

# Adaptive Style in Children with Cancer: Implications for a Positive Psychology Approach

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**Objective** To describe the adaptive style paradigm as a heuristic model for understanding the very positive psychosocial adjustment that has been observed in children with cancer, and to integrate findings regarding repressive adaptive style into a broader positive psychology framework. **Method** A selective review of the literature on adaptive style, and its' relevance to outcomes of depressive symptoms, posttraumatic stress symptoms, somatic distress, and health-related quality of life in children with cancer. **Results** Studies have found children with cancer report low levels of psychological distress. Adaptive style is a much stronger predictor of psychosocial outcomes than is health history. **Conclusion** Children with cancer represent a flourishing population. A repressive adaptive style is one pathway to resilience in this population. Additional constructs from the domain of positive psychology are reviewed, and a positive psychology model is suggested as a framework for guiding future research in this area.

**Key words** adaptive style; benefit finding; childhood cancer; optimism; positive psychology; repression; resilience.

Pediatric cancer has long been considered a highly stressful, burdensome, and even traumatic experience for those children who must face it, and understandably so (Kazak, 2005; Patenaude & Kupst, 2005). Such children face a myriad of potential stressors, including threats to bodily integrity, with frequent invasive procedures, aversive treatment regimens with multiple somatic side effects, and significant changes in physical appearance. In addition, there is often separation from the child's peer group, and disruptions in normal family, social, and educational activities, all of which occur in the context of a significant threat to their survival. For survivors, there remains the threat of relapse, the increased risk of numerous treatment-related late-effects, and the threat of second malignancy (Hudson et al., 2003; Oeffinger et al., 2006). It might be reasonable to expect an increased frequency of adjustment difficulties and affective distress in these children. However, studies utilizing self-report methods have largely failed to demonstrate increases in adjustment difficulties or elevations in affective distress among children with cancer. In fact, most studies utilizing self-report have

shown the pediatric cancer population to be adjusting as well, or better than their healthy peers (Phipps, 2005).

This article introduces the adaptive style paradigm as a framework for understanding the positive adjustment of children with cancer. A selective review of the literature is presented, indicating that a preponderance of the available data supports a view of children with cancer as exceptionally well adjusted. We then describe the adaptive style paradigm and review studies that indicate a high prevalence of a repressive adaptive style in children with cancer. Studies that examine the relationship of adaptive style to outcomes of depression, posttraumatic stress, somatic symptoms, and quality of life are presented, which suggest lower levels of distress among those with a repressive adaptive style. Subsequently, ongoing work from our laboratory is presented, where preliminary findings suggest that there are not significant physiological costs of maintaining a repressive adaptive style. Repressive adaptation is thus presented as a pathway to resilience in children with cancer, who, as a group, are construed as a thriving or flourishing population. Adopting a positive psychology framework,

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repressive adaptation is presented as only one of several potential mechanisms for the psychosocial thriving observed in children with cancer. The article concludes with a brief review of other constructs from positive psychology, pointing to their potential relevance for children with cancer, and as targets for future research.

### Children with Cancer Appear Exceptionally Well-Adjusted

To illustrate the surprisingly positive adjustment of children with cancer, consider the outcome of depressive symptomatology. The majority of published studies have shown that children with cancer report low symptom levels, in many cases significantly lower than either test norms or healthy peer controls (Bennett, 1994; Dejong & Frombonne, 2006). Table I lists 10 studies published prior to 2000, which utilized child self-report and indicated lower depressive symptoms in children with cancer, with effect sizes ranging from  $d = -0.23$  to  $-0.68$  ( $M = -0.44$ ). There were also studies published during that time showing no difference between pediatric cancer and control populations (e.g., Noll et al., 1999), but the preponderance of studies suggest lower levels in children with cancer. Curiously, many of the papers listed in Table I neglected to focus on the lower levels of depression in the cancer population, with only a few highlighting this issue (Canning, Canning, & Boyce, 1992; Phipps & Srivastava, 1997; Worchel et al., 1988). Since that time, research in pediatric cancer began to move away from more traditional measures of psychopathology such as depression, focusing instead on other outcomes thought to be more specific to the cancer experience, such as symptoms of posttraumatic stress disorder (Kazak, 2005; Patenaude & Kupst, 2005). Nevertheless, recent studies that include measures of depressive symptoms continue to report significantly lower levels of symptoms in cancer populations in comparison to community norms (e.g., Recklitis et al., 2006).

