

**Children's Primary Health Care Services:
A Social-Cognitive Model of Sustained High Use**

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(ABSTRACT)

This study tested portions of a social-cognitive model that explained the mechanisms involved in the parent decision-making process that ultimately drive and maintain children's health care use. Eighty-seven primary caretakers of children ages 4 to 9 years completed measures of child health and behavior, parental stress and functioning, and social cognitive measures related to parenting and health care use. Primary care use data over the two-years prior to recruitment were collected from primary care providers. Regression analysis showed that social cognitive measures were significant predictors of pediatric primary care services. Specifically, parental stress interacted with general parenting self-efficacy; parents with high stress and high parenting self-efficacy were more likely to use pediatric primary care services. Self-efficacy for accessing physician assistance and parental outcome expectations for pediatric physician visits were positively related to pediatric primary care use. These social cognitive variables accounted for more variance than variables traditionally included in health care use research (i.e., child behavior, parental distress, and parent health care use). Best Subsets analysis resulted in an overall best predictive model that accounted for 29.8% of the variance in pediatric primary care use. In this model, the interaction between parental stress and general parenting self-efficacy was the best predictor of use, accounting for 11.5% of the variance in physician use. High internalizing behavior scores, higher self-efficacy for accessing physician assistance, use of medication, and more parent health care visits were associated with higher pediatric primary care use in this overall model. While acknowledging the role of child health and behavior, this study extends the literature by demonstrating the importance of considering parental perceptions of burden, confidence, and ability to help themselves and their family. Implications for health care professionals and directions for future research are discussed in light of these findings.

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Table of Contents

Abstract.....	ii
Acknowledgements.....	iii
Table of Contents.....	iv
List of Tables.....	v
List of Appendix.....	vii
Introduction.....	1
Methods.....	16
Results.....	22
Discussion.....	30
References.....	45
Tables.....	52
Figure.....	71
Appendix.....	72
Vita.....	84

List of Tables

Table 1	Descriptive Statistics for Demographic Variables.....	52
Table 2	Item-Total Correlations for the SEAPA	53
Table 3	Item-Total Correlations for the POPPS.....	54
Table 4	Descriptive Statistics for Independent and Dependent Variables...	55
Table 5	Correlation Matrix.....	56
Table 6	Linear Regression Analysis: General Parenting Self-Efficacy (centered) and Parent Stress (centered).....	57
Table 7	Linear Regression Analysis: Interaction Between General Parenting Self-Efficacy and Parent Stress.....	58
Table 8	Average Primary Care Use (Parental Stress x General Parenting Self-Efficacy).....	59
Table 9	Linear Regression Analysis: Self-Efficacy for Accessing Physician Assistance (centered) and Parent Stress (centered).....	60
Table 10	Linear Regression Analysis: Interaction Between Self-Efficacy for Accessing Physician Assistance and Parent Stress.....	61
Table 11	Average Primary Care Use (Parental Stress x Self-Efficacy for Accessing Physician Assistance).....	62
Table 12	Linear Regression Analysis: Current and Past Child Health Status Combined.....	63
Table 13	Linear Regression Analysis: Child Health Variables (Past Health Status and Medication Status).....	64
Table 14	Linear Regression Analysis for Health and Social Cognitive Variables.....	65
Table 15	Linear Regression Analysis for Health and Traditional Variables..	66
Table 16	Supplemental Linear Regression Analysis for Health and Social Cognitive Variables.....	67
Table 17	Supplemental Linear Regression Analysis for Health and Traditional Variables	68

Table 18	Supplement Hierarchical Regression Analysis for Social Cognitive Variables Above and Beyond Health and Traditional Variables.....	69
Table 19	Best Subsets Analysis – Best Predictive Model of Primary Care Use.....	70

List of Appendix

Appendix A	Consent Form.....	72
Appendix B	Authorization for Release of Child’s Medical Information..	73
Appendix C	Authorization for Release of Adult’s Medical Information..	74
Appendix D	General Information Form.....	75
Appendix E	Current Child Health Status.....	77
Appendix F	Past Child Health Status.....	78
Appendix G	Social Environment Inventory.....	79
Appendix H	Parenting Self-Agency Measure.....	81
Appendix I	Self-Efficacy for Accessing Physician Assistance (SEAPA).....	82
Appendix J	Parental Outcome Expectancy for Pediatric Physician Services (POPPS).....	83

Children's Primary Health Care Use: A Social-Cognitive Model of Sustained High Use

Children with comparable symptoms and limitations have enormous variation in how they utilize medical care (Mechanic, 1995) with concern often centered on those families or children who fall at the extremes of the continuum of use. Approximately 1 in 8 children are consistently classified as high users, falling in the top third on a distribution of use year after year (Starfield, Van den Berg, Steinwachs, Katz, & Horn, 1979; Starfield et al., 1985). The number of visits that qualifies as high use varies from sample to sample, as well as by age. However, data for children 5 to 11 years of age show that approximately 9 or more health care visits per year reflect high use in managed care settings when applying this 1/3 criteria (Riley et al., 1993; Starfield et al., 1979).

This pattern of consistently high use is of concern for a number of reasons. First, patterns of health care use are established early in life (Osborne, Hatcher, & Richtsmeier, 1989; Walker & Greene, 1989). In turn, ineffective and inappropriate use of services as a child may lead to similar patterns through the life span. Second, since a great deal of utilization is due to factors other than health need, pediatric interventions focusing on health status may not adequately address the factors driving the pediatric consultation. Thus, high use of medical services may not adequately protect children (Riley et al., 1993). Third, high use of services adds strain on a system that is already burdened by high costs and restricted access to services for many individuals (Mechanic, 1995).

In many situations, high use is the result of poor health status. It may be that a chronic health condition is present that requires physician contact to monitor and treat symptoms. Additionally, some children are just more susceptible to various illness conditions. Not surprisingly, health status is the strongest determinant of when and how often a parent takes their child to the physician. However, numerous multivariate-based investigations have demonstrated that high utilization is not due strictly to child health status (Kelleher & Starfield, 1990; Newacheck & Halfon, 1986; Starfield et al., 1985; Wolfe, 1980). These studies have shown that actual health need accounts for only approximately 1/6 of the variance in health care use, which suggests that additional factors also drive high use of pediatric services.

Overview of Pediatric Utilization

Numerous investigators have attempted to identify the variables that best account for the variance in child health care utilization. However, as a whole, the utilization literature is difficult to interpret and marked by inconsistency, with investigations differing in research methodologies and findings. Part of this difficulty is due to differing sample characteristics (i.e., age, SES, health care plan), use of retrospective versus prospective studies, as well as varying data analytic strategies used to conduct regression analyses. Moreover, much of the utilization literature focuses on general pediatric health care use (Horwitz, Morgenstern, & Berkman, 1985; Kelleher, & Starfield, 1990; Riley et al., 1993; Starfield et al., 1979; Starfield, et al., 1985; Tessler & Mechanic, 1978; Ward & Pratt, 1996; Wolfe, 1980), with a relatively smaller number of studies examining utilization in primary care settings (Lavigne et al., 1993; Lavigne et al., 1998; McInerney, Szilagyi, Childs, Wasserman, & Kelleher, 2000). Despite these limitations, links between numerous variables and pediatric utilization are evident.

Child psychosocial concerns are frequently linked to increased use of pediatric primary care services (Bernal et al., 2000; Hankin et al., 1984; Kelleher & Starfield, 1990; Lavigne et al., 1998; Riley et al., 1993; Woodward et al., 1988). Although child psychosocial concerns have been operationalized differently across studies, the results have been fairly consistent. These concerns most frequently focus on emotional and behavioral problems, but also can include peer interaction difficulties, learning disabilities and other school related difficulties. The growing presentation of psychosocial concerns in pediatric primary care settings has been referred to as the “new hidden morbidity” and has been discussed extensively in the literature (Costello et al., 1988; Palfrey, 1994).

A number of different parent variables have been included in predictive analyses of pediatric utilization. The strongest parental predictor of pediatric utilization is maternal use of health care services, with greater maternal use of health care services consistently linked to greater use of health care services for their children (Hankin et al., 1984; Newacheck & Halfon, 1986; Riley et al., 1993; Starfield et al., 1985; Ward & Pratt, 1996; Wolfe, 1980). Parental psychopathology has also been investigated extensively (Horwitz

et al., 1985; Kelleher & Starfield, 1990; Riley et al., 1993; Tessler and Mechanic, 1978; Ward & Pratt, 1996; Watson & Kemper, 1995; Woodward et al., 1988). Although the results have been mixed, parental psychopathology has been linked to higher child use of health care services, but only for those families who have a positive attitude toward health care.

Parental social support has been associated with pediatric utilization. Three studies that have provided data linking parental social support to pediatric utilization (Horwitz et al., 1985; Riley et al., 1993) suggest that lower satisfaction with support and a greater number of supports are associated with high rates of pediatric primary care use. However, data supporting this link are not universal (Ward & Pratt, 1996; Watson & Kemper, 1995).

The influence of family functioning on utilization of pediatric health care services has also been investigated. Two retrospective analyses (Riley et al., 1993; Weimer, Hatcher, & Gould, 1983) have found that greater levels of family conflict, as measured by the Family Environment Scale (FES), predicted greater child health care utilization.

Demographic variables, including child age, family size, gender, and socioeconomic status, have been linked to greater utilization of children's health services. Younger child age (Hankin et al., 1984; Newacheck & Halfon, 1986; Starfield et al., 1985; Tessler & Mechanic, 1978; Ward & Pratt, 1996; Woodward et al., 1988) and small family size (Duncan, Taylor & Fordyce, 1987; Kirscht, Becker, & Eveland, 1976; Riley et al., 1993; Shore, et al., 1987; Slesinger, Tessler, & Mechanic, 1976; Wolfe, 1980) have consistently predicted higher utilization of services. Research results on gender are less conclusive, with some investigations reporting that boys use more health care services (Starfield et al., 1985) while others report that girls use more services (Hankin et al., 1984; Kelleher & Starfield, 1990). Inclusion in lower SES groups has been linked to low levels of primary health care services (Nadel, 1993), although this relationship is often not detected in multivariate analyses because many of the multivariate studies survey participants in managed care organizations where prepaid plans and equal access to services reduces the influence of SES.

Although not frequently included in multivariate investigations of health care use, the extent to which families have access to primary care services also influences

utilization. Access refers to the ability of families to obtain services. System access factors include the distance one must travel to health care facilities, the availability of physicians in one's neighborhood and waiting time to see the physician (Andersen, 1995; Forrest & Starfield, 1998; Leibowitz et al., 1985). These resources must be conveniently available where one lives and works if one is to use services on a regular basis (Andersen, 1995). Personal access factors may include financial resources required to obtain services, as well as possessing sufficient knowledge of the health care system to arrange physician assistance. The degree to which these factors impinge on individual families is highly variable and is an important source of influence on health-care seeking behaviors.

Although the literature in this area is marked by inconsistencies, it is clear that along with access factors and health status, child and parent psychosocial factors do influence the volume of pediatric primary care use. Despite these positive findings, relying exclusively on the variables examined in the literature reviewed here results in an incomplete understanding of what motivates pediatric health care use (Janicke & Finney, 2000). Not only do the factors identified in these models leave almost two-thirds of the variance in utilization unexplained (Riley et al., 1993; Starfield et al., 1985; Wolfe, 1980), they do not present a coherent picture of the processes that drive and maintain sustained high use of pediatric primary care services. In order to adequately address these issues, it is necessary to have a better understanding of those mechanisms involved in the parent decision-making process that drive and maintain overuse.

The purpose of the present study was to test elements of a social-cognitive model that explains the processes that drive and maintain the sustained high use of pediatric primary care services. This model is based on the interaction of parenting stress and parental self-efficacy for coping with general parenting and child health issues, as well as the necessity of self-efficacy for accessing physician assistance and positive outcome expectations for visits to the pediatric primary care physician.

Conceptualization of Stress

Historically researchers have had difficulty defining stress (Ostberg, Hagekull, & Wettergreen, 1997). No consistent definition of stress has been used in the literature and the distinction between stress and stressors is often overlooked (Whipple & Webster-

Stratton, 1991). Stressors can be viewed as objectively observed stimuli, while stress is a response to certain stressors in the environment. As noted by Kanner, Coyne, Schaefer, & Lazarus (1981), stress research in the 1970's and early 1980's consistently focused on major life events (e.g., death of a family member, loss of a job, family relocation) as stressors. This approach was frequently criticized because it did not consider the day-to-day difficulties that individuals had to overcome. More recently stress research has begun to consider the importance of the minor stressors or those irritating, distressing hassles that individuals experience in their everyday interactions with the environment. These "daily hassles may include annoying practical problems such as losing things or traffic jams, fortuitous occurrences such as inclement weather, as well as arguments, disappointments, and financial concerns" (Kanner et al., p. 3). For adults with children an additional source of stress is the daily hassles associated with parenting. Although these individual demands may have little impact by themselves, their cumulative impact can be quite stressful (Crnic & Greenberg, 1990; Ostberg et al., 1997).

Life events and daily hassles, as potential sources of stress affecting parents, are frequently broken down into three categories: Extrafamilial or environment factors, parental characteristics, and child factors (Abidin, 1992; Mash & Johnston, 1990; Webster-Stratton, 1990). Extrafamilial factors may include low SES, unemployment, social turmoil, marital distress, and various other life events and daily hassles. Personal parental factors may include personality attributes, affective states, psychopathology, and parental health status. Child factors often include difficult temperament, behavior problems, child health status and parenting related tasks. Because of the potential negative impacts of stress on parents, some researchers have examined the relationship between parental stress and pediatric utilization.

Parental Stress and Pediatric Utilization

Relatively few studies have looked specifically at the relationship between parental stress and pediatric utilization. Roughmann and Haggerty (1973) reported that the presence of parental stress increased the likelihood of the parents utilizing pediatric health care services, while Turk, Litt, Salovey and Walker (1985) reported that a parent's emotional distress was not a factor in the decision to seek urgent care for a child. However, both these studies suffer from various methodological weaknesses (limited

measures of stress and short sampling time frame) that limit our confidence in the generalizability and validity of their findings.

Abidin conducted two investigations into the relationship between parental stress and pediatric utilization (Abidin, 1982; Abidin & Wilfong, 1989) with mostly white, middle SES mothers and their children (below four years of age). In both investigations no relationship was found between the level of parenting stress and the number of visits to the pediatric clinic. These two investigations both included a broad measure of parental stress (PSI) as well as longitudinal measures of utilization. In light of the stronger methodology inherent in Abidin's work, the lack of a reported relationship between parental stress and pediatric utilization would appear to argue against such a relationship. However, a more recent investigation by Black and Jodorkovsky (1994) sheds light on additional factors that should be considered when examining this issue. They examined the relationship between stress, family competence and pediatric health seeking behavior in 40 children between the ages of 15 and 39 months. Although no main effect relationship between stress and pediatric contacts was detected, there was an interaction effect between family support and frequency of daily hassles. Mothers who reported frequent daily hassles and less supportive families initiated more frequent contact with the pediatrician. In contrast, mothers who reported exposure to frequent daily hassles, but who had more supportive families were less likely to contact the pediatrician. Perceived family support served as a buffer between higher levels of stress and pediatric contacts.

The findings by Black and Jodorkovsky (1994) are not surprising when one considers more expanded conceptualizations of stress, which suggest that stressors do not uniformly disrupt parental functioning. Many theories of psychological stress suggest that how the individual appraises or perceives the situation serves as an intervening step and determines whether the situation leads to stress and stressful outcomes (Hobfall, 1989). Social-cognitive theory, which emphasizes the role of self-efficacy, conceptualizes stress along these lines and provides insight into the relationship between parental stress and pediatric utilization.

Social-Cognitive Theory: Self-Efficacy and Outcome Expectations

Social cognitive theory posits that people engage in specific behaviors or tasks as a function of their perceived self-efficacy and outcome expectations. Perceived self-efficacy is defined as people's judgments of their capabilities to organize and execute courses of action (Bandura, 1986). It is not concerned with the "skills one has, but with judgments on what one can do with whatever skills one possesses (p. 391)." Outcome expectancy refers to the outcomes one expects will result from engaging in successful performance of a behavior. People engage in behavior when they expect given actions to produce desired outcomes (positive outcome expectancy) and they believe that they can perform those activities (positive self-efficacy; Bandura, 1997).

Beliefs in personal self-efficacy to manage the demands of social, familial, health, and occupational life may vary widely across these diverse domains of functioning. Thus, the efficacy belief system is not a global trait but a differentiated set of self-beliefs linked to distinct realms of functioning (Bandura, 1986; 1997). Moreover, self-efficacy does not equate to actual behavior. There are four principal sources of information that contribute to the establishment and undermining of self-efficacy. Enactive mastery experiences refer to the actual successes and failures individuals experience in their daily interactions with the environment. Vicarious experiences refer to events and subsequent beliefs that individuals form about their own abilities by watching others engage in similar activities. Verbal persuasion, a third source of self-efficacy, involves verbal feedback about one's potential for successful performance. Feedback in which others express faith in one's capabilities is more likely to build self-efficacy than if others convey doubts. Lastly, physiological arousal can affect self-efficacy (Bandura, 1997). People are more inclined to expect to cope successfully when they are relaxed as opposed to when they are tense. Thus, one may have a belief that they can effectively execute a course action, but that does not necessarily mean that they can in actuality effectively execute the course of action. Through verbal persuasion or vicarious experiences, one may feel confident in their ability to execute a course of action without every having engaged in the behavior. On the other hand, even if one has failed to successfully perform a course of action, their efficacy to perform that course of action in the future may remain high if the other sources of self-efficacy remain strong.

Social-Cognitive Conception of Stress

Social-cognitive theory views stress reactions primarily in terms of a low sense of self-efficacy to exercise control over aversive threats and taxing situations. As noted by Wiedenfeld and colleagues (1990), “threat is not a fixed property of situational events. Rather, it is a relationship property concerning the match between perceived coping capabilities and potentially hurtful aspects of the environment” (p. 1083). Thus, it is not the negative life events or daily hassles that directly lead parents to experience distress or the negative outcomes associated with what many label as stress. Rather it is the perception of life events, daily hassles, and parenting hassles as overwhelming one's coping capabilities that becomes the stressful reality.

