PTEs and other events separately, age remained a significant predictor in both models. In contrast, SES was only a significant predictor of cumulative other events, not PTEs.

Impact of Life Events

To explore the relationship between life events and ratings of psychological functioning (PTSS, depression, anxiety), Pearson correlations were computed. As seen in Table 5, correlations were generally significant (*r*'s $= .32$–$.36$) between the three psychological functioning measures and cumulative life events. However, when correlations were analyzed separately for PTEs and other events, there was only a minimal association between cumulative incidence of PTEs and psychological functioning (*r*'s $= .11$–$.16$). In contrast, the magnitude of the correlations between other events and psychological functioning was significantly stronger (*r*'s $= .35$–$.37$; Fisher's $z = -3.19$–-3.70; Table 5). The same pattern emerged when partial correlations were computed to control for group differences in SES (data not shown).

A similar picture emerged when correlations were computed separately for the participant groups (cancer and control). Specifically, there was a minimal and largely non-significant association between PTEs and measures of psychological functioning in children with cancer (*r*'s ranged from $.05$ to $.17$). In contrast, correlations were larger and moderate when psychological functioning was associated with other events (*r*'s $= .29$–$.33$; Table 5). Fisher's z analyses confirmed that correlations with other events were significantly stronger (z's $= -1.82$–-2.83). The same pattern emerged when correlations were computed with only the control group (Table 5).

To determine whether the associations between number of events and psychological functioning varied by group status, Fisher's z analyses were computed. Results revealed no significant differences between correlations computed separately with the cancer and control group (z's = 0.1–1.22).

Predictors of Psychological Functioning

Hierarchical regression analyses were conducted to determine the unique impact of PTEs vs. other events on psychological functioning. Order of entry into the model was consistent across the three models, with variables entered at separate steps: 1) group status (cancer vs. control); 2) SES and age at evaluation; 3) number of PTEs; and 4) number of other events. The results of each regression are presented in Table 6.

Results of the regression models were generally consistent across the three measures. First, there was no significant impact of group status (cancer vs. control) on psychological functioning. Second, demographic factors – SES and age – did generally significantly impact psychological functioning, accounting for approximately 4% of the variance (UCLA PTSDI and SCARED; no impact for the CDI). Third, the impact of cumulative PTEs was small, but significant, with R^2 values ranging from .02 (CDI) to .03 (UCLA PTSDI). Finally, the impact of cumulative other events was much larger, with $R^2 > .10$.

Finally, given our interest in the differential impact of life events on psychological functioning based on group status (cancer vs. control), we ran exploratory analyses to test for moderation. Regression models had similar outcomes regardless of the group analyzed, thus demonstrating that group status does not moderate the relationship between life events and psychological functioning.

Discussion

The objective of the current paper was to examine the differential impact of potentially traumatic events and other significant life events on psychological functioning in children with cancer and community controls. Both groups demonstrated psychological functioning within normative limits; however, a proportion evidenced mean scores suggestive of clinical levels of distress. Results revealed that children with cancer endorsed more cumulative life events than controls (approximately one event). However this difference disappeared when the "serious illness" item was removed from the scale. Moreover, when life events were distinguished between PTEs and other stressful life events, children with cancer endorsed experiencing significantly more PTEs than controls. There were no group differences in other events. The overall number of cumulative life events was significantly associated with psychological functioning; however, in contrast to expectations, the magnitude of this association was dependent on the type of event evaluated. Specifically, the association between psychological functioning and other events was significantly stronger than that with PTEs. Hierarchical regression analyses confirmed this pattern, with other events accounting for approximately ten percent of the variance in psychological functioning, over and above the influence of group status, demographic factors, and cumulative PTEs. This would suggest that while cumulative incidence of negative life events is associated with psychological distress, this relationship is driven by incidence of events that would not meet

DSM-IV A1 criteria (e.g., family or school problems), rather than more potentially traumatic events. Moreover, this relationship is similar for both children with cancer and community controls, as exploratory analyses revealed that group status does not moderate this relationship. Our results both replicate and extend the prior work of Currier and colleagues (2009) who demonstrated that more cumulative life events was associated with greater PTSS in children with cancer.

