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IN PSYCHOSOCIAL CONTEXTS OF ADOLESCENCE

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CORRELATIONS AMONG PERCEPTIONS OF DISEASE IMPACT, PERSONAL CONTROL, AND INFORMATION IN PSYCHOSOCIAL CONTEXTS OF ADOLESCENCE

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ABSTRACT

CORRELATIONS AMONG PERCEPTIONS OF DISEASE IMPACT, PERSONAL CONTROL, AND INFORMATION IN PSYCHOSOCIAL CONTEXTS OF ADOLESCENCE

By

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Most contemporary theories of coping emphasize sensitivity to the particular psychosocial contexts in which coping occurs. Information relevant to both disease and psychosocial context may facilitate coping and thereby attenuate psychosocial disease impact. The variables in the present study were operationalized very narrowly as a means of examining more closely the cognitive mediation between context-specific information and impact.

Correlations among four variables relevant to the psychosocial perspectives of chronically ill adolescents were computed in each of eight psychosocial contexts and at the across-contexts level. The four variables were Psychosocial Disease Impact, Self-Efficacy, Information Adequacy, and Health Locus of Control. All variables other than Health Locus of Control referred to disease-related psychosocial information in the following contexts: appearance, peer relationships, future orientation, sexual functioning, freedom/ independence, school achievement, physical abilities, and family relationships.

Thirty chronically ill adolescents, ages 13-18 years, responded to a 42-item questionnaire which contained the four operationalized variables. Correlations between Impact and Self-Efficacy generally were moderate and positive, ranging from .187 to .515 across contexts. Correlations between Impact and Information Adequacy were negative (range: -.213 to -.714). Correlations between Impact and Health Locus of Control were negative and tended to be moderately high (range: -.301 to -.778). The addition of Information Adequacy to Health Locus of Control generally enhanced prediction of Impact whereas the addition of Self-Efficacy did not.

A moderate amount of contextual specificity was evident in the correlations between Impact and Self-Efficacy. Inter-context differences in correlations between Impact and Information Adequacy were minimal.

A two-factor (age and sex) analysis of variance was conducted with each variable within each context and at the across-contexts level. None of the main effects of age attained statistical significance. The Self-Efficacy ratings of females were significantly higher in two contexts, appearance and peer relationships, and at the across-contexts level. Younger females produced significantly lower Information Adequacy ratings in the context of peer relationships.

Interpretations of the observed relationships were provided based on the presumed nature of the variables. Implications for psychosocial research and clinical practice were discussed.

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LIST OF ABBREVIATIONS

PDI	Psychosocial Disease Impact
SE	Self-Efficacy
IA	Information Adequacy
HLC	Health Locus of Control

I. INTRODUCTION

Chronic disease has the potential to significantly complicate the psychosocial development of children and adolescents. Prior to the mid-1970's, such complication was often equated with psychopathology. The dominant perspective today, however, is that most disease-related psychological problems are normal reactions to severe stressors rather than symptoms of pervasive mental disorder. Most of the early reports were anecdotal and based primarily on observations of medical patients who had exhibited behaviors of significant concern to hospital staff and who had therefore been brought to the attention of mental health professionals. Epidemiological studies in this area now routinely include non-referred medical patients and, to a somewhat lesser extent, persons with unimpaired health. As biases toward pathology have given way to more objective approaches, evidence attesting to the psychological normality of chronically ill children has emerged with compelling consistency (e.g., Anderson, Asher, Clark, Orrick, & Quiason, 1979; Bedell, Giordani, Amour, Tavormina, & Boll, 1977; Kellerman, Zeltzer, Ellenberg, Dash, & Rigler, 1980; Tavormina, Kastner, Slater, & Watt, 1976).

It appears that investigators are becoming increasingly cognizant of the adaptiveness of diverse methods of coping.

Greater sensitivity to the uniqueness of coping has contributed to the curtailment of a priori evaluations of profound responses to disease (e.g., denial). What is important today is to view disease-related challenges from the perspective of normal adolescent development rather than from perspectives in which psychopathology is central.

Most studies of disease-related adjustment problems have focused on adults. Downward extensions of what is known of chronically ill adults are of limited relevance to the situation of the child or adolescent. Fortunately, several frameworks for examining relationships between development and health have recently been proposed (e.g., Maddux, Roberts, Sledden, & Wright, 1986; Susman, Hollenbeck, Nannis, & Strope, 1980). Such frameworks have spawned much research on relationships between cognitive development and conceptualizations of health and illness (e.g., Bibace & Walsh, 1980; Campbell, 1975; Potter & Roberts, 1984; Simeonsson, Buckley, & Monson, 1979; Susman, et al., 1982). Undoubtedly, a child's emotional and behavioral reactions to disease and treatment are determined, in part, by his or her ability to understand what is happening. However, few investigators have taken the important additional step of detailing, with data, the effects of serious, chronic illness on the psychosocial tasks associated with particular developmental periods.

The determinants of psychosocial impact remain unknown. Previous research has revealed that disease types and personality traits account for minimal variance in psychosocial impact. Are measures of personality traits simply too broad to be sensitive to specific manifestations of disease-related impact? This possibility seems at least partially responsible for the current trend toward the identification and measurement of narrower variables.

Adolescence was chosen as the period for this inquiry because many psychosocially relevant aspects of chronic illness (e.g., changes in appearance, increased dependence, reduced physical abilities, etc.) are of heightened importance to the identity-seeking teenager. A point of significant departure from previous research is that the present study focuses on relationships among variables in each of eight relatively narrow psychosocial contexts integral to adolescent development; these contexts are appearance, peer relationships, future orientation, sexual functioning, freedom/independence, school achievement, physical abilities, and family relationships. The following variables were selected for study because of their relevance to coping: Psychosocial Disease Impact (PDI), Self-Efficacy (SE), Information Adequacy (IA), and Health Locus of Control (HLC). Each variable other than Health Locus of Control relates specifically to each of the eight psychosocial contexts (i.e., each variable is "crossed" with each context).

This study is the first systematic exploration of the contextual specificity of variables related to coping. Of primary interest are the correlations between Psychosocial Disease Impact and the other three variables and the extent to which such correlations are context specific. The two main research questions are:

1. Are Self-Efficacy, Information Adequacy, and Health Locus of Control significant correlates of Psychosocial Disease Impact in various psychosocial contexts of adolescence?
2. Is the correlation between Psychosocial Disease Impact and each of the other variables highly context specific or is there a high degree of continuity across contexts?

Of secondary interest are answers to the following questions:

3. Is the variance in Psychosocial Disease Impact that is explained by each predictor variable highly unique or do two or three of the predictors account for essentially the same portion of Impact variance?
4. Are there significant age effects?
5. Are there significant sex effects?

Although the design of this project is nonexperimental (i.e., survey/correlational) and therefore incapable of providing direct evidence of causal mechanisms, the resulting correlations are an important foundation for refined hypotheses about the determinants of psychosocial impact. Knowledge of such determinants would be very relevant to clinicians involved in promoting the use of effective coping strategies. For example, if it becomes known that high self-efficacy often strengthens coping (e.g., increased utilization of disease-related psychosocial information) and thereby reduces psychosocial impact, the clinician would have a much clearer therapeutic focus (i.e., alleviate self-efficacy deficits). If the determinants of psychosocial impact are found to vary significantly from one psychosocial context to another, clinicians would be well advised to develop therapeutic strategies from within a contextually sensitive framework.

The origins of the four variables currently under study are traced in Chapter II. Included therein are reasons for the increasing dissatisfaction with the broad trait measures that dominate assessment practice in both clinical and research settings. In response to the need for increased specificity in assessments of coping, three context-specific variables are introduced and operationalized in Chapter III. A fourth variable, Health Locus of Control, is relatively broad and serves as a point of contrast to the specificity of the other three variables. A description of the study's subjects, procedures and data analysis is followed by an account of some of the study's most significant limitations. Most of Chapter IV consists of data and discussion relevant to the primary research issues (correlations among variables, contextual specificity). Supplemental analyses are then presented to address issues of secondary interest (linear combinations, effects of sex and age). An integrative overview of the results concludes Chapter IV. Chapter V begins with a final look back at the study and closes with suggestions for utilizing the project's contributions.

II. LITERATURE REVIEW

Three areas of psychological research have significant bearing on the research questions posed in Chapter I. These areas are psychosocial impact of disease, perceptions of personal control, and information as it relates to coping. It is from these three areas that the four variables currently under investigation (Psychosocial Disease Impact, Self-Efficacy, Information Adequacy, and Health Locus of Control) were derived.

The first area reviewed, psychosocial impact of disease, provides the groundwork for the variable Psychosocial Disease Impact. One of the most salient issues that emerges in the discussion of impact is the insensitivity of broad trait measures and the consequent need to define more precisely the contexts in which psychosocially relevant effects of disease occur. In response to this need, three of the four variables in the present study (i.e., all variables other than Health Locus of Control) are crossed with each of the following eight psychosocial contexts: appearance, peer relationships, future orientation, sexual functioning, freedom/independence, school achievement, physical abilities and family relationships. The rationale for selecting these particular contexts concludes the review of impact-relevant literature.

The second area reviewed provides a critical account of the evolution of theory and measurement of perceptions of personal control. Theoretical and empirical work in the area of personal control provides the foundation for two variables of the current study. One such variable has a broad scope (Health Locus of Control) whereas the other is context-specific (Self-Efficacy).

The final area of relevant research relates to the relationship between information and coping. Perceptions of the adequacy of one's current level of disease-related psychosocial information are of particular interest and are represented by the fourth variable, Information Adequacy.

A. Psychosocial Impact of Disease

The adolescent's understanding of the nature of various social relations is qualitatively distinct from earlier forms of social awareness (Ellis & Davis, 1982; Selman, 1980). Hypothesizing about relations between self-perspectives and the perspectives of others requires the capacity for abstract logic which, according to most theories of cognitive development, is generally unavailable prior to adolescence. These abilities enable the adolescent to integrate various perceptions of the self into a psychosocial identity. A well established identity shows continuity between past and present and provides an orientation toward the future. According to Erikson (1963), failure to achieve an integrated sense of self results in "role confusion." Various parenting practices and social milieus, past and present, greatly affect the adolescent's preparedness to succeed in establishing a strong personal identity. Illnessimposed barriers to independence and threats to body image are perhaps greater obstacles in adolescence than in any other period of development (Hofmann, Becker, & Gabriel, 1976; Willis, Elliott, & Jay, 1982).

Most investigations of disease impact have focused on broad personality traits with little regard for the developmental contexts in which such traits are expressed. One important exception is the work of Kellerman et al. (1980). Three hundred forty-nine healthy adolescents and 168 adolescents with various chronic diseases were compared on measures of trait anxiety, self-esteem, and locus of control related to health and illness. These particular traits were chosen because of their apparent relevance to the primary psychosocial tasks of adolescence. No significant differences in trait anxiety or self-esteem were found between the healthy and ill subjects or among the various illness groups. With regard to the health locus of control variable, patients with renal, cardiac, rheumatologic, and oncologic disorders perceived less self-control over health than did healthy peers and subjects with diabetes mellitus or cystic fibrosis. Kellerman et al. (1980) suggested that the patient with diabetes mellitus or cystic fibrosis has a relatively greater degree of direct control over his or her diet, medication intake, and other factors associated with disease management. The greater externality among patients with cancer or renal, cardiac, or rheumatologic disease appears to represent accurate self-appraisal rather than psychopathology.

In a closely related study, Zeltzer, Kellerman, Ellenberg, Dash, and Rigler (1980) administered an 18-item "illness impact questionnaire" to the subjects described above. Healthy subjects presumably responded to questionnaire references to illness (e.g., "Illness hasn't changed the way I look") based on experiences with colds and other common maladies. There were essentially no differences between chronically ill and healthy respondents in total impact of illness. Among the explanations offered by the authors for this rather striking finding is that for the healthy adolescent the onset of a minor illness disrupts accustomed routines whereas the chronically ill adolescent may de-emphasize all but the most significant manifestations of his or her disease, having become inoculated by its milder presentations. Of course denial must be considered a plausible explanation, particularly with regard to the adolescents who died within a few months after participating in the study. Regardless of its origin, this finding illustrates clearly that knowledge of a patient's diagnosis or other index of health status is of very limited value in understanding the psychological mediation involved.

Although Kellerman and Zeltzer defined illness _impact_ in terms of developmental tasks, they used only broad classifications (i.e., disease types and personality traits) in their search for meaningful correlates of impact; context-specific perceptions and attitudes were not assessed. Classifications of disease or personality are too general to be of significant value in predicting how a patient is likely to deal with his or her disease in particular situations. Given that for any particular patient chronic disease may impact self-perceptions in one or more aspects of psychosocial functioning but not in others, it may be more informative to study impact (and potential correlates of impact) in terms of relatively narrow psychosocial contexts.

As Erikson (1963) suggested, the primary developmental tasks of adolescence are those which relate to the establishment of a psychosocial identity. The pursuit of an identity is a process that usually involves establishing independence from parents, adjusting to sexual maturation, forming mature relationships with peers of both sexes, and preparing for the future. The developmental tasks most relevant to identity formation can, for the sake of conceptual clarity, be categorized in terms of the psychosocial contexts to which they correspond. Eight such contexts appear to encompass nearly all aspects of psychosocial functioning relevant to adolescent identity formation. These contexts are: appearance, peer relationships, future orientation, sexual functioning, freedom/ independence, school achievement, physical abilities, and family relationships. Although various theorists and researchers have emphasized different subsets of this group of psychosocial contexts, most in-depth accounts of adolescent development reflect the authors' acknowledgement of the importance of most, if not all, of these eight contexts (e.g., Erikson, 1959; Havighurst, 1951; Kimmel & Weiner, 1985; McKinney, Fitzgerald, & Strommen, 1982). The developmental tasks which correspond to these contexts are no less relevant to adolescents with chronic diseases (e.g., Blumberg, Lewis, & Susman, 1982; National Institutes of Health, 1984; Pfefferbaum & Levenson, 1982; Spinetta et al., 1982; Zeltzer et al., 1980).