Ample evidence exists to support this relationship. Ozer (1995), in examining the effect of stress on women's psychological well being and distress, reported that heaviness of occupational workload and child care responsibilities had no direct effect on the mother's well-being or emotional strain over the dual roles. Rather, these factors operated through their effects on perceived self-efficacy. Women with a strong sense of efficacy that they could manage these multiple demands and enlist support experienced a lower level of physical and emotional strain and a more positive sense of well being than women with a weaker sense of self-efficacy. Silver, Bauman and Ireys (1995) attempted to identify factors that influence mothers' psychological responses to the stressor of a child's ongoing chronic illness. It was found that self-efficacy again served as a moderator between risk factors for stress (in this case illness-related functional limitations) and stress-related negative outcomes. Mothers who perceived their child as having greater functional limitations and who had low self-efficacy experienced more psychological distress than mothers who perceived their child as having greater functional limitations but who also had high self-efficacy in their ability to cope with and manage these difficulties. Further evidence to support this relationship is reported by Teti and Gelfand (1991) and Cutrona and Troutman (1986).

This research suggests that not only is self-efficacy a moderator between demanding situations and negative stressful outcomes, but also that self-efficacy is vital in helping parents function adaptively when faced with various demands. Most parents are presented with a number of life and parenting tasks that must be completed on any

given day or week, and self-efficacy will vary from task to task. More importantly, these demands often accumulate and test a parent's ability to cope with the situation as a whole. The specific demands may not be that burdensome in isolation, but because of other stressors, the parent is left with few physical and emotional resources to handle the situation (Coleman & Karraker, 1997). It is when multiple problems accumulate, and self-efficacy to cope with these various demands is low, that the need for assistance is often felt.

The current model proposes that for families that are consistently high utilizers of PPCS, greater parental stress drives the use of pediatric health care services. These parents frequently experience stress and feelings of being overwhelmed due to low self-efficacy to cope with the accumulated demands placed upon them, most specifically general parenting demands as well as specific child illness related demands. It is the experience of overwhelming stress and burden that leads these parents to perceive a need for professional assistance and eventually to seek assistance repeatedly from their child's primary care physician in an effort to reduce their perceived stress and parenting burden. One reason that this relationship has not been regularly detected is because instead of measuring the parent's level of stress, researchers in this area have actually been measuring "stressors" that could potentially lead to stress in the parent. By not considering the parent's self-efficacy to cope with various life and parenting demands, researchers are not able to reliably determine if various life events or daily hassles are experienced as overly stressful. In the following section, Bandura's notion of proxy control (1986; 1997) is presented to support the assertion that parents with low self-efficacy to cope with various situations will seek help from physicians.

Self-Efficacy and Relinquishing Control

One of the sequelae of low self-efficacy, referred to as proxy control, is a tendency to relinquish control over difficult low-efficacy situations to other individuals (Bandura, 1986; 1997). Individuals with low self-efficacy to cope with a given situation by definition do not have faith in their ability to complete a task or cope effectively in order to minimize their exposure to aversive situations. Rather than striving for direct control, these individuals will often seek their well being and security through help from other individuals (Bandura, 1982; 1986; 1997). Miller (1980) provided support for this

contention by manipulating perceptions of participant performance and competence on a reaction time test. Subjects had a chance to perform a task themselves in order to avoid an aversive stimulus, or pick another individual to perform the task for them. The results supported the notion that individuals will relinquish control to another individual whom they feel will provide a better chance at reducing their exposure to stressful and aversive situations. Moreover, those who relinquished control showed a reduction in stress and anxiety relative to those who retained control. In essence, relinquishing control is very attractive because not only will individuals reduce their exposure to negative stressful outcomes, but also individuals who relinquish control free themselves of the performance demands, hazards, and stress that the exercise of control entails (Bandura, 1997).

In a similar manner, parents who have low self-efficacy to cope with current stressors and subsequently feel overburdened and overwhelmed will often seek assistance from other individuals. For the subset of parents who seek frequent contact with pediatric services, the primary care physician is often this source of assistance. The choice of the primary care physician as the source of assistance fits the essence of proxy control. It is important for the external agent to have some kind of legitimate authority to act on the individual's behalf (Antonovsky, 1979). The stature that society places on physicians provides the ideal context for relinquishing control; who better to rely on than one's physician. When parents experience stress due to numerous demands, including a perceived difficulty with their child, the physician provides a guarantee of relief. The visit to the physician helps provide a solution to the problem (although sometimes only temporary) and relieves the parent of the responsibility of deciding how to handle difficult child issues. For parents who are consistently high users, child illness symptoms may not be the driving force behind frequent visits. Rather, parental perceptions of stress and burden, due to low self-efficacy for coping with these demands, may be the force driving sustained high use.

Parental Help-Seeking and Utilization of Child Mental Health Services

Recent research in the area of children's mental health service utilization points to a similar relationship between service use and parental stress (Angold et al., 1998). It is the impact that a child's behavioral and emotional problems have on a parent that may be a driving force in the parents' decision to seek services for their children. Angold and

colleagues sampled 1,015 children (11 to 13 years) and their parents to determine the impact of perceived parenting burden on mental health service use relative to the impact of actual child symptoms. Parenting burden refers to the demands, problems, and disruptions in a parent's life that result from caring for a child that they perceived as being caused or exacerbated by their child's psychiatric symptoms. Results revealed that the child's total symptom score, level of impairment, and perceived parental burden all predicted use of specialty mental health services. However, by far the strongest predictor was the perceived parental burden reported by the parents. The authors also looked at the factors related to school-based mental health service use, which is different because the child can initiate service use without parental assistance. In this setting they found that the child's total symptom score had the largest effect and parental burden had a smaller, but significant effect. Thus when the child initiates services, symptoms are the driving force, but when parents are responsible for initiating services, the perceived parenting burden and disruption is the best predictor. Although this example is from the mental health service industry, it directs attention toward parental perceptions of burden as a driving force behind parent's help seeking decisions on behalf of their children. Moreover, there is substantial overlap in the problems presented to mental health professionals and primary care physicians, and it is reasonable to believe that similar processes influence a parent's decision to seek medical care for their children.

Additional Requirements for Sustained High Use of PPCS

Although it is proposed that parental stress and low self-efficacy are a driving force behind consistently high use of pediatric services, not all those who experience a perceived need for help will consistently seek primary care services. This perceived need is a necessary but not sufficient factor. Social-cognitive theory points to the importance of self-efficacy and outcome expectations as two important determinants of whether an individual will engage in a specific behavior (Bandura, 1997).

In the present context, both of these are necessary elements that must exist if a parent is to exhibit sustained high use of PPCS. First, a parent must believe in their ability to obtain adequate physician assistance. This involves activities such as scheduling the appointment, arranging transportation and daycare for other children, arranging one's schedule to allow a physician visit, effectively communicating the problem to the

physician, and enlisting their support. If the parent has low self-efficacy for obtaining such assistance, they are unlikely to display the persistence necessary to be a consistently high user of pediatric services. Low access to physician services due to financial or distance barriers, or living in an underserved area, can be viewed as hindering the development of self-efficacy to obtain such assistance. For a number of families, these barriers have likely contributed to past failure experiences in attempts to obtain adequate health care services that in turn served to lower parent's self-efficacy in this area.

Second, a parent must have a positive outcome expectation for the physician visit. If the parent does not believe that the physician visit will produce positive outcomes, it is unlikely that sustained high use will follow. Positive outcome may consist of improved child health, reduced parental stress or anxiety, reduced parental responsibility for the presenting child issue, reduced parental burden, and increased personal time for the parent. If either of these two elements is not present, it is unlikely that a parent will consistently use high levels of PPCS.

Factors Maintaining Consistently High Utilization

A problem with the consistently high use of PPCS for children is that this low self-efficacy, stress-driven utilization occurs frequently and results in a sustained, stable pattern of high use (Starfield et al., 1985). For this pattern of over use to persist, there must be some sequelae of frequent use of PPCS that function to maintain it over a prolonged period. It is proposed that sustained high use of pediatric health care services reduces a parent's self-efficacy to independently cope with various parenting and daily stressors, increases a parent's self-efficacy to solicit help from their pediatric primary care physician, and contributes to a positive outcome expectancy by reducing parental stress in the short term. These elements in turn increase the likelihood that parents will maintain high rates of pediatric primary care use in the future.

Frequent utilization of PPCS can serve to reduce a parent's self-efficacy to cope independently with the difficult demands placed upon them in their daily interactions with the environment. The concept of proxy control (Bandura, 1997) was mentioned previously. It was noted how individuals with low self-efficacy to cope with difficult situations will often relinquish control to other individuals to reduce their own burden and improve their chances at avoiding negative outcomes (Miller, 1980). Unfortunately,

this relinquishment of control comes at a price in that it also serves to hinder the development of a self-efficacy for completing future tasks. By relinquishing control to physicians, parents miss the opportunity to build the skills needed for efficacious action and to cope independently with the different stressful situations. The lack of performance attainments serves to undermine parents' belief in their ability to successfully manage the difficult demands often presented to them.

Langer (1979) demonstrated that the act of relinquishing control or serving in a subordinate role can hinder future confidence and performance. Adult subjects who performed equally well on an initial screening math task were randomly assigned a role as either the "boss" or "assistant," and then asked to perform a similar task cooperatively. Although both performed equally well during this task, when each subject was later individually tested on the original task, those who had been given the subordinate role performed about half as well as they had on the task the first time, while the performance of those given the leadership role increased over their original performance. In a similar manner, parent who consistently use pediatric services relinquish control to their physician often take on a subordinate role in the decision-making or care-taking process, which serves to reduce their self-efficacy to handle independently similar situations in the future. Unfortunately, a low sense of self-efficacy fosters dependence on proxy control (Bandura, 1997).

A second outcome of frequent use of physician services is that it has the effect of increasing a parent's efficacy for obtaining future help from their pediatric primary care physician. In order to access and receive adequate health care services, parents must perform a number of tasks including scheduling the appointment, organizing childcare, arranging transportation, and communicating the presenting problem to the physician. Parents who are high users of pediatric services have a number of opportunities to accomplish this task successfully. Through these numerous performance attainment and mastery experiences, these parents are building their self-efficacy to access and influence physicians. In fact, "effective proxy control requires a high sense of personal efficacy to influence intermediaries who, in turn, operate as the agents of desired improvements" (Bandura, 1997, p. 17). In essence, these parents are developing self-efficacy to cope with

difficult parenting demands. However, they are developing self-efficacy to cope by turning to their child's primary care physician as opposed to coping independently.

A third consequence of frequent physician use that may serve to encourage future use of these services is that these parents will often experience a reduction in their stress level following their visit to the pediatric physician. As noted previously, in many situations the exercise of personal control, in this instance caring for children in addition to working in or outside the home, carries heavy responsibility (Bandura, 1982). Miller (1980) provides data to suggest that individuals who relinquished control in demanding situations experienced a subsequent reduction in stress and anxiety. By seeking assistance from a primary care physician, the parent relieves some of the burden and places it on the physician. Recent research investigating parental anxiety and utilization of pediatric care for minor illnesses provides further evidence documenting a reduction in parental anxiety following their child's visit to the pediatrician (Hatcher et al., 1989; Richtsmeier & Hatcher, 1994). Moreover, even though parental anxiety was reduced, highly anxious parents still were more anxious than parents who were not anxious initially, which speaks to the likelihood of future stress- and anxiety-related visits.

In social-cognitive terms this reduction in parental stress may be viewed as leading to an increase in positive outcome expectations for future physician use (one may also view this in operant terms in that the reduction of parent stress serves to negatively reinforce physician use; Skinner, 1969). As these positive outcome expectations develop, they serve to encourage and reinforce positive attitudes towards health care services and contribute to increased physician use. Thus, when a stressful situation is encountered in the future, the parent has high self-efficacy for obtaining physician assistance and a positive outcome expectation for that visit. Even if the child issue is only a small part of a stressful situation, the parent perceives that they have the skills to engage in a strategy that has served to reduce their stress and burden in the past.

Summary and Proposed Model

Parents who are consistently high users of PPCS for their children experience difficulty handling the diverse demands of parenting due to low self-efficacy to cope with the many tasks and life demands with which they are presented. These stressors may include child illness complaints, child behavior and emotional problems, parent

emotional problems, negative life events or other daily hassles and are generally divided into three categories: extrafamilial, parent and child factors. Many of these factors have been linked to higher levels of pediatric utilization and it has been proposed that these variables exert their influence by increasing stressors on parents and reducing parental self-efficacy for coping with these stressors and various parenting tasks. When the demands faced by the parent accumulate to a point at which they exceed the parent's self-efficacy to cope with the present situation, the parent feels stressed and overwhelmed, and experiences a perceived need for help. As the stress builds, these parents begin to survey their environment for strategies to cope. At this point these parents may often perceive the child as exhibiting some behavior (e.g., illness symptoms, disobedience, lethargy, or strained peer interactions) that is significantly contributing to the overall burden. If the parent has high self-efficacy for obtaining physician assistance and positive outcome expectations for such a visit, a physician visit is a likely strategy for stress reduction. This visit likely will not reduce all parental stress, but it will provide relief in some of the relevant domains so that their current burden is reduced to a more manageable level. As the parent increasingly turns to the primary care physician for assistance, the sequelae of such use serves to reinforce further use by reducing a parental self-efficacy for coping with various stressors independently, increasing parental self-efficacy for accessing physician assistance, and increasing positive outcome expectations for physician visits. A diagram of the proposed model is presented in Figure 1.

Hypotheses

1. It was hypothesized that the following main effects would be observed:
 - a. Parental self-efficacy for accessing physician assistance will account for a significant portion of variance in pediatric primary care utilization.
 - b. Parental outcome expectancy for visiting the physician will account for a significant portion of variance in pediatric primary care utilization.
 - c. General parenting self-efficacy will account for a significant portion of variance in pediatric primary care utilization.
2. Parental stress will not account for a significant portion of the variance in pediatric primary care utilization. However, the interaction between parental

stress and general parenting self-efficacy will account for a significant portion of variance in pediatric utilization.

3. The social cognitive model (including general parenting self-efficacy, parental stress, self-efficacy for accessing physician assistance, and parental outcome expectancy for pediatric physician visit, and interaction between parental stress and general parenting self-efficacy) will account for a significant portion of the variance in pediatric primary care utilization beyond that accounted for by child health status.
4. After accounting for child health status, the main process variables comprising the present social-cognitive model will account for a greater proportion of variance in pediatric primary care utilization than the traditional set of variables (parental distress, child behavior, and parental utilization) commonly found in utilization research.

Methods

Participants

Participants included 87 mothers or primary caretakers of children ages 4 to 9 years. Subjects were recruited via fliers distributed throughout Blacksburg and the surrounding communities. Four different strategies were used to distribute fliers to parents. First, the Carilion Family Practice office in Blacksburg, VA, provided addresses and allowed the investigator to mail fliers announcing the project to families with children within the target age range. Second, fliers announcing the project were distributed at the Carilion Family Practice office in Christiansburg, VA, and the Pediatric Associates offices in Radford and Blacksburg, VA. These fliers were left at the check-in window and people were allowed to take them if they were interested. Third, fliers announcing the project were distributed to children in grades K through four in eleven schools within the Montgomery County and Radford school systems. Lastly, fliers announcing the project were distributed to department heads at Virginia Tech through campus mail. Department heads were asked to distribute the fliers to staff and faculty within their departments. For families with more than one child in this age range, the target child was the youngest within the target age range.

Procedures

Survey Administration – Data Collection

Fliers were used to notify parents of the current project and parents were encouraged to call the investigator to indicate their interest in participating in the study. During the initial phone contact, parents were provided with a description of the study, questions were answered, and an appointment was scheduled if the parent indicated a willingness to participate in the study. Parents were provided with an opportunity to meet the experimenter in their home, at Virginia Tech, or at another location convenient for the parent. At the scheduled appointment, the experimenter again provided each parent with a brief description of the study, reviewed the informed consent form, the authorization for release of medical information forms, and answered any questions. After consent was granted (Appendix A) and the release forms were signed (Appendix B and C), parents completed the questionnaire packet. The entire process of completing the consent forms and questionnaire packet ranged between 30 and 90 minutes. Surveys were completed with the investigator or an undergraduate assistant (UA) present during the interview on all but two occasions. In these two instances, the investigator reviewed the entire packet with the subject and answered all questions before leaving the data packet with the subject. Data packets were then returned to the lead experimenter through inter-campus mail. As an incentive to participate in the project, all subjects who completed the survey were entered into two drawings for U.S. Savings Bonds (\$300 and \$100).

All surveys were administered by one of two individuals, the lead experimenter or the UA. Training of the UA involved a four step process: (a) discussion and review of the data collection protocol; (b) the UA observed the lead experimenter administered the survey to a subject; (c) the UA administered the survey to the lead experimenter; and (d) the UA administered the survey to a subject while the lead experimenter monitored the interview.

Collection of Medical Records

All patient records associated with Carilion Family Practice in Blacksburg were gathered via a chart review performed by the lead experimenter and a UA. The chart review involved directly reading the chart and recording office visits made to the Carilion practice during the two-year retrospective period. For patient records associated with all

other physicians' offices, a copy of records pertaining to all office visits over the last two years were requested via the phone and authorization forms were mailed to each office.

Scoring Measures and Data Entry

Each survey was scored separately by two different undergraduate assistants. The lead experimenter then compared scores to ensure accuracy; the lead experimenter rectified all discrepancies. All data were entered and double-checked by the lead experimenter for data analysis using SPSS (Version 9.0) and SAS (Version 7).

Measures

Predictor or Independent Variables

Demographic Questionnaire.

A 16-item measure was used to obtain information about the child and family including child's age and race, parent's age, marital status, relationship to child, number of children at home, and self-reported parental estimates of parent and child health care use (Appendix D).

The Current Health Scale (CSH; Ware, 1976).

The current health scale was a 9-item measure of health perceptions. Items were modified to tap parental perceptions of child health status. On a 5-point scale ranging from "definitely true" to "definitely false," parents indicated how true they felt each of the statements were concerning their child's health (see Appendix E). Items 3, 4, 7, and 8 were reverse scored. A total child health status score was derived by summing the items (with consideration of reversed items). Scores were then inverted so that higher scores indicated better perceptions of child health. Reported internal consistency coefficients ranged from .89 to .92 and test-retest reliabilities ranged from .76 to .86 (Ware, 1976).

Past Health Status.

