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Factors Influencing Children's Health Care Utilization

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Preface

This piece of work represents a fabulous journey down a path less traveled. It is a symbol of commitment, perseverance, creativity, and ingenuity. Although I have produced this dissertation, it could not have been accomplished without the help, wisdom, and support from many different individuals.

The first sphere of people fall into the category of family and friends. These are the people who have kept me laughing, living life to the fullest, and away from my computer screen. This process could not have been accomplished without my eternally patient and supportive husband, Don White. Many meals, massages, and mountain bike rides later, Don is still asking, "What's next for you?". Melanie Egorin, a dear friend, helped put graduate school and all its challenges into perspective. She was a wonderful support for all those "in limbo" moments. Kim and Henry Lau have also been a marvelous source of support for me. Without their inspiration to travel the world, I would have spent many more hours starting at a computer screen rather than watching schools of parrot fish or diving through the kelp forests off the coast of Northern California. I will treasure the unforgettable moments that I had at many of the celebratory parties the doctoral students had. If there was a reason to celebrate, we found it. Finally, email and the telephone were essential for the support I received from family and friends in far away places.

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A scholar can grow and flourish to accomplish amazing feats with faith, nurturance, and motivation.

Factors Influencing Children's Health Care Utilization

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The family environment, created partially by parental attitudes and beliefs, influences a child's physical, mental, and social well-being. Since less attention has focused on nonfinancial determinants of care for children, the primary aim of this study was to test a theoretical model designed specifically for pediatric health care utilization. This study proposed that specific parent/family factors (e.g. family environment, parenting behaviors) affect children's use of health care.

Using a six-month prospective cohort study design, data were collected on 196 children from either Hispanic or African American backgrounds using a combination of telephone and face-to-face interviews. Instruments used in this study include the: FES (Family Environment Scale), PBC (Parenting Behavior Checklist), CESD (Centers for Epidemiologic Studies on Depression), FS IIR (Functional Status Questionniare-revised), General Health Status of the child, and sociodemographic data.

African American parents, mainly single and better educated, reported lower annual incomes and greater reliance on MediCal than did Hispanic parents. African American parents more often rated their children's health as generally very good or excellent, and self-reported higher levels of parental nurturing and depressive symptoms, and a child's health status influence the child's functional status. Multivariate analyses showed that parental nurturing, parental depressive symptoms, and a child's general health status influence the child's functional status.

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Chapter I

The Study Problem

Introduction

Utilization of health care, one of the most widely used measures, is an outcome indicator by which realized access can be evaluated (Docteur, Colby, & Gold, 1996). Understanding the relationship between children and environmental factors that influence the type and pattern of utilization is important, since this relationship is often of great interest from a programmatic and policy perspective. The type of health service utilized refers to what kind of health provider was accessed (e.g. physician or nurse practitioner). The pattern of use refers to actual contact with the health care system and volume of visits.

Problem Statement

Once a child has made contact with the health care system, it is known that financial determinants, such as having health insurance, affect a child's use of health care. Newacheck and colleagues (1998) found that poor children with Medicaid had more contacts than poor children without insurance (6.5 vs. 4.0 per year) and non-poor children with private insurance (6.5 vs. 5.2 per year). However, it remains unclear what the nonfincancial determinants of care are for children.

The study of children's health care use presents an interesting case since children less than the age of five never initiate their own care. Overall, children suffer less from serious degenerative conditions such as arthritis but may have low morbidity conditions such as otitis media and common colds. However, their dependency and their developmental vulnerability highlight the need to examine the child's immediate external environment. Children depend upon their parents or other adult caregivers to seek, consent to, and pay for health care. Further, the dependency of children on their parents/guardians to “take care of them” is even more critical in the 1990’s as behavioral and emotional problems, child abuse and neglect, drugs, alcohol, and violence--problems which may influence parental behavior toward children—are becoming increasingly commonplace. In fact, Halfon, Inkelas, and Wood (1995) state that these societal problems are fast becoming important determinants of children’s health and well being.

A commonly held belief is that families are a group of two or more individuals usually living in close geographic proximity, having close emotional bonds, meeting affectional, socioeconomic, sexual and socialization needs of the family and/or the wider social system (Gilliss, Roberts, Highly, & Martinson, 1989). Typically, family members tend to resemble one another in terms of health status and health behaviors. Similarities are reflected in genetic predisposition, shared physical, social, and emotional environments, and learned health beliefs and values (Schor, 1995). Thus, children tend to learn their health behaviors from their parents/guardians. For example, children whose parents smoke, use alcohol or other drugs, or overeat are at higher risk for adopting those habits. Parents/guardians who emphasize sports activities and exercise will facilitate their children’s access to facilities, equipment, and opportunities to participate in sports and exercise. In terms of utilization, children’s use of health services is largely controlled by their parents and, logically, resembles the parents’ patterns of utilization (Schor, 1995).

Purpose of the Study

Studying children's, aged one to five, use of health care is important since children of this age are strongly influenced by their family. The family environment, created (in part) by parental attitudes and beliefs, influences a child's physical, mental, and social well-being. Given that there has been less attention focused on nonfinancial determinants of care for children, the primary aim of this study is to test a theoretical model that has been designed specifically for pediatric health care utilization. This proposed model will be tested using a nurse-managed primary care clinic site which serves a low-income population. This study proposes that specific parent/family factors (e.g. family environment, parenting behaviors) affect children's use of health care and that this effect is over and above the effect of the child's health status on his/her health care utilization.