B. Perceptions of Personal Control

There is now a trend toward redefining broad constructs, such as locus of control, in terms of narrower dimensions. The recent development of health locus of control scales (e.g., Parcel & Meyer, 1978; Wallston, Wallston, & DeVellis, 1978) reflects this more refined focus. However, these scales deal with perspectives of health-related personal control only in very general terms. The following items are from the Multidimensional Health Locus of Control scales (Wallston et al., 1978): "If I take care of myself, I can avoid illness." "My good health is largely a matter of good fortune." "I am in control of my health." From what frame of reference would a person with an intense, chronically obtrusive disease respond to such items? Although the health locus of control scales that have been designed to date primarily address preventative health behavior, they have been used to assess the perceived personal control of individuals with serious chronic diseases (e.g., Felton & Revenson, 1984; Nagy & Wolfe, 1983). Evidence for the validity of such applications has yet to be reported.

Rotter (1954; Rotter, Chance & Phares, 1972) developed the social learning theory on which most locus of control scales are based. He postulated that generalized expectancies are most likely to be relied upon in situations that are novel or ambiguous. It would seem that a person who has had a serious disease for several years is likely to have health-related expectancies that have been shaped by experience with the disease. It follows that, because of their greater relevance, experientially based expectancies would take precedence over general predispositions. As Strickland (1978) noted, "the severity of the disorder, the time of onset, the current status of the patient, the support that he/she receives, and so on, all interact with what is probably a complex set of cognitions about the disorder" (p. 1198). The amount of variance in health-related behavior that can be explained by locus of control alone is unimpressive (Strickland, 1978; Wallston et al., 1978).

There appears to be a consensus that in order to accurately predict the health-related behavior of a chronically ill person in a particular circumstance, influences specific to the situation must be taken into account. One approach would be to determine general predispositions using a locus of control measure, then generate hypotheses as to the impact of contextual factors on those general tendencies. This method would involve a great deal of speculation and consequently would yield imprecise predictions. A much more direct method would be to assess the patient's perceptions of self-efficacy in regard to each context of interest.

According to Bandura (1977), "an efficacy expectation is the conviction that we can successfully execute the behavior required to produce the outcomes" (p. 193). Efficacy expectations are derived largely from the person's experiential history, current interpersonal influences, and physiological state. Bandura (1977) hypothesized that "expectations of personal efficacy determine whether coping behavior will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and aversive experiences" (p. 191). Tests of the relationship between expectancy and performance are hindered whenever expectancies are assessed globally as if they were static and unidimensional. As Kendall and Korgeski (1979) noted, "a specific self-efficacy instrument would need to be devised for each behavior under investigation" (p. 11). Given the attitudinal lability that characterizes the struggle for an identity, specificity in expectancy assessment is particularly critical when dealing with adolescents.

C. Information and Coping

According to Lazarus and Folkman (1984), coping refers to the "process of managing demands (external or internal) that are appraised as taxing or exceeding the resources of the person" (p. 283). One of the most significant aspects of this perspective is the emphasis on processes (i.e., coping strategies) rather than on styles or traits. An important implication of this is that a method of coping which is helpful in a particular context at a particular time may be less beneficial or even maladaptive on other occasions or in other settings. Although the relative adaptiveness of any strategy cannot be fully determined independent of the context in which it is applied, some methods are generally more adaptive than others.

One strategy that is common to most theories of coping and that has frequently been associated with positive outcome is "information seeking" (e.g., Cohen, 1980; Moos & Tsu, 1977; "Project on Coping," 1983). In studies of pediatric populations, disease-related information has been associated with decreased anxiety (Katz, Kellerman, & Siegel, 1980; Pfefferbaum, Levenson & van Eys, 1982) and improved compliance with medical advice (Francis, Korsch, & Morris, 1969). However, such associations have been weak. In a study of hospitalized adults, Cohen and Lazarus (1973) found that a preoperative measure of a trait believed to be related to information needs, "repression-sensitization," failed to predict coping behavior or patient recovery. Both the desire for additional information and the effects of such information on behavior and psychological state appear to be mediated by situation-specific influences. Willis et al. (1982) suggested that our understanding of the role of disease-related information might be enhanced significantly by addressing the patient's "perceived self-efficacy in being able to apply that knowledge" (p. 43).

Self-efficacy and information seeking are significantly interdependent; information facilitates competence in dealing with daily tasks which then increases the expectancy that additional information would be advantageous. Of course, there are circumstances in which additional disease-related information would be incapable of increasing competence and to believe otherwise would be merely wishful and perhaps maladaptive. However, it would seem that only a small minority of the population of chronically ill adolescents would be in such grave straits at any given time.

Information seeking may be particularly important during adolescence because it facilitates self-sufficiency and a sense of independence. Parents, even more than their ill adolescents, may feel a need for increased patient knowledge and independence (Levenson, Copeland, Morrow, Pfefferbaum, & Silberberg, 1983).

Perhaps it is because adolescents who are aggressively involved in their own treatments seem to survive longer (Achterberg, Matthews-Simonton, & Simonton, 1977), that most studies of self-help have focused on treatment issues. This focus also seems to parallel the information preferences of the adolescents themselves. In a study of 55 adolescent cancer outpatients, Levenson et al. (1983) found the need for disease-related information to be greatest in relation to the disease itself and least with regard to implications of the illness in terms of feelings, appearance, and relationships. In a related study, Pfefferbaum and Levenson (1982) described the information preferences of 63 adolescent oncology patients. Although information directly related to the disease and its treatment was given the highest priority, there was also a strong indication of need for information in psychosocial areas. For example, the following questionnaire items were rated as either "important" or "extremely important" (rather than "slightly important" or "unimportant") to the extent indicated by the corresponding percentages: "The effects of cancer and its treatment on current appearance" (73%); "The effects of cancer on future appearance" (77%); "The kinds of physical activity that can be done" (79%); "How cancer will affect future family role" (68%); "Ways to talk to friends and relatives about my illness" (46%).

The need to address the adolescent's psychosocial concerns becomes acute when such concerns interfere with medical treatment (Kellerman & Katz, 1977). For example, in interviews with nine adolescents who refused cancer treatment, the primary reasons given for refusal were: fear of how they would look and fear of friends' reactions (Blotcky, Cohen, Conatser, & Klopovich, 1985).

D. Literature Summary and Implications for the Present Study

Three areas of research relevant to the present study have been discussed: 1. Psychosocial impact of chronic illness during adolescence, 2. Perceptions of personal control, and 3. Disease-related information and coping.

The first section described aspects of adolescent development which affect subjective responses to chronic illnesses and related medical treatments. Other than studies of cognitive development as related to conceptualizations of health issues, the available literature offers few empirical accounts of how disease impact is mediated by developmental processes. Perspectives which emphasized typologies of illness and personality were found to add little to the understanding of the psychosocial concomitants of illness.

The literature reviewed in the second section outlined the evolution of the theory and measurement of perceptions of personal control. From its broad roots in Rotter's social learning theory, locus of control has been refined to address particular domains such as general perceptions of personal control over one's own health. However, "health" is such a broad content area that general measures of health control have provided little insight into behaviors that occur in specific, disease-affected contexts. Bandura's (1977) seminal paper on self-efficacy has prompted calls for context-specific investigations of perceptions of personal control with pediatric patients. Such applications have yet to appear in the literature.

The final section of the literature review addressed the relationship between disease-related information and coping. Information seeking was found to be an effective coping strategy for many patients. It appears that both information needs and the effects of such information often relate to specific manifestations of the illness and the psychosocial contexts in which they are most problematic. Published surveys indicate that chronically ill adolescents have strong needs for psychosocial information which takes into account the effects of their illnesses.

In all three areas (impact, personal control, information) there is a very salient trend toward increased recognition of the influence of contextual factors. The primary impetus for this more refined view is the need to predict behavior more precisely. Lazarus and Folkman (1984) cogently noted the need for greater sensitivity to the contextual specificity of coping:

> Quite clearly, we need to identify the situational context of the coping process if we are to make advances in our understanding....This means that we should be centering our assessments of coping, at least some of the time, on actual, specific encounters (p. 307).

This trend is much more evident in conceptual rather than methodological aspects of recent work; broad trait measures continue to dominate assessment practice. The present study is distinct from previous work in terms of the contextual specificity with which disease-relevant psychosocial variables are measured and analyzed. This project provides the first true test of the suspected advantage of context-specific measures over trait measures as correlates of psychosocial disease impact.

III. METHOD

A. Goals

The goals of this study are as follows:

1. To estimate correlations among four major variables relevant to the psychosocial perspectives of chronically health-impaired adolescents. These variables are outlined below and operationalized (transcribed into rating scales) in Section D of this chapter.

Psychosocial Disease Impact (PDI) refers to disease-induced changes in how the self is regarded in each of eight psychosocial contexts commonly believed to be integral to adolescent development. These contexts are: appearance, peer relationships, future orientation, sexual functioning, freedom/independence, school achievement, physical abilities, and family relationships.

Self Efficacy (SE) refers to perceived ability to derive benefit from disease-related information in each of the aforementioned psychosocial contexts. Self-efficacy in terms of disease-related information is a highly specific derivative of the self-efficacy construct elaborated by Bandura (1977).

Information Adequacy (IA) refers to perceived sufficiency of current disease-related knowledge in each of the psychosocial contexts.

Health Locus of Control (HLC) refers to the extent to which one believes his/her health to be under self-control. This variable relates to personal control over health generally (e.g., prevention, recovery, etc.), rather than in specific disease or psychosocial contexts.

2. To provide substantive interpretations of the observed intercorrelations based on the presumed nature of the variables.

B. Hypotheses

The first five hypotheses address the first primary research question asked in Chapter I: Are Self-Efficacy, Information Adequacy and Health Locus of Control significant correlates of Psychosocial Disease Impact in various psychosocial contexts of adolescence? Hypothesis 6 addresses the second primary research question: Is the correlation between Psychosocial Disease Impact and each of the other variables highly context specific or is there a high degree of continuity across contexts? The secondary research questions asked in Chapter I (regarding multivariate prediction of Impact and the effects of age and sex) are addressed separately in the Supplemental Analysis section of Chapter IV. Each formally stated hypothesis is preceded by a brief substantive description of the relationship(s) involved.

1. Subjects who have high Self-Efficacy (believe that they could make good use of disease-related information) are likely to have used information effectively in the past, thereby lowering their

Psychosocial Disease Impact. Subjects with low Self-Efficacy are likely to have high Impact as a consequence of not using psychosocial information in the past. This relationship will be expressed as a high negative correlation between Self-Efficacy and Psychosocial Disease Impact.

Hypothesis 1:

A significant, negative correlation will exist between Psychosocial Disease Impact and Self-Efficacy.

2. The relationship between Self-Efficacy and Psychosocial Disease Impact stated in Hypothesis 1 will be stronger than any other hypothesized relationship.

Hypothesis 2:

The magnitude of the negative correlation between Psychosocial Disease Impact and Self-Efficacy will be greater than the correlation between Psychosocial Disease Impact and any other variable.

3. Subjects who have adequate levels of disease-related information are likely to have benefited from such information in terms of Psychosocial Disease Impact. Subjects with very inadequate levels of disease-related information have had little information to bring to bear on the psychosocially relevant effects of their diseases. This relationship will be

expressed as a moderate, negative correlation between Information Adequacy and Psychosocial Disease Impact.

Hypothesis 3:

> A significant, negative correlation will exist between Psychosocial Disease Impact and Information Adequacy.

4. Subjects who perceive a great deal of control over their health in general will tend to have relatively low Psychosocial Disease Impact whereas subjects who perceive little control over their health will tend to have relatively high levels of Impact. This relationship will be expressed as a low, negative correlation between Health Locus of Control and Psychosocial Disease Impact.

Hypothesis 4:

> A nonsignificant negative correlation will exist between Psychosocial Disease Impact and Health Locus of Control.

5. Subjects who have high Self-Efficacy will tend to have high (internal) Health Locus of Control (and vice versa). Subjects who have high levels of Information Adequacy will also tend to show high levels of Health Locus of Control. These relationships will be expressed as low, positive correlations.

Hypothesis 5:

> A nonsignificant positive correlation will exist

between: (a) Health Locus of Control and Self-Efficacy; (b) Health Locus of Control and Information Adequacy.

6. The relationship between Self-Efficacy and Psychosocial Disease Impact will vary significantly from one psychosocial context to another. The same will be true for the relationship between Psychosocial Disease Impact and the other context-specific variable, Information Adequacy. This variability will be evidenced by significant differences between the eight psychosocial contexts in terms of the correlations which involve Psychosocial Disease Impact.

   Hypothesis 6:

   > There will be significant variability between psychosocial contexts with regard to bivariate correlations which involve Psychosocial Disease Impact.

The relationship between Psychosocial Disease Impact and the other three variables is depicted in Figure 1. The width of each arrow represents the corresponding variable's influence relative to the other identified influences. The amount of influence exerted by unexamined variables is unknown, as indicated by the undefined lines of the arrow at the right of the figure.