The current findings are consistent with past research that has indicated that significant life events do not have to meet DSM-IV A1 criteria in order to be associated with psychological distress (Gold et al., 2005; Van Hoof et al., 2009; Verlinden et al., 2013). Indeed, our results suggest that, even for those youth who have experienced an A1 event (e.g., our cancer patients) the impact of other events on psychological functioning is stronger than that of PTEs. Such findings are supported by recent research that suggests that a child's perception of an event (e.g., DSM-IV A2 criteria) is more important for the development of PTSS/ PTSD than the severity or traumatic nature of the event (e.g., DSM-IV A1 criteria) (Verlinden et al., 2013). This is perhaps ironic, given the elimination of A2 criteria from the DSM-5 (American Psychiatric Association, 2013), ostensibly due to a lack of predictive validity. Although A2 criteria was not explicitly measured in our study, that 'other events' were more indicative of psychological functioning than PTEs could be explained by children's perceptions of those events (e.g., A2 criteria). For example, a child could have very different perceptions of the severity of an 'other event' as compared to a PTE (e.g., the death of a pet may have a significantly greater impact on their psychological distress than the death of a grandparent they have never met). However, without knowing more about these events, we cannot explicitly evaluate this hypothesis.

Our life events measure generally captured significant events that have the potential to have a lasting impact on a child's world and thus psychological functioning as well (e.g., parental divorce, moving to a new city). These events, while not likely to meet DSM-IV or 5 criteria, certainly have the potential to precipitate psychological distress, and this was demonstrated in the current study. In contrast, a smaller proportion of the events captured were those that may have less of a lasting impact, but may also occur with more frequency and have the potential to repeat (e.g., failing a test, death of a pet, break-up of a romantic relationship). While still significant, these latter events may be better assessed as part of a measure of daily stress or frequent stress, rather than stressful life events per se. This does not suggest that these events are not equally important, but rather begs the question of the impact of daily/more frequent stressors on psychological functioning (Chamberlain & Zika, 1990).

In addition to the intensity of events, there remains the question of alternate ways to classify events that may be more predictive of or relevant to psychological functioning. One such category would be events that involve an interpersonal relationship and those that do not. Specifically, past research (Lancaster et al., 2009) has suggested that individuals who experience traumatic events that are interpersonal in nature evidence higher levels of PTSS than those who experience non-interpersonal traumatic events. Similarly, a study of preschool-age children suggested that interpersonal events, and particularly those that involved a change to the structure of the family (e.g., parental job change, divorce, moving), were indicative of mental health outcomes (Furniss et al., 2009). Although beyond the scope

of this study, examination of the LESC suggested that a large percentage of the events directly involve or affect a friend or family member. Given the importance of the family in child development, and in particular for children undergoing treatment for a serious illness like cancer, these effects warrant further attention.

Limitations to consider include lack of method variance, as all measures were self-report in nature. However, we felt it was most appropriate in our design that both life events and psychological functioning be based on youth's perceptions of these factors. Relatedly, our measures of psychological distress focused exclusively on internalizing concerns and not externalizing behaviors. While children are often reliable reporters of their internal thoughts and feelings, they may be less dependable with regards to ratings of their behavior. Future studies may wish to examine concordance of self- and parent-report of stressful life events and/or psychological functioning, and would benefit from the inclusion of measures of externalizing behaviors as well. Past studies using the LESC have demonstrated significant differences between parent and child report of negative life events, though adequate agreement regarding specific events was also found (Currier et al., 2009; Johnston et al., 2003). Relatedly, no additional information was gathered regarding the experiences of our sample's nine PTEs. As such, it is quite possible that many endorsed PTEs would not meet DSM-IV (or 5) A criteria. However, given that our findings confirmed some prior research that non-PTEs are more impactful with regard to psychological functioning (Copeland et al., 2010; Gold et al., 2005; Verlinden et al., 2013), this reduced our concern regarding this limitation. Similarly, we did not collect information about how often each event occurred. It is certainly possible that many of the other events occurred more than once, and this may be true of some PTEs as well. Finally, our sample was not highly distressed, with mean scores falling within normative limits. However, we were still able to account for significant variance in psychological functioning.