In considering these findings, a fundamental question becomes—are the self-reports of low depression from these children “real,” or might they be in some way distorted or reflective of “illusory mental health” (Shedler, Mayman, & Manis, 1993)? Alternative hypotheses have been put forth to explain these findings, involving a number of similar or closely related constructs. These include denial, both as a general defense mechanism and as a specific process invoked

**Table I.** Studies Reporting Lower Levels of Depressive Symptoms in Children with Cancer Relative to Healthy Peers or Normative Data

Study	Comparison	<i>n</i>	<i>d</i>
Kaplan, Busner, Weinhold, & Lennon, 1987	TN	38	-.37
Fritz & Williams, 1988	TN	41	-.32
Worchel et al., 1988	CC	76	-.23
Schoenherr, Brown, Baldwin, & Kaslow, 1992	TN	37	-.37
Mulhern, Fairclough, Smith, & Douglas, 1992	TN	97	-.42
Canning et al., 1992	CC	31	-.68
Radcliffe, Bennett, Kazak, Foley, & Phillips, 1996	TN	38	-.45
Frank et al., 1997	TN	86	-.66
Phipps & Srivastava, 1997	CC	107	-.43
Burgess & Haaga, 1998	TN	72	-.44

*d*, effect size; TN, test norms; CC, community controls, i.e., healthy peer comparisons.

by questionnaires, avoidant coping, defensiveness, social desirability, self-deception, and impression management (Canning, et al., 1992; Phipps, 2005; Phipps & Srivastava, 1997; Worchel et al., 1988). Our laboratory has focused one approach: the adaptive style paradigm.

### The Adaptive Style Paradigm

The adaptive style paradigm, initially developed by Weinberger and colleagues (Weinberger, 1990; Weinberger, Schwartz, & Davidson, 1979) involves the simultaneous use of two measures; subjective distress (e.g., trait anxiety) and defensiveness, typically assessed using social desirability scales. Cutoffs are made on these measures to assign respondents into four categories, labeled as High Anxious, Low Anxious, Defensive High Anxious, and Repressor. This approach was developed as a means of understanding the poor correlations previously observed between self-report and physiological measures of anxiety. Weinberger et al. (1979) demonstrated that when repressors were separated from low anxious subjects, adequate differentiation of high and low anxious individuals on indices of physiological reactivity was obtained. This had been confounded by the fact that repressors, who report the lowest levels of anxiety, were highly physiologically reactive. The repressor group (i.e., those who score above the 75th percentile on defensiveness and below the median in anxiety) has been a particular focus of research. Individuals identified as repressors tend to present themselves in a favorable light, and thus to look good on most self-report

measures. However, considerable research suggests that the positive self-presentation of repressors is not simply the indication of a response style, but reflects a substantive personality variable characterized by an attenuated awareness of emotional distress (Derakshan & Eysenck, 1997; Myers, 2000; Weinberger, 1990). Repressors tend to think of themselves as well-adjusted, self-controlled, and content, and their behavior is organized to protect that self-image.

Canning and colleagues documented a high prevalence of repressive adaptive style in children with cancer, which explained, in part, the low levels of self-reported depressive symptoms in their cancer sample (Canning et al., 1992). We replicated these findings in a large cross-sectional sample of children and adolescents with cancer, showing that the incidence of repressive adaptive style in the cancer group was double that of healthy controls (36–18%), and also conversely that the cancer group demonstrated low levels of a “high anxious” style relative to healthy controls (Phipps & Srivastava, 1997). These findings have been replicated several times by our group and others, both in children with cancer and long-term childhood cancer survivors (Erickson & Steiner, 2001; Jurbergs, Long, Hudson, & Phipps, 2007; Phipps, Larson, Long, & Rai, 2006; Phipps, Steele, Hall, & Leigh, 2001).