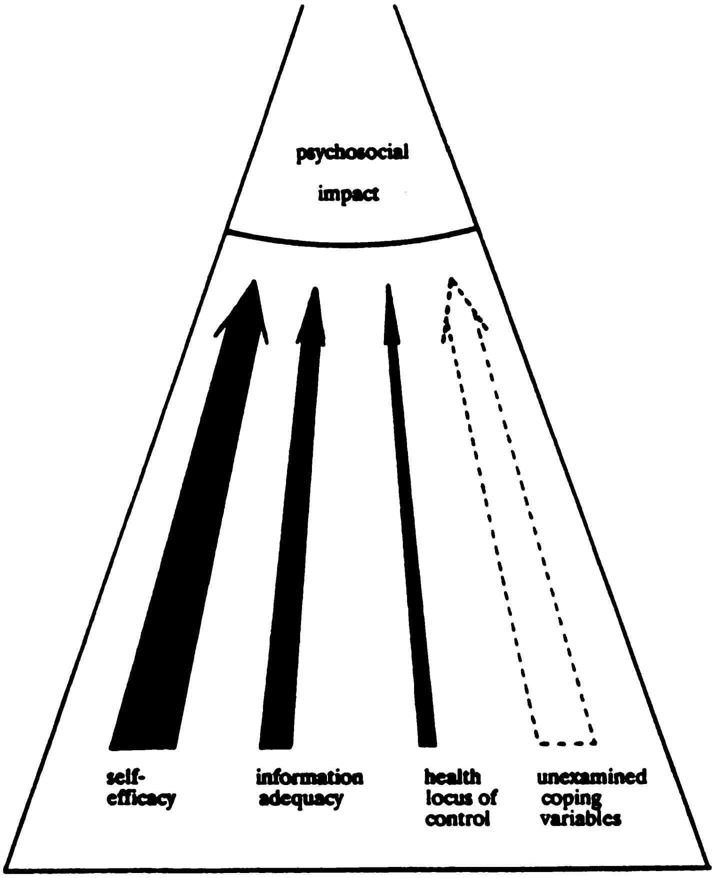

Figure 1. The self in reference to psychosocially relevant effects of illness or treatment.

The opening at the figure's apex illustrates the point at which psychosocial impact dissipates or increases in accord with gains and pitfalls in the coping process. Certainly the most desirable outcome is decreased psychosocial impact as coping progresses over time. However, even in such an adaptive scenario, situational influences, such as disease state or availability of social support, are likely to fluctuate and alter the balance between challenges and resources. Therefore, the extent to which the self is impacted by psychosocially relevant aspects of the illness will vary over time; the curved line of Figure 1 would vacillate accordingly.

The hypotheses are summarized in Table 1. Configurations of variable levels for hypothetical cases consistent with all hypotheses are exhibited in Table 2.

C. Subjects

The sample consisted of 30 adolescents, ages 13 through 18 years, each of whom had been diagnosed as having a serious chronic disease. Because of the great variability throughout the psychosocial literature in criteria used to define adolescence, the age span of 13 through 18 years was chosen "as the period to describe the adolescent experience, rather than as a method to encapsulate all of adolescence" (Ellis & Davis, 1982, p. 698). The only other criterion for inclusion was the absence of diagnosed or suspected mental retardation.

Subject recruitment began soon after the study proposal was approved by the University Committee on Research Involving Human Subjects at Michigan State University (Appendix A).

Since the investigator was not affiliated with a health care facility, subjects were recruited from diverse sources. A standard letter (Appendix B) requesting assistance in securing subjects was distributed to 65 physicians in the northwestern United States. The medical specialties represented in the physician group included: pediatrics, adolescent internal medicine, hematology, oncology, rheumatology, neurology, and

Table 1

Predicted Intercorrelations Among Variables

	Variable	SE	IA	HLC
1.	PDI	H (-)	M (-)	L (-)
2.	SE	--	M (+)	L (+)
3.	IA		--	L (+)
4.	HLC			--

Note. H=high (≥.60); M=moderate (.30-.59); L=low (≤.29).

Table 2

Configurations of Variable Levels That Exemplify All Hypothesized Relationships

		Hypothetical Case	
	Variable	1	2
1.	PDI	L	H
2.	SE	H	L
3.	IA	M-H	L-M
4.	HLC	M	M

Note. H=high; M=moderate; L=low.

cardiology. Physician referrals accounted for seven study participants. An advertisement (Appendix C) in the January, 1988 issue of the Candlelighters Newsletter, published by the Oregon chapter of the National Cancer Society, yielded 10 subjects. The remaining 13 subjects were located with assistance from various professionals in social work, psychology, and education. Subject characteristics are profiled in Table 3 and summarized in Table 4.

D. Measures

The data-gathering instrument developed for this study consists of 42 items in questionnaire format (Appendix D). The introduction to the "Teenager/Patient Questionnaire" instructs the subject to respond in terms of the six-point continuum of relative agreement that appears below each statement. This instrument consists of four distinct scales.

Three of the four scales originate in this project. Each item of these three scales is framed in terms of one of the eight psychosocial contexts (i.e., one item per context per scale). The main interest is on the relationships among the variables within each context, rather than on relationships among the variables across contexts. For example, self-efficacy across contexts is of much less interest than self-efficacy with regard to appearance, self-efficacy with regard to peer relationships, self-efficacy with regard to physical abilities, etc. The many psychometric "unknowns" and other limitations inherent in one-item measures are discussed in Section III G.

Table 3

Subject Characteristics

Subject	Sex	Age	State	Illness
1	M	17	CA	Lymphoma,Leukemia
2	M	15	CA	Diabetes mellitus
3	M	17	CA	Diabetes mellitus
4	F	18	OR	Thyroid cancer
5	F	15	OR	Leukemia
6	M	15	CA	Leukemia
7	M	13	OR	Leukemia
8	F	13	CA	Leukemia
9	M	17	CA	Seizure disorder-mixed
10	F	16	CA	Neuroblastoma
11	F	16	CA	Muscular dystrophy
12	F	17	CA	Leukemia
13	F	13	OR	Diabetes mellitus
14	M	14	OR	Lymphoma, Leukemia
15	M	16	CA	Osteogenesis imperfecta
16	M	15	CA	Spina bifida
17	F	14	CA	Leukemia
18	M	18	CA	Leukemia
19	F	18	CA	Leukemia
20	F	15	CA	Leukemia
21	M	15	MI	Muscular dystrophy
22	M	13	MI	Muscular dystrophy
23	M	14	OR	Rhabdomyosarcoma
24	M	16	OR	Hodgkin's disease
25	F	13	OR	Leukemia
26	M	16	OR	Leukemia
27	M	13	CA	Torsion dystonia
28	F	15	CA	Friedreich's ataxia
29	M	15	WA	Ewing's sarcoma
30	F	13	OR	Osteogenic sarcoma

Table 4

Sample Summary

Sex		Frequency	Percent
1.	Male	17	56.7
2.	Female	13	43.3
Age			
1.	13, 14	10	33.3
2.	15, 16	13	43.3
3.	17, 18	7	23.3
State			
1.	California	17	56.7
2.	Michigan	2	6.7
3.	Oregon	10	33.3
4.	Washington	1	3.3
Illness			
1.	Cancer	19	63.3
2.	Diabetes mellitus	3	10.0
3.	Friedreich's ataxia	1	3.3
4.	Muscular dystrophy	3	10.0
5.	Osteogenesis imperfecta	1	3.3
6.	Seizure disorder	1	3.3
7.	Spina bifida	1	3.3
8.	Torsion dystonia	1	3.3

However, one psychometric property, "content validity" was given particular priority in the construction of the measures of Psychosocial Disease Impact, Self-Efficacy, and Information Adequacy and therefore warrants consideration here.

"Content validity is built into a test from the outset through the choice of appropriate items" (Anastasi, 1968, p.100). According to Salvia and Ysseldyke (1985), content validity is evaluated not only by examining the appropriateness of the items (i.e., Does this item really tap the domain of interest?) but also by determining the completeness of the item sample. Certainly a one-item measure of a personality trait such as locus of control would fall far short on the completeness criterion. Even constructs which are much narrower in scope, such as general self-efficacy, require many appropriate items to ensure adequate representation. However, the domains of interest in the present project are so narrow (i.e., constrained by both relevance to the subject's disease and relevance to a particular psychosocial context) that large numbers of items are not necessary to ensure adequate domain sampling. Such domains include the impact of one's disease on his or her appearance, the extent to which one believes that he or she could make use of disease-related information to improve family relationships, perceived adequacy of one's current level of disease-related knowledge about maximizing his or her school achievement, etc.

Psychological Disease Impact. This scale relates to disease-induced changes in how the self is regarded in each of eight psychosocial contexts of adolescence. These contexts are: appearance, peer relationships, future orientation, sexual functioning, freedom/independence, school achievement, physical abilities, and family relationships. The order of all questionnaire items was determined via a randomization process. The items that compose the Psychosocial Disease Impact scale are: 1, 18, 23, 27, 29, 32, 35, and 36.

The 18-item "Illness Impact Questionnaire" developed by Zeltzer, et al. (1980) is the only other instrument which addresses the impact of disease on particular aspects of adolescent psychosocial functioning. Each of seven of the eight psychosocial contexts examined in the present study (i.e., other than physical abilities) is represented by one or more items in the Illness Impact Questionnaire. In the interest of optimal content validity and parallel form among the three context-specific measures, the Illness Impact Questionnaire served only as a very general prototype in the development of the Psychosocial Disease Impact items.

Self-Efficacy. This scale relates to perceived ability to derive benefit from context-specific disease-related information. The items that compose the Self-Efficacy scale are: 4, 11, 12, 13, 19, 25, 30, and 39.

As Strickland (1978) and others have noted, assessing perceptions of personal control broadly, as in the case of locus of control scales, tells us little about actual behavioral functioning. Using locus of control scales which relate to a particular aspect of functioning, such as health, is a step toward greater specificity yet still provides little information about how one copes with disease manifestations (Wallston et al., 1978). Although Bandura (1977) argued that self-efficacy is a personal control construct specific enough to explain observed coping behavior, no such applications have been reported. Given that acquisition of disease-related information is often an important aspect of the coping process (Moos & Tsu, 1977), self-efficacy in the current project was framed in terms of disease-related psychosocial information. Since there were no prototypical disease-related self-efficacy items to rely upon, the tenets of content validity and the interest in parallel form were given priority in the development of the Self-Efficacy items. The close correspondence between each item and the domain of interest (disease-related, context-specific self-efficacy) is clearly evident in the structure common to all Self-Efficacy items: "I could make good use of information about ____________, despite the effects of my illness (or treatment)."

<u>Information Adequacy</u>. This scale relates to perceived adequacy of current level of disease-related knowledge in each psychosocial context. The items that compose the Information Adequacy scale are: 2, 3, 10, 14, 21, 26, 33, and 38.

As with the other context specific measures, Information Adequacy items are logical derivatives of the construct of interest and have no empirical history in the psychological literature. The content validity and parallel form of the

Information Adequacy items are apparent in the structure common to all Information Adequacy items: "I currently have adequate information about ________________, which takes into account the effects of my illness (or treatment)."

Health Locus of Control. This scale relates to perceived self-control over health in general. The Health Locus of Control scale is actually Form A of the Multidimensional Health Locus of Control scales (Wallston et al., 1978). The items that compose the Health Locus of Control scale are: 5, 6, 7, 8, 9, 15, 16, 17, 20, 22, 24, 28, 31, 34, 37, 40, 41, and 42.

The only psychometric data available for the Health Locus of Control scale are those reported by its developers, Wallston, et al. (1978). However, the Wallston et al. (1978) study is replete with methodological limitations and is focused primarily on adults. To illustrate, 354 persons, ages 16 and above, waiting at gates in a Nashville airport were asked to complete and return a booklet that contained 115 items from which the Health Locus of Control Scales would later be derived. Eighty percent of those approached accepted the booklet and 44% of those individuals returned them. Of those returning the booklet, the mean age was 42 years, 74% had at least some college education, and most were residents of Tennessee. In summary, the Health Locus of Control scale has yet to receive validation beyond that which can be inferred from the seemingly close match between item content and the construct purportedly measured.

According to a method developed by Fry (1968), the questionnaire is approximately at the 7th grade level of readability.

E. Procedure

Upon receipt of the name and telephone number of each prospective subject (from one of the referral sources described in Section III C), an introductory telephone call was made to the adolescent's parent or guardian. A brief description of the study was provided, with an emphasis on what participation would entail. The parent or guardian was informed that the questionnaire deals with potentially sensitive topics such as sexual functioning, family relationships, and appearance. If the parent/guardian indicated a willingness to allow the adolescent to participate, a similar introduction was provided to the potential subject. In 12 instances, the study was introduced by someone other than the researcher; each representative had received instruction in how the introduction was to be handled. All of the referred adolescents and their parents or guardians indicated a willingness to examine the participant packet. This packet consisted of a consent form for the adolescent (Appendix E), a consent form for the parent or guardian (Appendix F), the questionnaire, and a postage paid return envelope. These materials were sent to the parent or guardian to be reviewed and approved before being passed on to the adolescent.

To encourage participation and rapid return of the consent forms and questionnaire, a ten dollar incentive was offered to all but the first two participants (i.e., it was initiated as soon as the need became apparent). The incentive check was mailed within one day of the return of the completed study materials.

All adolescents who were asked to participate completed and returned the questionnaire. Each subject's questionnaire was complete; there were no omissions or ambiguous responses.

Subjects received a "debriefing" telephone call soon after participating in the study. The purposes of the call were to thank the subject, provide "appropriate reassurance...about nor-normal reactions, including disappointment" (APA, 1982, p. 66), and to detect any adverse effects of having participated in this project. A note relevant to these matters was sent to subjects who could not be contacted by telephone; the option of placing a collect call to the researcher was included.

Subjects were again contacted by telephone (or mail) approximately one month after participation to ascertain whether or not participation-related effects existed. There was no indication whatsoever of any adverse participation-related effect.

Each subject will receive a brief summary of the project (Appendix G) when it is complete.

F. Data Analysis

Prior to analysis, the ratings of 12 of the 18 Health Locus of Control items (5, 7, 9, 16, 17, 22, 24, 28, 31, 34, 41, 42) were reversed so that all high ratings would correspond to "internal" control whereas all low ratings would correspond to "external" control. The primary analysis consists of (a) bivariate correlations conducted within each psychosocial context and across contexts, and (b) a test of the contextual specificity (homogeneity) of the bivariate correlations which involve Psychosocial Disease Impact.