Ultimately, our findings highlight the impact of stressful life events on psychological functioning in children, regardless of illness history. More specifically, psychological functioning appears to be most affected by likely non-traumatic events that, while still significant, would not necessarily qualify an individual for a diagnosis of PTSD. Given this, it would be prudent for clinicians to assess a wide range of negative life events as a potential cause of or contributor to difficulties with psychological functioning. Moreover, assessment of interpersonal life events may be particularly important, though this will require confirmation through additional research.

Acknowledgments

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Table 1

Demographic and cancer-specific characteristics

	Cancer (*n* = 254)		Control (*n* = 142)	
	M ± SD	*N (%)*	*M ± SD*	*N (%)*
Age (years)	13.09 ± 2.89		12.68 ± 2.89	
Gender				
Male		132 (52.0)		74 (52.1)
Female		122 (48.0)		68 (47.9)
Race/Ethnicity				
Caucasian		184 (72.4)		109 (76.8)
African-American		58 (22.8)		29 (20.4)
Other		12 (4.8)		4 (2.8)
Socioeconomic Status[a]				
Groups I & II		70 (27.5)		58 (40.8)
Group III		81 (31.9)		50 (35.2)
Groups IV & V		103 (40.6)		34 (24.0)
Cancer-Specific Characteristics				
Age at diagnosis (years)	9.29 ± 4.74			
Months since diagnosis	45.06 ± 51.57			
Diagnostic Category				
ALL		61 (24.0)		
AML or APL		18 (7.1)		
Lymphoma		34 (13.4)		
Solid Tumor		99 (39.0)		
Brain Tumor		42 (16.5)		
Treatment Intensity				
Least intensive		14 (5.5)		
Moderately intensive		83 (32.7)		
Very intensive		83 (32.7)		
Most intensive		58 (22.8)		
Treatment Status				
On Therapy		147 (57.9)		
Off Therapy		107 (42.1)		

Abbreviations: ALL = acute lymphoblastic leukemia; AML = acute myeloid leukemia; APL = acute promyelocytic leukemia

[a]Socioeconomic status was determined by the Barratt Simplified Measure of Social Status (Barratt, 2006).

Table 2

List of traumatic stressors spontaneously identified and described by participants on the UCLA PTSDI. Events are delineated by group.

Cancer Group (n = 254)	Control Group (n = 142)
Different Events	
Cancer*	Fight with a parent
Bike wreck	Getting lost
Death of a parent	Strep Throat
Witnessed a shooting	Shots
Fear of the future	Finding out needed to have surgery
Parental deployment	Hearing about an accident
Watching a scary movie	Items stolen / Break-in
	Haunted House
	Accused of wrongdoing when innocent
	Punishment (being spanked, threat of punishment)
	Moving / new school
	Mission trip
	Report made to Children and Family Services
	Siblings quirks
	Potential parent divorce
	Foreclosure
	Divorce of family members (aunt/uncle, grandparents)
	Feeling that couldn't breathe (from coughing or falling)
Similar Events	
Death of a family member (cousin, aunt, grandparent, great-grandparent)	
Death of a friend/family friend	
Injury or illness in a family member	
Natural disaster / severe weather (severe thunderstorm, hurricane)	
Car wreck	
Injuries/illness that required hospital visit (stitches, broken bones, asthma attack)	
Death of a pet	
School issues (testing, homework, bad grades, not being prepared, unfriendly school)	
Separation of family (sibling moved out, lived with grandparents for short time)	
Specific phobias (clowns, snakes, dogs, monsters)	
Parental divorce	
Difficulties with a relationship (break-up, fight with a friend)	

*Cancer (or a related topic) was spontaneously identified by 133 (52.4%) participants in the cancer group

Table 3

Descriptive statistics of psychological functioning.