Significance

There are three chief reasons why this study will add to the existing knowledge of pediatric utilization. Given that a strong association has been shown between financial predictors (e.g. insurance, family income) and children's health care use (Guendelman & Schwalbe, 1986; Newacheck & Halfon, 1986; Newacheck, 1992; Short & Leftkowitz, 1992), this study will focus on rarely studied nonfinancial determinants (e.g. parent behavior, family environment, parent depressive symptoms) that influence utilization. Although the proposed study will not be able to examine all social and behavioral factors that influence use, it may lead to better planning of health care services for children. For example, if the study shows that parental depressive symptoms affect utilization rates, then screening of parents for depression could be offered at the child's primary care site.

Second, this study will be able to explain some of the variation in utilization by underrepresented minority populations. Children's primary health care utilization needs to be studied in populations other than the White middle-class. Flores and colleagues (1999) state that dramatic differences have been reported between African American and Caucasian adults in health and use of service, but that these disparities have been rarely studied in other ethnic groups. Further, examining the relationship between ethnicity and factors influencing children's use of health services is important since different environmental factors may affect health care use. For example, Grossman and Shigaki (1994) found that Hispanic children in disadvantaged families experienced socioenvironmental stress and a sense of hopelessness and frustration due to lack of personal resources, support networks, and coping strategies. The African American Task Force for the Unity in Health (1991) states that violence in the African American family affects the family structure, support systems, and vitality of the community.

Finally, this study examines the effect of certain sociodemographic characteristics, such as yearly household income and family structure, on a child's use of health care. These characteristics are important since poverty, greater parental educational attainment, and younger age are significantly associated with greater numbers of physicians visits (Flores, Bauchner, Feinstein, & Nguyen, 1999).

In addition, compared to a national data set, collection of population specific data such as parent behavior or the family environment may be more accurately accomplished through a particular clinical site. This type of data will provide specific information about the primarily minority population using this nurse-managed facility. This study will begin an overall program of research designed to improve pediatric health care utilization by identifying those factors that influence health care use in children.

Chapter II

Conceptual Framework and Literature Review

Introduction

This chapter presents an overview of the literature related to factors influencing children's health care utilization. Aday and Andersen (1975) have developed a framework to guide general understanding of the factors that influence access to care. In this chapter their conceptual framework will be presented along with the support for the relationships proposed. Limitations of the framework and our understanding of the specific factors that influence children's health and their subsequent use of health care will follow. This chapter concludes with specific research questions.

Conceptual Framework

In studying access to health care or outcome indicators thereof, the most widely used conceptual framework is Aday and Andersen's (1975) model (Halfon, et al., 1995; Riley, et al., 1993). This framework is useful in examining the relationship between a child's *realized access* to care or health care use and those factors which influence a child's *potential access* to care. The framework rests on two ideas that are well developed in the literature. Aday and Andersen (1975) state that access to care is a function of the characteristics of the delivery system or the individual(s) in question. Indices that reflect characteristics of the system (e.g. availability of health care providers and facilities) and characteristics of the individual (e.g. age, sex, family income) can be considered probable or potential levels of access to health care (Andersen, McCutcheon, Aday, Chiu, & Bell, 1983). Second, access to care is best evaluated by outcome indicators of the rate or quality of passage through the system, such as utilization rates or satisfaction scores. Andersen and colleagues (1983) state that utilization rates and satisfaction indicators can be considered an individual's actual or realized access to services.

While an individual's rates of utilization or subjective descriptions of the care obtained represent the realization of entry into the health care system, an individual's potential entry is reflected by three types of categories (see Figure 1). **Predisposing** variables include those factors which exist prior to the onset of illness and describe the propensity of individuals to use services. Examples of predisposing variables include age, sex, and family structure. **Enabling** factors describe the resources individuals have available to use health care services. Examples of enabling variables would include family/household income and health care insurance status. The **need** for care refers to the actual acuity of illness, perceived level of illness symptoms, or restrictions in activities of daily living. An individual's entry into the health care system is also influenced by structural characteristics of the delivery system itself.

Figure 1. Dimensions of Access to Medical Care and Their Indicators

Potential Access		**Realized Access**	
System (County)	Individual	Objective	Subjective Satisfaction
Availability	**Predisposing**	**Use**	**Convenience**
MD/Population	Age $\leq$ six $\geq$ 65	Preventive Exam	Travel Time
Bed/Population	Sex	MD Visits	Waiting Time
	Race	Hospital Admit	Visit Cost
	Education		
Community Char.	Family Structure		
Predisposing		**Use Relative to Need**	**Provider Behavior**
% $\leq$ 6 or $\geq$ 65			RN Courtesy
		Symptom Response	
Enabling	**Enabling**	Use Disability	
% below poverty	Health care Insurance		
Region	Income		
Rural vs. Urban	Visit Cost		
	Particular Provider		
	Specialty Provider		
	Travel Time		
	Prior Appointment		
	Appointment Time		
	Waiting Time		
	Time with Provider		
Need			
Infant Mortality	**Need**		
	Child's Health Status		
	Parents' Perceived Need (of health care for child)		
	Disability Days		