The current health scale was modified to assess parental estimates of their child's health over the last two years (Appendix F). The directions and wording of individual items were changed so that they were consistent with an attempt to assess the caretaker's general impression of their child's health status over the past two years.

The Child Behavior Checklist (CBCL; Achenbach, 1991).

The CBCL is a 118-item parent-completed checklist designed to assess a child's behavioral, emotional, and social functioning. Using a three-point scale ("not true,"

“somewhat true,” or “very true”), the parent rated the extent to which the item is representative of the child’s behavior. Normative data collected on population samples have yielded two factors (Internalizing and Externalizing Behavior Problems) and a total behavior problem score. There are separate norms for males and females, as well as for age ranges 4-11 and 12-18. T-scores from both factors and the total behavior score were used in the present study. One-week test-retest reliability was .89, while the intraclass correlation coefficient was .952. (ICC reflects the portion of the total variance in item scores that was associated with differences among the items themselves, after variance due to a specific source of unreliability has been subtracted.) Higher scores were associated with the presence of dysfunctional patterns of behavior.

Brief Symptom Inventory (BSI; Derogatis, 1993).

The BSI is a 52-item self-report instrument adapted from the SCL-90-R. It was designed to provide multidimensional symptom measurement in a brief period of time. Items were rated on a five-point scale, ranging from “not at all” to “extremely”, in terms of the level of distress experienced in the previous seven days. The measure yielded nine primary symptoms dimensions along with a global severity index, which is an average of the 53 items. The T-score for the global severity index was utilized in this study to provide an estimate of parent global distress. Cronbach's alpha for the global severity index of the BSI was .90.

Social Environment Inventory (SEI; Orr, James, & Charney, 1989).

The SEI is a mother-completed self-report measure designed to facilitate the identification of mothers exposed to high levels of stressors. The measure contained 30 items that present a variety of potential stressors. Mothers were instructed to endorse each item as either a “yes” or “no,” depending on whether they have been exposed to the stressor within the past 12 months (see Appendix G). The measure yielded a score of 0 to 30, with higher scores representing greater exposure to stress. Test-retest reliability on a sample of 141 women was .74. ($p = 0.0001$). Construct validity was demonstrated by associating the SEI with a measure of depression, the Center for Epidemiologic Studies Depression Scale. A supplemental 10-item subscale was added to the SEI and consisted of items constructed to assess potential stressors affecting parents that were not included in the SEI. These supplemental items assessed for the presence of sibling conflicts,

maternal distress, reductions in the quality of maternal relationships, and reductions in social activities and support.

Parenting Self-Agency Measures (PSAM; Dumka, Stoerzinger, Jackson & Rossa 1996).

The PSAM is a 5-item self-report measure designed to assess parental perceptions of effectiveness in the parental role. Using a seven-point scale, ranging from (1) “Never” to (7) “Always,” the parent indicated how often they feel or think like the statement (Appendix H). Higher scores indicated higher parental self-efficacy. The alpha coefficient for the PSAM reported by Dumka and colleagues (1976) is .70. The PSAM was a measure of general parenting self-efficacy.

Parental Health Care Utilization.

The total number of health care visits made by the responding adult (mother or father completing questionnaire packet) over the two-year retrospective period constituted an additional predictor variable in the current study. Each caretaker was asked to report the different physicians he/she had seen in the last two years and for permission allowing the experimenter to contact each physician to obtain a copy of their medical records (Appendix C) or obtain a computer summary of the number of visits during this period. OB/GYN visits were excluded for two reasons. First, a number of mothers were pregnant during the two-year retrospective period and required regular check-ups. The information gathered from physicians was not consistently detailed to differentiate maternity visits from other visits. Second, two fathers participated in the study and obviously did not require these visits. These two factors led to potential bias in the counts of parental health care visits if OB/GYN visits were included in this variable.

The number of health care visits made by the parent was determined via direct chart review (for any parent seen at Carilion Family Practice in Blacksburg, VA) or review of copied medical records provided to the investigator by the individual physician offices (subsequent to presentation of signed form from parent authorizing release of medical information). Direct chart reviews were conducted by the investigator and an undergraduate assistant who was trained in the data recording protocol. Random counts conducted by the undergraduate assistant were reviewed and resolved by this investigator to ensure for accuracy and adherence to the protocol. Review counts of copied medical

records were conducted by the lead researcher. All counts were double-checked and differences resolved to ensure accuracy.

Self-Efficacy for Accessing Physician Assistance (SEAPA).

The SEAPA is a 14-item scale self-report questionnaire constructed specifically for use in the present study (Appendix I). The SEAPA was designed to measure the parent's sense of efficacy for accessing adequate physician assistance and was intended to be consistent with Bandura's notion of self-efficacy as being highly situation- or domain-specific. Thus, this measure assessed parental perceptions regarding their ability to manage the tasks necessary to visit the physician (i.e., schedule appointment, arrange schedule, and arrange transportation), as well as their ability to enlist their physician's assistance (i.e., remember all concerns, communicate those concerns, and redirect physician). Using a five-point scale, the parent rated the extent to which they agreed or disagreed with each item. Items were summed to calculate a total efficacy score, with higher scores representing higher levels of perceived self-efficacy.

Most of the items in this measure were generated by this researcher. In addition, some of the items in this scale were modified from the Family Empowerment Scale (Koren, DeChillo & Friesen, 1992). Items were reviewed and feedback provided by two doctoral-level students in pediatric psychology. The original 12-item measure was then administered to a sample of 29 parents of children between 8 and 10 years of age. The subjects were predominantly Caucasian from middle- to upper-middle class backgrounds. The internal reliability of the scale (Cronbach's Alpha) was 0.91. Item-total correlations were also calculated; all items were positively and significantly correlated with the total measure score and thus no items were dropped. Feedback provided by parents was incorporated to help clarify the items. Two items were added to the measure in response to parental feedback.

The Parental Outcome-Expectancy for Pediatric Physician Services (POPPS).

The POPPS is an 11-item self-report questionnaire constructed specifically for use in the present study. The POPPS was designed to measure the parent's outcome expectations for visiting their child's physician. Items focused on expectations of improved child health and reduced parental stress and anxiety. Using a five-point scale, the parent rated the extent to which they agreed or disagreed with each item (Appendix

J). Items were summed to calculate a total expectancy score, with higher scores representing more positive outcome expectancies.

All items were originally generated by this researcher. Items were reviewed and feedback provided by two doctoral-level students in pediatric psychology. The measure was then administered to a sample of 29 parents of children between 8 and 10 years of age. The subjects were predominantly Caucasian from middle- to upper-middle class backgrounds. The internal reliability of the scale (Cronbach's Alpha) was 0.86. Item-total correlations were also calculated; all but one of the items were positively and significantly correlated with the total measure score; this one item was dropped from the measure. Feedback provided by parents was incorporated to help clarify the remaining items.

Outcome or Dependent Variables

Child Primary Care Utilization.

The number of visits made by each child to his/her primary care physician during the two-year retrospective period constituted the main dependent measure of pediatric utilization. The number of visits was determined via direct chart review (for any child seen at Carilion Family Practice in Blacksburg, VA) or review of copied medical records provided to this investigator by the individual physician offices (subsequent to presentation of signed form from parent authorizing release of medical information). Direct chart reviews were conducted by the investigator and an undergraduate assistant who was trained in the data recording protocol. Random counts conducted by the undergraduate assistant were reviewed by this investigator to ensure for accuracy and adherence to the protocol. No discrepancies were noted. All counts were double-checked and differences resolved to ensure accuracy.

Results

Sociodemographic Information

Sociodemographic characteristics of the study sample are displayed in Table 1. The study sample consisted of primarily Caucasian (89.7%), married (87.4%), and upper-middle SES (average household income = \$63,553) families. Respondents were mostly mothers (94.3%), and there were more males (59.8%) identified as the target child (average age = 6.8 years). Nearly all of the target children had health insurance (96.6%).

Validation of Measures Created for the Current Investigation

SEAPA.

The measure demonstrated adequate internal consistency ($\alpha = 0.92$). Total scores ranged from 52 to 70 ($\bar{x} = 64.3$; $SD = 5.3$). Item correlations are listed in Table 2. All items were positively and significantly correlated with the total measure score.

POPSS.

The measure demonstrated adequate internal consistency ($\alpha = 0.77$). The total scores ranged from 29 to 55 ($\bar{x} = 42.1$; $SD = 4.9$). Item correlations are presented in Table 3. All items were positively and significantly correlated with the total measure score.

Hypotheses

The central aim of these analyses was to evaluate the effectiveness of a number of social cognitive variables in predicting pediatric primary care utilization. Specific hypotheses included the assessment of whether (a) general parenting self-efficacy, self-efficacy for accessing physician assistance, parental outcome expectancy for pediatric physician services, and parental stress are significantly related to primary care use; (b) the interaction between parental stress and general parenting self-efficacy accounts for a significant portion of the variance in pediatric utilization; (c) these social-cognitive variables, as a block, account for a significant portion of variance beyond that accounted for by child health status; and (d) after accounting for child health status, the variables in the social-cognitive model account for a greater proportion of variance in pediatric primary care utilization than the traditional set of variables commonly found in utilization research.

Data Analysis

Preliminary Analysis.

All data analyses were conducted using SPSS Version 9.0 with the exception of the supplemental analysis to determine the best overall predictive model of pediatric primary care utilization. For this analysis SAS Version 7 was used. Table 4 provides the means, standard deviations, and minimum and maximum values for all predictor and outcome variables in the study. Tolerance and variance inflation factor estimates were within normal limits, suggesting that there were no problems with multicollinearity.

Initial multiple linear regression analyses of the relationship between the various independent variables and the dependent variable were performed to allow for scatter plot analysis of unstandardized predicted values versus unstandardized residuals, and of QQ plots of observed versus expected normal values for the dependent variable. Assumptions for regression analysis assume a random distribution of unstandardized predicted values versus unstandardized residuals, as well as a linear relationship between observed versus expected normal values of the dependent variable. Examination of the QQ plots showed a consistent non-linear pattern of observed versus expected normal values for all variables against the dependent variable. Post hoc examination of the data showed that the dependent variable was not normally distributed. Square root transformation of the dependent variable, pediatric primary care utilization, resulted in a normal distribution. Subsequent scatter plots and QQ plots of multiple linear regression analysis using the square root of pediatric primary care utilization showed a consistent random distribution of unstandardized predicted values versus unstandardized residuals and a consistent linear pattern in QQ plots. As a result, the square root of pediatric primary care utilization was used as the primary dependent variable in the data analyses.

In the following section, bivariate analysis was used to test the hypothesized relationships between each of the individual predictor variables and primary care use. The standard .05 significant level was used in the bivariate analysis. However, in the regression analyses used to test the social-cognitive model (Hypothesis 2 –4), a .10 significance level was used. Research has shown that with a conventional .05 significance level, important contributors to explained variance could be underselected. This leads to the chance that important contributors to explained variance may be left out of predictive models (Greenland, 1989). By utilizing a .10 significance level, we increase that chance that all variables that contribute substantially to explained variance are included in the model as predictors.

Hypothesis One.

Standard bivariate analysis was used to test the relationships in hypothesis one. Data analysis shows that self-efficacy for accessing physician assistance was significantly related to pediatric primary care utilization ($p < .05$), with higher self-efficacy associated with higher primary care use (Table 5). This variable in isolation accounted for

approximately 5.5% of the variance in primary care use. Contrary to the hypothesis, Neither parental outcome expectation for physician office visits and general parenting self-efficacy were not significantly related to pediatric primary care utilization.

Hypothesis Two.

As hypothesized, bivariate analysis shows that parental stress (Table 5) was not significantly associated with pediatric utilization. A centering procedure outlined by Aiken and West (1991) was then used to calculate the interaction variable in this hypothesis. Each of the individual variables in the different interaction terms (general parenting self-efficacy and parental stress) was transformed to a centered variable by subtracting the average value for that variable across all subjects (e.g., parental stress – average for parental stress = centered parental stress). The interaction terms were then calculated by multiplying the two centered variables (interaction between parental stress and general parenting self-efficacy = parental stress centered x general parenting self-efficacy centered). This procedure reduces the risk of multicollinearity between the interaction term and the component variables (Aiken & West, 1991). Each interaction term was then tested for significance by entering into the model both the individual component variables and the interaction terms, and then comparing regression analysis for that model with analysis consisting of only the two centered component variables.

The interaction between general parenting self-efficacy and parental stress was significantly associated with pediatric primary care utilization, supporting the hypothesis. To test this model, an initial test of the component variables in the model, displayed in Table 6, showed that this model was not significant accounting for only 1.8% of the variance in pediatric primary care use. However, the model with the addition of the interaction term between parenting stress and general parenting self-efficacy accounted for 12.8% of the variance in primary care use (Table 7). Compared to the component variables, the interaction term added substantially to explained variance. Post hoc examination of the data showed that, contrary to expectations, above-average parental stress combined with above-average parenting self-efficacy to predict higher utilization of pediatric primary care services (because further significance testing of this interaction would be redundant, post hoc review was conducted visually). Specifically, Table 8 shows that when parental stress is below average (relative to all parents in the sample),

the level of general parenting self-efficacy does not affect pediatric primary care use; children averaged 4.59 health care visits over the study period when parents had below average stress and below average general parenting self-efficacy versus 4.42 health care visits when parents had below average stress and above average general parenting self-efficacy. When parental stress was above average, parenting self-efficacy affected pediatric primary care use; children averaged 5.59 health care visits over the study period when parents had above average stress and below average general parenting self-efficacy versus 6.88 health care visits when parents had above average stress and above average general parenting self-efficacy.

Although not part of the original hypotheses, supplemental analysis (identical to the procedures used to test the parental stress-general parenting self-efficacy interaction) was conducted to assess the interaction between parenting stress and self-efficacy for accessing physician assistance. The initial test of the component variable model for parenting stress and self-efficacy for accessing physician assistance demonstrated that this model was significant and accounted for 7.8% of the variance in pediatric primary care use (Table 9). The bivariate analyses of the individual component variables suggested that this explained variance is primarily accounted for by self-efficacy for accessing physician assistance. The addition of the interaction term between parenting stress and self-efficacy for accessing physician assistance accounted for an additional 4.8% in explained variance, leading to a total explained variance of 12.6% (Table 10). Although parental stress was not significantly related to primary care use, post hoc analysis showed that when parental stress was dichotomized into above and below average stress, at each level of stress, higher self-efficacy for accessing physician assistance predicted higher utilization of pediatric primary care services. Specifically, Table 11 shows that when parental stress was below average, self-efficacy to access physician assistance does effect pediatric primary care use; children averaged 3.50 health care visits over the study period when parents had below average stress and below average self-efficacy for accessing physician assistance versus. 4.97 health care visits when parents had below average stress and above average self-efficacy for accessing physician assistance. When parental stress was above average, self-efficacy to access physician assistance also effects pediatric primary care use; children averaged 5.39 health

care visits over the study period when parents had above average stress and below average self-efficacy for accessing physician assistance versus 7.25 health care visits when parents had above average stress and above average self-efficacy for accessing physician assistance

Hypothesis Three.

Bivariate analysis was first used to examine the two measures of child health status, parental estimate of current child health and parental estimate of child health over the past two years (past health status). Examination of Table 5 shows that neither current child health status nor past child health status was significantly related to primary care use, accounting for only 2% and 4% of the variance respectively. Relative to previous investigations of pediatric health care use (Kelleher & Starfield, 1990; Riley et al., 1993; Starfield et al., 1985), both child health status variables were poor predictors of health care use. Use of either variable alone, or in conjunction (Table 12) did not provide a good assessment of the predictive ability of the social cognitive variables above and beyond health status. However, additional analysis of other child health variables (Table 5) showed that the child's current medication status (whether or not currently taking medication) was significantly related to pediatric primary care use, accounting for 6.7% of variance in primary care use. When combined together, past child health status and medication use accounted for 8.1% of the variance in pediatric primary care use (Table 13). This combined model of health status provided a more stringent test of the influence of the social cognitive variables and, as a result, both past child health status and medication use were used to represent the child's health status to test hypothesis three.

Hierarchical regression analysis was used to assess whether the social-cognitive variables accounted for a significant portion of the variance in pediatric primary care utilization beyond that accounted for by child health status variables. The health status variables were entered as the first block and the social cognitive variables (parental stress, general parenting self-efficacy, self-efficacy for accessing physician assistance, parental outcome expectations for physician office visits, the interaction between parental stress and general parenting self-efficacy) were entered as the second block. The results of this analysis are shown in Table 14. The addition of social cognitive variables to the health variables accounted for a significant addition in explained variance (15.5%), allowing for

a total explained variance in the model of 23.6% and supporting hypothesis three.

Hypothesis Four.

Standard linear regression and hierarchical regression analyses were used to test hypothesis four. First, bivariate analyses were used to examine the individual relationships between each of the traditional health care use variables and pediatric primary care utilization (Table 5). Parental health care use was significantly related to pediatric primary care use, with higher parental use predicting higher levels of pediatric primary care use. Parental health care use accounted for approximately 9.5% of the variance in pediatric primary care utilization. Parental distress was not significantly related to primary care use.

Examination of Table 5 shows that of the three CBCL child behavior variables, both child's internalizing behavior and child's total behavior scores were significantly related to the dependent variable. Comparison of these results showed that the internalizing score accounted for approximately 7.3% of explained variance in the dependent variable, while the total behavior score accounted for only about 5.0%. In order to provide the most stringent test of the social cognitive model, the child's total internalizing score was included as the child behavior variable in the traditional variable model.

Hierarchical regression analysis was then used to assess whether these traditional variables accounted for a significant amount of explained variance above and beyond that accounted for by the child health variables. Past child health status and medication use were entered as the first block and the traditional variables (parental distress, parental health care visits, and standardized internalizing score) were entered as the second block. The results of this analysis are shown in Table 15. The addition of the traditional variables to the health variables accounted for an additional 12.1% in explained variance (significant at the $p < .05$), allowing for a total explained variance in the model of 20.2%

Comparing Tables 14 and Table 15 shows that, above and beyond the health status variables, the social cognitive variables accounted for a greater amount of explained variance (15.5%) relative to the traditional set of variables (12.1%). However, the social cognitive model included 5 variables compared to 3 variables for the traditional variable model. This adds a potential element of bias as models are compared. As a result, an

additional analysis was conducted in which only the two best predictors from each model were used in the analyses. The two models were then compared to determine which model accounted for a higher percentage of explained variance above and beyond the health status variables. For the social cognitive model, self-efficacy for accessing physician assistance and the interaction between parental stress and general parenting self-efficacy were the two best predictors, while standardized internalizing behavior score and parental health care use are the two best predictor from the traditional variables. The results of the hierarchical regression analyses for these two models are displayed in Table 16 and 17. The two variable social cognitive model accounted for 13.9% additional explained variance, allowing for a total explained variance of 22.0%. The two traditional variables only account for 9.3% additional explained variance, allowing for a total explained variance of 17.4%.