The genesis of the adaptive style differences between children with cancer and healthy children is unclear. A reasonable explanation might be that it represents a contingent response to the stresses of illness, such that patients facing the threat of cancer mobilize a more defensive posture, which if successful, would also lower anxiety. Some evidence for this in adults comes from two studies of women pre- and post-diagnostic procedures for breast cancer, where only women subsequently diagnosed with a malignancy showed increases in defensiveness and repressive adaptation (Kreitler, Chaitchik, & Kreitler, 1993; Zachariae et al., 2004). On the other hand, adaptive style has been shown to be a fairly stable personality trait, and, in children with cancer, the increased prevalence of a repressive adaptive style has been demonstrated within 2–3 weeks of diagnosis, remaining stable across the first year of treatment (Phipps et al., 2001). Because of the low incidence of childhood cancer, a definitive answer to the question of the genesis of cancer–control differences in adaptive style may not be feasible. However, the higher prevalence of repressive adaptation in children with cancer appears well established, and thus examining the implications of adaptive style for patient adjustment,

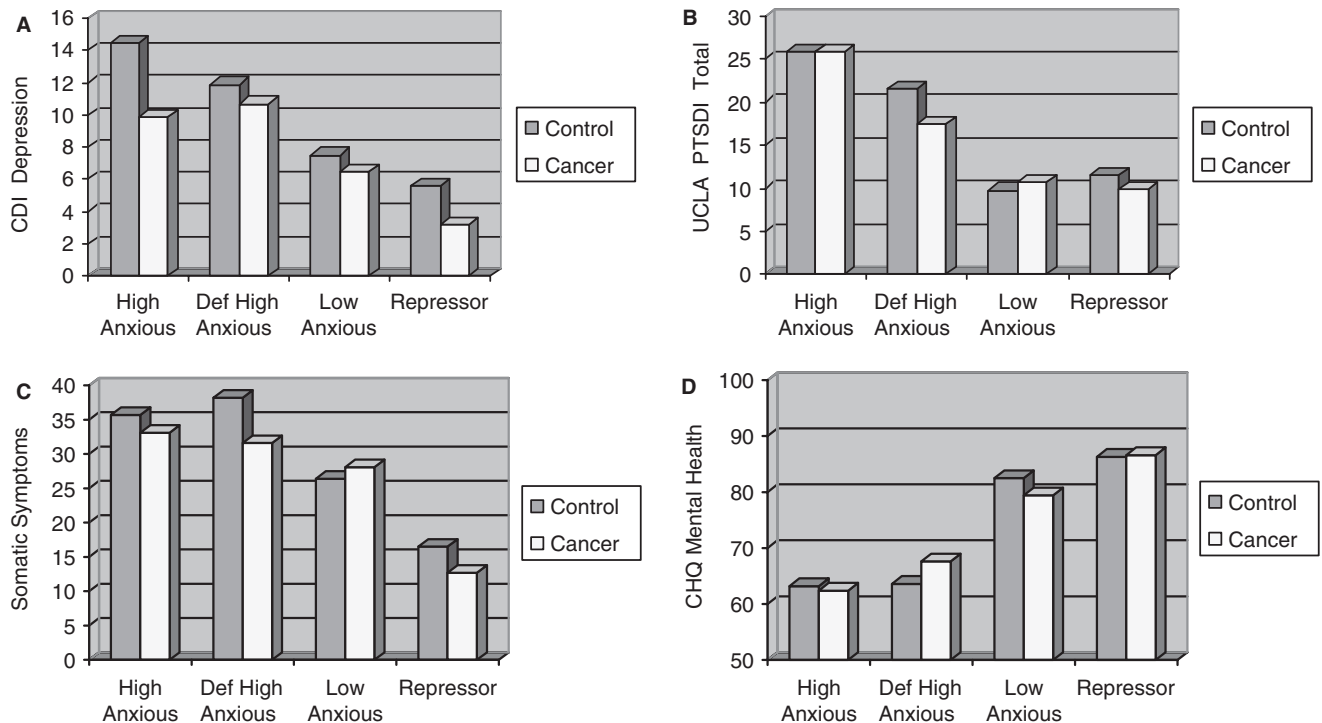
quality of life and other health outcomes in this population is crucial.

### Adaptive Style and Depressive Symptoms

Study of the effects of adaptive style on patient adjustment began with the outcome of depression (Canning et al., 1992; Phipps & Srivastava, 1997, 1999). The influence of adaptive style on depressive symptoms is clearly seen, with high anxious children reporting the highest level of symptoms and repressors the lowest, as depicted in Fig. 1A (Phipps & Srivastava, 1997). Significant effects are seen for both health status (cancer versus control, with cancer patients reporting lower symptom levels) and adaptive style, but the effect size is much larger for adaptive style. This data shows how adaptive style differences can help to explain, but only in part, the observed cancer–control differences in depression. The absolute value of the Children’s Depression Inventory (CDI, Kovacs, 1992) scores in the repressor groups are also striking (overall  $M = 4.8$ ; 3.2 in the cancer group). Across both cancer and control groups, a total of 119 children were categorized as repressors. Of these, not one obtained a score suggestive of even a mild level of depression, using a score of 12 on the CDI as a cutoff (Phipps & Srivastava, 1997).