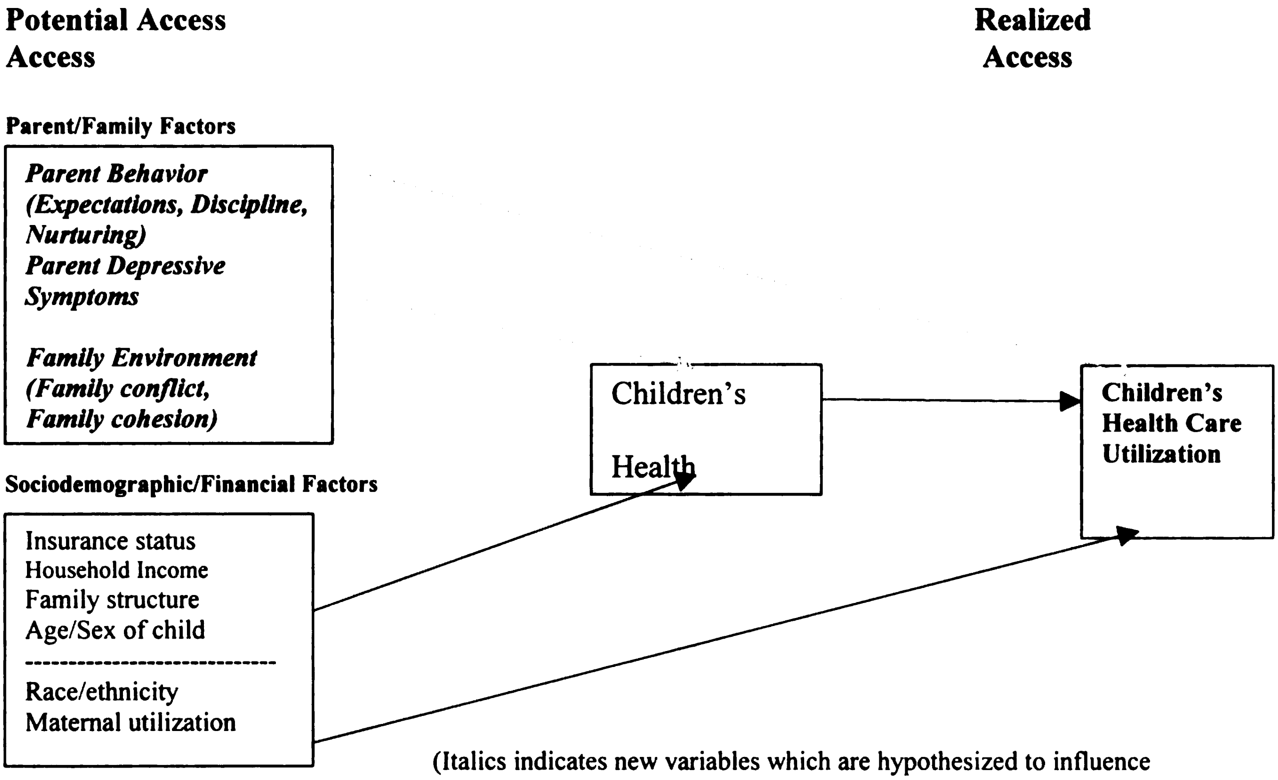
Andersen, et al., 1983

In addition to illustrating the relationships between predisposing, enabling, and need variables and realized access to care, researchers have adapted the framework to examine non-financial (versus financial) predictors to health care utilization (Halfon, et al, 1995). For example, a mother's own health care utilization exerts an effect upon her child's utilization of care independent of the child's health needs. Family income and type of insurance are examples of financial predictors which have been found to be significantly associated with the type of provider (private versus public) used as well as the frequency of visits. Children from lower-income areas or larger families are less likely to see a provider over a one year period (Wolfe, 1980). While there are many variables that affect a child's use of health care, only some of these are changeable or mutable.

Unfortunately the use of the Aday and Andersen (1975) model in the pediatric population remains limited, since it was originally conceived with an adult population in mind. Given that children depend on their families for most aspects of their life, including visits to a health care provider, the existing framework has been modified to suit children. Most importantly, parent/family variables have been added (see parent/family factors box, Figure 2). Parents serve as role models for the next generation of health care users as well as initiate a child's use of health care. Children are not just small adults; they also have special health needs related to their developmental status. Children require health care that emphasizes preventive services such as immunizations and continuous monitoring of physical and psychosocial growth and development (Institute of Medicine, 1996). Biologic threats to the normal development of a child (e.g. low birth-weight, born addicted to crack cocaine) and social threats to a child's well-being (e.g. family dysfunction, abuse, or neglect) can put a child at risk for delays in physical and/or cognitive development (Halfon, et al, 1995).

Two other modifications made to the existing framework include the rearrangement of the variables to reflect the impact of the child's environment on his/her health status and use of arrows to symbolize the direction of the relationships. The model presented here illustrates the overall conceptualization of factors influencing children's health care. It does not specify the particular relationships between all the variables.

Figure 2. Factors Influencing Children's Health Care Use



(Italics indicates new variables which are hypothesized to influence children's health status and children's health care utilization rates)

Literature Review

This discussion does not cover an exhaustive analysis of children's health care utilization. Rather, a more focused analysis of children, between the ages of one through five, and their health care use is offered. Literature searches completed on Melvyl Medline as well as by hand have shown that since the 1960's there have been a number of studies which have examined health care use by children (see Appendix A-Table 1). Studies were excluded from this systematic analysis if they did not include children (0-17 years of age) or did not take place in a primary care ambulatory clinic setting. Further, studies were excluded if they examined poverty and/or ethnicity as the only independent variable(s). The next section will discuss a number of these variables using Aday and Andersen's framework (see Appendix A-Table 2).

Predisposing Variables

Financial

Children between the ages of one and five rely on their parents/guardians to provide the financial means needed to access health care. Within the Aday and Andersen framework, there are no predisposing financial variables since income or, rather, a family's income is considered an enabling variable.