When the population correlation rho (ρ) has a value other than zero, the bivariate distribution is skewed. With $\rho \neq 0$, the smaller the sample size, the greater the skewness. Given the relatively small sample size in the present study (N=30), the direct use of r in normal distribution tests of Ho: $\rho = 0$ perhaps would have produced misleading results. Consequently, R. A. Fisher's (1915) logarithmic transformation of r was used in testing each Ho: $\rho = 0$, since the sampling distribution of this statistic (Z_r) is approximately normal irrespective of sample size or the value of r. For each obtained value of r, the following test was conducted:

$$Z = \frac{Z_r - Z_\rho}{\sigma Z_r}$$

where

$$Z_r = \frac{1}{2} \log_e \frac{1+r}{1-r}$$

$$Z_\rho = \frac{1}{2} \log_e \frac{1+\rho}{1-\rho}$$

$$= 0$$

$$\sigma Z_r = \frac{1}{\sqrt{N-3}}$$

$$= \frac{1}{\sqrt{27}}$$

$$= .1925$$

To test the contextual homogeneity of the bivariate correlations involving Psychosocial Disease Impact (e.g., PDI/SE in appearance vs. PDI/SE in peer relationships), the following statistic, as described by Olkin (1967), was computed. This test was conducted for all possible context comparisons (28) for each of the two pairs of correlated variables of interest.

$$\frac{\sqrt{n}[(r_{12} - r_{34}) - (\rho_{12} - \rho_{23})]}{\hat{\sigma}_{r_{12}-r_{34}}}$$

where $\rho_{12} - \rho_{34} = 0$

$$\hat{\sigma}_{r_{12}-r_{34}} = \sqrt{\begin{aligned}&(1-r_{12}^2)^2+(1-r_{34}^2)^2+r_{12}r_{34}[r_{13}^2+r_{14}^2+r_{23}^2+r_{24}^2]\\&+2[r_{13}r_{24}+r_{14}r_{23}]\\&-2[r_{12}r_{13}r_{14}+r_{12}r_{23}r_{24}+r_{13}r_{23}r_{34}+r_{14}r_{24}r_{34}]\end{aligned}}$$

Several supplemental analyses were conducted. The correlations between Psychosocial Disease Impact and various linear combinations of the other three variables (i.e., multiple R) were explored in each psychosocial context and across contexts.

A two-factor (2 x 2) analysis of variance (ANOVA) was conducted with each of the four variables to detect effects of age, sex, and the interaction of age and sex. ANOVAs were conducted both within and across psychosocial contexts. Table 5 illustrates the layout of cases in each ANOVA. All correlations and ANOVAs were performed using Psychostat-3, release 2.1 for IBM.

The variable list and data file are in Appendix H.

Table 5

Layout for 2 x 2 ANOVAs

		Age	
		13-15	16-18
Sex	Male	n = 10	n = 7
	Female	n = 8	n = 5

G. Limitations

The most significant limitation of the present study is the relatively small size of the sample. Results based on 30 subjects are considerably less stable or conclusive than results based on large samples.

A second major limitation involved the nonrandom nature of the subject selection process. This limitation is most costly in terms of inferential aspects of the obtained results. The pool of potential participants was limited by factors other than the research requirements. For example, several referral sources, particularly physicians, indicated that they knew of chronically ill adolescents who would not be approached for possible participation due to the grave nature of their current health status. Additionally, all subjects were volunteers, some of whom cited the ten dollar incentive as the primary reason for their participation. Volunteerism and variables related to financial need may have, in some unknown way, biased the selection process. Perhaps the obtained results are representative only of persons very similar to study participants in terms of other unmeasured variables, such as health status or intelligence.

Three of the study's four scales originate in this project. A fourth measurement tool, the Health Locus of Control scale, has been the focus of very little prior research. The reliability of these instruments is unknown. Given that Psychosocial Disease Impact, Self-Efficacy and Information Adequacy were measured by only one item per psychosocial context, a reliability coefficient could not be computed. (Only one type of reliability coefficient, a stability coefficient, can be computed for one-item measures; the necessary readministration of the items was not included in this project.) Without a reliability coefficient, it is not possible to compute the standard error of measurement or to estimate true scores. For a test to be valid, it must be reliable. The instruments used in the present study may or may not be sufficiently reliable.

The extent to which each of these instruments measures its parent construct is open to debate. Content validity, the concept most prominent in the development of the items in this study, is judgmental in nature (Salvia & Ysseldyke, 1985). Items were not pilot tested prior to inclusion in the study. The absence of empirical validity studies necessitates particular caution when describing relationships, even correlational relationships, among the variables purportedly measured. Interpretations offered for the observed correlations are therefore particularly tenuous.

There was no objective measure of the presence or absence of psychosocially relevant effects of disease or treatment. Low ratings on coping variables could, for example, simply indicate that there were no psychosocial challenges with which the subject had to cope.

The fit between the type of data and the type of analysis is less than ideal. Variables to be correlated or used (as dependent variables) in ANOVAs must be continuous. Although there is no one definitive distinction between discrete and continuous variables, the range of possible values at the context level (1-6) only marginally qualifies as continuous.

The final matter concerns the distinction between statistical significance and differences (between genders or age groups) that are of practical or theoretical use. This distinction is particularly important given the large number of ANOVAs conducted (28) with a lenient level of alpha (.05) and the consequent likelihood of observing one or two instances of statistical significance due to chance.

IV. RESULTS AND DISCUSSION

Obtained correlations which relate to the hypotheses will be discussed at the "across contexts" level, then within each psychosocial context. These two levels of bivariate analysis are followed by an examination of the contextual specificity of the bivariate correlations which involve Psychosocial Disease Impact. Questions of secondary interest (regarding multivariate prediction of Impact and the effects of age and sex) are addressed under a separate heading, Supplemental Analyses. The chapter concludes with a section devoted to integration and derivation of tentative conclusions.

First, however, a few comments regarding the classification of correlation coefficients are warranted. Substantive descriptions of the hypotheses were framed in terms of "high," "moderate," or "low" correlations. There is great diversity among various classifiers in the use of these categories. Such diversity is warranted because the evaluation of any given correlation is bound by the nature of its constituent variables. To illustrate this relativity, Blommers and Forsyth (1977) suggested that coefficients as high as .5 between measures of a physical trait and a mental trait are extremely rare whereas correlations of this magnitude between reliable measures of two mental traits are quite common and would be considered only moderate. Similarly, a correlation of .9 between two independent measures of the same trait, as in the case of alternate forms of an academic achievement test, might be considered only moderate or perhaps even low.

Given the nature of the variables currently under study, the adjective high will be applied to correlations of .60 or greater, moderate will denote correlations of .30 to .59, and coefficients of .29 or less will be regarded as low. The lower end of the high category accounts for more than one-third (36%) of the total variance, whereas the upper limit of the low category accounts for less than one tenth (8.4%) of the variance. Values considered high are, without exception, statistically significant (given N = 30) whereas low values are not. Values near the boundaries of these somewhat arbitrarily defined categories will be qualified accordingly (e.g., moderately high).

A. Bivariate Correlations Across Contexts

Bivariate correlations based on data aggregated from all psychosocial contexts are displayed in Table 6. Using the classification system described above, none of the hypotheses received support at the across contexts level. However, if a less categorical approach is taken, the relationship between Information Adequacy and Impact implicit in Hypothesis 3 (a moderate, negative correlation), received strong affirmation (r= -.709). Perhaps adolescents who have illnesses with relatively minor psychosocially relevant concomitants simply have little need for disease-related psychosocial information (i.e., they consider their current knowledge sufficient). This pattern is most clearly evident in the case of Subject 3. This 17-year-old male with very well controlled diabetes mellitus reportedly is very popular, athletic, and in his school's Gifted and Talented program. He gave a rating of one to every Impact item and a rating of six to every Information Adequacy item. Even persons such as Subjects 4, 6, and 28 with more serious illnesses (thyroid cancer, leukemia, and a degenerative muscle disorder, respectively) gave low ratings (average ≤ 2) to Impact items and high ratings (average ≥ 4) to Information Adequacy items. Perhaps the reason that these individuals currently experience a low level of impact is because they have ample information about how to cope with the psychosocially relevant aspects of their illnesses. The high, inverse relationship between Impact and Information Adequacy appears to characterize chronically ill adolescents independent of variability in objective health status.

The strongest relationship observed was between Impact and Health Locus of Control ($r= -.769$). Clearly, adolescents with a more "internal" focus perceived less impact relative to their more "external" counterparts. This relationship was much stronger than that which was anticipated in Hypothesis 4 (a low, negative correlation). Although objective health status was not systematically assessed, this high, negative correlation appears to hold true for the terminally ill adolescent as well as for those with well controlled illnesses. The magnitude of this

Table 6

Correlations Among Variables Across Contexts

Variable	SE	IA	HLC
1. PDI	.412(2.275)*	-.709(-4.588)***	-.769(-5.273)***
2. SE	---	-.389(-2.127)*	-.355(-1.928)
3. IA		---	.676(4.270)***
4. HLC			---

Note: Values of z corresponding to r are in parentheses.
*p<.05, ***p<.001

Table 7

Correlations Among Variables In-Context: Appearance (AP)

Variable	SE	IA	HLC
1. PDI	.355 (1.928)	-.714(-4.652)***	-.546(-3.184)**
2. SE	---	-.457(-2.564)*	-.586(-3.490)***
3. IA		---	.666(4.175)***
4. HLC			---

Note: Values of z corresponding to r are in parentheses.
*p<.05, **p<.01, ***p<.001

coefficient is somewhat surprising given the ambiguity inherent in interpreting the general and primarily prevention focused Health Locus of Control items (i.e., "If I take care of myself, I can avoid illness") from the perspective of someone with a major, perhaps life threatening illness. The mother of Subject 30 described on the questionnaire how her daughter responded to this ambiguity:

> Jenny was confused about how to answer the questions dealing with her control over her illness. She believes her cancer was a matter of chance but that she has control over minor illnesses and over the effects of treatment.

The positive correlation between Information Adequacy and Health Locus of Control (.676) was much stronger than anticipated in Hypothesis 5b (a low, positive correlation) and may be the product of bidirectional influences. A strong sense of personal control is likely to promote information acquisition which then may increase the person's perceived competence.

The moderate, positive correlation between Impact and Self-Efficacy (.412) is the result in sharpest contrast to a hypothesized relationship (i.e., a high, negative correlation). The low Self-Efficacy ratings of many subjects may have been a reflection of minimal need for disease-related psychosocial information. Similarly, an adolescent confronted with significant psychosocially relevant manifestations of a disease may be highly motivated to seek and apply relevant information so as to improve his or her circumstances. The fact that self-efficacy tended to correlate positively with Impact and negatively with Information Adequacy suggests the possibility of such a relationship. However, within the sample is a subset of subjects which produced responses more consistent with the hypothesized relationships. Included in this subset are Subjects 4 and 6 who, despite low Impact ratings, had relatively high Self-Efficacy ratings. Chronically ill adolescents such as these may have used information effectively in the past and are now confident about being able to apply additional information productively. This notion is evident in comments Subject 24 wrote on his questionnaire:

> When the phrase, "I could make good use of", is used, I feel that <u>any</u> additional information could be used. The same is true about the phrase, "I currently have adequate information". The information may be adequate but more is always being looked for, used, and appreciated when found.

B. Bivariate Correlations Within Contexts

<u>Appearance</u>

Bivariate correlations among the four variables within the context of appearance are displayed in Table 7. The correlations among the appearance variables relate to the hypotheses in the same manner as did the correlations observed across contexts (i.e., no support according to the classification system, but stronger-than-predicted support for the negative correlation between PDI and IA specified in Hypothesis 3, the negative correlation between PDI and HLC specified in Hypothesis 4, and the positive correlation between HLC and IA specified in Hypothesis 5b).

There are two exceptions to the across contexts pattern that are noteworthy, at least from a mathematical perspective. The correlation between Impact and Health Locus of Control for appearance is considerably smaller than the correlation between these variables at the across contexts level (-.546 vs. -.769). In terms of the classification system, the correlation between Impact and Health Locus of Control within the context of appearance is high rather than moderate as is the case at the across contexts level. The other exception is that the correlation between Self-Efficacy and Health Locus of Control for appearance is greater than the corresponding correlation at the across contexts level (-.586 vs. -.355).

Peer Relationships

Interrelationships among the four variables within the context of peer relationships are displayed in Table 8. The direction of each correlation at the peer relationships level is the same as it was at the across contexts level. However, three of the coefficients at the peer relationship level are only moderate, in contrast to their high counterparts at the across contexts level. As discussed below, only Hypothesis 3 (a moderate, negative correlation between PDI and IA) received support according to the coefficient classification system whereas the relationships specified in Hypotheses 4 (a low, negative correlation between PDI and IA) and 5b (a low, positive correlation between HLC and IA) were stronger than anticipated.

Two of the more moderately correlated pairs of variables involve Health Locus of Control (PDI, HLC; IA, HLC). Even this more moderate correlation between Health Locus of Control and Information Adequacy is stronger than the relationship predicted in Hypothesis 5b. The coefficients at the across contexts level are much greater than at the peer relationships level (for PDI, HLC: -.769 vs. -.422; for IA, HLC: .676 vs. .358). Perhaps the Health Locus of Control scale is too broad to be sensitive to peer related implications of illness. Only one of the 18 items that compose the Health Locus of Control scale includes a reference to peers (item 31).

The weaker relationship between Impact and Information Adequacy at the peer relationships level, relative to the across contexts level, supports Hypothesis 3 (a moderate,negative correlation). However, this coefficient may have been moderated by certain aspects of impact which cancel each other out and result in a rating which does not fully represent the actual degree of impact. Again, the comments offered by Subject 24 provide insight:

> In regard to the negative affect my disease and treatment have on my social life, I must comment that it has brought some people closer to me and others further away.