### Adaptive Style and PTSS

The low levels of depressive symptoms observed in children with cancer prompted a move away from traditional measures of psychopathology, which were thought to be inadequate to capture the specific and persistent experiences of children in this context (Kazak, 2005; Patenaude & Kupst, 2005). An alternative approach that became a focus of research over the past decade is posttraumatic stress disorder (PTSD). Most studies have not shown a significant elevation in levels of PTSD in the pediatric cancer population, leading researchers to focus more on subclinical levels of posttraumatic stress symptoms (PTSS) (Bruce, 2006; Kazak, 2005). However, studies have generally failed to show higher levels of PTSS in children with cancer relative to healthy children (Barakat et al., 1997; Brown, Madan-Swain, & Lambert, 2003; Schwartz & Drotar, 2006). Moreover, children with cancer appear to report lower levels of PTSS than individuals who experienced other stressful events during childhood, such as natural disasters, accidents, serious physical injury, or the death of a parent (Bruce, 2006; Salmon & Bryant, 2002). Thus, the added specificity of PTSS measures have not led to



**Figure 1.** Common self-report outcomes in pediatric oncology presented by health status (cancer vs. control) and adaptive style, depicting small or null effects of health status and large effects of adaptive style. A) Depressive symptoms on the Children's Depression Inventory; B) Symptoms of post-traumatic stress on the UCLA PTSDI; C) Somatic symptoms on the Pennebaker Inventory of Limbic Languidness; D) Mental Health on the Children's Health Questionnaire.

findings of increased adjustment problems in the pediatric cancer population, who continue to look exceptionally well-adjusted.

The effect of adaptive style on patient reported PTSS was examined by our group in a cross-sectional study of pediatric cancer patients, survivors, and young adult survivors. Although we found that time elapsed from diagnosis was a significant determinant of PTSS, with recently diagnosed and on-treatment patients reporting higher symptoms levels than survivors, we also found that adaptive style was the most powerful determinant of PTSS outcomes (Phipps et al., 2006; Phipps, Long, Hudson, & Rai, 2005). Using the UCLA PTSD Index for DSM-IV (Pynoos, Rodriguez, Steinberg, Stuber, & Frederick, 1998), we found that patients identified as repressor and low anxious report significantly less PTSS than do the high anxious or defensive high anxious patients. Although repressors reported the lowest level of symptoms, they did not differ significantly from the low anxious patients. Thus, it appears that for PTSS outcomes, trait anxiety level is the primary factor accounting for the observed effects, and defensiveness plays a lesser role (Phipps et al., 2006). These findings have been replicated in a follow-up study that included a healthy control group.

In that study, we found that children with cancer reported significantly fewer symptoms of intrusion/re-experiencing than did their healthy peers, while also reporting significantly greater symptom levels of numbing/avoidance (Phipps, Jurbergs, & Long, 2007). However, there were no differences in total PTSS between cancer and control groups, who obtained almost identical mean scores. In contrast, large and significant effects of adaptive style were found on total PTSS and all symptom cluster subscales (Fig. 1B). In sum, our findings are consistent with a preponderance of the existing literature, suggesting that PTSS is simply not elevated in children with cancer. In addition, PTSS outcomes are much more dependent on preexisting personality traits such as adaptive style than on health history. The low levels of PTSS observed provides further evidence that predisposition to pathology is low in this population, or conversely, that children with cancer are resilient against the stresses of their illness.

### Adaptive Style and Somatic Symptoms

The relationship of adaptive style to affective distress outcomes, such as depression and PTSS raises the