	Cancer (*n* = 254)	Control (*n* = 142)
UCLA PTSD Reaction Index for DSM-IV		
Mean	18.29	18.73
Standard Deviation	13.83	14.67
Range	0 – 64	0 – 76
Number (Percent) above clinical cutoff[a]	28 (11%)	16 (11.3%)
Screen for Child Anxiety Related Emotional Disorders		
Mean	18.67	20.99
Standard Deviation	11.89	12.04
Range	0 – 82	1 – 57
Number (Percent) above clinical cutoff[b]	72 (28.3%)	48 (33.8%)
Children's Depression Inventory		
Mean	6.45	6.73
Standard Deviation	5.40	5.48
Range	0 – 28	0 – 25
Number (Percent) above clinical cutoff[c]	16 (6.3%)	10 (7.0%)

Note. There were no significant differences in psychological functioning between groups.

[a] Clinical cutoff = 38

[b] Clinical cutoff = 25

[c] Clinical cutoff = 16

Table 4

Frequency of identified life events, delineated by cancer vs. control

	Cancer (*n* = 254)	Control (*n* = 142)	
	N (%)	*N (%)*	X^2
Potentially Traumatic Events			
A parent died	11 (4.3)	0 (0.0)	6.32[*]
A grandparent died	149 (58.7)	93 (65.5)	1.79
A relative/close friend died	158 (62.2)	83 (58.5)	0.54
Abused (and reported)	10 (3.9)	6 (4.2)	0.02
Witnessed shooting/act of violence	21 (8.3)	5 (3.5)	3.34
Involved in natural disaster	97 (38.2)	38 (26.8)	5.29[*]
Car crash or serious accident	67 (26.4)	31 (21.8)	1.01
Injured and had to go to ER	89 (35.0)	38 (26.8)	2.86
Serious illness	202 (79.5)	14 (9.9)	178.30[**]
Total Events [M ± SD (Range)][a]	3.16 ± 1.51 (0 – 7)	2.17 ± 1.17 (0 – 5)	6.82[**]
Total Events (no illness) [M ± SD (Range)][a]	2.37 ± 1.38 (0 – 6)	2.07 ± 3.36 (0 – 5)	2.22[*]
Other Events			
A brother or sister was born	155 (61.0)	92 (64.8)	0.55
Your parents separated	89 (35.0)	38 (26.8)	2.86
Your parents divorced	66 (26.0)	36 (25.4)	0.02
Your parent remarried	52 (20.5)	23 (16.2)	1.08
A parent became sick, hospitalized	56 (22.0)	33 (23.2)	0.07
A sibling became sick, hospitalized	38 (15.0)	18 (12.7)	0.39
Learned you were adopted	6 (2.4)	1 (0.7)	1.44
Parent lost a job and was unemployed	79 (31.1)	40 (28.2)	0.37
Parent's job changed, less time at home	44 (17.3)	38 (26.8)	4.94[*]
Parents began fighting	32 (12.6)	25 (17.6)	1.85
Parent went to jail	41 (16.1)	8 (5.6)	9.28[**]
Moved to a new city	66 (26.0)	49 (34.5)	3.21
Parents worrying more about money	90 (35.4)	67 (47.2)	5.25[*]
Drug/alcohol problems in family	50 (19.7)	15 (10.6)	5.52[*]
Bullied at school or threatened	43 (16.9)	38 (26.8)	5.41[*]
Pet died	173 (68.1)	82 (57.7)	4.27[*]
Failed an important exam	45 (17.7)	35 (24.6)	2.71
Suspended or expelled	22 (8.7)	13 (9.2)	0.03
Attend court for wrongdoing	6 (2.4)	3 (2.1)	0.03
Boy/girlfriend broke up with you	70 (27.6)	38 (26.8)	0.03
Serious argument with parents	36 (14.2)	29 (20.4)	2.59
Total Events [M ± SD (Range)][a]	4.96 ± 2.99 (0 – 16)	5.08 ± 2.84 (0 – 15)	0.39