Non-financial

A **parent's education** is associated with a child's health care use. Parents who possess higher levels of education tend to have children who are seen more frequently by health care providers (Guendelman & Schwalbe, 1986; Newacheck, 1992; Woodward, Boyle, Offord, Cadman, Links, Munroe-Blum, Byrne, & Thomas, 1988). Both Newacheck (1992) and Woodward (1986) found that a higher educational attainment (e.g. college) by the parents was associated with a higher use of health care for children. Whereas, in a sample of 30, 286 records obtained from the 1979 National Health Interview Survey (NHIS), Guendelman and Schwalbe (1986) found that a low level of education among Hispanic families was a strong detractor to children's health care use. The majority of the Hispanics in the sample (9 percent) had either only completed elementary (37 percent) or high school (45 percent). It is hypothesized that the relationship between parent's educational attainment and their child's health care use could be due to more highly educated parents: 1) having an increased awareness of their child's health problems; 2) a higher income; 3) better access to health care and thus, a more comprehensive diagnosis and treatment plan; 4) seeking care earlier in a child's illness episode and more appropriately (e.g. nurse practitioner's office vs. emergency room); and 5) seeking more preventive care (Starfield & Budetti, 1985).

Age, sex, and race/ethnicity have long been shown to be associated with a child's use of health care. Many studies have found that age is inversely related to utilization of health care; High use tend to be most frequent among young children and decrease as childhood progresses (Newacheck, 1992; Newacheck & Halfon, 1986; Starfield, Hankin, Steinwachs, Horn, Benson, Katz, & Gabriel, 1985; Woodward et al., 1988). In addition, boys have been found to use more care; Starfield and Budetti (1985) report that boys have had increasingly higher rates of activity limitation than girls. An interesting note is that boys also have higher death rates in all age groups throughout infancy and childhood. Ratios for mortality rates among boys versus girls between the ages of two to five include: ages one through four, 1.32:1 and ages five to 14, 1.72:1 (Starfield & Budetti, 1985).

White children are more likely to use health care services than any other racial/ethnic group. Newacheck (1992) found that White children were twice as likely to be high users than Black children. Hispanics were less likely to contact a physician during a one year period compared with Non-Hispanics and Black non-Hispanics (Guendelman & Schwalbe, 1986). Further, non-White children were far less likely to use private practitioners than white children (Wolfe, 1980) due, in part, to lower rates of health insurance particularly among African Americans and Hispanics. However, the number of studies examining utilization by ethnic minorities, particularly Hispanics, remains limited.

Other reasons for the lower utilization rates by racial/ethnic groups may be due to their history in the United States. The relationship of the African American population to health care institutions was most likely shaped by the broader patterns of race relations and by the segregation of Blacks and Whites (Lewin-Epstein, 1991). Similarly, the socio-political status of illegal residency, relative physical isolation, and language barriers, likely structure the relationship between the Hispanic population and health care institutions.

Characteristics of **family structure** also influence a child's use of health care. There is ample evidence that children from large families or who have mothers working outside the home use less health care (Cafferata & Kasper, 1985; Newacheck, 1992; Newacheck & Halfon, 1986; Wolfe, 1980). However, past studies have shown conflicting results on single parent versus two parent family's influence on a child's utilization of care. Halfon and colleagues (1995) found that children in single-parent families have more physician visits than other children. On the other hand, family composition made little difference in children's utilization of services in other studies (Guendelman & Schwalbe, 1986; Newacheck, 1992). Therefore, when examining use of health care by children, assessing both the numbers of adults and children within a family is important. It may be that family structure serves as a proxy measure for other enabling factors such as time to appointment, waiting time, and convenience of services.

Enabling Variables

Financial

Availability of **insurance coverage** increases children's use of ambulatory health care, especially parent's use of preventive health care for their child (Riley et al., 1993). Newacheck's (1992) study indicated that children with health insurance coverage were approximately 50 percent more likely than children without coverage to be higher users of physician services. A study completed in Ontario, Canada found no relationship between children's health care use and socioeconomic variables such as income below the poverty level or the receipt of social assistance (Woodward et al., 1988). The researchers report that this finding may suggest the universal insurance provided by the Ontario Health Insurance Plan has been effective in removing financial barriers to ambulatory medical care.

Short and Lefkowitz (1991) found that expanded Medicaid eligibility was associated with a significant increase in well-child care for low-income children who would otherwise be uninsured. Inadequate health insurance coverage for Latino families and children not only contributes to lack of appropriate use of preventive and primary care service but also lack of a usual source of care, and an increased risk for acute and chronic illnesses such as pneumonia and asthma (Zambrana, Dorrington, & Hayes-Bautista, 1995).

Lewin-Epstein (1991), who studied three ethnic groups (African Americans, Hispanics, and Whites) in Chicago, found that people who had public insurance or no insurance coverage were more likely to use a hospital as a regular source of care rather than a private physician. Hospital facilities were more frequently used by African Americans as their regular source of care whereas Hispanics used hospital facilities because they are the least likely to have a regular source of care. Although this study is valuable since it examined both African American and Hispanic individuals, a major drawback of this study is that it consisted of persons aged 18-45, therefore, the results cannot be generalized to other age groups. Nonetheless, as previously mentioned, it follows that a child's health care use resembles the parent's pattern of utilization.

The total **family income** shows a strong association to the number of visits made to a health care provider. Children living in poverty generally have fewer physician visits, are under-immunized, and experience delayed entry to care (Halfon et al., 1995). In a study that analyzed approximately 30, 000 children, maternal, and child ambulatory utilization patterns from the 1978 NHIS, family income was found to be a significant predictor of utilization (Newacheck & Halfon, 1986). Using data from the 1976-78 NHIS, the Kleinman group found that those in the lowest income group had 47 percent fewer visits than those in the highest group (Muller, 1986). In another study which used the 1988 NHIS, children who lived below the poverty line were more likely to be low users (no physician contacts during past year) of health care (Newacheck, 1992).