question of whether these effects extend to other domains, such as physical or somatic symptoms. Given the tendency of repressors to report low levels of psychological distress, one might predict they would report lower levels of somatic distress as well. However, studies in adults have documented that repressors exhibit heightened levels of physiological reactivity to laboratory stress, and that they appear to be at higher risk for a number of adverse health outcomes, such as tension and migraine headaches, ulcers, allergies, and hypertension (Schwartz, 1990; Weinberger, 1990; Wickramasekera, 1995). In two studies in healthy adults, repressors were found to report lower levels of somatic symptoms than nonrepressors, suggesting that repressors tend to present themselves in a positive fashion on self-report measures of physical health, just as they do on measures of mental health (Myers & Vetere, 1997; Ward, Leventhal, & Love, 1988). Using a case-control design, we examined self-reported somatic symptoms of 120 children with cancer who were at least 6 months postcompletion of therapy, and 120 healthy children matched on age, race, gender, and socioeconomic status (Jurbergs et al., 2007a). Contrary to expectations, there were no differences between children with cancer and healthy controls in self-reported somatic symptoms, although cancer patients reported slightly *lower* symptom levels. In contrast, there were significant differences in self-reported somatic symptoms as a function of adaptive style. Children identified as Repressors reported the lowest level of somatic symptoms and differed significantly from all other adaptive style groups (Fig. 1C). These findings do not support the hypothesis that a repressive style may be a risk factor for psychosomatic illness, but are consistent with the findings relating adaptive style to measures of affective distress, suggesting a generally low level of all self-reported symptoms in repressors, including physical symptoms.

The absence of cancer-control differences in somatic symptoms suggests underreporting of physical symptoms in cancer survivors, influenced in part by adaptive style. Although some patients may refuse to acknowledge certain symptoms as a means of avoiding anxiety, it is unlikely that these children are deliberately denying symptoms of which they are aware, i.e., they are not “faking good.” Rather, it appears they believe they are reporting in a generally honest manner, but several factors may promote a response bias that minimizes symptoms. One issue is “framing,” whereby children who have experienced severe, life threatening symptoms in the past may tend to overlook or minimize more

common and less severe physical symptoms, which are deemed unimportant. Alternately, the children may be reporting accurately based on their awareness of their physical state, but that awareness may be somewhat attenuated, as a function of adaptive style. Some have hypothesized that the attentional processes of repressors are altered, such that they are less likely to attend to threatening stimuli, and are poorly attuned to their physiological state (Schwartz, 1990; Weinberger, 1990). Thus, when children with cancer appear to underreport symptoms, they may either be genuinely unaware of a symptom, or have a limited awareness such that even when they acknowledge symptoms, they minimize their severity or impact.

### Adaptive Style and HRQL

Another outcome that has grown in importance in pediatric oncology settings over the past decade is health-related quality of life (HRQL, Feeny, Furlong, Mulhern, Barr, & Hudson, 1999; Varni, Burwinkle, Katz, Meeske, & Dickinson, 2002). Particularly as survival rates have increased, success of treatment may be measured more by evaluation of the impact of treatment, and its associated late effects on quality of life, than on survival, as, for example, in equivalence, or noninferiority designs, where HRQL becomes the primary outcome measure (Cullen & Stenning, 2004). A common assumption of HRQL research is that the HRQL of children with cancer will decline as a function of side-effects and/or late effects of medical treatment (Spieth & Harris, 1996; Varni et al., 2002). That is, as the number and severity of these objective, adverse outcomes increase, the patient’s quality of life will decrease. However, because self-report of HRQL, like other self-report outcomes, is at least partly subjective, there are a number of individual factors that might contribute to the observed outcomes, and adaptive style is hypothesized to be a significant determinant of HRQL as well.

The impact of adaptive style on self-reported HRQL outcomes was examined in our laboratory in a study assessing a cross-sectional population of children with cancer ( $N=199$ ) and a healthy acquaintance control group ( $N=108$ ). Children completed the Children’s Health Questionnaire (CHQ), and one parent of each child also completed the CHQ parent report form (Landgraf, Abetz, & Ware, 1999). By patient report, significant cancer-control differences were observed on the physical health domains of the CHQ (physical functioning, body pain, and general health perceptions), with, as expected, the cancer group reporting poorer health

than controls (Russell, Hudson, Long, & Phipps, 2006). However, children with cancer and healthy children did not differ significantly on the psychosocial health domains (mental health, self-esteem, general behavior) of the CHQ. In contrast, differences in self-reported HRQL outcomes as a function of adaptive style were seen on all CHQ outcomes (Jurbergs, Russell, Long, & Phipps, in press). The effect of adaptive style was smaller on the physical health domains of HRQL, where effects were much greater for health status (cancer versus control), whereas adaptive style effects were much larger on the psychosocial domains, with children identified as repressors reporting the best HRQL regardless of health status (Fig. 1D).