<u>Future Orientation</u>

Bivariate correlations among the four variables within the context of future orientation are displayed in Table 9. Hypotheses 3 (a moderate, negative correlation between PDI

Table 8

Correlations Among Variables In-Context: Peer Relationships (PR)

	Variable	SE	IA	HLC
1.	PDI	.509(2.915)**	-.412(-2.246)*	-.422(-2.339)*
2.	SE	---	-.329(-1.255)	-.463(-2.603)**
3.	IA		---	.358(1.946)
4.	HLC			---

Note: Values of z corresponding to r are in parentheses.
*p< .05, **p<.01

Table 9

Correlations Among Variables In-Context: Future Orientation (FO)

	Variable	SE	IA	HLC
1.	PDI	.406(2.239)*	-.457(-2.564)**	-.697(-4.474)***
2.	SE	---	.092(.480)	.258(1.372)
3.	IA		---	.348(1.887)
4.	HLC			---

Note: Values of z corresponding to r are in parentheses.
*p<.05, **p<.01, ***p<.001

and IA) and 5a (a low, positive correlation between HLC and SE) received support according to the classification system whereas the relationships specified in Hypotheses 4 (a low, negative correlation between PDI and HLC) and 5b (a low, positive correlation between HLC and IA) were stronger than predicted.

There is less association among the variables at the future orientation level than at the across contexts level. The coefficient of each of two pairs of correlated variables, Psychosocial Disease Impact/Information Adequacy and Information Adequacy/Health Locus of Control, is only moderate within the context of future orientation, rather than high as was the case at the across contexts level. In the same trend, Self-Efficacy within future orientation bears negligible association with either Information Adequacy or Health Locus of Control. Orientation toward the future is perhaps based on factors which are less specific or less observable than the referents on which perceptions of appearance or peer relationships are based. Future orientation's more abstract, philosophical nature may be why the broadest variable, Health Locus of Control, is the best predictor ($r = -.697$) of Impact.

Sexual Functioning

Interrelationships among the four variables within the context of sexual functioning are displayed in Table 10. None of the hypotheses received support according to the classification system although the relationships described in Hypotheses 4 (a low, negative correlation between PDI and HLC), 5a (low, positive correlation between HLC and SE), and 5b (a low, positive correlation between HLC and IA) were stronger than anticipated.

Other than the strong, positive correlation between Information Adequacy and Health Locus of Control (.667), each correlation within this context is considerably different from its across contexts counterpart in terms of either magnitude or direction. In contrast to the larger, statistically significant coefficients at the across contexts level, only a negligible correlation exists between Impact and each of the other three variables. The relative nonassociation between sexual functioning Impact and each of the other three variables may be due to a lack of attention to sexual matters. Comments written on the questionnaires suggest that at least a few subjects were confused as to how to respond to questionnaire references to sexual functioning, given their current lack of sexual relationships. It is likely that many of the subjects, particularly those with severe muscle disorders or active cancers, would consider sexual matters relatively foreign as compared with family relationships, non-sexual physical abilities, and other matters of inescapable prominence. Consequently, high levels of Information Adequacy were endorsed. The moderate and positive correlation between Self-Efficacy and Information Adequacy may indicate that within this context both variables essentially relate to the same perspective: disinterest.

Freedom/Independence

Bivariate correlations among the four variables within the context of freedom/independence are displayed in Table 11. None of the hypotheses was supported according to the classification system. The relationships specified in Hypothesis 4 (a low, negative correlation between PDI and HLC) and 5b (a low, positive correlation between HLC and IA) were stronger than predicted.

Although the moderate tendency for increased levels of Information Adequacy to be associated with decreased levels of Self-Efficacy is evident within freedom/independence (-.460), as well as within most other contexts, each of these variables appears to have little bearing on Impact (i.e., the coefficient for PDI/SE is .293 and the coefficient for PDI/IA is -.293). The strongest associations involve Health Locus of Control. As was the case at the across-contexts level, the degree of concordance between Information Adequacy and Health Locus of Control was high and the magnitude of the inverse relationship between Self-Efficacy and Health Locus of Control was moderate.

School Achievement

Interrelationships among the four variables within the context of school achievement are displayed in Table 12. Only Hypothesis 3 (a moderate, negative correlation between PDI and IA) received confirmation from the school achievement data whereas the relationships described in Hypotheses 4 (a low, negative correlation between PDI and HLC) and 5b (a low,

Table 10

Correlations Among Variables In-Context: Sexual Functioning (SF)

Variable	SE	IA	HLC
1. PDI	.187 (.938)	-.259 (-1.377)	-.301 (-1.600)
2. SE	---	.508 (2.910)**	.434 (2.415)*
3. IA		---	.667 (4.184)***
4. HLC			---

Note: Values of z corresponding to r are in parentheses.
*p<.05, **p<.01, ***p<.001

Table 11

Correlations Among Variables In-Context: Freedom/Independence (FI)

Variable	SE	IA	HLC
1. PDI	.293 (1.569)	-.293(-1.569)	-.679(-4.297)***
2. SE	---	-.460(-2.584)**	-.498(-2.840)**
3. IA		---	.605(3.645)***
4. HLC			---

Note: Values of z corresponding to r are in parentheses.
**p<.01, ***p<.001

positive correlation between HLC and IA) were stronger than anticipated.

There is a somewhat stronger association between Self-Efficacy and Impact with regard to school achievement, relative to the other psychosocial contexts. In general, students impacted the most perceived the greatest potential benefit from additional achievement-related information that would take into account the effects of illness and/or treatment. Given that the mean of school achievement Impact (3.30; SD=1.78) is in the middle of the rating continuum, the moderately strong correlation between Impact and Self-Efficacy also reflects the perceptions of adolescents with low achievement Impact who consequently do not need disease-accommodating, school-related information.

Although many of the subjects were receiving educational services designed to accommodate their health problems (e.g., home-based instruction), Impact was relatively independent of whatever information such programs provided (i.e., the correlation between PDI and IA is only -.301). This relatively minor degree of association is in sharp contrast to the very substantial correlation coefficient at the across contexts level (-.709).

Physical Abilities

Bivariate correlations among the four variables within the context of physical abilities are exhibited in Table 13. Only Hypothesis 5b (a low, positive correlation between HLC and IA) was confirmed whereas the relationship described in Hypothesis 4

Table 12

Correlations Among Variables In-Context: School Achievement (SA)

Variable	SE	IA	HLC
1. PDI	.515(2.959)**	-.301(-1.613)	-.476(-2.691)**
2. SE	---	-.366(-1.94)	-.343(-1.858)
3. IA		---	.482(2.731)**
4. HLC			---

Note: Values of z corresponding to r are in parentheses.
**p<.01

Table 13

Correlations Among Variables In-Context: Physical Abilities (PA)

Variable	SE	IA	HLC
1. PDI	.160(.839)	-.213(-1.124)	-.591(-3.528)***
2. SE	---	.059(.307)	-.161(-.844)
3. IA		---	.228(1.206)
4. HLC			---

Note: Values of z corresponding to r are in parentheses.
***p<.001

(a low, negative relationship between PDI and HLC) was considerably stronger than anticipated. Health Locus of Control correlated -.591 with physical abilities Impact, in contrast to the other two variables, each of which correlated negligibly with Impact (i.e., SE/PDI=.160, IA/PDI= -.213). In fact none of the bivariate relationships, other than that of Health Locus of Control and Impact, attained statistical significance at alpha .05 or beyond.

Family Relationships

Interrelationships among the four variables within the context of family relationships are exhibited in Table 14. Hypothesis 3 (a moderate, negative correlation between PDI and IA) received confirmation in accord with the classification system whereas the relationships predicted in Hypotheses 4 (a low negative correlation between PDI and HLC) and 5b (a low, positive correlation between HLC and IA) were stronger than anticipated. Table 14 closely resembles the correlation matrix of the across contexts variables (Table 6). Within the family relationships context, however, Information Adequacy bears a somewhat weaker inverse relationship with Impact than was the case at the across contexts level (i.e., -.597 vs. -.709). Similarly, Information Adequacy's functional relationship with the variable most associated with Impact, Health Locus of Control, is substantially lower within the context of family relationships, relative to the across contexts level (i.e., .460 vs. .676). It is likely that for many chronically ill adolescents family relationships are an ongoing challenge, even in families with generally good relationships. The positive, moderate correlation between Impact and Self-Efficacy suggests that adolescents with disease-affected family relationships are relatively more interested in acquiring information about how to improve family relationships. Adolescents who perceived a high level of control over health in general (Health Locus of Control) were much more apt to have family relationships with relatively low levels of disease-related discord. The observed correlation between Impact and Health Locus of Control most likely is the product of many determinants, including pre-diagnosis family functioning.

C. Contextual Specificity of Bivariate Correlations

Seven of the 28 inter-context differences in correlations between Psychosocial Disease Impact and Self-Efficacy attained statistical significance at alpha .05 or beyond.[1] The observed differences are particularly noteworthy given the low power associated with N=30. The finding that one of every four tests of inter-context differences is significant provides moderate support for the heterogeneous relationship between Impact and Self-Efficacy specified in Hypothesis 6.

Only 3 of the 28 inter-context differences between Psychosocial Disease Impact and Imformation Adequacy attained statistical significance at alpha .05 or beyond. Since one or two instances of statistical significance probably resulted from chance alone, the three significant inter-context differences observed do not support the heterogeneous relationship between

[1] The author gratefully acknowledges assistance from Hripsime A. Kalaian in conducting these analyses.

Impact and Information Adequacy described in Hypothesis 6.

D. Supplemental Analyses

Multivariate Prediction Across Contexts

Psychosocial Disease Impact at the across contexts level was predicted with various linear combinations of the other three across contexts variables. The correlation and R^2 of each set of predictors are exhibited in Table 15. The amount of variance explained per combination ranges from approximately one-half (SE, IA) to two-thirds (SE, IA, HLC). The addition of Self-Efficacy accounts for only two percent more variance than either Information Adequacy or Health Locus of Control alone.

Multivariate Prediction Within Contexts

Appearance Impact was predicted with various linear combinations of the other two appearance-related variables in conjunction with Health Locus of Control. The correlation and R^2 of each set of predictors are displayed in Table 16. The amount of appearance-related Impact explained per combination ranges from 30 percent (SE, HLC) to 51 or 52 percent (all other combinations). The addition of Self-Efficacy and/or Health Locus of Control to Information Adequacy did not enhance prediction even one percent.

All intercorrelations within peer relationships are moderate. As is evident from comparisons among the R^2 values in Table 17, the range of explained variance among the four linear combinations of Impact predictors is narrow (i.e., 27% to 35%).

An examination of Table 18 reveals that the addition of

Table 14

Correlations Among Variables In-Context: Family Relationships (FR)

	Variable	SE	IA	HLC
1.	PDI	.479(2.710)**	-.597(-3.578)***	-.778(-5.404)***
2.	SE	---	-.394(-2.164)*	-.623(-3.637)***
3.	IA		---	.460(2.584)**
4.	HLC			---

Note: Values of z corresponding to r are in parentheses.
* p<.05, **p<.01, ***p<.001

Table 15

Multivariate Predictors of Psychosocial Disease Impact Across Contexts

	Predictor Variables	R	R^2
1.	SE, IA	.724***	.524
2.	SE, HLC	.783***	.614
3.	IA, HLC	.811***	.657
4.	SE, IA, HLC	.816***	.666

Note: ***p<.001

Self-Efficacy or Information Adequacy to Health Locus of Control explains only an additional five or six percent of the variance in Impact within the context of future orientation.

As exhibited in Table 19, the linear combination of all three predictors accounts for only about one-fourth of the variance in sexual functioning Impact. The same set of predictors in the other seven psychosocial contexts explains one-third to two-thirds of total Impact variance.

As is exhibited in Table 20, only negligible increases in the prediction of freedom/independence Impact were achieved by adding Self-Efficacy and/or Information Adequacy to Health Locus of Control. The Health Locus of Control/Impact relationship most likely is the product of bidirectional influences, dependent on objective disease-related restrictions as well as general predispositions relevant to personal control.

A comparison of the R^2 values of the second and fourth linear combinations exhibited in Table 21 indicates that Information Adequacy does not contribute uniquely to the prediction of Impact in the context of school achievement.

The R^2 values in Table 22 indicate that only an additional 1% of the physical abilities Impact variance is explained by supplementing Health Locus of Control with Self-Efficacy and Information Adequacy. Without the effect of Health Locus of Control, the predictor set explains very little (i.e., 8%) Impact variance. The relative nonassociation among the context-specific, disease-related information variables is particularly enigmatic within the context of physical abilities, given the

Table 16

Multivariate Predictors of Context-Specific Impact: Appearance (AP)

	Predictor Variables	R	R^2
1.	SE(AP), IA(AP)	.714	.510
2.	SE(AP), HLC	.547**	.297
3.	IA(AP), HLC	.720***	.518
4.	SE(AP), IA(AP), HLC	.720***	.518

Note: **p<.01, ***p<.001

Table 17

Multivariate Predictors of Context-Specific Impact: Peer Relationships (PR)

	Predictor Variables	R	R^2
1.	SE(PR), IA(PR)	.571**	.326
2.	SE(PR), HLC	.551**	.303
3.	IA(PR), HLC	.506*	.256
4.	SE(PR), IA(PR), HLC	.591**	.349

Note: * p<.05, **p<.01

Table 18

Multivariate Predictors of Context-Specific Impact: Future Orientation (FO)

	Predictor Variables	R	R^2
1.	SE(FO), IA(FO)	.588**	.346
2.	SE(FO), HLC	.735***	.540
3.	IA(FO), HLC	.733***	.538
4.	SE(FO), IA(FO), HLC	.771***	.594

Note: $^{**}p<.01$, $^{***}p<.001$

Table 19

Multivariate Predictors of Context-Specific Impact: Sexual Functioning (SF)

	Predictor Variables	R	R^2
1.	SE(SF), IA(SF)	.452*	.204
2.	SE(SF), HLC	.464*	.215
3.	IA(SF), HLC	.311	.097
4.	SE(SF), IA(SF), HLC	.507*	.257

Note: $^{*}p<.05$

Table 20

Multivariate Predictors of Context-Specific Impact: Freedom/Independence (FI)

Predictor Variables	R	R^2
1. SE(FI), IA(FI)	.343	.118
2. SE(FI), HLC	.681***	.464
3. IA(FI), HLC	.695***	.484
4. SE(FI), IA(FI), HLC	.696***	.484

Note: ***$p<.001$

Table 21

Multivariate Predictors of Context-Specific Impact: School Achievement (SA)

Predictor Variables	R	R^2
1. SE(SA), IA(SA)	.529**	.279
2. SE(SA), HLC	.605**	.366
3. IA(SA), HLC	.483*	.233
4. SE(SA), IA(SA), HLC	.605**	.366

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

prominent, concrete nature of physical concomitants of chronic illness.