A study using 513 families enrolled in a prepaid group practice found no relationship between family income and rate of acute care visits such as illness episodes (Horwitz, Morgenstern, & Berkman, 1985). Given this finding and results of the study conducted by Woodward and colleagues (1988) in Canada, it appears that the effect of family income on children's health care use is moderated by the presence of a health care plan. However, economically disadvantaged families living in the U.S., who do not have a health plan, may be disinclined to seek and utilize health services due to other severe and complex social problems associated with poverty (Halfon et al., 1995). Many families living at or below the poverty line must deal with other environmental and access barriers such as transportation difficulties and safety concerns.

Nonfinancial

With the exception of a mother's psychological health, there are no other variables discussed in the literature under the category of nonfinancial enabling variables. The influence of a mother's psychological health on her child's health care use is discussed and expanded upon in a later section.

Need Variables

Newacheck (1992), in a study examining utilization of physician services, using a sample of 17, 110 children (younger than 18 years of age) from the 1988 NHIS on child health, found that a **child's health status** was strongly associated with use. This study as well as many others have found that children who experience more health problems were much more likely to be high users (Guendelman & Schwalbe, 1986; Newacheck & Halfon, 1986; Riley et al., 1993; Short & Lefkowitz, 1992; Starfield et al., 1985). Another study consisting of all children constantly enrolled in the Columbia Medical Plan from 1974-1979 found that the likelihood of being a constantly high user of medical care increased progressively with an increase in the number of types of morbidity experienced (Starfield et al., 1985). This study is particularly interesting since the researchers attempted to separate out the actual distribution of patterns of use for children having different types of morbidity: acute condition only, acute recurring condition, chronic medical, nonacute specialty, and psychosocial/psychosomatic. Unfortunately the findings for distribution of patterns of use were inconclusive. In addition, the findings may be confounded by the fact that children with the less common conditions were likely to have the more common ones as well (Starfield et al., 1985). For example, a child with asthma was likely to also have more common childhood conditions such as ear infections and colds.

All previous studies have used the parent's perception of the child's general health status as their definition of child health status. Yet, child health consists of both physical health and mental health. A review of the literature shows evidence that a child's physical health has been operationalized as functional performance and capacity with regard to specific categories of daily activities that are within a child's developmental limits (Eisen, Ware, Donald & Brook, 1979; Lewis, Pantell, & Kieckhefer, 1989).

An operational definition of a child's mental health is less developed. The relationship between children's mental health problems and their health care use has also been studied less frequently. Yet, children with high medical care utilization may have mental health or other psychosocial problems that are among reasons for excessive care-seeking. Newacheck (1992) found that children reported to have emotional or behavioral problems were twice as likely as others to be considered high users (10 or more visits to physician in a one year period). Riley and colleagues (1993) also found that child behavior and emotional problems were related to both volume and high versus low use of care (over a two year period, low use is zero to six visits and high use is 16-75 visits). Problem-specific behavior treatment was found to reduce children's use of medical services, especially acute primary care visits (Finney, et al.,1991). Without treatment, behavioral problems in pre-schoolers that go undetected often go on to display disorder during the school years, which, in turn, places them at risk for a range of mental health, conduct and personality problems later on in life (Sonuga-Barke, Thompson, Stevenson, & Viney, 1997).

Newacheck (1992) also found that high **maternal utilization** of physician services was a powerful predictor of high use among children. Other studies within this body of literature also point to that fact child health need and maternal patterns of health care use were powerful predictors of the overall amount of health care used (Newacheck & Halfon, 1986; Riley et al., 1993; Tessler & Mechanic, 1978). In all studies the effect of maternal utilization was a very strong positive predictor of her child's use of health care. Maternal utilization may reflect maternal beliefs and attitudes toward the health care system (Riley et al., 1993). Fewer studies examined the effect of paternal utilization on his child's health care use. Starfield and colleagues (1985) found that paternal high use of services also increased the likelihood that the child had a large number of visits.

The fact that maternal utilization patterns influence a child's use of health care is important not only for present policy implications, but also for understanding the next adult generation of health care users. A child learns from his/her parent's guidance and actions. Modeling of illness behavior by parents was shown to influence the amount of disability displayed by diabetic adolescents and by adults with recurring headaches (Whitehead et al., 1994). Further, childhood reinforcement of cold illness behavior significantly predicted adult cold symptoms and disability days. A strong association between parental and adolescent health behaviors was found in another study of 337 families (Rossow & Rise, 1994). For example, the probability of low fat intake by adolescents was five times higher if the mother had a low fat intake than if she did not. Lewis and colleagues (1977) found a strong association between patterns of being taken to pediatricians and the use of service in a school setting where the children were able initiate their own care.

Use of Health Care Services-Realized Access

Utilization

Utilization of health care is a clearly defined concept in the literature; it is an outcome indicator by which realized access can be evaluated (Aday and Andersen, 1975). The formal definition of access implies an approach to or use of a given service or object and the factors that affect or impede this process. Utilization rates permit external validation of the importance of the health care system as well as the individual characteristics associated with a specific type of care. The type and pattern of the population's actual utilization of the system is one outcome measure that may be used to test the predictive validity of the system and individual based access indicators (Aday & Andersen, 1975). Further, studying an outcome such as utilization can provide the basis for policy decisions regarding future funding, effectiveness and appropriateness of resources, and the organization of health care (Iezzoni, 1994).