This study also examined the relationship between parent and child-reported HRQL as an effect of child adaptive style. Although the consistency of parent and child reports was good, as evidenced by moderate correlations between parent and child scores and relatively small mean differences, adaptive style was nonetheless significantly predictive of discrepancies between parent and child report of HRQL on the psychosocial domains of the CHQ (Jurbergs et al., 2007b). Repressor and low anxious children reported better HRQL than did their parents, while high anxious children reported poorer HRQL than their parents, regardless of health status. Adaptive style was not predictive of parent–child differences on the physical health domains.

To summarize, adaptive style appears to be a significant determinant on many of the most common self-report outcomes in pediatric psychooncology research, including symptoms of depression, PTSD, somatic distress, and HRQL. Child health status (cancer versus healthy) appears to be unrelated, or only minimally related to the most common psychosocial outcomes, although it is a significant determinant of the physical health domains of HRQL. That expected differences between children with cancer and healthy children on physical health outcomes are, in fact, observed, suggests that children with cancer are reporting reasonably accurately on more objective, readily observed outcomes i.e., they are not just “faking good.” This highlights the importance of appreciating the nature of the self-reported outcome being examined, in terms of the relative level of subjectivity.

In considering HRQL, for example, items asking children to rate their mood, hopefulness about the future, and how able they are to have fun, which load onto the psychosocial domains, are clearly more subjective than

items asking about concrete, functional aspects of HRQL that are part of the physical domains, such as how difficult it is to walk up a flight of stairs, bend, or bathe themselves. The effects of adaptive style are more likely to be observed as the subjectivity of the measure increases. One key issue may be the construal of “distress,” which, by definition, implies a subjective component. In some contexts, it may be desirable to reduce subjectivity in measurement of certain HRQL outcomes, but typically, it is neither possible nor desirable to eliminate all subjectivity in HRQL measures. Thus, clinicians and researchers should be aware of the influence of adaptive style on subjectively assessed outcomes.

### **Is There a Cost for the Low Levels of Distress in Children with Cancer?**

The literature documents low levels of distress with adequate to exceptional adjustment in children with cancer, and cancer–control differences in adaptive style help to explain some of these findings. This raises the question of whether there might be a cost, or “price to pay” for the avoidance of distress in children with cancer, particularly those with a repressive adaptive style? Research done in healthy adult populations suggests that repressors show increased physiological reactivity to stress, and are at higher risk for a number of adverse health outcomes (Schwartz, 1990; Weinberger, 1990; Wickramasekera, 1995). We have begun to explore the psychophysiological and medical implications of adaptive style in our laboratory. To date, two studies have been completed, although analyses are ongoing and results are only preliminary.

Study one used a case-control design, enrolling a cohort of children who had completed cancer therapy ( $N=120$ ), and a group of healthy children ( $N=120$ ) matched on age, race, gender, and SES. All children completed measures of adaptive style and underwent three verbal stress tasks, while measures of heart rate, heart rate variability, blood pressure, skin conductance, muscle tension, and salivary cortisol were obtained. Although good physiological reactivity to all stress tasks was obtained, correlations between physiologic indices, self-reported stress, and adaptive style were poor. Analyses completed thus far examining the effects of adaptive style on physiological reactivity have revealed mostly null findings. A few findings that approached or reached significance have been in the opposite direction of our a priori hypotheses, i.e., with high defensive children showing lower levels of physiological reactivity

during the stress tasks. Study two enrolled a cohort of children with newly diagnosed cancer ( $N = 137$ ). These patients completed the same battery of measures and laboratory assessments as in study one, and then were followed longitudinally to examine whether adaptive style was predictive of medical outcomes (number of hospital admissions, days in hospital, narcotic and antiemetic medication usage, and specific toxicities) during the first 6 months of treatment. Preliminary analyses have failed to show a significant association between patient adaptive style and these medical outcomes. In regards to hospitalization data, findings were null, but there were trends observed that were again opposite of the predicted direction—children identified as repressors experienced the lowest number of admissions and the fewest days in hospital.

These findings are inconsistent with our a priori hypotheses and what has been previously reported in adults. However, they do begin to address one of our primary questions—is there a physiological price to pay for the low distress reported by those children with a repressive adaptive style? Based on these preliminary findings, the answer appears to be a tentative “No.” The results suggest that children identified as repressors do not appear to experience adverse effects of this coping style, as manifest either in increased physiological reactivity or poorer medical outcomes. Since children identified as repressors report lower levels of distress and generally better psychosocial outcomes without apparent adverse effects, we have begun to revise our thinking about this construct, viewing it as a potential pathway to resilience in children with cancer.