Supplemental hierarchical regression analysis was also conducted to examine whether the social cognitive models added a significant amount of explained variance above and beyond that accounted for by the health status and traditional variables. Table 18 shows that the social cognitive variables account for an additional 13.2% explained variance ($p < .05$). Subsequent scatter plots and QQ plots of these models showed a consistent random distribution of unstandardized predicted values versus unstandardized residuals and a consistent linear pattern in QQ plots. These results support hypothesis four.

Supplemental Analysis – Best Predictive Model.

An additional supplemental analysis was conducted using MAX-R, best-subsets regression analysis (SAS version 7), to determine the best predictive model across all predictor variables. The MAX-R method selects one variable at a time and makes comparisons by removing one variable and replacing it with another at each step to determine which variable yields the greatest increase in R^2 at that step. Comparisons continue (all possible switches) until the model that yields the largest increase in R^2 is produced. Independent variables from this analysis were retained in the final model if they were significant at the $p < .10$ level.

The MAX-R analysis resulted in a 5-variable model that accounted for 29.8% of the variance in pediatric primary care utilization (Table 19). The best predictor of primary

care use was the interaction between parental stress and general parenting self-efficacy, with higher parental stress and higher parenting self-efficacy predicting higher pediatric primary care use. This interaction accounted for 11.5% of the variance in primary care use. Standardized internalizing behavior score accounted for an additional 7.4% variance, with higher internalizing scores predicting higher primary care use. Three other variables entered the final model; child medication use, higher self-efficacy for accessing physician assistance, and higher parental health care use all predicted higher levels of pediatric primary care utilization in the final model.

Discussion

This study adds to the understanding of the processes that drive and maintain various levels of primary care use by testing elements of a social-cognitive model of pediatric primary care utilization. It was proposed that parental stress and low self-efficacy for coping with various parenting and life demands interact to drive the utilization of pediatric services. Moreover, sequelae of frequent physician use, including high self-efficacy for accessing physician assistance and high parental outcome expectations for pediatric physician services, serve to maintain high use.

Although the goal of this study was to test a model of sustained high use across a diverse population of health care users, participants in the current study consisted of primarily upper middle class parents whose children used moderate rates of primary care services. All parents who became participants had to initiate contact with the experimenter and volunteer to participate after seeing an announcement about this study. The effort required suggest that participating parents were likely highly interested in children's health issues or sympathetic to research endeavors. Moreover, the distribution of self-efficacy (SEAPA and general parenting self-efficacy) and health status scores were narrow and weighted toward the high end. These factors suggest the presence of a high functioning sample that may limit the generalizability of these findings. Furthermore, the current study is retrospective, with self-report predictor variables regressed on the total number of primary care visits over the past two years. The retrospective nature of this study leads to the possibility that parent self-reports may be biased by recent experiences in the health care system. This is especially a concern for the concept of self-efficacy. Although the construct of self-efficacy is intended to focus

on one's belief in their ability to perform a future behavior, the current study design uses self-efficacy as a predictor of past behavior

Despite these limitations, the present analyses add to the literature on pediatric health care use and provide mixed support for the current model. Self-efficacy for accessing physician assistance was significantly associated with pediatric primary care utilization. Parents who had higher confidence in their ability to get their child physician assistance were more likely to take their child to the primary care physician. This is not surprising; social cognitive theory suggests that people are more likely to engage in behaviors when they believe they can perform those activities successfully (Bandura, 1997).

Some of the components that contributed to self-efficacy, as assessed by the SEAPA, can be considered access factors, which have been shown to be related to higher use and satisfaction with health care services (Forrest & Starfield, 1998). These findings are consistent with research in this area. However, the SEAPA is not merely a proxy for these access factors. This measure goes beyond access factors by also considering parents' confidence in their ability to communicate and influence their children's physicians, and to organize other aspects of their lives to allow them to get their children to their primary care physicians. Thus high self-efficacy in this area is not only due to having primary care services that are easily accessible to families through convenient locations, short waiting periods, and evening hours. Parents must also be confident in their ability to organize child care and transportation, communicate the presenting problem to the physician, remember and ask their questions, and get the physician to address their main concerns. The more opportunities parents have to successfully engage in these activities, the more confident they are in their ability to perform them in the future. When parents perceive a need for assistance and are more confident that they are able to orchestrate effective interventions, the more likely they are to seek physician assistance.

It was anticipated that parental outcome expectations for physician assistance would also be positively related to pediatric primary care use. Statistical analysis showed that this relationship was not significant and accounted for only 4% of the variance in pediatric primary care use. This finding is somewhat disappointing because it was

expected that parent's expectation of reduced burden would be a much stronger predictor of sustained high use over prolonged periods. One possible explanation for this less than robust relationship is that when discussing health care use parents may be less than enthusiastic about endorsing items that admit to personal gain from taking their child to the primary care physician. Furthermore, this measure placed only limited emphasis on expectations for improved child health, which is an important part of parental burden. Greater emphasis on the assessment of improved child health may have provided a broader and more accurate assessment of outcome expectations.

However, the nature of the current study sample, which consisted of only a limited number of sustained high users of primary care services, likely influenced this relationship. Only one child in this sample averaged over 9 visits per year, a level that has been reported to designate "high" users in past health care use research (Riley et al., 1993; Starfield et al., 1979), and only 10 children averaged 5 or more visits per year. Considering the factors theorized to be related to high use, it is easy to see how such a disparity may have arisen. Those parents that were stressed and burdened by the demands of parenting and daily life were probably those least likely to take the time to initiate contact and volunteer to participate in this study. Without truly high users of primary care who experience repeated visits to the primary care physician, the detrimental effects of proxy control would not have as great a chance to reduce a parent's general parenting self-efficacy. Nor would there be as extensive a learning history to build up positive outcome expectations for reduced parental burden.

Contrary to predictions, general parenting self-efficacy was not related to primary care use. It had been suggested that sustained high utilization of pediatric health care services would reduce parental opportunities to learn to cope independently and thus would reduce general parenting self-efficacy; this was not supported. One possible explanation is that, rather than reducing opportunities to learn to cope independently, some parents experience a rise in general parenting self-efficacy from visiting the pediatric primary care physician. For these parents, physicians may give advice and teach skills that these parents may internalize; subsequently they may feel more confident in their parental abilities. Given that the current sample consisted of primarily well-educated, middle- to upper-income families, sensitive to health care issues, and only a

limited number of sustained high users of primary care services, it is reasonable to speculate that such a process may have occurred with a number of these parents. Furthermore, it is likely that general parenting self-efficacy is a function of direct steps parents have taken to make sure their child is as functional and healthy as possible. From this viewpoint, taking their child to the physician is likely a high efficacy building activity for parents.

In accordance with expectations, parental stress was not related to primary care use. This is consistent with research literature that suggests that parental stress, when considered in isolation, is not related to pediatric primary care use (Abidin, 1982; Abidin & Wilfong, 1989). However, the data also suggest that parental stress, when considered in conjunction with general parenting self-efficacy, does play a significant role in primary care use. The examination of the interaction between parenting stress and general parenting self-efficacy showed that when parents have high stress and high general parenting self-efficacy, they are more likely to take their child to the primary care physician. This finding is in contrast to the expectation that high parental stress, combined with low general parenting self-efficacy, would lead to a greater perceived need for help and thus higher primary care use. The picture of a struggling parent, stressed by the demands of life and parenthood and unsure of how to cope, taking their child to the physician was not supported. It is not the parent who has little confidence in their parenting ability who seeks help from the physician when stressed, but rather the self-perceived able parents, confident in their ability to help their child either by themselves or by getting help.

What factors accounted for this significant interaction? It may be parents in this sample who were stressed but sought help from their child's pediatrician viewed themselves as good parents, confident in their abilities because of the fact they took steps to consult a competent professional to help resolve their concerns. In essence, the act of seeking assistance from a competent professional had the opposite effect than expected; instead of reducing a parent's self-efficacy to cope independently, taking steps to resolve issues, even in the short term, raised the parents' confidence in their ability to solve parenting problems. These parents may not be concerned with whether they solve the problem independently or by seeking assistance from a professional; their main concern

is to get a problem resolved. When there are significant stressors impacting a family, some of which the parent feels are out of his or her control, taking the child to the pediatric primary care physician may be one thing that a parent can control.

This view is supported by the interaction effect between parental stress and self-efficacy for accessing physician assistance. Although self-efficacy for accessing physician assistance was a significant predictor of use, the interaction between parental stress and self-efficacy accounted for a substantial portion of additional variance. Thus, when parents were stressed, but confident in their ability to access and direct help from their physician, they were more likely to visit the physician. This further emphasizes the relationship between parental burden and confidence in obtaining assistance for their child.

One must also consider that parental responses were gathered in the context of a health survey. When answering questions about confidence in their parenting, it is likely that parents may have been overly focused on illness situations. For example, when asked if “I know things about being a mother/father that would be helpful to other parents,” the responders’ focus may have been on their perceived ability to handle health care issues. Thus, estimates of their general parenting self-efficacy may have been influenced heavily by their ability to solve health-related concerns. Given the apparent likely high functioning status of the current sample in this regard, estimates of general parenting self-efficacy may be inflated.

This finding contradicts the results reported by Black and Jodorkovsky (1994), in which they found an interaction between family support and frequency of daily hassles. Perceived family support served as a buffer between high stress and pediatric contacts so that mothers who reported frequent daily hassles and less supportive families initiated more frequent contact with the pediatrician. Evidence has been presented supporting the contention that such family support can serve to increase self-efficacy to cope with a variety of stressful situations (Cutrona & Troutman, 1986; Duncan & McAuley, 1993; Major et al., 1990). With this link between support and self-efficacy, it appears that the role of self-efficacy differed between the current study and that of Black and Jodorkovsky. However, methodological considerations may have influenced these results. The current investigation only examined the parent’s self-efficacy to cope with

general parenting tasks and did not incorporate a measure to assess parent's self-efficacy to cope with the wide range of daily life stressors. The current measure may not have been as specific as necessary with regards to assessing parent's ability to cope with the general stressors of daily life. Although these non-parenting related, daily life stressors may be more distally related to a perceived need for help that leads a parent to seek assistance, they still impact the parenting context. By not assessing self-efficacy to cope with other daily stressors, it is possible that for some parents the current study design may not have adequately assessed the potential impact of all stressors and the resulting perceived need for help. Furthermore, the sample in the examination by Black and Jodorkovsky consisted of primarily middle class, suburban families. These participants likely differed from the primarily upper-middle class, high functioning, health conscious parents in the current study, which may have also contributed to these disparate findings.

Consistent with expectations, this analysis also demonstrated that the social cognitive variables (general parenting self-efficacy, parental stress, self-efficacy for accessing physician assistance) were better predictors of primary care use than the set of traditional variables (i.e., behavioral concerns, parental health care visits, parental psychopathology). This is encouraging considering that two of the traditional variables were found to be significant predictors of pediatric primary care use in the current sample, thus providing for a strong comparison model. The positive relationship between child internalizing problems and primary care use was consistent with past research (Lavigne et al., 1998; Riley et al., 1993; Woodward et al.). Although there are several processes that explain this consistently observed phenomenon, it is likely that children with emotional and behavioral problems exhibit more physical, and certainly mental health symptoms, and show signs of poor health and functioning. Those symptoms elevate both child and parental distress. In order to reduce this distress, parents initiate health care seeking (Mechanic, 1983).

The significant positive relationship between parental use of health care services and child primary care use is also consistent with numerous other investigations (Hankin et al., 1984; Riley et al., 1993; Starfield et al., 1985; Ward & Pratt, 1996; Wolf, 1980). It is likely that this relationship is due to a greater overall propensity to use health care services, which may be linked to parental beliefs and attitudes towards health care

(Tessler & Mechanic, 1978), or a high somatic focus within the family. If parents are more aware of their own health problems and they view health care services as a viable alternative for help and support for themselves, it is likely that this attitude carries over to their use of services for their child. The relationship between a general propensity to seek care and greater child health care use has been shown by Tessler and Mechanic (1978) and Horowitz and colleagues (1985).

One possible explanation for the relative strength of the social cognitive variables relative to the traditional set of variables is that the social cognitive variables, most notably self-efficacy for accessing physician assistance and outcome expectations for physician services, are more proximal to the parent decision making process. These variables focus on parental perceptions and all decisions to seek help must channel through these perceptions. Regardless of whether the child has a health or behavioral issue, or whether the parent is experiencing psychological distress, if the parent has little confidence in their ability to access physician assistance or low outcome expectations for a visit, they will be less likely to seek physician assistance.

Parental stress and general parenting self-efficacy are also more proximal to the parent decision making process because many of the traditional variables related to higher rates of pediatric utilization can be conceptualized as either potential stressors or as hindering the development of self-efficacy to cope with parenting demands. For example, child health can be considered a stress factor. In fact, examination of the correlation matrix shows that child health and parental stress were significantly correlated, suggesting that there is shared variance between these variables. This likely accounted for child health not entering the final model.

Furthermore, while the child's internalizing behavior score is one potential source of parental stress, the parent's total stress score is an accumulation of potential stressors. It is difficult to determine whether the child's internalizing symptoms are a concern without considering them within the context of all potential factors burdening the parent. While the parental stress – general parenting self-efficacy interaction was a significant predictor of utilization, the interaction between child internalizing behavior and general parenting self-efficacy was not a significant predictor of utilization. This supports the importance of considering this larger context of potential stressors. By examining the

interaction of parenting stress and general parenting self-efficacy, we are examining a better approximation of the parent's total burden and their confidence in their ability to cope with that burden.

Despite the emphasis on the social cognitive variables in this model, the presence of standardized internalizing score and medication status in the final predictive model highlights the importance of the child's health and behavior. With the focus of the discussion on stress, self-efficacy, and outcome expectations, it is easy to lose sight of the fundamental importance of these factors. Although parent decision making process is a key component and is worthy of greater focus and consideration, the focus of the parent's attention is on the child, their health, and their behavior when they consider a visit to the primary care pediatrician.

Overall, the best predictive model accounted for a similar amount of variance to two other retrospective studies widely cited in the literature. Riley and colleagues explained 33% of the variance, while Wolfe (1980) explained 31% of the variance in pediatric care use. However, these studies focused on general pediatric health care use in an HMO compared to the focus on community-based fee-for-service primary care practices as in this study. This community-based study is unique because much of the utilization literature focuses on general pediatric health care use conducted within single, large managed care organizations (Horwitz et al., 1985; Kelleher, & Starfield, 1990; Riley et al., 1993; Starfield et al., 1979; Starfield, et al., 1985; Tessler & Mechanic, 1978; Ward & Pratt, 1996; Wolfe, 1980) where freedom of choice is limited and services are provided by insurances. Some recent investigations have focused more on utilization in primary care setting (Lavigne et al., 1993; Lavigne et al., 1998; McNerny, Szilagyi, Childs, Wasserman, & Kelleher, 2000). However, these studies are organized around research practice networks. These networks offer a number of advantages (i.e., access to large populations of patients, enhanced cooperation from participating practices). However, a potential complication is that by joining together in a research practice, these networks place a greater emphasis on research. Moreover, it has been demonstrated that providers in these groups are younger and more likely to practice in group settings than providers from national professional medical associations (Kelleher & Long, 1994). These factors, to some extent, likely influence patient care practices and may not be

representative of the general population of primary care providers. In this study subject participation was not limited to families within a single large, HMO settings, nor those within a research practice network. Although physicians may have had knowledge that some of their patients were being recruited as participants in this study, these settings did not emphasize research.

It is important to emphasize that it is not this investigator's position that sustained high use is by definition inappropriate use and thereby needs to be reduced. In many situations high use is largely the result of poor child health status that requires frequent physician contact to monitor and treat symptoms. In other situations, however, poor child health status is not the sole or main issue driving sustained high use. In these instances, sustained high use is often a sign that the family has a need that is not being addressed by their primary care physician (i.e., child behavior or emotional problem, parental distress, family conflict, or parental uncertainty about how to handle various illness conditions).

This does not imply that such visits are inappropriate, but it leads to two important questions: Is the primary care physician the most appropriate source of assistance for the family? and, are the parents getting the problem addressed effectively in the most competent and efficient manner possible? The problem is that for some families the sustained high use of primary care services often does not match families with professionals who are best suited (i.e., psychologists, psychiatrists, medical specialists, social services, school counselor, or clergy) to address the issues underlying repeated help seeking. Although the primary care physician may provide solutions that give short-term relief to a presenting problem, it may be that in many situations there are other professionals who are better prepared to address the issues that are contributing to increased distress and primary care visits in these families (Janicke & Finney, in press).

Given the position that high use of health care services is not synonymous with inappropriate use, but rather often reflects a family whose current needs are not being effectively addressed by the primary care physician, a number of strategies flow from the current results that can help improve how families cope with various concerns. Considering the predictive ability of self-efficacy for accessing physician assistance, it stands to reason that one strategy to offset sustained high use would be to raise parents' self-efficacy to obtain assistance from other professional and non-professional sources

that can help the family more efficiently address their current needs. If one can raise parent's awareness of other potential sources of assistance, parents may be more likely to consider seeking help from these alternative sources (Dewey & Hawkins, 1998). However, such a strategy is likely to be ineffective unless specific efforts are employed to increase parent's self-efficacy to contact and access these services. To this end it may be necessary for professionals to initially guide parents through the process of setting up appointments with other professionals. It may also be beneficial for primary care physicians to have established contacts in various helping agencies (e.g., psychologists, social services, community support programs, or pastoral counseling services) who are prepared to make a parent's first encounter with a new agency as easy and successful as possible.