A comparison of the R^2 values in Table 23 underscores the dominance of Health Locus of Control as a predictor of Impact within family relationships. The addition of Self-Efficacy to Health Locus of Control does not yield any discernible increase in prediction. By supplementing Health Locus of Control with Information Adequacy, an additional 7% of Impact variance is explained.

Gender and Age Effects Across Contexts

A two factor ANOVA was conducted with each of the four across contexts variables to detect effects of sex, age or an interaction of sex and age. The results of all four ANOVAs are exhibited in Table 24.

The only effect of significance is that the mean of across contexts Self-Efficacy for females is higher than the mean of the same variable for males. Female subjects, to a greater extent than their male counterparts, perceived themselves as being able to derive benefit from disease-related psychosocial information. Context-level analyses will reveal the domains in which such differences in perception were most apparent.

Gender and Age Effects Within Contexts

The effects of age and sex on each of the four appearance variables are exhibited in Table 25. The difference between males and females in terms of Self-Efficacy is greater with regard to appearance relative to any other psychosocial context.

Table 22

Multivariate Predictors of Context-Specific Impact: Physical Abilities (PA)

	Predictor Variables	R	R^2
1.	SE(PA), IA(PA)	.274	.075
2.	SE(PA), HLC	.594*	.353
3.	IA(PA), HLC	.596*	.355
4.	SE(PA), IA(PA), HLC	.601*	.361

Note: **p<.01

Table 23

Multivariate Predictors of Context-Specific Impact: Family Relationships (FR)

	Predictor Variables	R	R^2
1.	SE(FR), IA(FR)	.653***	.427
2.	SE(FR), HLC	.778***	.605
3.	IA(FR), HLC	.823***	.678
4.	SE(FR), IA(FR), HLC	.825***	.680

Note: ***p<.001

The Self-Efficacy ratings of females were approximately one and one-half points higher (on the 6 point rating continuum) than the comparable ratings of males. Although not significant at alpha .05 ($p<.08$), females perceived greater appearance Impact (a difference of 1.2 on the rating continuum) which may have heightened their need for disease-related information and, consequently, their Self-Efficacy ratings.

The effects of age and sex on each of the four peer relationships variables are exhibited in Table 26. The analysis of the variance of Self-Efficacy ratings revealed that the average rating of females (5.31) was significantly higher than the average rating of males (4.12). As was the case with appearance, the difference between the Information Adequacy ratings of males and females fell slightly short of significance at alpha .05 ($p<.06$); males were somewhat more apt to consider their current level of information adequate.

However, differences between genders in Information Adequacy depended on age, as indicated by the significance of the interaction effect. As is evident from an examination of the cell means displayed in Table 27, younger females were significantly less satisfied, relative to their male counterparts and older adolescents, with their current level of disease-related information about peer relationships. Although experience with disease manifestations generally increases with age and consequently may produce an increasingly sufficient knowledge base, the reasons for the specificity in gender are difficult to discern. Perhaps the groups of younger adolescents

Table 24

Analysis of Variance Across Contexts

	Mean					
Effect	Male	Female	Younger	Older	F	sig.
PDI						
A (Sex)	25.59	31.08			1.41	N.S.
B (Age)			28.72	26.83	.17	N.S.
AxB						N.S.
SE						
A	31.88	38.54			5.15	.05
B			32.67	37.92	3.33	N.S.
AxB					.19	N.S.
IA						
A	38.88	32.38			3.00	N.S.
B			34.17	38.92	2.23	N.S.
AxB					.72	N.S.
HLC						
A	73.12	67.31			2.03	N.S.
B			68.72	73.42	1.09	N.S.
AxB					.09	N.S.

Table 25

Analysis of Variance In-Context: Appearance (AP)

	Mean					
Effect	Male	Female	Younger	Older	F	sig.
PDI						
A (Sex)	3.47	4.69			2.23	N.S.
B (Age)			3.83	4.25	.19	N.S.
AxB					2.63	N.S.
SE						
A	4.06	5.54			7.52	.01
B			4.61	4.83	.32	N.S.
AxB					.55	N.S.
ACLI						
A	4.35	3.00			3.33	N.S.
B			3.67	3.92	.15	N.S.
AxB					.30	N.S.

differed on unassessed experience-related variables, such as amount of time since diagnosis. If most of the younger males had been diagnosed several years earlier than the younger females, they may have compiled a greater amount of information relevant to dealing effectively with peers on disease related matters. The interaction is to a large extent a consequence of one or two extreme cases in the young female group. Subject 25, for example, is the only subject who gave the lowest possible rating to each Information Adequacy item.

Within the context of future orientation, the association between internal Locus of Control and relatively low Impact (and vice versa) is consistent across age groups and genders (Table 28). There were no differences due to age among the remaining variables. Males, however, were again more satisfied than females with their current levels of future-relevant information.

The effects of age and sex on each of the variables within the sexual functioning context are exhibited in Table 29. Although none of the effects was significant with alpha .05, the greater mean Self-Efficacy rating of the older adolescents ($p<.07$) suggests that the perceived benefit of information regarding sexual functioning tended to increase with age.

As is evident from the values exhibited in Table 30, none of the effects of sex and age attained statistical significance within the context of freedom/independence.

The effects of sex and age on each of the four school achievement variables are displayed in Table 31. The analysis of the variance of Information Adequacy revealed that the

Table 26

Analysis of Variance In-Context: Peer Relationships (PR)

	Mean					
Effect	Male	Female	Younger	Older	F	sig.
PDI						
A (Sex)	3.29	3.92			.56	N.S.
B (Age)			3.28	4.00	.85	N.S.
AxB					.56	N.S.
SE						
A	4.12	5.31			4.27	.05
B			4.39	5.00	1.20	N.S.
AxB					.07	N.S.
IA						
A	5.18	3.92			3.87	N.S.
B			4.28	5.17	3.87	N.S.
AxB					4.32	.05

Table 27

Cell Means for Peer Relationships (PR)

		Age	
		Younger	Older
Sex	Male	5.20	5.14
	Female	3.13	5.20

average rating of females (5.71) was significantly higher than the average rating of males (4.69). Combined with the (nonsignificant) trend toward greater Self-Efficacy among females, this observation suggests that the female subjects were more interested in school-related information because they had not yet compiled information repertoires that they would consider to be adequate.

As is indicated by the values displayed in Table 32, the effects of sex and age were not statistically significant for any of the variables within the context of physical abilities.

As evidenced by the consistently low F values displayed in Table 33, the effects of age and sex are not statistically significant in the context of family relationships.

E. Integration and Conclusions

Three of the six hypotheses (1, 2, and 5A) describe relationships involving Self-Efficacy. Correlations compatible with the relationship stated in Hypothesis 5a (a low positive correlation between HLC and SE) were observed in two psychosocial contexts, future orientation and sexual functioning. Otherwise, however, none of the hypotheses involving Self-Efficacy were supported. The primary reason for this seems to be that variables in addition to self-efficacy may have influenced ratings on the Self-Efficacy scale.

Self-efficacy is a useful construct for understanding coping behavior (e.g., Bandura, 1977) which, in the present case, involves the utilization of disease-related psychosocial

Table 28

Analysis of Variance In-Context: Future Orientation (FO)

Effect	Male	Female	Younger	Older	F	sig.
	Mean					
PDI						
A (Sex)	3.24	4.08			1.11	N.S.
B (Age)			3.56	3.67	.02	N.S.
AxB					.09	N.S.
SE						
A	4.76	5.15			.51	N.S.
B			4.50	5.58	3.61	N.S.
AxB					.00	N.S.
IA						
A	5.06	3.69			4.99	.05
B			4.17	4.92	1.83	N.S.
AxB					.45	N.S.

Table 29

Analysis of Variance In-Context: Sexual Functioning (SF)

Effect	Male	Female	Younger	Older	F	sig.
	Mean					
PDI						
A (Sex)	2.65	2.85			.11	N.S.
B (Age)			2.61	2.92	.27	N.S.
AxB						N.S.
SE						
A	3.76	4.46			1.44	N.S.
B			3.61	4.75	3.62	N.S.
AxB					.00	N.S.
IA						
A	4.35	3.92			.18	N.S.
B			4.17	4.17	.02	N.S.
AxB					1.01	N.S.

Table 30

Analysis of Variance In-Context: Freedom/Independence (FI)

Effect	Mean				F	sig.
	Male	Female	Younger	Older		
PDI						
A (Sex)	3.12	4.08			1.98	N.S.
B (Age)			3.39	3.75	.33	N.S.
AxB					.00	N.S.
SE						
A	4.53	5.00			.45	N.S.
B			4.61	4.91	.19	N.S.
AxB					1.09	N.S.
IA						
A	4.82	4.69			.01	N.S.
B			4.39	5.33	3.03	N.S.
AxB					.11	N.S.

Table 31

Analysis of Variance In-Context: School Achievement (SA)

Effect	Mean				F	sig.
	Male	Female	Younger	Older		
PDI						
A (Sex)	3.29	3.31			.02	N.S.
B (Age)			3.11	3.58	.37	N.S.
AxB					.66	N.S.
SE						
A	3.06	4.15			2.23	N.S.
B			3.17	4.08	1.66	N.S.
AxB					.07	N.S.
IA						
A	5.71	4.69			4.21	.05
B			4.94	5.75	3.35	N.S.
AxB					7.52	N.S

information. Coping, as discussed earlier, is the process of managing taxing circumstances (Lazarus and Folkman, 1984). For many of the participants in the current study, in various psychosocial contexts, there were no "taxing demands." Consequently, variables other than self-efficacy, per se, must have influenced their responses to Self-Efficacy items. Patterns of interaction among the variables which may partially account for the observed Self-Efficacy ratings are proposed below.

In the present study, low ratings on the Self-Efficacy scale are generally associated with either: (a) relatively high levels of Information Adequacy, independent of actual self-efficacy (i.e., "I do not need that type information because my illness does not affect that context"); or (b) relatively low levels of Information Adequacy in conjunction with relatively low levels of actual self-efficacy (i.e., "I do not know much about how to address my problems in that context and I doubt that I could apply new information effectively"). The first type of low Self-Efficacy subject is likely to have low Impact ratings and high Locus of Control ratings. The second type of low Self-Efficacy subject is likely to have high Impact ratings and low Health Locus of Control ratings.

High ratings on the Self-Efficacy scale are generally associated with either: (a) relatively high levels of Information Adequacy in conjunction with relatively high levels of actual self-efficacy (i.e., "I know a lot about how to handle my problems in that context, but I could always make good use of additional information"), or (b) relatively low levels of

Table 32

Analysis of Variance In-Context: Physical Abilities (PA)

Effect	Mean				F	sig.
	Male	Female	Younger	Older		
PDI						
A (Sex)	4.12	4.85			1.02	N.S.
B (Age)			4.78	3.92	2.26	N.S.
AxB					.60	N.S.
SE						
A	4.06	4.85			2.69	N.S.
B			4.39	4.42	.05	N.S.
AxB					.73	N.S.
IA						
A	4.53	4.31			.19	N.S.
B			4.39	4.50	.01	N.S.
AxB					.16	N.S.

Table 33

Analysis of Variance In-Context: Family Relationships (FR)

Effect	Mean				F	sig.
	Male	Female	Younger	Older		
PDI						
A (Sex)	2.41	3.31			1.08	N.S.
B (Age)			2.89	2.67	.14	N.S.
AxB					.54	N.S.
SE						
A	3.53	4.31			.99	N.S.
B			4.00	3.67	.30	N.S.
AxB					.43	N.S.
IA						
A	4.88	4.15			.92	N.S.
B			4.44	4.75	.39	N.S.
AxB					1.21	N.S.

Information Adequacy in conjunction with relatively high levels of actual self-efficacy (i.e., "I do not know much about how to address my problems in that context, but I am willing and probably able to apply relevant new information effectively"). The first type of high Self-Efficacy subject is likely to have moderately low Impact ratings and high Health Locus of Control ratings. The second type of high Self-Efficacy subject is likely to have moderately high Impact ratings and high Locus of Control ratings.

The notion of contextual specificity of correlations among variables received moderate support only in relation to Psychosocial Disease Impact and Self-Efficacy; the relationship between Impact and Information Adequacy varied relatively little between contexts. Although the relationships in some contexts (such as family relationships) closely reflected the across contexts pattern, relationships in other contexts (such as sexual functioning) were highly unique. As with the bivariate relationships, patterns of multivariate prediction differed among the various psychosocial contexts. The moderate degree of contextual specificity observed in this study lends credence to recent caveats about reliance on broadly based measures of psychosocial functioning.

One of the most surprising outcomes of the study was the absence of statistically significant age effects. Of the 28 two-way ANOVAs, only the interaction of age and sex in one context, peer relationships, attained significance. It was anticipated that the advances in social cognition which typically accompany increases in age would be evident in the ratings. The rationale for such expectations included, for example, the finding of Leadbeater and Dionne (1981) who observed a close relationship between identity achievement and formal operational thought. Identity achievement status (vs. identity diffusion) was associated with superior performances when confronted with identity-related issues. Given that the questionnaire of the present study is replete with identity-related issues, the lack of observed differences may be due to the insensitivity of the rating continuum, rather than to homogeneity in social cognitive development. Similar "task artifact" explanations have been offered for other instances in which expected qualitative cognitive differences between age groups were not manifested in performance (e.g., Neimark, 1980). Yet other scales similar in format to the questionnaire used in the present study have reflected differences among various adolescent age groups in terms of social cognition (Ford, 1982) and locus of control (Germain, 1985). Alternatively, perhaps aspects of the nonrandom selection process, such as volunteerism, did produce a somewhat homogeneous sample in terms of social cognition.