Utilization of health services may be categorized in terms of the type, site, purpose or time interval of use (Aday & Andersen, 1975). The *type* of utilization refers to what kind of health provider was accessed. For example, children may be seen by a physician, nurse practitioner, and physician assistant as well as by a dentist or psychiatrist. Although some researchers may have wanted to study utilization rates between different types of providers, all studies examined studied rates of physician utilization due to limitations in either research design or data sets (Guendelman & Schwalbe, 1986; Newacheck, 1992; Newacheck & Halfon, 1986; Starfield et al., 1985; Tessler & Mechanic, 1978).

To evaluate appropriate use of care, data are needed on where individuals have their health care needs met. The *site* of health care refers to the place where care was received: doctor's office, ambulatory care clinic attached to a hospital, urgent care clinic, nurse-managed clinic, hospital emergency room, etc. Although Lewin-Epstein's study (1991) examined a particular source of care, no such studies examining pediatric utilization have specifically looked at site of care.

The *purpose* of a visit refers to whether it was for preventive or illness-related care (Aday & Andersen, 1975). Preventive care includes those visits, such as immunizations and well-child check-ups, which try to stop illness from occurring. Visits to the health care provider may also be for the purposes of "curative" or "stabilizing" treatments (Aday & Andersen, 1975). Curative care or acute illness visits refer to the process of treatment (e.g. prescription of antibiotics for otitis media) which returns an individual to his/her previous state of functioning. Stabilizing care or chronic illness visits (e.g. asthma treatments or blood glucose check for diabetic child) refer to those visits made to a health care provider to continue an individual's state of present functioning. Studies done in the past have examined both the rate of preventive visits and acute care visits (Horwitz et al., 1985; Tessler & Mechanic, 1978).

The *time* interval for a visit can be expressed in terms of contact, volume, or continuity (Aday & Andersen, 1975). As a measure of achievement in gaining entry into the health care system, contact refers to whether or not the person entered the medical care system in a given period of time. In the case of children, with the exception of serious illness (e.g. asthma attack), trauma, or accidents, entry into the health care system tends to reflect discretionary use (Guendelman & Schwalbe, 1986). Thus, a delay in seeking care or a deferment of treatment suggests the family's difficulty in entering the health care system.

The national average number of annual visits to a physician for children younger than age 18 is three (Newacheck, 1992). However, in their study of Hispanic, black Non-Hispanic, and white Non-Hispanic children, Guendelmen and Schwalbe (1986) found that Hispanics were less likely to contact a physician during a one-year period compared with the other groups (68.3 percent, 78.5 percent, and 72.2 percent respectively). Newacheck's (1992) study of the 1988 NHIS data revealed that 21 percent of all children used no physician services during this year and that only seven percent of children with ten or more physician contacts accounted for 37 percent of all contacts.

Volume refers to the number of contacts and revisits in a given time interval. Many studies examined volume of visits to the physician (Horwitz et al., 1985; Newacheck, 1992; Newacheck & Halfon, 1986; Riley et al., 1993; Starfield & Budetti, 1985; Wolfe, 1980). Volume also tends to be nondiscretionary and largely influenced by the provider's decisions to schedule subsequent visits (Guendelman & Schwalbe, 1986). In order to accurately measure which child gets into the system and how often he/she uses it, separating parent-initiated from provider initiated visits becomes important. Wolfe's study (1980) of 1, 107 children found that parent's use of health care was statistically significant in predicting the volume of visits his/her child made to the physician. In addition, provider recommendations for return visits were related to multiple visits by the child (Horwitz et al., 1985).

Although Riley and colleagues (1993) used a computerized patient encounter database to collect utilization rates, many of the studies have relied on a 12-month parent recall for their utilization data (Newacheck, 1992; Newacheck & Halfon, 1986; Tessler & Mechanic, 1978; Wolfe, 1980). The reliability of one year memory recall is a limitation of these studies. Although parents are likely to remember visits to the emergency room, an accurate recall of the number of visits may be less likely especially if their child was particularly ill and needed numerous visits to a health care provider. Another issue regarding reliable measurement of children's health care utilization is relying on parent's self-report. Lorig and colleagues (1996) found in their study of Chronic Disease Self-Management that individual's self-report of utilization was somewhat unreliable. In their analysis of chart reviews, the total number of self-reported visits to physicians over the past six months ranged from one to 15, and range of visits recorded in the charts was from one to16. Thirty-six percent of subjects accurately reported the number of outpatient visits, 19 percent underreported, and 44 percent overreported. Underreporters tended to be those with more visits during the six-month period (Lorig, Stewart, Ritter, Gonzalez, Laurent, & Lynch, 1996). The accuracy of reporting of child's health care utilization is not adequately addressed in the literature.

Gaps in the Literature

Each study has examined the effect of a different set of variables on a child's health care use. This is a double-edged sword since others wanting to conduct utilization studies can evaluate which variables have been studied, but there are few variables which have consistently had strong predictive power of utilization. Without model replication, researchers wanting to study utilization of health care must take into account many variables since it is not yet clear which variables account for a large amount of variation.