Given the relationship between outcome expectations and primary care use, it also appears important to help parents understand how these alternative sources of assistance can, in the long-term, more effectively help the parents address various parenting concerns. We can improve parents self-efficacy to access alternative sources of assistance, but if they do not feel that seeking help from these alternative sources provides benefits beyond that supplied by the primary care physician, they will not be likely to seek help from these alternative sources. Given the respect that many parents have for their child's primary care physician, it is likely that the primary physician could play a very important role in raising a parent's expectations for help seeking from other professionals. Instead of just providing a referral, the physician needs to take the time to outline how such services can be beneficial.

Including pediatric psychologists in primary care settings could be one strategy to help both improve access to, and raise outcome expectations for, psychological services (Finney, Riley & Cataldo, 1991). Psychologists can aid in assessment, provide brief-targeted therapy, or facilitate appropriate referrals. Such first hand experience with, and easy access to, psychologists in these settings may serve to increase parent's self-efficacy for accessing and communicating with alternative sources. Moreover, inclusion in these settings will give pediatric psychologists the chance to demonstrate their effectiveness to both families and physician, which can serve to raise outcome expectations for future

consultation. Subsequently, this may decrease their reliance on their primary care physician for providing such services.

The importance of child internalizing problems in predicting primary care use in this sample suggests a further target for intervention. It has been estimated that approximately 3 out of 5 children with psychosocial concerns are receiving care for these issues from the primary care physician (Costello & Edelbrock, 1985). Unfortunately it has also been demonstrated that a substantial portion of psychosocial and behavioral issues affecting children in primary care settings are not detected by the physician (Costello et al., 1988; Lavigne et al., 1993). These factors point to the continued importance of improving physician awareness and assessment skills in detecting parental concerns over children's psychosocial problems and subsequent family distress. Such efforts could start with modifying physician assessment strategies to encourage an atmosphere that is conducive to the discovery of underlying issues contributing to the current visit. Specifically, physicians should remain observant for signs of parental stress and child psychosocial concerns, and ask parents about the other factors that have contributed to the current problem or have led the parents to seek help at this time. Obtaining more detailed information about the underlying reasons leading a parent to seek help at this time should lead to more targeted treatment and more appropriate referrals to mental health and other specialty services.

It also appears that parental stress is a significant contributor to pediatric primary care use, although one must consider a parent's confidence in their ability to manage various health and behavioral situations. This would suggest that efforts to help parents cope with life and parenting stressors and to build their support network could help in reducing the need for frequent physician assistance. For example, training in stress management strategies such as relaxation, time management, and problem solving skills could help parents ability to cope with diverse stressors. Additionally, community support groups or support networks working in conjunction with health care professionals could also help in this area.

There are a number of important directions for future research, a number of which stem from some additional limitations with this study. First, although its uniqueness may be considered a strength, the sample of parent-child dyads was affiliated with a number

of different primary care providers and practices. It is likely that office practices (appointment schedule procedures, after-hours care, waiting periods) differed among the various providers. Such differences may have affected the families' use of health care services. Fortunately, the SEAPA measured parental attitudes regarding some of these access and communication variables; thus some of the differences that existed between practices may be accounted for by this variable. There is also the possibility that the method of data collection may not have accounted for all primary care visits made by each family. Some parents may not have reported all the primary care physicians that their child visited during that period or some physician offices could have inadvertently failed to provide records on all visits. However, the results showed that a number of variables traditionally related to health care utilization (behavior problems, parent visits, and medication use) were significantly related to the number primary care visits in this study. This suggests that the accuracy of the dependent variable is at least adequate. Nevertheless, it may be beneficial for additional research efforts to focus on testing this model with a sample of children from a large managed care organization or research network where utilization data is recorded on a computerized database and where there may be less variability in access factors. A focus on collecting prospective data will also be beneficial future direction. Such efforts will reduce the concerns regarding the study of self-efficacy with retrospective data and limit the possibility that parental report were influenced by past experiences with the health care system.

Another limitation is that the measures used to assess self-efficacy for accessing physician assistance and parental outcome expectation for pediatric physician services were both developed for this investigation. Although both demonstrated adequate internal consistency in an initial validation sample and in this investigation, further validation studies appear warranted before definitive conclusions can be made about the validity of these measures. Such efforts should include samples from diverse cultural and socioeconomic backgrounds and examine test-retest reliability and predictive validity.

Sample size is another area of concern. This investigation included 87 participants; given that there were nine variables included in hypothesis testing in the regression analysis, this equals approximately ten subjects per variable. Researchers have recommended that when conducting multiple regression analyses, ideally there should be

no fewer than 10 subjects per predictor variable (Maxwell, 2000; Tabachnick & Fidell, 1989), with a bare minimum of 5 subjects per independent variable (Tabachnick & Fidell, 1989). Although the ratio in this study is above the bare minimum level noted by Tabachnick and Fidell, it is toward the low end of this minimum range, which suggests that caution should be exercised when interpreting and generalizing these findings.

While the current study adds to our understanding of factors that affect a parent's decision to seek physician services for their child, the best predictive model still leaves unexplained approximately 70% of the variance in pediatric primary care use. Where should future research look to help account for this unexplained variance? It may be that one answer to this question lies in examining interaction effects between predictor variables. In this study, the interaction between parental stress and general parenting self-efficacy was the best predictor of use. By looking at two-way and possibly three-way interactions we may be better able to understand when parents are more likely to seek physician assistance.

Efforts to test this model with culturally diverse, urban, or more functionally diverse population would also be an important next step in understanding how these variables impact primary care utilization. The current sample was biased toward Caucasian, middle-upper to upper class, health conscious families. It is reasonable to believe different factors may exert greater and lesser influence in different populations. For example, research generally suggests that Caucasian families typically use higher levels of health care than African American families (Riley et al., 1993; Ronsaville & Hakim, 2000; Tessler & Mechanic, 1978). This may be due to differing cultural attitudes towards health care use (Pappas, 1994; Ronsaville & Hakim, 2000), but there is no universally accepted reason for these phenomena. It will also be important to see if the SEAPA and POPPS correlate with children's health care use in these different populations. Additionally, given the impact of social support in past studies (Black & Jodorkovsky, 1994), it will be important to look at how social support may influence self-efficacy and ultimately influence pediatric primary care use in this model.

Researchers should investigate whether high users of pediatric primary care services seek help from other professionals and whether these people are high "help-seekers" from these other services. It would also seem important to examine the factors

affecting the parent's decision as to where to seek services when they perceive a need for help. Although self-efficacy and outcome expectancy may be necessary components for consistently high users, determining what variables are associated with a stressed parent's decision to seek alternative forms of professional and non-professional support would be informative and could help develop strategies to encourage more effective patterns of coping and help seeking. This may be an area where examining higher-level interaction effects may prove helpful.

It also might be beneficial to look at what parents are seeking from their primary care physician and how this differs across various levels of utilization. For example, do we observe more high users looking for reassurance or parenting advice as opposed to low users? Do high users seek more referrals, or might we find that pattern in families who use lower levels of primary care services? Such knowledge could further help health care professionals address the needs of presenting families. Furthermore, considering the significant relationship between primary care use and parental self-efficacy for accessing physician assistance, it might be beneficial to consider what factors are important contributors to this self-efficacy. Determining how to build parent's self-efficacy to access physician assistance could have important implications for low users of primary care and general health care services.

Within the framework of the parent decision-making process, the current investigation tested a social-cognitive model that describes the processes that drive and maintain the sustained high use of primary care services. Undoubtedly, utilization is a complex phenomenon with numerous factors affecting the parent's decision to seek health care. However, this study extends the literature by demonstrating the important role that these social cognitive factors play in influencing a parent's decision to seek pediatric primary care services. While acknowledging the role that child health and behavior, this study emphasizes the importance of considering parental perceptions of burden, confidence and ability to help themselves and their family. Specifically, these results demonstrate that parental stress interacts with a parent's general perception of parenting competence to influence pediatric primary care utilization. Moreover, these results suggest that a parent's feeling of confidence in their ability to access physician assistance for their child and their outcome expectations for such assistance play an

important role determining how often they seek pediatric primary care services. These results and the limitations of this study suggest that the relationships identified in this model require further exploration. Further studies derived from this model should help expand our understanding of the processes that influence not only sustained high use, but all levels of pediatric primary care utilization. In turn, such efforts may ultimately inform intervention strategies to help health care professionals best address the underlying, unmet needs of families.

References

- Abidin, R. R. (1982). Parenting stress and the utilization of pediatric services. Children's Health Care, *11*, 70-73.
- Abidin, R. R. (1992). The determinants of parenting behavior. Journal of Clinical Child Psychology, *21*, 407-412.
- Abidin, R. R., & Wilfong, E. (1989). Parenting stress and its relationship to child health care. Children's Health Care, *18*, 114-116.
- Aiken, L. S., & West, S. G. (1993). Multiple Regression: Testing and interpreting interaction. Newbury, Park, CA: Sage Publications.
- Andersen, R.M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? Journal of Health and Social Behavior, *36*, 1-10.
- Angold, A., Messer, S. C., Stangel, D., Farmer, E., Costello, E. J., & Burn, B. J. (1998). Perceived parental burden and service use for child and adolescent psychiatric disorders. American Journal of Public Health, *88*, 75-80.
- Antonovsky, A. (1979). Health, stress, and coping. San Francisco, CA: Josey-Bass.
- Achenbach, T. M. (1991). Manual for the child behavior checklist/4-18 and 1991 profile. Burlington: University of Vermont Department of Psychiatry.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, *37*, 122-147.
- Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Bandura, A. (1997). Self-efficacy: The exercise of control. New York: W.H. Freeman and Company.
- Bernal, P., Estroff, D. B., Abouardham, J. F., Murphy, M., Keller, A., & Jellinek, M. S. (2000). Psychosocial morbidity: the economic burden in a pediatric health maintenance organization sample. Archives of Pediatric and Adolescent Medicine, *154*, 261-266.
- Black, M., & Jodorkovsky, R. (1994). Stress and family competence as predictors of pediatric contacts and behavior problems among toddlers. Journal of Developmental and Behavioral Pediatrics, *15*, 198-203.

- Coleman, P. K. & Karraker, K. H. (1997). Self-efficacy and parenting quality: Findings and future applications. Developmental Review, 18, 47-85.
- Costello, E. J., Burns, B. J., Costello, A. J., Edelbrock, C., Dulcan, M., & Brent, D. (1988). Service utilization and psychiatric diagnosis in pediatric primary care: The role of the gatekeeper. Pediatrics, 82, 435-441.
- Costello, E. J., & Edelbrock, C. S. (1985). Detection of psychiatric disorders in pediatric primary care: A preliminary report. Journal of the American Academy of Child Psychiatry, 24, 771-774
- Crnic, K. A., & Greenberg, M. T. (1990). Minor parenting stresses with young children. Child Development, 61, 1628-1637.
- Cutrona, C. E., & Troutman, B. R. (1986). Social Support, infant temperament, and parenting self-efficacy: A mediational model of postpartum depression. Child Development, 57, 1507-1518.
- Derogatis, L.R. (1993). Brief symptom inventory (BSI) administration, scoring, and procedures manual (3rd ed.). Minneapolis: National Computer Systems.
- Dewey, C. R., & Hawkins, N. S. (1998). The relationship between the treatment of cough during early infancy and maternal education level, age and number of other children in the household. Child Care, Health and Development, 24, 217-227.
- Dumka, L. E., Stoerzinger, H. D., Jackson, K. M., & Roosa, M. W. (1996). Examination of the cross-cultural and cross-language equivalence of the parenting self-agency measure. Family Relations, 45, 216-222.
- Duncan, T. E., & McAuley, E. (1993). Social support and efficacy cognitions in exercise adherence: A latent growth curve analysis. Journal of Behavioral Medicine, 16, 199-218.
- Duncan, J. K., Taylor, R. J., & Fordyce, I. D. (1987). Factors associated with variation in the consultation rates of children aged under five years. Journal of the Royal College of General Practitioners, 37, 251-254.
- Finney, J. W., Riley, A. W., & Cataldo, M. F. (1991). Psychology in primary health care: Effects of brief targeted therapy and children's medical care utilization. Journal of Pediatric Psychology, 16, 447-461.

Forrest, C. B., & Starfield, B. (1998). Entry into primary care and continuity: The effects of access. American Journal of Public Health, *88*, 1330-1336.

Greenland, S. (1989). Modeling and variable selection in epidemiologic analysis. American Journal of Public Health, *79*, 340-349.

Hankin, J. R., Starfield, B. H., Steinwachs, D. M., Benson, P., Livingston, G., & Katz, H. (1984). The relationship between specialized mental health care and patterns of primary care use among children enrolled in a prepaid group practice. Community and Mental Health, *4*, 203-220.

Hatcher, J. W., Richtsmeier, A. J., & Westin, S. (1989). Anxiety in parents seeking pediatric care. Journal of Pediatric Psychology, *14*, 335-340.

Hobfall, S. (1989). Conservation of resources: A new attempt at conceptualizing stress. American Psychologist, *44*, 513-524.

Horwitz, S. M., Morgenstern, H., & Berkman, L. F. (1985). The impact of social stressors and social network on pediatric medical care use. Medical Care, *23*, 946-959.

Janicke, D. M., & Finney, J. W. (2000). Determinants of children's primary care use. Journal of Clinical Psychology in Medical Settings, *7*, 29-39.

Janicke, D. M., & Finney, J. W. (in press). Children's primary health care services: A social-cognitive model of sustained high use. Clinical Psychology: Science and Practice.

Kanner, A. D., Coyne, J. C., Schaeffer, & Lazarus, R. S. (1981). Comparison of two modes of stress management: Daily hassles and uplifts versus major life events. Journal of Behavioral Medicine, *4*, 1-39.

Kelleher, K. J., & Long, N. (1994). Barriers and new directions in mental health services research in the primary care setting. Journal of Clinical Child Psychology, *23*, 133-142.

Kelleher, K., & Starfield, B. (1990). Health care use by children receiving mental health services. Pediatrics, *85*, 114-118.

Kirscht, J. P., Becker, M. H., & Eveland, J. P. (1976). Psychological and social factors as predictors of medical behavior. Medical Care, *14*, 422-431.

Koren, P.E., DeChillo, N., & Friesen, B. J. (1992). Measuring empowerment in families whose children have emotional disabilities: A brief questionnaire. Rehabilitation Psychology, 37, 305-321.

Langer, E. J. (1979). The illusion of incompetence. In Perlmutter, L. C., & Monty, R. A. (Eds.), Choice and perceived control (pp. 301-314). Hillsdale, NJ: Lawrence Erlbaum Associates.

Lavigne, J. V., Binns, H. J., Christoffel K.K., Rosenbaum, D., Arend, R., Smith, K., Hayford, J. R., & McGuire, P. A. (1993). Behavioral and emotional problems among preschool children in pediatric primary care settings: Prevalence and pediatricians' recognition. Pediatrics, 91, 649-655.

Lavigne, J. V., Binns, H. J., Arend, R., Rosenbaum, D., Christoffel, K. K., Hayford, J. R., & Gibbons, R. D. (1998). Psychopathology and health care use among preschool children: A retrospective analysis. Journal of the Academy of Child and Adolescent Psychiatry, 37, 262-270.

Leibowitz, A., Manning, W. G., Keeler, E. B., Duan, N., Lohr, K. N., & Newhouse, J. P. (1985). Effect of cost-sharing on the use of medical services by children: Interim results from a randomized controlled trial. Pediatrics, 75, 942-951.

Major, B., Cozzarelli, C., Sciacchitano, A. M., Cooper, M. L., Testa, M., & Mueller, P. M. (1990). Perceived social support, self-efficacy, and adjustment to abortion. Journal of Personality and Social Psychology, 59, 452-463.

Mash, E. J., & Johnston, C. (1990). Determinants of parenting stress: Illustrations from families of hyperactive children and families of physically abused children. Journal of Clinical Child Psychology, 4, 313-328.

Maxwell, S. E. (2000). Sample size and multiple regression analysis. Psychological Methods, 5, 434-458.

McInerny, T. K., Szilagyi, P. G., Childs, G. E., Wasserman, R. C., & Kelleher, K. J. (2000). Uninsured children with psychosocial problems: Primary care management. Pediatrics, 106, 930-936.

Mechanic, D. (1983). The experience and expression of distress: The study of illness behavior and medical utilization. In Mechanic, D. (Ed.), Handbook of health, health care, and the health professions (pp. 591-607). New York, NY: The Free Press.

Mechanic, D. (1995). Sociological dimension of illness behavior. Social Science Medicine, 41, 1207-1216.

Miller, S. M. (1980). Why having control reduces stress: If I can stop the roller coaster, I don't want to get off. In Garber, J., & Seligman, M. E. P. (Eds.), Human helplessness: Theory and application. (pp. 71-95). New York, NY: Academic Press, Inc.

Nadel, V. (1993). Emergency departments: Unevenly affected by growth and change in patient use. Washington, DC: U.S. General Accounting Office, Human Resources Division.

Newacheck, P., & Halfon, N. (1986). The association between mother's and children's use of physician services. Medical Care, 24, 30-38.

Orr, S., T., James, S. A., & Charney, E. (1989). A social environment inventory for the pediatric office. Developmental and Behavioral Pediatrics, 10, 287-291.

Osborne, R., Hatcher, J. W., & Richtsmeier, A. J. (1989). The role of social modeling in unexplained pediatric pain. Journal of Pediatric Psychology, 14, 43-61.

Ostberg, M. Hagekull, B., & Wettergreen, S. (1997). A measure of parental stress in mothers of small children. Dimensionality, stability, and validity. Scandinavian Journal of Psychology, 38, 199-208.

Ozer, E. M. (1995). The impact of child care responsibility and self-efficacy on the psychological health of working mothers. Psychology of Women Quarterly, 19, 315-336.

Pappas, G. (1994). Elucidating the relationships between race, socioeconomic status, and health. American Journal of Public Health, 84, 892-893.

Richtsmeier, A. J. & Hatcher, J. W. (1994). Parental anxiety and minor illness. Developmental and Behavioral Pediatrics, 15, 14-18.

Riley, A. W., Finney, J. W., Mellits, D., Starfield, B., Kidwell, S., Quaskey, S., Cataldo, M. F., Filipp, L., & Shematek, J. P. (1993). Determinants of children's health care use: An investigation of psychosocial factors. Medical Care, 31, 767-783.

Ronsaville, D. S., & Hakim R. B. (2000). Well child care in the United States: Racial differences in compliance with guidelines. American Journal of Public Health, 90, 1436-1443.