The only significant difference among genders at the across contexts level was in relation to Self-Efficacy. The Self-Efficacy ratings of females were significantly higher than those of their male counterparts in two contexts, appearance and peer relationships. Especially females who were relatively less satisfied with their current levels of information believed that they could make good use of additional information about appearance and peer relationships which would take into account the effects of illness (or treatment).

V. SUMMARY AND RECOMMENDATIONS

Relationships among four variables relevant to the psychosocial perspectives of chronically ill adolescents were studied in each of eight psychosocial contexts and at the across-contexts level. The four variables were Psychosocial Disease Impact (PDI), Self-Efficacy (SE), Information Adequacy (IA), and Health Locus of Control (HLC). All variables other than Health Locus of Control referred to disease-related psychosocial information in the following contexts: appearance, peer relationships, future orientation, sexual functioning, freedom/ independence, school achievement, physical abilities, and family relationships. Of particular interest was the degree of association between Psychosocial Disease Impact and the other variables (individually and in combination). Differences due to age and sex were examined. Interpretations of some of the most significant correlations were provided based on the presumed nature of the variables. The observed correlations were contrasted with the hypothesized relationships.

The sample consisted of 30 health-impaired adolescents, ages 13-18 years inclusive. Approximately two-thirds of the subjects had cancer whereas several disorders were represented in the remaining third. Each subject responded to a 42-item questionnaire which contained the four operationalized variables.

A. Summary of Bivariate Correlations

Both the substantive and formal versions of the bivariate hypotheses are restated below. The coefficients that correspond to the adjectives high, moderate and low are as follows: high is $\geq .60$, medium is .30-.59, low is $\leq .29$. All coefficients of .36 or greater are statistically significant (at alpha $\leq .05$), given N=30. The obtained bivariate correlations in relation to the hypotheses are exhibited in Table 34.

1. Subjects who have high Self-Efficacy (believe that they could make good use of disease-related information) are likely to have used information effectively in the past, thereby lowering their Psychosocial Disease Impact. Subjects with low Self-Efficacy are likely to have high Impact as a consequence of not using psychosocial information in the past. This relationship will be expressed as a high negative correlation between Self-Efficacy and Psychosocial Disease Impact.

   Hypothesis 1:

   A significant, negative correlation will exist between Psychosocial Disease Impact and Self-Efficacy.

2. The relationship between Self-Efficacy and Psychosocial Disease Impact stated in Hypothesis 1 will be stronger than any other hypothesized relationship.

   Hypothesis 2:

   The magnitude of the negative correlation between

Psychosocial Disease Impact and Self-Efficacy will be greater than the correlation between Psychosocial Disease Impact and any other variable.

3. Subjects who have adequate levels of disease-related information are likely to have benefited from such information in terms of Psychosocial Disease Impact. Subjects with very inadequate levels of disease-related information have had little information to bring to bear on the psychosocially relevant effects of their diseases. This relationship will be expressed as a moderate, negative correlation between Information Adequacy and Psychosocial Disease Impact.

   Hypothesis 3:

   A significant, negative correlation will exist between Psychosocial Disease Impact and Information Adequacy.

4. Subjects who perceive a great deal of control over their health in general will tend to have relatively low Psychosocial Disease Impact whereas subjects who perceive little control over their health will tend to have relatively high levels of Impact. This relationship will be expressed as a low, negative correlation between Health Locus of Control and Psychosocial Disease Impact.

   Hypothesis 4:

   A nonsignificant negative correlation will exist between Psychosocial Disease Impact and Health Locus of Control.

5. **Subjects who have high Self-Efficacy will tend to have high (internal) Health Locus of Control (and vice versa). Subjects who have high levels of Information Adequacy will also tend to show high levels of Health Locus of Control. These relationships will be expressed as low, positive correlations.**

Hypothesis 5:

A nonsignificant positive correlation will exist between: (a) Health Locus of Control and Self-Efficacy; (b) Health Locus of Control and Information Adequacy.

Table 34

Summary of Obtained Correlations in Relation to Bivariate Hypotheses

Psychosocial	Hypothesis					
Context	1	2	3	4	5a	5b
Across contexts	–	–	**	**	–	**
Appearance	–	–	**	**	–	**
Peer relationships	–	–	*	**	–	**
Future orientation	–	–	*	**	*	**
Sexual functioning	–	–	–	**	**	**
Freedom/independence	–	–	–	**	–	**
School achievement	–	–	*	**	–	**
Physical abilities	–	–	–	**	–	*
Family relationships	–	–	*	**	–	**

Note: – = hypothesis not supported
* = hypothesis supported
** = correlation stronger than anticipated (e.g., high rather than moderate)

Correlations between Psychosocial Disease Impact and Self-Efficacy generally were moderate and positive, ranging from .187 to .515 across contexts. Correlations between Psychosocial Disease Impact and Information Adequacy were negative and varied considerably in magnitude across contexts, ranging from -.213 to -.778. Correlations between Psychosocial Disease Impact and Health Locus of Control were negative and tended to be moderately high, ranging from -.301 to -.778.

Most correlations between Self-Efficacy and Information Adequacy or Health Locus of Control were negative and moderately low, but there was considerable variability in these relationships among contexts. Correlations between Information Adequacy and Health Locus of Control were positive and tended to be moderately high.

Interpretations of the observed correlations were based on the extent to which each scale was believed to represent its underlying variable, as well as on the nature of the variables themselves. The proposed relationships are particularly tenuous, given the small size of the sample.

Issues were raised regarding the match between the Self-Efficacy scale and the self-efficacy construct on which it was based. Self-efficacy may have been only one of a set of variables that determined ratings on the Self-Efficacy scale. For example, Self-Efficacy ratings may have been the product of very different considerations for persons who were confronted with significant disease-related psychosocial challenges, relative to individuals who were not.

B. Summary of Contextual Specificity

The question of whether or not the bivariate correlations involving Psychosocial Disease Impact would vary significantly among psychosocial contexts was addressed in Hypothesis 6. Both the substantive and formal versions of Hypothesis 6 are restated below.

6. The relationship between Self-Efficacy and Psychosocial Disease Impact will vary significantly from one psychosocial context to another. The same will be true for the relationship between Psychosocial Disease Impact and the other context-specific variable, Information Adequacy. This variability will be evidenced by significant differences between the eight psychosocial contexts in terms of the correlations which involve Psychosocial Disease Impact.

   Hypothesis 6:

   There will be significant variability between psychosocial contexts with regard to bivariate correlations which involve Psychosocial Disease Impact.

One of every four inter-context differences in correlations between Impact and Self-Efficacy attained statistical significance. This observation provides moderate support for the contextual heterogeneity of the relationship between Impact and Self-Efficacy specified in Hypothesis 6. Inter-context differences in correlations between Impact and Information Adequacy were nonsignificant in all but three comparisons, and therefore are not consistent with the context-specific relationship described in Hypothesis 6.

C. Summary of Multivariate Prediction

Despite the high correlations that existed among pairs of individual predictors of Psychosocial Disease Impact in various psychosocial contexts, linear combinations were often productive in claiming additional Impact variance. The addition of Information Adequacy to Health Locus of Control generally enhanced prediction of Impact substantially whereas the addition of Self-Efficacy did not.

D. Summary of Age and Gender Effects

Age did not have a significant main effect on any of the variables, either across or within psychosocial contexts. Within the context of peer relationships, however, younger females rated their current level of information as relatively inadequate. Males perceived greater Information Adequacy than females with regard to future orientation and school achievement. Females produced higher Self-Efficacy ratings with regard to appearance and peer relationships; this difference held true at the across-contexts level as well.

E. Recommendations

Theory and Research

Given the strength of many of the correlations in this survey, further exploration in this area is warranted. What is needed first are replications with larger samples of randomly selected representatives of the population of chronically ill adolescents. Variables should continue to be framed within narrow psychosocial contexts. The effects of secondary variables such as length of time since diagnosis, IQ, objective disease status, and prognosis should be assessed and removed (as covariates) so as to increase the salience of the relationships among the variables of primary interest. Causal mechanisms thought to underlie reliably observed functional relationships can then be tested. Such an endeavor might involve providing specific disease-related psychosocial information to one member of an Impact-matched pair and nonspecific attention to the other; observed reductions in Impact could then be said to be the result of increased adequacy of information.

The relationship between various measures of social cognition and behavior in interpersonal situations has generally been only modest (Kendall & Braswell, 1985). Concordance would likely be improved if the variables that are to be compared are measured in reference to more narrowly defined social contexts. The present project provides a prototype for diverse avenues of context based psychosocial research.

Clinical Applications

Clinical uses of the scales employed in this study would necessitate careful analyses of client ratings within each context. Similarities among the across context means of various subjects in the present study obscured important individual differences. For example, Subjects 1 and 21 had the same mean Impact score (4.25) yet had very different standard deviations (2.19 and .46, respectively). A contextual analysis reveals that Subject 1 perceived extreme impact in half of the contexts and relatively little in the others. In contrast, Subject 21's ratings were consistently within the upper end of the moderate range. Although large samples of chronically ill adolescents need to be surveyed before commonalities can be stated with certainly, there is no need to defer clinical applications until such results are available. Measures such as those employed in the present study may be an efficient means of developing an understanding of idiosyncratic client perspectives.

APPENDICES

APPENDIX A

MICHIGAN STATE UNIVERSITY

OFFICE OF VICE PRESIDENT FOR RESEARCH
AND DEAN OF THE GRADUATE SCHOOL

EAST LANSING • MICHIGAN • 48824-1046

November 23, 1987

Mr. Randall J. Varga
8416 Wonderland Blvd.
Redding, California 96003

Dear Mr. Varga:

Subject: Proposal Entitled, "Interrelationships Among Disease Impact, Self-Efficacy, and Information in Psychosocial Contexts of Adolescence"

UCRIHS' review of the above referenced project has now been completed. I am pleased to advise that since the reviewers' comments have been satisfactorily addressed, the conditional approval given by the Committee at its November 2, 1987 meeting has now been changed to full approval.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval prior to November 2, 1988.

Any changes in procedures involving human subjects must be reviewed by the UCRIHS prior to initiation of the change. UCRIHS must also be notified promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to our attention. If we can be of any future help, please do not hesitate to let us know.

Sincerely,

Henry E. Bredeck, Ph.D.
Chairman, UCRIHS

HEB/jms

cc: Dr. H. Clarizio

APPENDIX B

Request for Study Participants

Name
Address
City, State, Zip

Dear Dr.

This is a request for your assistance in securing subjects for my Ph.D. dissertation (Michigan State University). I am looking for chronically ill adolescents, ages 13-18 years inclusive, excluding those suspected of being mentally retarded.

My interest is not with particular diseases, but rather with any chronic illness which would likely impact psychosocial development in one or more of the following contexts: appearance, peer relationships, future orientation, sexual functioning, freedom/independence, school achievement, physical abilities, and family relationships. The analysis will focus on the extent to which psychosocial impact is mediated by certain factors such as perceptions of "self-control" and the adequacy of the patient's knowledge of how to cope with psychosocial aspects of the illness (e.g., hair loss, weight fluctuations, increased dependency, limited physical abilities, etc.). The results of this study will be a helpful step in determining how to attenuate the psychosocial impact of chronic illness on adolescent development. However, personal benefit as a direct result of participation in this "basic research" project is unlikely.

I would be very grateful if you were willing and able to provide access to one or two potential subjects. Please be assured that the rights and welfare of your patients are not likely to be compromised in any way. My prospectus has been approved by MSU's very stringent University Committee on Research Involving Human Subjects.

Here's how to help: Inform the adolescent patient and his/her parent or guardian that you are assisting in a psychological study of chronic illness during the teen-age years. Indicate that subject participation consists only of responding to a 42 item questionnaire. Mention that I will send a $10.00 check to the participant upon receipt of the signed consent forms and completed questionnaire. Ask if they would allow you to release their names and phone number to me. Assure them that I will explain the research and that they will not be pressured to participate. Notify me, by phone or mail, of these candidates. (University-imposed time constraints require that the data collection phase be completed very soon...)

Thank you very much for considering my request. I will contact you by phone in approximately 10 days to answer any questions you may have and to determine the availability of potential subjects.

Sincerely,

Randall J. Varga
School Psychologist

8416 Wonderland Blvd.
Redding, CA 96003

(916) 244-4600 extension 261

RJV/kmh

APPENDIX C

HEY, TEENS!!

Randall Varga, a psychologist, writing his doctoral thesis for Michigan State, is looking for teens with cancer who want to make money.

He is gathering research on cancer patients between the ages of 13 and 18 inclusive. If you, with the permission of your parents, fill out a 42-item questionnaire, he will pay you $10.

He has sent me ten questionnaires to distribute, so the first 10 of you teens to call me can make a fast $10. Call me, Penny Kreinberg, for information at 281-9966.

APPENDIX D

Teenager/Patient Questionnaire

Teen-ager/Patient Questionnaire

Name: ______________________

Age: ______________________

Date: ______________________

This questionnaire deals with some of the personal and social aspects of having a chronic illness during the teen-age years. Please rate each item by circling one of the six numbers below it, based on how you feel about the item. This information is confidential and will be shared only with your doctor(s).