Studies done in the past have shown that the child's age and health status have consistently predicted high use of primary health care. In all of the studies, there was higher utilization of care if the child was young in age (Guendelman & Shalwbe, 1986; Horwitz, et al., 1985; Newacheck, 1992; Newacheck, et al., 1986; Riley, et al., 1993; Short & Lefkowitz, 1992; Starfield, et al., 1985; Tessler & Mechanic, 1978; Wolfe, 1980; Woodward, et al., 1988). In addition, the more diagnoses or illnesses a child had, the more the child visited the clinic. However, age and health status of a child cannot solely account for high utilization rates. Other studies have shown the influence of one or more of the following variables: a child's behavior, mother's patterns of use, parental psychological well-being, family structure, and family conflict on the utilization of children's health care (Newacheck, 1992; Newacheck, et al., 1986; Riley, et al., 1993; Starfield, et al., 1985; Wolfe, 1980; Woodward, et al., 1988). Further, the existing studies have a set of variables which can explain a maximum of 33 percent of the variation in use (Riley, et al., 1993). The amount of variation that remains unexplained (67 percent) suggests that there are other variables, such as aspect of parental behavior and family functioning which may warrant further study.

Many studies have used large national data sets. Although these large data sets have distinct advantages, they do not allow for the examination of specific geographically situated populations. Many other studies have used pre-paid group plans as a source of data. Although these studies have allowed for geographically situated populations, an inherent bias in using data from pre-paid group plans is the exclusion of those individuals insured by other means such as Medical and the uninsured. Some of the studies note the racial/ethnic distribution of their sample. Guendelman and Schwalbe (1986) compared Hispanic children (nine percent of sample) to African American (15 percent) and Caucasian children (76 percent). Riley and colleagues (1993) and Tessler and colleagues (1978) both have a sample which is mainly Caucasian, 84 percent and 71 percent respectively. Even with an attempt to oversample Hispanic and African American children in a couple of studies, a major flaw in utilization studies thus far has been to examine primarily the Caucasian population. The use of averaged Caucasian health data as the normative standard or optimal reference point may not necessarily adequately reflect needs for many ethnic populations (Latino Task Force for the Unity in Health, 1992). It appears that the literature on the health use patterns of Latinos is conflicting. On one hand, research suggests that both youth and children underuse health services and, therefore, are at high risk of health problems (Zambrana, Dorrington, & Hayes-Bautista, 1994). Mexican-American children and their parents are less likely to use such services as routine medical checkups, family planning, prenatal care, and dental and eye examinations. On the other hand, one study showed that once contact with a physician is made, the likelihood of visiting (volume of visits) a physician is twice as high for Hispanics with Medicaid than for Caucasians and 1.5 times higher than for African Americans with public insurance (Guendelman & Schwalbe, 1986). Further, this same study reported that Hispanics place a high value on health and comply with the medical regimen if it is explained, understood, and economically accessible.

Although, the national average number of visits to a physician for a child under 18 years of age is approximately between three and four times per year (Newacheck, 1992; Newacheck & Halfon, 1986), is this true for children in Latino and/or African American populations? As previously mentioned, Guendelman & Schwalbe (1986) report that 67 percent of Hispanics compared to 71 percent of African American children and 78 percent of Caucasian children contacted a physician within a one-year interval. Utilization of children's health care needs to be examined in other ethnic populations, particularly in states where there are large numbers of children of color. Due to its rapid growth rate, the Latino population in California surpassed the national Hispanic growth rate of 53 percent in 1990 (Latino Task Force for the Unity in Health, 1992). As of 1992, the state of California has the largest Latino population (7.7 million), more than any other state in the nation. Thus, studying predictors of health care use in the Latino child population is of interest since they may not utilize health care for the same reasons or with the same patterns of utilization as African American or Caucasian children.

Another gap in the literature is that most studies took place in clinics where patients saw only physician providers. No studies have documented children's health care use in advanced practice nurse-managed clinics. These nurse-managed clinics provide improved access to quality care in underserved communities across the country. For example, Kansas could not encourage physicians to practice medicine in rural underserved parts of the state. A nurse-practitioner program was initiated four years ago, and now 66 percent of all its graduates practice in rural underserved areas of Kansas (Gorman, 1997). Similarly, in the state of California, nurse-managed clinics have filled the need of access to care in underserved areas. Even within San Francisco's boundaries, this area does not have an adequate health care workforce; four of the nine core service area census tracts are designated as Health Professional Shortage Areas (California Office of Statewide Health Planning and Development, 1995).

The pediatric utilization studies have elaborated on structural system characteristics only to the point of telling the reader about the geographic placement (e.g. rural, urban, inner city) of the research and type of care (primary care). There is no further discussion about other characteristics. One important structural system characteristic that warrants some discussion is provider training. Halfon and colleagues (1995) state that current clinical training insufficiently prepares providers to diagnose and treat the increasingly complex, interdependent problems of children and their families. National surveys of health providers including nurses, physicians, social workers, nutritionists, and psychologists reveal substantial self-reported inadequacies in competency and training in a number of essential health care concerns such as childhood mental disorders, developmental problems, complex psychosocial problems, and abuse and neglect. Thus, even though a child may have contact with a health provider and could be using health services, he/she may have utilization rates that reflect misdiagnoses, many referrals and/or follow-up visits, or improper treatment plans. Of course, inadequate provider preparation is only one part of a larger systemic problem with today's health care system. Future researchers of pediatric utilization must take into account the type of provider and the type of training and philosophy of practice the provider holds. Do advanced practice nurses make a difference in unnecessary visits to the emergency room? If so, what can this difference be attributed to? Holistic assessment, intervention, and treatment? Do pediatric patients receive an increase in preventive care from advanced practice nurses? What kind of preventive care is most common?