Roughmann K. J., & Haggerty, R. J. (1973). Daily stress, illness and use of health services in young females. Pediatrics Reserves., *7*, 520-526.

Shore, E, Starfield, B., Stidley, C., & Hankin, J. (1987). Family health: Utilization and effects of family membership. Medical Care, *25*, 616-626.

Silver, E. J., Bauman, L. J., & Ireys, H. T. (1995). Relationships of self-esteem and efficacy to psychological distress in mothers of children with chronic physical illnesses. Health Psychology, *5*, 333-340.

Skinner, B. F. (1969). Contingencies of reinforcement: A theoretical analysis. New York: Appleton-Century-Crofts.

Slesinger, D. P., Tessler, R. C., & Mechanic, D. (1976). The effects of social characteristics on the utilization of preventive medical services in contrasting health care programs. Medical Care, *14*, 392-404.

Starfield, B., Hankin, J., Steinwachs, D., Horn, S., Benson, P., Katz, H., & Gabriel, A. (1985). Utilization and morbidity: Random or tandem? Pediatrics, *75*, 241-247.

Starfield, B., Katz, J., Gabriel, A., Livingston, G., Benson, P., Hankin, J., Horn, S., & Steinwachs, D. (1984). Morbidity in childhood - A longitudinal view. The New England Journal of Medicine, 824-829.

Starfield, B., Van den Berg, B. J., Steinwachs, D. M., Katz, H. P., & Horn, S. D. (1979). Variations in utilization of health services in children. Pediatrics, *63*, 633-641.

Szilagyi, P. G., & Schor, E. L. (1998). The health of children. Health Services Research, *33*, 1001-1039.

Tabachnick, B. G. & Fidell, L. S. (1989). Using multivariate statistics. New York: Harper Collins Publishers, Inc.

Tessler, R., & Mechanic, D. (1978). Factors affecting children's use of physician services in a prepaid group practice. Medical Care, *16*, 33-47.

Teti, D. M. & Gelfand, D. M. (1991). Behavioral competence among mothers of infants in the first year: The mediational role of maternal self-efficacy. Child Development, *62*, 918-929.

Turk, D. C., Litt, M. D., Salovey, P., & Walker, J. (1985). Seeking urgent pediatric treatment: Factors contributing to frequency, delay, and appropriateness. Health Psychology, 4, 43-59.

Walker, L. S., & Greene, J. W. (1989). Children with recurrent abdominal pain and their parents: More somatic complaints, anxiety and depression than other patient families? Journal of Pediatric Psychology, 14, 231-243.

Ward, A., & Pratt, C. (1996). Psychosocial influences on the use of health care by children. Australian and New Zealand Journal of Public Health, 20, 309-316.

Ware, J. E., Jr. (1976). Scale for measuring general health perceptions. Health Services Research, Winter, 396-415.

Watson, J. M., & Kemper, K. J. (1995). Maternal factors and child's health care use. Social Science Medicine, 40, 623-628.

Weimer, S. R., Hatcher, C., & Gould, E. (1983). Family characteristics in high and low health care utilization. General Hospital Psychiatry, 5, 55-61.

Webster-Stratton, C. (1990). Stress: A potential disrupter of parent perceptions and family interactions. Journal of Clinical Child Psychology, 19, 302-312.

Whipple, E. E. & Webster-Stratton, C. (1991). The role of parental stress in physically abusive families. Child Abuse & Neglect, 15, 279-291.

Wiedenfeld, S. A., O'Leary, A., Bandura, A., Brown, S., Levine, S., & Raska, K. (1990). Impact of perceived self-efficacy in coping with stressors on components of the immune system. Journal of Personality and Social Psychology, 59, 1082-1094.

Wolfe, B. L. (1980). Children's utilization of medical care. Medical Care, 23, 1196-1207.

Woodward, C. A., Boyle, M. H., Offord, D. R., Cadman, D. T., Links, P. S., Munroe-Blum, H., Byrne, C., & Thomas, H. (1988). Ontario child health study: Patterns of ambulatory medical care utilization and their correlates. Pediatrics, 82, 425-434.

Table 1. Descriptive Statistics for Demographic Variables

Characteristic	M (SD) or % of Sample
Child Age (years)	6.8 (1.4)
Child Gender (% male)	59.8
Child Race	
Caucasian	89.7%
African American	2.3%
Asian	2.3%
Hispanic	2.3%
Biracial/Other Race	3.4%
Number of Children in Household	2.06 (0.84)
Households with 1 child	23.0%
Households with 2 children	55.2%
Households with 3 children	17.2%
Households with 4 or more children	4.6%
Mother as Respondent	94.3%
Age of Respondent (years)	38.4 (5.5)
Respondent is Married	87.4%
Child has Health Insurance	96.6%
Household Income (\$)	\$63,553 (40,514)

Table 2. Item-Total Correlations for the SEAPA

Item #	Correlation with Total Score
Item 1	0.769**
Item 2	0.654**
Item 3	0.640**
Item 4	0.687**
Item 5	0.746**
Item 6	0.797**
Item 7	0.788**
Item 8	0.622**
Item 9	0.762**
Item 10	0.707**
Item 11	0.633**
Item 12	0.640**
Item 13	0.670**
Item 14	0.542**

**Correlation significant at the 0.01 level (2-tailed).

* Correlation significant at the 0.05 level (2-tailed).

Table 3. Item-Total Correlations for the POPPS

Item #	Correlation with Total Score
Item 1	0.573**
Item 2	0.628**
Item 3	0.622**
Item 4	0.499**
Item 5	0.651**
Item 6	0.462**
Item 7	0.589**
Item 8	0.505**
Item 9	0.510**
Item 10	0.532**
Item 11	0.443**

**Correlation significant at the 0.01 level (2-tailed).
* Correlation significant at the 0.05 level (2-tailed).

Table 4. Descriptive Statistics for Independent and Dependent Variables

Variable	Mean (or %)	SD	Minimum	Maximum
Current Health Status	41.28	4.23	23	45
Past Health Status	38.98	4.94	20	45
Medication Status	(Yes = 25.3%)			
GPSE	28.26	3.55	16	35
Parental Stress	8.36	4.74	00	19
SEAPA	64.21	5.29	52	70
POPSS	42.09	4.91	29	55
Parental Distress	15.97	17.22	00	86
SIB Score	47.77	9.59	33	71
SEB Score	47.95	9.06	30	73
STB Score	47.57	9.51	32	72
Parent H.C. Visits	5.59	4.65	00	20
Child P.C. Visits	5.23	3.65	00	19

GPSE = General Parenting Self-Efficacy

SEAPA = Self-Efficacy for Accessing Physician Assistance

POPSS = Parent Outcome Expectation for Pediatric Physician Services

SIB Score = Standardized Internalizing Behavior Score

SEB Score = Standardized Externalizing Behavior Score

STB Score = Standardized Total Behavior Score

Table 5. Correlation Matrix

	Age	Child Gender	Child Meds	Curr. Health	Past Health	Gen. Self-Eff.	Parent Stress	Parent Distress
Age		-0.124	-0.110	-0.031	-0.135	-0.166	-0.165	-0.022
Child Gender	-0.124		0.154	-0.054	0.071	-0.101	0.037	0.121
Child on Meds	-0.110	0.154		0.189	-0.331 ^a	-0.024	-0.079	-0.183
Current Health Status	-0.031	-0.054	0.189		0.498 ^a	0.185	-0.356 ^a	-0.309 ^a
Past Health Status	-0.135	0.071	0.331 ^a	0.498 ^a		0.056	-0.339 ^a	-0.362 ^a
Gen. Prnt. Self-Eff.	0.166	-0.101	-0.024	0.185	0.056		-0.334 ^a	-0.273 ^a
Parental Stress	-0.165	0.037	-0.079	-0.356 ^a	-0.339 ^a	-0.334 ^a		0.677 ^a
Parental Distress	-0.022	0.121	-0.183	-0.309 ^a	-0.362 ^a	-0.273 ^a	0.677 ^a	
SEAPA	-0.010	-0.122	-0.143	0.327 ^a	0.183	0.333 ^a	-0.221 ^a	0.293 ^a
POPPS	0.195	0.085	-0.142	-0.006	-0.372 ^a	0.070	-0.027 ^a	-0.036
Total Behavior Score	0.039	0.044	-0.043	-0.389 ^a	-0.362 ^a	-0.142	0.555 ^a	0.612 ^a
Total Internalizing Score	0.199	0.032	-0.177	-0.336 ^a	-0.300 ^a	-0.080	0.391 ^a	0.421 ^a
Total Externalizing Score	-0.037	0.150	0.003	-0.431 ^a	-0.370 ^a	-0.166	0.531 ^a	0.643 ^a
Parental H.C. Visits	-0.113	0.000	-0.169	0.003	-0.080	0.067	0.250 ^a	0.169
Child P.C. Visits	0.003	0.045	-0.211 ^a	-0.136	-0.192	0.021	0.157	0.095
Child P.C. Visits (Sqrt).	0.034	0.029	-0.259 ^a	-0.143	-0.199	0.055	0.096	0.019

	SEAPA	POPPS	Total Bhvr. Score	Total Intrn. Score	Total Extrn. Score	Parent H.C. Visits	Child P.C. Visits	Child P.C. Vsts (Sq)
Age	-0.010	0.195	0.039	0.199	-0.037	-0.113	0.003	0.034
Child Gender	-0.122	0.085	0.044	0.032	0.150	0.000	0.045	0.029
Child on Meds	-0.143	-0.142	-0.043	0.177	0.003	-0.169	-0.211 ^a	-0.259 ^a
Current Health Status	0.327 ^a	-0.006	-0.389 ^a	0.336 ^a	-0.431 ^a	0.003	-0.136	-0.143
Past Health Status	0.183	-0.083	-0.372 ^a	-0.300 ^a	-0.370 ^a	-0.080	-0.192	-0.199
Gen. Prnt. Self-Eff.	0.333 ^a	0.070	-0.142	-0.080	-0.166	0.067	0.021	0.055
Parental Stress	-0.211 ^a	-0.027	0.555 ^a	0.391 ^a	0.531 ^a	0.250	0.157	0.096
Parental Distress	-0.293 ^a	-0.036	0.612 ^a	0.421 ^a	0.643 ^a	0.169	0.095	0.019
SEAPA		0.337	-0.243 ^a	-0.209	-0.235 ^a	0.114	0.200	0.235 ^a
POPPS			-0.004	-0.013	0.031	0.117	0.186	0.192
Total Behavior Score				0.828 ^a	0.902 ^a	0.292 ^a	0.266 ^a	0.224 ^a
Total Internalizing Score					0.600 ^a	0.299 ^a	0.266 ^a	0.271 ^a
Total Externalizing Score						0.211	0.235 ^a	0.167
Parental H.C. Visits							0.352 ^a	0.309 ^a
Child P.C. Visits								0.962 ^a
Child P.C. Visits (Sqrt).								

^a = p < .05

Table 6. Linear Regression Analysis: General Parenting Self-Efficacy (centered) and Parent Stress (centered)

MODEL SUMMARY

Model	R	R Squared	Std. Error Of the Estimate
1	0.134	0.018	0.8102

ANOVA

Model	Sum of Squares	df	Mean Squares	F	Sig.
Regression	1.001	02	0.501	0.763	0.470
Residual	55.139	84	0.656		
Total	56.140	86			

COEFFICIENTS

Model	Unstandardized Coefficients		Stdz Coeff.	t	Sig.
	B	Std. Error	Beta		
Constant	2.141	.087		24.649	0.000
GPSE Centered	2.238E-02	.026	.098	0.856	0.394
PS Centered	2.199E-02	.020	.129	1.125	0.264

GPSE = General Parenting Self-Efficacy
 PS = Parental Stress

Table 7. Linear Regression Analysis: Interaction Between General Parenting Self-Efficacy and Parent Stress

MODEL SUMMARY

Model	R	R Squared	Std. Error Of the Estimate
1	0.358	0.128	0.7678

ANOVA

Model	Sum of Squares	df	Mean Squares	F	Sig
Regression	7.204	03	2.401	4.073	0.009
Residual	48.936	83	0.590		
Total	56.140	86			

COEFFICIENTS

Model	B	Unstandardized Coefficients Std. Error	Stdzd Coeff. Beta	t	Sig.	Semi-Partial Correl.
Constant	1.988	.797		2.494	0.015	
GPSE	2.764E-03	.026	.012	0.108	0.914	.011
Parent Stress	2.040E-02	.019	.120	1.101	0.274	.113
Interaction (Parenting Self-Efficacy x Parent Stress)	1.726E-02	.005	.343	3.244	0.002	.332

GPSE = General Parenting Self-Efficacy

Table 8. Average Primary Care Use (Parental Stress x General Parenting Self-Efficacy)

	Below Avg. Self-Efficacy	Above Avg. Self-Efficacy	
Below Average Parental Stress	n = 17 x = 4.59 sd = 3.02	n = 31 x = 4.42 sd = 3.40	n = 48 x = 4.48 sd = 3.24
Above Average Parental Stress	n = 22 x = 5.59 sd = 4.38	n = 17 x = 6.88 sd = 3.28	n = 39 x = 6.15 sd = 3.94
	n = 39 x = 5.15 sd = 3.84	n = 48 x = 5.29 sd = 3.53	

Each subject was classified into one of the four quadrants in this table based on their parenting stress and general parenting self-efficacy scores. First, the mean for each of these two variables was calculated. Then the variables were dichotomized based on whether the subject score was below or above the mean value for each variable. For example, there were 31 parents who reported below average stress and above average general parenting self-efficacy (quadrant 2). The children of these parents averaged 4.42 health care visits over the study period.

Table 9. Linear Regression Analysis: Self-Efficacy for Accessing Physician Assistance (centered) and Parent Stress (centered)

MODEL SUMMARY

Model	R	R Squared	Std. Error Of the Estimate
1	0.279	0.078	0.7850

ANOVA

Model	Sum of Squares	df	Mean Squares	F	Sig
Regression	4.384	02	2.192	3.557	0.033
Residual	51.756	84	0.616		
Total	56.140	86			

COEFFICIENTS

Model	B	Unstandardized Coefficients Std. Error	Stdzd Coeff. Beta	t	Sig.
Constant	2.141	.084		25.444	0.000
SEAPA Centered	4.112E-02	.016	.269	2.504	0.014
PS Centered	2.653E-02	.018	.156	1.449	0.151

SEAPA = Self-Efficacy for Accessing Physician Assistance
 PS = Parenting Stress

Table 10. Linear Regression Analysis: Interaction Between Self-Efficacy for Accessing Physician Assistance and Parent Stress

MODEL SUMMARY

Model	R	R Squared	Std. Error Of the Estimate
1	0.355	0.126	0.7689

ANOVA

Model	Sum of Squares	df	Mean Squares	F	Sig
Regression	7.069	03	2.356	3.986	0.011
Residual	49.071	83	0.591		
Total	56.140	86			

COEFFICIENTS

Model	B	Unstandardized Coefficients Std. Error	Stdzd Coeff. Beta	t	Sig.	Semi-Partial Correl.
Constant	- 0.618	1.080		-0.572	0.569	
SEAPA	3.929E-02	.016	.257	2.439	0.017	.250
Parent Stress	3.260E-02	.018	.191	1.795	0.076	.184
Interaction (SEAPA x Parent Stress)	6.519E-03	.003	.222	2.131	0.036	.219

Table 11. Average Primary Care Use (Parental Stress x Self-Efficacy for Accessing Physician Assistance)

	Below Avg. SEAPA	Above Avg. SEAPA	
Below Average Parental Stress	n = 16 x = 3.50 sd = 2.19	n = 32 x = 4.97 sd = 3.59	n = 48 x = 4.48 sd = 3.24
Above Average Parental Stress	n = 23 x = 5.39 sd = 3.42	n = 16 x = 7.25 sd = 4.48	n = 39 x = 6.15 sd = 3.94
	n = 39 x = 4.62 sd = 3.09	n = 48 x = 5.73 sd = 4.01	

Each subject was classified into one of the four quadrants in this table based on their parenting stress and self-efficacy for accessing physician assistance. First, the mean for each of these two variables was calculated. Then the variables were dichotomized based on whether the subject score was below or above the mean value for each variable. For example, there were 32 parents who reported below average stress and above average self-efficacy for accessing physician assistance (quadrant 2). The children of these parents averaged 4.97 health care visits over the study period.

Table 12. Linear Regression Analysis: Current and Past Child Health Status Combined.