### **Repressive Adaptive Style as a Pathway to Resilience in Children with Cancer**

The notion of a repressive adaptive style as a pathway to resilience has been described previously in the context of caregiver bereavement in adults (Bonanno, 2004). In his description of typical trajectories of adjustment following trauma and loss, Bonanno (2004) suggests that contrary to widely held assumptions, the majority of bereaved persons show minimal levels of disturbance, which does not imply delayed grief or other maladaptive response patterns. He further suggests that resilience is the rule rather than the exception, and that there are multiple pathways to resilience. Repressive coping is identified as a specific pathway to resilience, among others, including hardiness, self-enhancement, and the transient experience of positive emotion. This model appears particularly

relevant to childhood cancer in two respects: First, in the population of children with cancer, as in bereaved adults, resilient outcomes are the rule and dysfunctional or pathological outcomes the exception. Secondly, the data suggests that a repressive adaptive style may be a pathway to resilience in this population, but not the only one. Given their exceptional adaptation in the face of challenging and potentially traumatic events, we suggest that children with cancer can be viewed not only as resilient, but as a flourishing population. There has been some reluctance to incorporate this perspective by a field that has been focused on the search for pathology and problems to fix (Phipps, 2005). However, a view of children with cancer as a flourishing population provides a unique challenge and opportunity. By delineating the pathways to resilience and the mechanisms by which this is achieved, new insights are likely to be gained that may be applied to the minority of children experiencing difficulties.

The theoretical and empirical work addressing resilience in children has been focused largely on children facing chronic and global social stressors, such as poverty, neglect, and violence (Garmezy, 1991; Luthar, Cicchetti, & Becker, 2000). In contrast, much of the work in adult resilience has addressed relatively circumscribed traumatic events (such as bereavement) that occur in the context of otherwise normal or adequate social circumstances (Bonanno, 2005). Childhood cancer presents an opportunity to extend childhood resilience research into new contexts, and to incorporate additional models from the global domain of positive psychology. The past decade has seen a shift in focus away from psychopathology towards positive psychology and a study of human strengths, with a dramatic increase in research in this area (Linley & Joseph, 2004; Seligman & Csikszentmihalyi, 2000; Snyder & Lopez, 2002). A few constructs from this domain that might be particularly relevant to children with cancer include dispositional optimism, hope, benefit finding, posttraumatic growth, spiritual coping, and the assessment of positive affect. Many of these variables are likely to have overlap with the construct of adaptive style.

### **Positive Psychology Models and Childhood Cancer**

Dispositional optimism, defined as having positive expectations for the future (Scheier & Carver, 1985), is associated with numerous benefits in adults including positive mood, perseverance, achievement, lower somatic distress, better health-related quality of life, and longevity

(Peterson, 2000). This trait has been shown to be particularly salient in the context of adult cancers, where patients higher in dispositional optimism display better adjustment and quality of life throughout treatment (Allison, Guicahrd, & Gilain, 2001; Carver & Antoni, 2004). Optimism has yet to be studied in the context of childhood cancer, perhaps because of a lack of well-validated measures of optimism for children. Recently, a child analog of the widely used Life Orientation Test (LOT; Scheier & Carver, 1985) has been developed. The Youth Life Orientation Test (YLOT) has been shown to have adequate reliability, and some validity data which suggests the construct works similarly in children as in adults (Ey et al., 2004). We examined the relationship between adaptive style and optimism/pessimism in our laboratory, using the YLOT with samples of healthy children and children with cancer (Davis, Hancock, & Phipps, 2007). Overlap between the constructs was found, with repressors reporting higher levels of optimism and lower levels of pessimism than other adaptive style groups. However, both constructs accounted for distinct variance in the outcomes of parent-reported child internalizing and externalizing behavior problems, and both child-reported and parent-reported HRQL. Clearly, dispositional optimism and its' correlates represent a fruitful area for further research on resilience in children with cancer.