	Cancer ($n = 254$)	Control ($n = 142$)	
	N (%)	N (%)	X^2
All Events Combined			
Total Events [M ± SD (Range)][a]	8.12 ± 3.84 (2 – 22)	7.25 ± 3.42 (0 – 18)	2.26*
Total Events (no illness) [M ± SD (Range)][a]	7.33 ± 3.76 (1 – 21)	7.15 ± 3.36 (0 – 18)	0.47

[a]Independent sample t-test

*
$p < .05$

**
$p < .01$

Table 5

Pearson correlations between cumulative life events (Total Events, PTEs, and Other Events) and measures of psychological functioning.

	Total Events	PTEs	Other Events	
	r	*r*	*r*	*Fisher's z[a]*
All Patients (n = 396)				
UCLA PTSDI	.36[***]	.16[**]	.37[***]	−3.19[***]
CDI	.33[***]	.12[*]	.36[***]	−3.70[***]
SCARED	.32[***]	.11[*]	.35[***]	−3.57[***]
Cancer Only (n = 254)				
UCLA PTSDI	.33[***]	.17[*]	.33[***]	−1.82[*]
CDI	.26[**]	.05	.29[***]	−2.83[**]
SCARED	.31[***]	.13	.32[***]	−2.27[*]
Control Only (n = 142)				
UCLA PTSDI	.39[***]	.18[**]	.40[***]	−2.00[*]
CDI	.38[***]	.17[**]	.40[***]	−2.13[*]
SCARED	.34[***]	.16[*]	.36[***]	−1.88[*]

Abbreviations: PTE = potentially traumatic event; UCLA PTSDI = UCLA PTSD Reaction Index for DSM-IV; CDI = Children's Depression Inventory; SCARED = Screen for Child Anxiety Related Emotional Disorders

[a]Fisher's exact test to evaluate differences in magnitude of correlations between associations with PTEs and other events

[***]$p < .001$

[**]$p < .01$

[*]$p < .05$

Table 6

Hierarchical regression analyses to evaluate the impact of PTEs versus other events on psychological functioning

		UCLA PTSD Reaction Index for DSM-IV (UCLA PTSDI)				
	Std β	*SE*	*t*	*F*	*R²*	*F*
Step 1				0.09	--	--
Cancer vs. Control	.02	1.48	0.29			
Step 2				5.85**	.04	8.73***
SES	−.21	0.06	−4.13***			
Age	−.04	0.24	−0.81			
Step 3				7.72***	.03	12.79***
PTEs	.19	0.50	3.97***			
Step 4				15.94***	.10	45.32***
Other Events	.35	0.25	6.73***			

		Children's Depression Inventory (CDI)				
	Std β	*SE*	*t*	*F*	*R²*	*F*
Step 1				0.25	--	--
Cancer vs. Control	.02	0.57	0.50			
Step 2				2.20	.02	3.18*
SES	−.13	0.02	−2.49*			
Age	.01	0.09	0.29			
Step 3				3.18*	.02	6.03*
PTEs	.13	0.20	2.46*			
Step 4				12.44***	.11	47.96***
Other Events	.36	0.10	6.92***			

Screen for Child Anxiety Related Emotional Disorders (SCARED)

	Std β	SE	t	F	R²	F
Step 1				3.43	--	--
Cancer vs. Control	.09	1.25	1.85			
Step 2				7.66***	.05	9.70***
SES	−.17	0.05	−3.36**			
Age	−.15	0.20	−2.98**			
Step 3				8.56***	.02	10.69**
PTEs	.17	0.42	3.27**			
Step 4				17.42***	.10	48.65***
Other Events	.36	0.21	6.98***			

Abbreviations. SES = socioeconomic status; PTE = potentially traumatic event

***
$p < .001$

**
$p < .01$

*
$p < .05$