MODEL SUMMARY

Model	R	R Squared	Std. Error Of the Estimate
1	0.205	0.042	0.8001

ANOVA

Model	Sum of Squares	df	Mean Squares	F	Sig
Regression	2.369	02	1.185	1.851	0.163
Residual	53.770	84	0.640		
Total	56.140	86			

COEFFICIENTS

Model	B	Unstandardized Coefficients Std. Error	Stdzd Coeff. Beta	t	Sig.	Semi- Partial Correl.
Constant	3.713	.905		4.104	0.000	
Current Child Health	-1.12E-02	.023	-.059	- 0.476	0.635	- .051
Past Child Health	-2.78E-02	.020	-.170	- 1.380	0.171	- .147

Table 13. Linear Regression Analysis: Child Health Variables (Past Health Status and Medication Status)

MODEL SUMMARY

Model	R	R Squared	Std. Error Of the Estimate
1	0.285	0.081	0.7835

ANOVA

Model	Sum of Squares	df	Mean Squares	F	Sig
Regression	4.570	02	2.285	3.722	0.028
Residual	51.570	84	0.614		
Total	56.140	86			

COEFFICIENTS

Model	Unstandardized Coefficients		Stdzd Coeff.	t	Sig.	Semi- Partial Correl.
	B	Std. Error	Beta			
Constant	3.673	.698		5.259	0.000	
Past Child Health	-2.08E-02	.018	-.127	-1.150	0.254	-.120
Medication Status	-.400	.205	-.217	-1.955	0.054	-.204

Table 14. Linear Regression Analysis for Health and Social Cognitive Variables

MODEL SUMMARY

Model	R	R Squared	Std. Error Of the Estimate	R Squared Change	Sig. F Change
1	0.285	0.081	0.7835	.081	.028
2	0.486	0.236	0.7368	.155	.011

ANOVA

Model		Sum of Squares	df	Mean Squares	F	Sig
1	Regression	4.570	02	2.285	3.722	0.028
	Residual	51.570	84	0.614		
	Total	56.140	86			
2	Regression	13.253	07	1.893	3.487	0.003
	Residual	42.887	79	0.543		
	Total	56.140	86			

COEFFICIENTS

Model	B	Unstandardized Coefficients Std. Error	Stdzd Coeff. Beta	t	Sig.	Semi- Parital Correlation
Constant	3.673	0.698		5.259	0.000	
Past Child Health	- 2.08E-02	.018	-.127	- 1.150	0.254	-.120
Medication Status	- 0.400	.205	-.217	- 1.955	0.054	-.204
Constant	1.347	1.450		0.929	0.356	
Past Child Health	- 2.076E-02	.019	-.127	- 1.112	0.270	-.109
Medication Status	- 0.292	.198	-.158	- 1.479	0.143	-.145
GPSE	-1.38E-02	.025	-.061	- 0.544	0.588	-.053
Parent Stress	1.453E-02	.019	.085	0.767	0.446	.075
SEAPA	3.169E-02	.018	.207	0.790	0.077	.176
Outcome Expect.	1.082E-02	.017	.066	0.620	0.537	.061
Parent Self-Eff. x Parent Stress)	1.542E-02	.005	.306	2.995	0.004	.295

GPSE = General Parenting Self-Efficacy; SEAPA = Self-Efficacy For Accessing Physician Assistance

Table 15. Linear Regression Analysis for Health and Traditional Variables

MODEL SUMMARY

Model	R	R Squared	Std. Error Of the Estimate	R Squared Change	Sig. F Change
1	0.285	0.081	0.7835	.081	.028
2	0.449	0.202	0.7438	.120	.010

ANOVA

Model		Sum of Squares	df	Mean Squares	F	Sig
1.	Regression	4.570	02	2.285	3.722	0.028
	Residual	51.570	84	0.614		
	Total	56.140	86			
2.	Regression	11.329	05	2.266	4.096	0.002
	Residual	44.811	81	0.553		
	Total	56.140	86			

COEFFICIENTS

Model	B	Unstandardized Coefficients Std. Error	Stdzd Coeff. Beta	t	Sig.	Semi- Parital Correlation
Constant	3.673	.698		5.259	0.000	
Past Child Health	- 2.08E-02	.018	- .127	- 1.150	0.254	-.096
Medication Status	- 0.400	.205	- .217	- 1.955	0.054	-.236
Constant	2.552	.921		2.771	0.007	
Past Child Health	- 1.97E-02	.018	- .120	- 1.064	0.290	-.176
Medication Status	- 0.349	.197	- .189	- 1.770	0.081	-.106
Parental Distress	-9.03E-03	.005	- .192	- 1.686	0.096	-.167
SIB Score	1.891E-02	.010	.224	1.950	0.055	.194
Parent H.C. Visits	4.074E-02	.018	.233	2.211	0.030	.219

SIB Score = Standard Internalizing Behavior Score

Table 16. Supplemental Regression Analysis for Health and Social Cognitive Variables

MODEL SUMMARY

Model	R	R Squared	Std. Error Of the Estimate	R Squared Change	Sig. F Change
1	0.285	0.081	0.7835	.081	.028
2	0.469	0.220	0.7308	.139	.001

ANOVA

Model	Sum of Squares	df	Mean Squares	F	Sig
1. Regression	4.570	02	2.285	3.722	0.028
Residual	51.570	84	0.614		
Total	56.140	86			
2. Regression	12.347	04	3.087	5.780	0.000
Residual	43.793	82	0.534		
Total	56.140	86			

COEFFICIENTS

Model	B	Unstandardized Coefficients Std. Error	Stdzd Coeff. Beta	t	Sig.	Semi- Parital Correlation
Constant	3.673	0.698		5.259	0.000	
Past Child Health	- 2.08E-02	.018	- .127	-1.150	0.254	-.204
Medication Status	- 0.400	.205	- .217	-1.955	0.054	-.120
Constant	1.864	1.120		1.665	0.100	
Past Child Health	- 2.655E-02	.017	- .162	-1.517	0.133	-.148
Medication Status	- 0.301	.196	- .163	-1.539	0.128	-.150
SEAPA	3.032E-02	.016	.198	1.926	0.058	.188
Parenting Self-Eff. x Parental Stress	1.470E-02	.005	.292	2.946	0.004	.287

Table 17. Supplemental Regression Analysis for Health and Traditional Variables

MODEL SUMMARY

Model	R	R Squared	Std. Error Of the Estimate	R Squared Change	Sig. F Change
1	0.285	0.081	0.7835	.081	.028
2	0.417	0.174	0.7521	.093	.013

ANOVA

Model	Sum of Squares	df	Mean Squares	F	Sig
1. Regression	4.570	02	2.285	3.722	0.028
Residual	51.570	84	0.614		
Total	56.140	86			
2. Regression	9.755	04	2.439	4.311	0.003
Residual	46.385	82	0.566		
Total	56.140	86			

COEFFICIENTS

Model	B	Unstandardized Coefficients Std. Error	Stdzd Coeff. Beta	t	Sig.	Semi- Parital Correlation
Constant	3.673	0.698		5.259	0.000	
Past Child Health	- 2.08E-02	.018	-.127	-1.150	0.254	-.120
Medication Status	- 0.400	.205	-.217	-1.955	0.054	-.204
Constant	2.332	0.922		2.530	0.013	
Past Child Health	- 1.210E-02	.018	-.074	-0.667	0.506	-.075
Medication Status	- 0.328	.199	-.178	-1.649	0.103	-.172
SIB Score	1.356E-02	.009	.161	1.436	0.147	.074
Parent H.C. Visits	3.910E-02	.018	.235	2.114	0.038	.243

SIB Score = Standardized Internalizing Score; Parent H.C. Visits = Parent Health Care Visits

Table 18. Supplemental Hierarchical Regression Analysis for Social Cognitive Variables Above and Beyond the Health and Traditional Variables

MODEL SUMMARY

Model	R	R Squared	Std. Error Of the Estimate	R Squared Change	Sig. F Change
1	0.285	0.081	0.7835	.081	.028
2	0.449	0.202	0.7438	.120	.010
3	0.578	0.334	0.7016	.132	.016

ANOVA

Model		Sum of Squares	df	Mean Squares	F	Sig
1.	Regression	4.570	02	2.285	3.722	0.028
	Residual	51.570	84	0.614		
	Total	56.140	86			
2.	Regression	11.329	05	2.266	4.096	0.002
	Residual	44.811	81	0.553		
	Total	56.140	86			
3.	Regression	18.732	10	1.873	3.806	0.000
	Residual	37.408	76	0.492		
	Total	56.140	86			

COEFFICIENTS

Model	B	Unstandardized Coefficients Std. Error	Stdzd Coeff. Beta	t	Sig.	Semi- Parital Correlation
Constant	0.751	1.550		0.485	0.629	
Medication Status	-0.268	.193	-.145	-1.391	0.168	-.130
Past Health Status	-1.957E-02	.018	-.120	-1.083	0.282	-.101
Parental Distress	-9.058E-02	.006	-.193	-1.415	0.161	-.133
SIB Score	2.064E-02	.009	.245	2.224	0.029	.208
Parent H.C. Visits	2.993E-02	.018	.172	1.665	0.100	.156
SEAPA	3.055E-02	.017	.200	1.755	0.083	.164
POPPS	8.297E-02	.017	.050	0.498	0.620	.047
Parent Stress	1.070E-02	.023	.063	0.458	0.648	.043
Gen. Prnt.Self-Eff.	-2.428E-02	.024	-.107	-0.992	0.324	-.093
Gen. Prnt. Self-Eff. x Parental Stress	1.483E-02	.005	.294	3.011	0.004	.282

SIB Score = Standardized Internalizing Score; Parent H.C. Visits = Parent Health Care Visits

Table 19. Best Subsets Analysis – Best Predictive Model of Primary Care Use

Component	Std Coeff ^a	Partial R ²	Semi- Partial Corr.	Cum. Variance
Inter Btwn Parental Stress & General Parenting Self-Eff.	0.278	0.115	.274	11.5% ^b
SIB Score	0.247	0.074	.213	18.9% ^d
SEAPA	0.200	0.054	.188	24.3% ^c
Medication Status	-0.162	0.031	-.157	27.4% ^c
Parent Health Care Visits	0.168	0.024	.154	29.8% ^d

SIB Score = Standardized Internalizing Behavior Score

SEAPA = Self-Efficacy for Accessing Physician Assistance

^a Additional variance accounted for by the addition of the variable. Note: Regression coefficients are standardized so that they represent the amount of change in the dependent variable that is attributable to a 1 unit change in the standard score of the predictor variables, independent of all other variables examined.

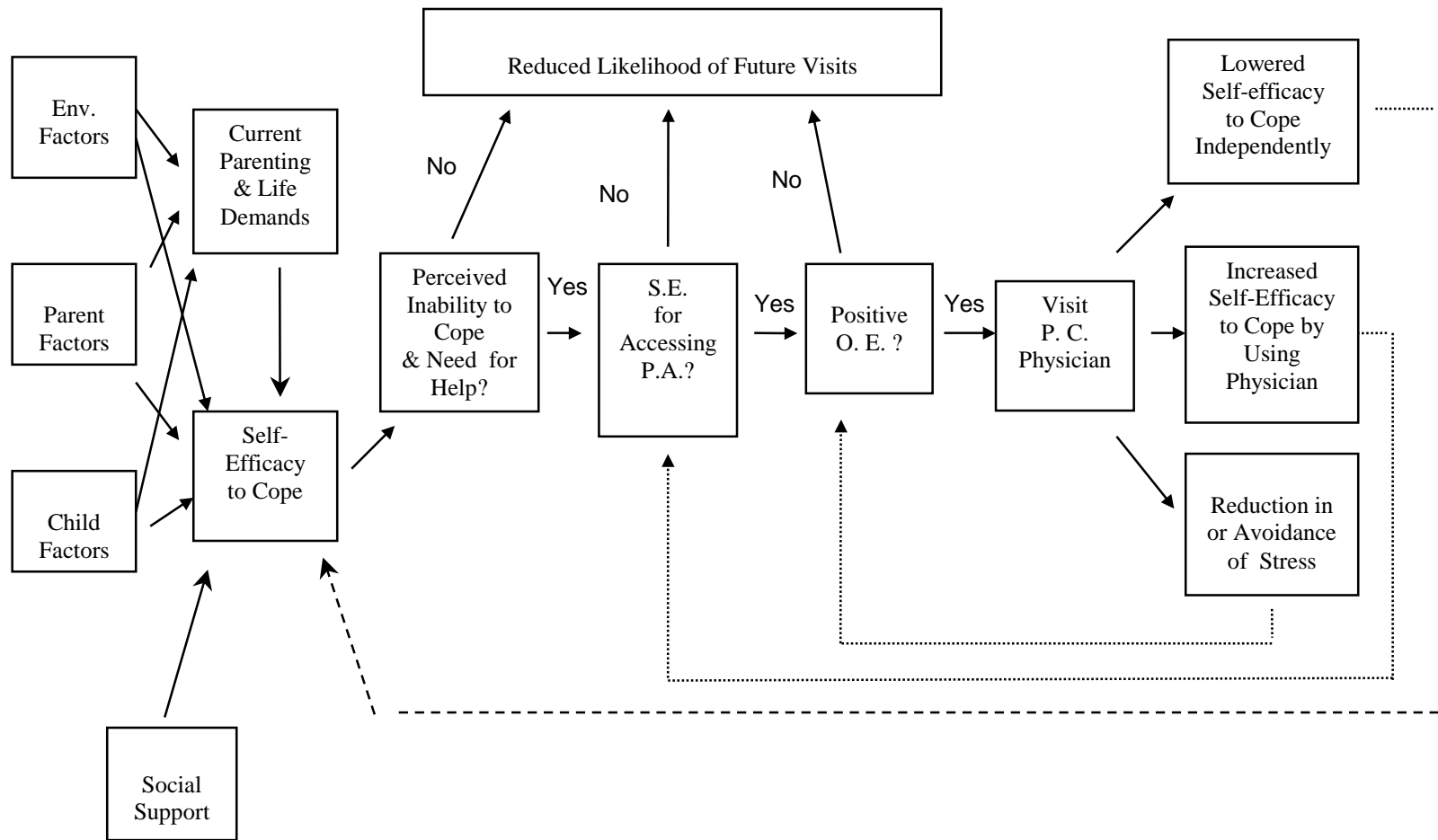
^bp < 0.01 for the F test.

^cp < 0.05 for the F test.

^dp < 0.10 for the F test.

Figure Caption

Figure 1. Conceptual Model of Pediatric Primary Care Utilization



Appendix A
Consent Form

TITLE: Children's Use of Pediatric Health Care Services

PURPOSE OF THE STUDY:

You are invited to participate in a study designed by researchers at Virginia Tech to assess the factors that influence a parent's decision to seek health care services for their child. Participation in the study will involve filling out several questionnaires today and providing consent for experimenters to review both your child's and your primary care medical records for the last two years. All medical records will be kept confidential. The purpose is to determine the number of visits to your primary care physician over this time period.

Involvement in this study will require less than 90 minutes. There are not apparent risks associated with participation in this study. All information obtained will be confidential; only the experimenters will have access to the information you provide. You will be compensated (\$5) for your time and effort. Your participation may help us to identify factors that encourage and/or discourage parents to seek care from primary care services. Such information may further help us tailor health care services to better meet the needs of families with various illness concerns.

FREEDOM TO WITHDRAW:

You are free to withdraw from participation in this study at any time without penalty. You reserve this right when you consent to participate.

USE OF THE RESEARCH DATA:

The information from this research may be used for scientific or educational purposes. It may be presented at scientific meetings and/or published or reproduced in professional journals or books, or used for any other purpose that Virginia Tech's Department of Psychology considers proper in the interest of education, knowledge, or research. In all cases, confidentiality will be maintained.

APPROVAL OF RESEARCH:

This research has been approved by the Human Subjects Committee (HSC) and Institutional Review Board (IRB) of Virginia Tech.

SUBJECT PERMISSION:

I have read and understand the above description of the study. I have had an opportunity to ask questions, and my questions have been answered to my satisfaction. I hereby agree to voluntarily participate in the research project described above and under the conditions described above. I understand that I may discontinue participation at any time without prejudice or penalty. I understand that should I have any questions regarding this research or its conduct, I should contact any of the persons named below:

Primary Investigator:	David M. Janicke	(540) 231-8504
Faculty Advisor:	Jack W. Finney, Ph.D.	(540) 231-6670
Chair, HSC:	R.J. Harvey, Ph.D.	(540) 231-7030
Chair, IRB:	Thomas Hurd	(540) 231-5281

Signature: _____ Date: _____

Signature of Administrator: _____

Appendix B

Authorization for Release of
Child's Medical Information

In regard to information concerning _____ (write in your child's full name), permission is given for Dave Janicke, a graduate student in the Department of Psychology at Virginia Tech, to contact your child's physician and receive confidential medical records. Permission is also given for the supervising faculty members, Jack W. Finney, Ph.D. to view these records. Please provide these individuals with a copy of my child's complete health care records over the last two years. I understand that information obtained from my child's medical records will be kept strictly confidential.

Child's Name: _____

Child's Date of Birth: _____

Name of your child's physician: _____

Physician's Business Address and/or Phone Number:

Signature of parent or guardian: _____

Date: _____

Parent or guardian's printed name: _____

Appendix C

Authorization for Release of
Medical Information

In regard to information concerning _____ (write in your full name), permission is given for Dave Janicke, a graduate student in the Department of Psychology at Virginia Tech, to contact your physician and receive confidential medical records. Permission is also given for the supervising faculty members, Jack W. Finney, Ph.D. to view these records. Please provide these individuals with a copy of my complete health care records over the last two years. I understand that information obtained from my medical records will be kept strictly confidential.

Your Name: _____

Your Date of Birth: _____

Name of your physician: _____

Physician's Business Address and/or Phone Number:

Your Signature: _____

Date: _____

Your printed name: _____

16. How many times did your child see his/her doctor in the last two years for each of the reasons shown below?

A. Cold, flu, eye or ear infection. 0 1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19

If more than 19, fill in number _____

B. Accident or injury 0 1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19

If more than 19, fill in number _____

C. Allergy or asthma 0 1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19

If more than 19, fill in number _____

D. Physical check-up 1 2 3 4 5 6 7 8 9 10

If more than 10, fill in number _____

E. Behavioral or emotional concerns 0 1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19

If more than 19, fill in number _____

F. Chronic illness such as
diabetes or cancer 0 1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19

If more than 19, fill in number _____

G. Other 0 1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19

If more than 19, fill in number _____

Appendix E

Current Child Health Status

Please indicate how true you feel the following statement are.

	1 definitely true	2 mostly true	3 don't know	4 mostly false	5 definitely false
1. According to my child's physician, my child's health is now excellent.	1	2	3	4	5
2. I believe that my child feels better now than he/she ever has before.	1	2	3	4	5
3. My child is somewhat ill.	1	2	3	4	5
4. My child is not as healthy as he/she used to be.	1	2	3	4	5
5. My child is as healthy as any child I know.	1	2	3	4	5
6. My child's health is excellent	1	2	3	4	5
7. My child has been feeling badly lately.	1	2	3	4	5
8. Physicians say that my child now is in poor health	1	2	3	4	5
9. My child feels about as good now as he/she ever has.	1	2	3	4	5

Appendix F

Past Health Status

Please indicate how true you feel the following statement are.

	1 definitely true	2 mostly true	3 don't know	4 mostly false	5 definitely false
1. According to my child's physician, my child's health has been excellent.	1	2	3	4	5
2. Over the past two years, my child has felt better than he/she ever has before.	1	2	3	4	5
3. My child was somewhat ill.	1	2	3	4	5
4. My child was not as healthy as other children his/her age.	1	2	3	4	5
5. My child has been as healthy as any child I know.	1	2	3	4	5
6. My child's health has been excellent.	1	2	3	4	5
7. Over the past two years my child has been feeling badly.	1	2	3	4	5
8. Physicians have said that my child was in poor health	1	2	3	4	5
9. Relative to other children, my child has frequently suffered from the flu, colds, or minor aches and pains.	1	2	3	4	5

Appendix G

Social Environment Inventory

Did any of the following occur to you during the past twelve months?