Another area that would appear ripe for further study relates to the constructs of posttraumatic growth and benefit finding. Although these might be best considered as distinct constructs, there has been some conceptual confusion in the literature, and the terms are often used interchangeably. Regardless, the onset of a serious illness has been recognized as a potential catalyst for positive change, and this has been a burgeoning area of research (Kangas, Henry, & Bryant, 2002; Sears, Stanton, & Danoff-Burg, 2003). Many cancer patients report gains, such as a deepened sense of purpose, closer relationships with family and friends, a reappraisal of their life's priorities, and an enhanced spiritual life (Affleck & Tennen, 1996; Carver & Antoni, 2004; Cordova, Cunningham, Carlson, & Andrykowski, 2001; Tomich & Helgeson 2004). Again, most of the research has been conducted with adult populations and research in children lags behind, partly due to lack of appropriate child measures. Recently, two new measures have been developed specifically in pediatric cancer populations, one addressing the construct of posttraumatic growth (Barakat, Alderfer, & Kazak, 2006), and the other, from

our laboratory addressing the more circumscribed construct of benefit finding (Phipps, Ogden, & Long, in press). The development of such measures will allow for additional research to proceed in this potentially fruitful area.

One of the conceptual issues critical in the shift to a positive psychology focus is recognition of positive and negative affect as relatively independent constructs and not opposite ends of a single continuum (Watson & Clark, 1997). The pediatric psychology and psychooncology literature, as virtually all of clinical psychology, has been largely focused on negative affect, mood disturbance and distress, to the exclusion of any measure of positive emotions. The importance of positive emotions is now being recognized, and the independence of positive and negative emotions has several implications. For example, positive and negative psychological states can occur contiguously or even simultaneously, and positive psychological states can occur in the midst of highly stressful circumstances such as terminal illness or bereavement (Folkman & Moskowitz, 2000). Further, the experience of positive psychological states can serve to promote emotional and physical well-being, both by undoing the deleterious effects of negative states and serving as a buffer against future stress and negative experience (Fredrickson, 2001; Tugade, Fredrickson, & Barrett, 2004).

Fredrickson's (2001) "broaden and build theory of positive emotions" posits that negative emotions are associated with specific action tendencies that require autonomic activation to prepare for the activity (e.g., fight, flight). Positive emotions are not associated with any specific action tendencies, and as such, can serve to reduce autonomic activation, undoing the physiological preparation for action, and returning the body to a resting equilibrium. In this way, positive emotional states can serve as an antidote to the effects of negative emotions (Fredrickson, 2001; Tugade et al., 2004). According to this theory, the experience of positive emotions results in an increment in enduring personal resources, both physical and psychological, that can be drawn upon later, in other contexts and other emotional states. Many of the positive outcomes associated with dispositional optimism may reflect the fact that optimists are more likely to experience positive emotions (Affleck & Tennen, 1996). In a similar vein, Folkman's research has indicated that people coping successfully with severe stress seek naturally to create positive emotional states, both to gain relief from stress and gather



strength to face adversity (Folkman & Moskowitz, 2000; Moskowitz, Folkman & Acree, 2003). A key finding from her studies is that positive emotional experiences need not be intense nor prolonged to produce their beneficial effects (Moskowitz et al., 2003).

These lines of thinking have yet to be explored in pediatric oncology. Certainly, our adaptive style work might lead to the hypothesis that those children with a repressive adaptive style are more likely to experience positive emotional states. But beyond adaptive styles, there may be aspects of the childhood cancer experience in general that are associated with an increased frequency of positive affects, even if these are transitory, and embedded in a context that is also threatening. Researchers in this area are encouraged to include measures of positive affect in their study designs, and to attend to aspects of the patients' milieu that might be associated with fluctuations in daily emotional experiences.

In sum, since the introduction of self-report methodologies, children with cancer have demonstrated surprising adjustment, faring as well as, and often better than, healthy peers on outcomes such as depression, anxiety, posttraumatic stress, and quality of life. The adaptive style paradigm has provided a heuristic model for understanding these findings. Children with cancer consistently demonstrate higher levels of a repressive adaptive style, which serves to explain in part, their low levels of distress/pathology and excellent adjustment. Research by our group suggests that the positive adjustment of children with cancer in general, and those with a repressive adaptive style, in particular is not reflective of illusory mental health, nor is it associated with significant risks or adverse health outcomes. Thus, we have come to view children with cancer as a flourishing population, and repressive adaptation as one pathway to resilience in this population. Additional pathways and mechanisms for promoting and maintaining resilient outcomes are likely to be found, and constructs from positive psychology, such as optimism, posttraumatic growth, benefit finding, and discrete assessment of positive emotions provide fruitful starting points. Incorporating a positive psychology framework opens the door wide for range of research questions. We hope that this discussion will stimulate new research efforts on these and other positive psychology constructs in the future.

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