1. **My illness (or treatment) has a negative effect on my social life.**

1	2	3	4	5	6
No, not at all		Not sure, maybe			Yes, definitely

2. **I currently have adequate information about increasing my freedom and independence, which takes into account the effects of my illness (or treatment).**

1	2	3	4	5	6
No, not at all		Not sure, maybe			Yes, definitely

3. **I currently have adequate information about increasing my school achievement, which takes into account the effects of my illness (or treatment).**

1	2	3	4	5	6
No, not at all		Not sure, maybe			Yes, definitely

4. **I could make good use of information about planning for the future, despite the effects of my illness (or treatment).**

1	2	3	4	5	6
No, not at all		Not sure, maybe			Yes, definitely

17

5. No matter what I do, if I am going to get sick, I will get sick.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

6. When I get sick I am to blame.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

7. No matter what I do, I am likely to get sick.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

8. If I take care of myself, I can avoid illness.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

9. Regarding my health, I can only do what my doctor tells me to do.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

10. I currently have adequate information about improving my sexual functioning, which takes into account the effects of my illness (or treatment).

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

11. I could make good use of information about how to minimize the effect that my illness (or treatment) has had or will have on my sexual functioning.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

12. I could make good use of information about how to improve my appearance, despite the effects of my illness (or treatment).

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

13. I could make good use of information about how to improve my social life, despite the effects of my illness (or treatment).

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

14. I currently have adequate information about becoming more physically active, which takes into account the effects of my illness (or treatment).

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

15. If I get sick, it is my own behavior which determines how soon I get well again.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

16. Health professionals control my health.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

17. Whenever I do not feel well, I should consult a medically trained professional.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

18. My illness (or treatment) has affected or will affect my sexual functioning.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

19. I could make good use of information about how to improve my family relationships, despite the effects of my illness (or treatment).

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

20. The main thing which affects my health is what I myself do.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

21. I currently have adequate information about improving my appearance, which takes into account the effects of my illness (or treatment).

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

22. If it's meant to be, I will stay healthy.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

23. My illness (or treatment) limits my physical activity.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

24. Luck plays a big part in determining how soon I will recover from an illness.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

25. I could make good use of information about becoming more physically active, despite the effects of my illness (or treatment).

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

26. I currently have adequate information about improving my family relationships, which takes into account the effects of my illness (or treatment).

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

27. My illness (or treatment) has changed my plans for the future.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

28. Most things that affect my health happen to me by accident.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

29. My illness (or treatment) has a negative effect on the amount of freedom and independence that I have.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

30. I could make good use of information about improving my school achievement despite the effects of my illness (or treatment).

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

31. When I recover from an illness, it's usually because other people (for example, doctors, nurses, family, friends) have been taking good care of me.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

32. My illness (or treatment) has a negative effect on my family relationships.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

33. I currently have adequate information about improving my social life, which takes into account the effects of my illness (or treatment).

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

34. My family has a lot to do with my becoming sick or staying healthy.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

35. My illness (or treatment) has a negative effect on my school achievement.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

36. My illness (or treatment) has a negative effect on my appearance.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

37. If I take the right actions, I can stay healthy.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

38. I currently have adequate information about planning for my future, which takes into account the effects of my illness (or treatment).

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

39. I could make good use of information about how to increase my freedom and independence, despite the effects of my illness (or treatment).

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

40. I am in control of my health.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

41. Having regular contact with my physician is the best way for me to avoid illness.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

42. My good health is largely a matter of good fortune.

1 2 3 4 5 6
No, Not sure, Yes,
not at all maybe definitely

Thank you for participating in this study. If you would like to discuss any of the questionnaire items, please indicate this in the space below or mention it to the researcher or his assistant.

APPENDIX E

Subject Consent Form

Consent to Participate in a Psychological Study of Chronic Illness in Adolescence

Researcher:	**Patient:**
Randall J. Varga	**Name:**______________
Michigan State University	**Age:**______________
Department of Counseling, Educational Psychology & Special Education	**Sex:**______________
	Illness:______________
East Lansing, MI 48824	Physician(s):______________

This study examines the impact of chronic illness on several psychological and social aspects of adolescent development. These aspects are appearance, peer relationships, future orientation, sexual functioning, freedom/independence, school achievement, physical abilities, and family relationships. We are interested in determining the extent to which psychosocial disease impact is influenced by certain factors such as feelings of "self-control" and the adequacy of the patient's knowledge about how to deal with psychosocial aspects of the illness (e.g., hair loss, weight fluctuations, increased dependency, limited physical abilities, etc.). The results of this study will be a first step in determining how to reduce the psychosocial impact of chronic illness.

Participation consists of responding to a forty-two item questionnaire. Because some of the questionnaire items deal with potentially sensitive topics, there is a slight risk that responding to such items will produce a sense of personal distress.

1. I freely consent to participate in a scientific study being conducted by the researcher identified above.
2. The study has been explained to me and I understand what my participation will involve.
3. I understand that the questionnaire deals with very personal issues such as sexual functioning, family relationships, self-esteem and appearance.

4. I understand that the results of the study are confidential and that I will remain anonymous. The exchange of information between my physician(s) (Dr.   ) and the researcher (Randall J. Varga) and/or his assistant (Jill Madsen) will be the only disclosure of information in which I will be identified.
5. I understand that participation in the study will have no effect on the medical care that I receive.
6. I understand that participation in the study will not result in any additional service nor will it guarantee any benefit to me.
7. I understand that I may cancel this consent to participate at any time.
8. I understand that I will receive a summary of the study when it is complete.

______________________ Participant	________________ Today's Date

APPENDIX F

Parent/Guardian Consent Form

Consent to Participate in a Psychological Study of Chronic Illness in Adolescence

Researcher:
Randall J. Varga
Michigan State University
Department of Counseling, Educational
Psychology & Special Education
East Lansing, MI 48824

Patient:
Name:____________________
Age:____________________
Sex:____________________
Illness:__________________
Physician(s):_______________

This study examines the impact of chronic illness on several psychological and social aspects of adolescent development. These aspects are appearance, peer relationships, future orientation, sexual functioning, freedom/independence, school achievement, physical abilities, and family relationships. We are interested in determining the extent to which psychosocial disease impact is influenced by certain factors such as feelings of "self-control" and the adequacy of the patient's knowledge about how to deal with psychosocial aspects of the illness (e.g., hair loss, weight fluctuations, increased dependency, limited physical abilities, etc.). The results of this study will be a first step in determining how to reduce the psychosocial impact of chronic illness.

Participation consists of responding to a forty-two item questionnaire. Because some of the questionnaire items deal with potentially sensitive topics, there is a slight risk that responding to such items will produce a sense of personal distress.

1. I freely consent to participation by my son/daughter in a scientific study being conducted by the researcher identified above.
2. The study has been explained to me and I understand what participation by my son/daughter will involve.
3. I have reviewed the "Teen-ager/Patient Questionnaire" and am aware that it deals with very personal issues such as sexual functioning, family

relationships, self-esteem and appearance.

4. I understand that the results of the study will be confidential and that my son/daughter will remain anonymous. The exchange of information between the physician(s) (Dr.) who treats my son/daughter and the researcher (Randall J. Varga) and/or his assistant (Jill Madsen) will be the only disclosure of information in which my son/daughter is identified.
5. I understand that participation in the study will have no effect on the medical care that my son/daughter receives.
6. I understand that participation in the study will not result in any additional service nor will it guarantee any benefit to my son/daughter.
7. I understand that I may cancel this consent to participate at any time.
8. I understand that I will receive a summary of the study when it is complete.

Parent/Guardian

Today's Date

APPENDIX G

Study Summary for Participants

Remember the questionnaire that you filled out a few months ago for a study of psychosocial aspects of having a chronic illness? Well, the results are in and, as promised, I will attempt to summarize some of them for you without too much jargon or too many words (the full-length version is over 100 pages).

The purpose of the study was to determine how strongly certain variables influence the psychosocial impact of having a serious chronic illness. The participants were 30 chronically ill adolescents (most had cancer), ages 13-18 years inclusive. The questionnaire that you completed was actually several relatively short scales blended together; each scale represented a variable. I'll discuss the variables in plain English rather than in terms of their technical names and definitions. I looked at the relationships among the variables in each of eight psychosocial contexts that are often important in adolescent development: appearance, peer relationships, future orientation, sexual functioning, freedom/independence, school achievement, physical abilities and family relationships. Here's some of what I found:

1. Overall, there was a strong inverse relationship (i.e., as one variable goes up the other comes down)

between the level of perceived "self-control" over psychosocially relevant aspects of the illness (e.g., weight fluctuations, increased dependency, limited physical abilities, etc.) and level of perceived psychosocial impact. This relationship was particularly strong in regard to family relationships, future orientation and freedom/independence. It was weakest in the context of sexual functioning. There were no significant differences between males and females or between adolescents of different ages.

2. The adequacy of a person's current level of information about coping with psychosocially relevant aspects of illness (or treatment) was a good predictor of degree of psychosocial impact. This was another inverse relationship; high levels of information adequacy were associated with low levels of impact and vice versa. Perceptions of information adequacy did not differ according to sex or age.
3. Although greater need for psychosocial information that takes into account the effects of disease tended to be higher for persons with low levels of psychosocial information, there were many exceptions. Some people who already knew a lot wanted to know more. Some people who had relatively little information doubted that they could make good use of additional information. Some people had little need for disease-related psychosocial information in certain contexts

simply because their diseases did not have implications for their functioning in those contexts. Males perceived a greater level of information adequacy in the contexts of future orientation and school achievement; there were no sex differences in terms of information adequacy in the other psychosocial contexts. Younger females were significantly less satisfied with their current levels of information in the context of peer relationships. In the contexts of appearance and peer relationships, females were more interested than males in additional psychosocial information that would take into account the effects of their illnesses or treatments.

Research is kind of like a funnel. This research project was near the wide part; it attempted to answer broad questions. Associations (correlations) among variables do not tell us <u>why</u> those relationships exist. Whenever I use words like "because" to describe how a particular variable got to be high or low, I'm just speculating. If the associations observed in this study turn out to be reliable (show up in other samples) the next step would be to take a close look at how changes in one variable actually cause changes in one or more of the other variables. Until then, we're left with the classic chicken and egg dilemma. For example, did increases in perceived self-control over psychosocially relevant aspects of the disease result from increased knowledge about how to deal with those aspects or did increased knowledge produce increased self-control? They probably influenced each other, but how much influence did each variable have on the other?

The goal that drives all of this academic stuff is to help the people who attempt to help you through the tough times. It helps them know what they should be sensitive to and how to be most effective in addressing your concerns.

Thanks again for your help with this project.

APPENDIX H

Variable List

1. PDI TRS
2. SE TRS
3. AI TRS
4. HLC TRS
5. PDI (AP)
6. SE (AP)
7. AI (AP)
8. PDI (PR)
9. SE (PR)
10. AI (PR)
11. PDI (FO)
12. SE (FO)
13. AI (FO)
14. PDI (SF)
15. SE (SF)
16. AI (SF)
17. PDI (FI)
18. SE (FI)
19. AI (FI)
20. PDI (SA)
21. SE (SA)
22. AI (SA)
23. PDI (PA)
24. SE (PA)
25. AI (PA)
26. PDI (FR)
27. SE (FR)
28. AI (FR)

APPENDIX H (Continued)

29. SEX

30. AGE

Data File

```
Subject:  1    34  45  35  83  6  3  4  6  6  5  1  6  6  4  6  4  4  6  4  6
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Subject:  2     8  31  40  92  1  3  3  1  4  5  1  6  6  1  4  6  1  4  6  1  1
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Subject:  3     8  19  48  90  1  2  6  1  2  6  1  5  6  1  5  6  1  2  6  1  1
 6  1  1  6  1  1  6  1  2
Subject:  4    11  36  43  76  1  6  6  1  5  6  2  6  4  1  6  5  2  3  5  1
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Subject:  5    32  38  25  67  5  5  2  4  5  1  5  6  1  4  4  3  2  6  5  4
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Subject:  7    22  23  46  77  5  3  5  1  1  5  3  3  6  3  5  6  3  2  6  1
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Subject:  8    39  39  18  51  6  6  1  5  6  2  5  5  2  3  2  2  5  5  3  4
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Subject:  11    42  46  40  67  6  6  3  6  5  6  6  5  5  5  6  4  6  6  5  5
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Subject:  13    38  31  34  61  6  6  2  4  5  5  6  2  5  4  3  4  5  6  2  2
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Subject:  14    28  24  43  69  3  3  6  4  3  6  4  6  5  2  3  6  5  3  5  3
 1  6  5  2  3  2  3  6  1  1
Subject:  15    15  45  44  75  6  6  5  5  5  5  5  4  5  4  4  4  4  5  4  5
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Subject:  16    38  37  39  65  2  5  5  2  6  6  1  6  6  1  5  6  1  5  5  2
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Subject:  19    16  41  43  71  2  6  5  1  6  6  3  6  4  2  6  6  3  4  6  1
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Subject:  22    39  30  32  46  4  5  1  2  5  5  6  1  6  5  2  3  6  6  2  4
 1  5  6  4  5  6  6  5  1  1
Subject:  23    17  14  43  80  2  1  6  2  1  6  1  6  6  3  1  6  3  2  6  2
 1  6  3  1  1  1  1  6  1  1
Subject:  24    42  39  32  67  6  4  2  5  4  5  6  5  3  6  6  2  6  6  6  6
 5  6  5  5  5  2  4  3  1  2
Subject:  25    39  43  8  52  6  6  1  5  6  1  4  6  1  1  2  1  6  6  1  5
 6  1  6  5  1  6  6  1  2  1
Subject:  26    43  39  32  58  6  6  2  6  6  5  6  6  6  1  1  1  6  6  6  6
 6  6  6  3  3  6  5  3  1  2
Subject:  27    31  29  29  74  1  6  6  6  6  6  6  1  1  2  1  1  1  6  2  5
 3  6  6  4  6  4  2  1  1  1
Subject:  28    16  45  47  75  3  6  6  1  6  6  2  6  6  1  6  6  1  6  6  1
 6  6  6  5  5  1  6  6  2  1
Subject:  29    31  35  30  67  5  5  3  4  5  3  3  4  4  3  4  3  4  4  5  4
 5  3  6  4  5  2  4  4  1  1
Subject:  30    22  23  46  79  4  2  6  2  2  6  1  4  5  3  6  6  4  2  6  2
 1  6  5  5  5  1  1  6  2  1
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