1. One of your children developed an illness that lasted for less than 3 weeks.
2. You developed an illness that lasted for more than 3 weeks
3. Your spouse or significant other (boyfriend/girlfriend) developed an illness that lasted for more than 3 weeks.
4. One of your children developed an illness that lasted for more than 3 weeks.
5. Your spouse or significant other (boyfriend/girlfriend) died.
6. One of your children died.
7. A close relative or friend (not your spouse or child) died.
8. You got a separation or a divorce.
9. Your child had surgery that required him or her to stay in the hospital for at least 3 days.
10. You were in an accident and had to go to the doctor or hospital.
11. Your spouse or boyfriend was in an accident that forced him to go to the doctor or hospital.
12. Your child was in an accident and had to go to the doctor or hospital.
13. You were a victim of a crime, such as a burglary or robbery.
14. Your spouse or significant other (boyfriend/girlfriend) was a victim of a crime, such as a burglary or robbery.
15. Concerns about your own ability to be a good parent.
16. Concerns about your child's emotional adjustment.
17. You didn't have enough money to buy the things you think your children needs.
18. You are unsure if your children's schools and teachers are good.
19. Concerns about the influence of other children upon your children, teaching them bad habits, or behavior, or getting them into trouble.
20. Concerns about your family finances.
21. Your child developed behavior problems.
22. Your child was in trouble at school.
23. Your child was in trouble with the law.
24. Your child's grades in school were below par.
25. You had frequent disagreements with your spouse or boyfriend.
26. Your job was stressful to you.

27. Your child had problems adjusting at school.
28. Your elderly parents required your help on a daily basis.
29. You had serious marital problems.
30. Your spouse or significant other (boyfriend/girlfriend) was unemployed for more than 1 month.
31. A family member or friend was sent to prison or jail.
32. You developed an emotional problem, such as depression, that lasted for 3 weeks or more.
33. Your spouse or significant other (boyfriend/girlfriend) developed an emotional problems that lasted for 3 weeks or more.
34. You had surgery that required you to stay in the hospital for at least 3 days.
35. You had a poor relationship with your parents.
36. Caring for your child has affected your relationship with his/her other parent.
37. Your child's problems have made it more difficult for you to deal with the other children.
38. There are frequent fights/conflicts between your children.
39. You are frequently embarrassed by my child's behavior.
40. Your social life has changed for the worse due to the needs of caring for your children.
41. You have had to give up things you like to do (hobbies, activities) because there is just not enough time in your day/week.
42. You have taken medication to help reduce symptoms of anxiety, depression, or other stress related concerns.
43. Do you often wish you had more individuals to whom you could turn to for support?
44. My child always seems to demand my attention.
45. Having to care for my child has had a negative impact on my relationships with my friends and other family members (not including spouse).

Appendix H

Parenting Self-Agency Measure

The statements that follow refer to your feelings and thoughts about being a mother or father. Circle the answer that shows HOW OFTEN YOU FEEL OR THINK LIKE THE STATEMENT.

1. I feel sure of myself as a mother/father.

A – Never
B – Rarely
C – Occasionally
D – Sometimes

E - Often
F – Very Often
G - Always

2. I know I am doing a good job as a mother/father.

A – Never
B – Rarely
C – Occasionally
D – Sometimes

E - Often
F – Very Often
G - Always

3. I know things about being a mother/father that would be helpful to other parents.

A – Never
B – Rarely
C – Occasionally
D – Sometimes

E - Often
F – Very Often
G - Always

4. I can solve most problems between my child and me.

A – Never
B – Rarely
C – Occasionally
D – Sometimes

E - Often
F – Very Often
G - Always

5. When things are going badly between my child and me, I keep trying until things begin to change.

A – Never
B – Rarely
C – Occasionally
D - Sometimes

E - Often
F – Very Often
G – Always

Appendix I

Self-Efficacy for Accessing Physician Assistance (SEAPA)

Please indicate the degree to which you agree or disagree with the following statements.

1. I feel confident that I can communicate my concerns about my child to his/her doctor.
2. I feel confident that I can arrange my schedule in order to get my child to his/her doctor.
3. I feel confident that I can get the doctor to help me with my child's problem.
4. I am comfortable scheduling an appointment with my child's physician.
5. I feel confident that I can arrange transportation to get my child to the physician's office.
6. I feel confident that I can take the steps necessary to obtain medical care for my child.
7. I feel confident that I am able to make good decisions about what services my child needs.
8. During the doctor's appointment, I am able to remember all the questions and/or concerns that I have.
9. I feel confident that I can accurately describe my child's symptoms to the physician.
10. I feel confident that I can get the physician to address my main concerns.
11. If my child's doctor is not addressing my concerns, I feel confident that I can redirect him/her to address my main concern.
12. I feel confident that I can be assertive when my child's needs are urgent.
13. I feel confident that I can arrange our finances to make sure my child obtains medical care when I have a concern with his/her health or behavior.
14. I am confident that I can arrange an appointment with my child's doctor that is convenient for my family and me.

Appendix J

Parental Outcome Expectancy for Pediatric Physician Services (POPPS).

Please indicate the degree to which you agree or disagree with the following statements.

1 - Strongly Disagree 2 - Disagree 3 - Not Sure 4 - Agree 5 - Strongly Agree

1. I feel more relaxed after I take my child to see his/her doctor. ^A
2. My child's problems improve after visiting his/her doctor. ^A
3. My child's physician helps with my concerns about my child. ^A
4. After taking my child to the doctor, I feel less anxious about his/her health. ^A
5. I often feel that the entire process of scheduling an appointment, arranging transportation, and getting in to see my child's physician is such a hassle that it is just not worth it. ^A
6. When I take my child to his/her doctor, the doctor provides information or assistance that makes my job as a parent easier. ^A
7. I sometimes feel that it takes so long to see my child's physician that it is just not worth the wait. ^A
8. Taking my child to his/her doctor usually allows me more time for myself later. ^B
9. Visiting my child's physician reduces the demands placed on me as a parent. ^B
10. When I take my child to his/her doctor, the doctor usually takes primary responsibility for the problem. ^C
11. I feel less worried when I follow the advice of my child's doctor, even if my child does not feel better right away. ^C

Rotation involves working two days per week in our Continuity Clinic. Duties focus primarily on treatment and psychoeducational assessment, including diagnosis and development of parenting, treatment, and educational recommendations for children with ADHD, learning disabilities, developmental reading disorders, autistic spectrum disorders and internalizing disorders.

Adolescent Therapy Rotation *8/00 to 11/00*
Supervisors: Kathryn Pieper, Ph.D.
Vincent J. Barone, Ph.D.

Worked in a multidisciplinary Adolescent Medicine Clinic where collaboration with primary care providers and specialists was frequent. The population served by the clinic was culturally diverse, with the majority of patients coming from urban backgrounds. Provided targeted treatments for depression, panic attacks, anxiety, sleep problems, parent-child conflict, anger management, and ADHD.

School Consultation *11/00 to present*
Supervisors: Vincent J. Barone, Ph.D.

Working as a behavioral consultant one day per week for a local school district's Special Education Cooperative. Duties included observation, assessment, behavioral analysis, individual program development and implementation, and therapy for children exhibiting academic, behavioral or emotional difficulties.

Behavioral Pediatrics Rotation *12/00 to present*
Supervisors: Ed Christophersen, Ph.D.
Vincent J. Barone, Ph.D.

Focus on implementation of behavioral interventions to the parents and children with a wide variety of common behavior problems. Includes extensive exposure to children who present with Oppositional Defiant Disorder, Attention Deficit Hyperactivity Disorders, and Toileting Problems. To a lesser degree, exposure to children suffering from Tic and Habit Disorders, Adjustment Reactions, and Anxiety Disorders. Emphasis placed on empirically validated treatment procedures.

Consultation and Liaison Rotation *To begin 4/01*
Supervisors: Brian Belden, Ph.D., Lynne Covitz, Ph.D.,
Sara Kirk, Ph.D., Susan Mortweet, Ph.D.

Graduate Teaching Instructor 8/98 to 5/00
Virginia Polytechnic Institute and University
Supervisor: Jack W. Finney, Ph.D., Dept. Chair

Employed as an instructor for 4 semester courses: Psychology of Learning (twice), Psychological Disorders of Children, and Abnormal Psychology. Independently developed course plan, lectures, tests, activities and held office hours.

Clinical Graduate Clinician

Psychological Services Center and Child Study Center
Virginia Polytechnic Institute and State University

Supervisors:	Russell T. Jones, Ph.D.	8/99 to 5/00
	Robert S. Stephens, Ph.D., Angela Scarpa, Ph.D.	8/97 to 5/98
	Thomas H. Ollendick, Ph.D.	5/97 to 8/97
	Cynthia Lease, Ph.D.	8/96 to 5/97

Duties included individual and group outpatient psychotherapy and assessment for children, adolescents, and adults; participation on practicum teams; served as supervisor for 2nd year graduate students during my 4th year of training. Completed over 500 hours of practicum training.

Clinical Externship in Pediatric Feeding

6/98 to 8/98

Kennedy Krieger Institute - Pediatric Feeding Unit

Supervisors: Cathleen Piazza, Ph.D.
Chuck Gulotta, Ph.D.

Duties included individual inpatient and outpatient behavior therapy (emphasizing behavior analysis) for children who have food refusal, food selectivity and failure to thrive. Duties also included parent training, coordination of interdisciplinary treatment, supervision of staff, and assessment at pediatric feeding and swallowing clinic. Completed over 450 hours of practicum training.

Clinical Practicum in Pediatric Psychology

7/97 to 10/98

Roanoke Community Hospital - Pediatrics Unit

Supervisor: David Hamilton, Ph.D.

Commitment of four on-site hours per week, with focus on integrating research and clinical services on pediatric unit specializing in hematology and oncology. Duties include providing psychological services to inpatients and families, focusing mainly on helping children and families cope with hospitalization and chronic illness. Additional responsibilities included attendance at medical rounds, as well as development of protocols for and implementation of psycho-educational discussion groups for patients and parents.

Graduate Teaching Assistant

8/97 to 5/98

Virginia Polytechnic Institute and University

Supervisor: Robin Cooper, Ph.D.

Delivered lectures, led class discussions, coordinated educational research project and assigned grades for an Advanced Developmental Psychology lab course.

Graduate Teaching Assistant

8/96-5/97

Virginia Polytechnic Institute and University

Supervisor: Jack Finney, Ph.D., Department Chair

Employed as teaching assistant for psychology department. Delivered lectures and led class discussions on weekly basis for introductory psychology lab sections.

Graduate Assistant Instructor

Spring, 1996 and Fall, 1995

Mankato State University

Supervisor: Ken Good, Ph.D., Dept. Head, Psychology

Employed as an instructor for a 4 credit, introductory psychology course for two quarters. Independently developed course plan, lectures, tests and held daily office hours.

Clinical Psychology Practicum

6/95-8/95

Meyer Rehabilitation Institute

University of Nebraska Medical Center

Omaha, NE 68104

Supervisor: Keith Allen, Ph.D., Associate Professor

Participated in assessment and treatment of pediatric patients & families experiencing a variety of behavioral and developmental disabilities including such issues as noncompliance, ADHD and autism. Conducted intake and assessment interviews, behavior therapy sessions, and parent training sessions. Collected data and assisted in developing protocols for case studies and research projects. Participated in multidisciplinary training program involving coordination of services between psychology and speech therapy, occupational therapy, physical therapy, human genetics, pediatric dentistry, education and child development, and nutrition. Completed over 300 hours of practicum training.

Graduate Assistant

9/95-6/96, 9/94-6/95

Mankato State University

Supervisor: Michael Fatis, Ph.D., Director of Clinical Training

Involved coordination and implementation of efforts to solicit applications for faculty vacancy, including phone solicitation. Active solicitation of potential presenters for MABAT conference in fall and spring. Assisted in admissions process for incoming graduate students, which included serving as student contact for incoming applicants. Delivered course lectures and assisted in course grading, plus various other administrative tasks.

Crisis Phone & Outreach Counselor

4/93-8/94

Crisis Connection, Mpls., MN

Responsibilities: Participated in forty hour training program focusing on the fundamentals of crisis management as it related to specific community and mental health issues. Provided crisis counseling for individuals from all age groups and SES backgrounds. Duties included community outreach counseling which involved meeting clients in their homes on a face to face basis.

Research Assistant

9/92-4/93

University of Minnesota - Psychology Dept.

A Prospective Longitudinal Study of Adolescent Eating Disorders

Supervisors: Dr. Gloria Leon, Ph.D., Jane Faulkerson

Responsibilities: Organizing and administering surveys, conducting reliability test administrations, reviewing and editing collected survey data, and leading classroom discussions with junior high school study participants regarding the field of psychology.

Computer Systems Consultant

Jaqua Consulting, Mpls., MN

4/93-6/94

Andersen Consulting, Mpls., MN

9/89-9/92

Responsibilities: Worked as a contractor in the computer consulting industry. Tasks included coordinating design efforts with future users, project administration, system design, analysis, computer programming, supervision, implementation, and system maintenance.

STUDENT MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS

American Psychological Association (APA)

Association for Advancement of Behavior Therapy (AABT)

Society for Pediatric Psychology (SPP)

EDITORIAL ACTIVITIES

Guest Review, Journal of Pediatric Psychology, 1998

Student Reviewer, Journal of Applied Behavior Analysis, 1995.

Student Reviewer, Children's Health Care, 1995.

RELATED ACTIVITIES

Class Representative for Advanced Students in Clinical Psychology Program

Served as representative for fourth and fifth year graduate students at the clinical faculty meetings. Duties involved presenting concerns to faculty and serving on subcommittees aimed at modifying the clinical program at Virginia Tech.

CURRENT RESEARCH

Current interests focus around pediatric psychology and children's health care issues. This includes family factors affecting child illness presentation and intervention strategies based on social learning and behavior family intervention models, and psychosocial and parent influences affecting the utilization of pediatric health care services. Additional interests include the etiology and treatment of recurrent abdominal pain, asthma management, and pediatric sleep disorders. Specific projects currently underway include an analysis of factors influencing the prospective utilization of child health care services, and completion of my dissertation which will involve analysis and discussion of data designed to testing a social-cognitive model sustained high use of pediatric health care services. I am also in the process of collecting follow-up data to test this model of sustained high use with an urban population.

PUBLISHED MANUSCRIPTS

Janicke, D. M., & Finney, J. W. (1999). Empirically supported treatments in pediatric psychology: Recurrent abdominal pain. Journal of Pediatric Psychology, 24, 115-128.

Bradbury, K., Janicke, D. M., Riley, A.W., & Finney J. W. (1999). Predictors of unintentional injuries to school-aged children in pediatric primary care. Journal of Pediatric Psychology, 24, 423-433.

Janicke, D. M., & Finney, J. W. (2000). Determinants of children's primary care use. Journal of Clinical Psychology in Medical Settings, 7, 29-39.

MANUSCRIPTS IN PRESS

Janicke, D. M., & Finney, J. W. (in press). Children's primary health care services: A social-cognitive model of sustained high use. Clinical Psychology: Science and Practice.

Janicke, D. M., Finney, J. W., & Riley, A. W. (in press). Children's health care use: A prospective investigation of factors related to care-seeking. Medical Care.

SYMPOSIUM PRESENTATIONS

Allen, K. D., & Janicke D. M. (1996). Clinical applications of simplified habit reversal. Presented at the Association for Behavior Analysis - May, 1996.

PAPER PRESENTATIONS

Janicke, D. M., Finney, J. W., Bradbury, K., Boeving, C. A., & Riley, A. W. Determinants of children's primary care use: A prospective analysis. Presented at the Florida Conference on Child Health Psychology - April, 1999.

Janicke, D. M., Brasch, E., Fatis, M., Buchanan, J., Bryant, G., & Nelson, K. Hypnotic responsiveness viewed from a behavioral perspective. Presented at Midwest Association for Behavior Analysis and Therapy - April, 1996.

Janicke, D. M., & Allen, K. Compliance training as a prerequisite to language development in a child with autism: A case study. Presented at Midwest Association for Behavior Analysis and Therapy - Nov, 1995.

Janicke, D. M., Allen, K., & Bertsch, K. The application of a simplified treatment approach to stuttering in a 10 year old girl: A case study. Presented at Midwest Association for Behavior Analysis and Therapy - Nov, 1995.

Janicke, D., Brasch, E., & Fatis, M. Trends in psychological and behavioral gerontology: Is the increase in clinical interest matched with more research? Presented at Midwest Association for Behavior Analysis and Therapy - April, 1995.

POSTER PRESENTATIONS

Janicke, D. M., & Finney, J. W. The Development of Social Cognitive Measures to Predict the Utilization of Children's Health Care Services. Presented at the Kansas Conference in Clinical Child Psychology, Lawrence, KS, - Oct. 2000.

Janicke, D. M., & Finney, J. W. Psychosocial Influences on Children's Health Care Use: A Longitudinal Investigation. Presented at the Kansas Conference in Clinical Child Psychology, Lawrence, KS, - Oct. 2000.

Janicke, D. M., & Finney, J. W. Child- versus family-focused treatment for children's learned illness behavior. Presented at the Association for Advancement of Behavior Therapy, Toronto, Canada, - Nov. 1999.

Bradbury, K., Janicke, D. M., & Finney, J. W. Predictors of unintentional injuries to children seen in pediatric primary care. Presented at the 16th Annual Research Symposium at Virginia Tech – Jan. 1999.

Janicke, D. M., & Finney, J. W. Recurrent abdominal pain in children: Status of empirically validate treatments. Presented at the Association for Advancement of Behavior Therapy, Washington D.C. - Nov. 1998.

Bradbury, K., Janicke, D. M., Finney J. W., & Riley, A. W. Predictors of unintentional injury to children. Presented at the Association for Advancement of Behavior Therapy, Washington D.C. - Nov. 1998.

Bradbury, K., Finney, J. W., & Janicke, D. M. Risk-taking in middle childhood: Effects of peer context, friendship satisfaction, and peer reinforcement value. Presented at the Association for Advancement of Behavior Therapy, Washington D.C. - Nov. 1998.

Janicke, D. M., Brasch, E., Fatis, M., Trulsen, M.O. Enhancing responsivity to hypnotic suggestion by providing a relevant behavioral history. Poster presented at the Association for Advancement of Behavior Therapy - Nov. 1997.