Geographic access barriers present problems for both insured and uninsured poor families. Newacheck (1992) found that children living in Southern states were less likely to be high users compared with children living in other regions. In addition, children living in suburban settings were likely to be high users compared with children living in inner city and rural areas. Travel time for families in underserved urban or rural areas can result in a reduced utilization of care, especially for children's preventive services such as immunizations (Andersen et al., 1983). With the exception of travel time, a gap in the literature is that we do not know why there are these differences. One possibility could be due to a shortage of primary care in both rural and urban areas. In 1992 the number of practicing generalist physicians in the U.S. was only 35 percent of the total, compared to over half in 1960 (Pew Health Professions Commission, 1995). One consequence of the shortage of office-based primary care providers is a higher rate of inappropriate emergency department utilization which affects the adequacy and scope of care that these children receive (Halfon et al., 1995). As the primary care workforce increases due to an increasing number of nurse practitioners, there is hope that a child's access to care in both rural and urban areas will increase.

Modifications to the Conceptual Framework

In order to address some of the gaps found in the literature on children's health care utilization, this study proposes to examine parent/family variables which have been largely neglected in past health care utilization research. There is less evidence regarding the association between such variables as the **family environment** and children's health care use. Health care providers and future researchers must also take into consideration parental and family influences. Riley and colleagues (1993) found that family conflict was associated with a higher volume of care, while a child's depressive symptoms were related to lower use. Children who live in single-parent families are in an environment of increased family stress, increased social disruption and less parental supervision. Thus, these children face an increased risk of physical injury (Starfield & Budetti, 1985) and tend to have more physician visits than other children when other factors including need, insurance status, and other demographic characteristics are held constant (Halfon, et al., 1995). Without adequate commitment to the well-being of the child from his/her family, a child's is at a higher risk for poor social (i.e. ability to develop and maintain social relationships) and emotional health outcomes (Schor, 1995).

Parental stress, specifically the **mother's psychological health**, influences a child's use of services. A recurrent theme in the medical literature identifies the overlap in the occurrence of symptoms between high and low users of physician services and the role of social and psychological factors (Halfon et al., 1995; Tessler et al., 1978). For example, in a study of 350 mother-child pairs, Mechanic (1964) found that mothers who were under stress were more likely than others to call the physician about their child's health. Results from a study of 175 mothers and their children indicated that distress was a relevant predictor of physician utilization for children in both White and non-White families (Tessler & Mechanic, 1978). Ten to 15 percent of new mothers have a serious episode of depression in the first year of their children's lives, and 50 percent of mothers of children younger than five years rate themselves as significantly depressed (Krugman & Wissow, 1998).

Children of depressed parents tend to have poorer health (Downey & Coyne, 1990) as well as their behavior is perceived more negatively by mothers who are depressed (Brody & Forehand, 1986). Lutenbacher and Hall (1998) report that the level of sexual abuse experienced by children increases as the level of depressive symptoms in the mother increase. As a result, children of **depressed mothers** are more negative, less active, and less responsive. Krugman and Wissow (1998) state that psychosocially disturbed parents tend to focus less attention on children, what attention they do give is often negative, and parents are relatively unavailable to help their children with major developmental tasks. Thus, children of depressed parents show insecure attachment, have deficits in social relations, and have general maladaptive functioning which can lead to significant psychopathology in adolescence or early adulthood (Cytryn, McKnew, Zahn-Waxler, & Gershorn, 1985; Dix, 1991).

None of the past studies incorporated parenting attitudes as a variable in their utilization studies. Parental attitudes can be thought of as filters that indirectly affect parental behavior and thereby reflect the child's environment (Holden & Edwards, 1989). It is the **parental behavior** which plays a major role in children's health as well as their use of health care. There is growing evidence for a reciprocal relationship between childhood difficulties (e.g. internalizing and externalizing behaviors, injury, illness episodes) and parenting (Fox, 1994). George and Bloom (1997) state that parental child-rearing practices are thought to be causally related to major aspects of personality and character structure, to subsequent behavior problems, and to specific forms of psychopathology in children.

Parents' emotions directly influence child-rearing practices, including their children's use of health care. Riley and colleagues (1993) found that a child's externalizing behaviors were positively related to use of health care services. Reasons for the increase in use may range from inadequate parenting skills to the inability to regulate parental emotional responses to the child. For example, a parent who cannot regulate his/her own emotions, has unrealistic expectations of a child, or uses rewards and punishments inconsistently, tend to have children who are less compliant and take more risks (Dix, 1991). A parent who consistently displays more warmth has favorable developmental outcomes for children, whereas parental hostility is consistently associated with children who may have behavior problems or other unfavorable developmental outcomes.

It is not known whether parent/family factors contribute to the variation in children's health care utilization rates. The *relationship between parent/family factors and a child's use of health care* is hypothesized to have some affect over and above sociodemographic/financial factors and a child's health status.

Research Questions

Primary Questions

1) To what extent do parent/family factors explain variance in children's health care utilization?
2) What is the effect of child health status on child health utilization?
3) To what extent do sociodemographic/financial factors explain variance in child health care utilization?

Secondary Questions

4) Do specific parent/family factors including parents' behavior and/or parents' depressive symptoms explain variance in children's (aged 1-5) functional status?
    - (a) Do parents' behaviors as measured by the Parenting Behavior Checklist (PBC) (discipline, nurturing, expectations) explain variance in children's health?
    - (b) Does the family environment as measured by the Family Environment Scale (FES) (family conflict, family cohesion) explain variance in children's health?
    - (c) Do parents' depressive symptoms as measured by the Centers for Epidemiologic Studies on Depression (CES-D) explain variance in children's health?
5) Does a child's general health status (rated by the parent) explain variance in his/her functional status?
6) Do sociodemographic and financial factors explain variance in children's functional status in a low-income, minority population?

Chapter III

Methods

Introduction

Most studies on pediatric utilization have undertaken a retrospective cohort study design. While these types of studies are typically less costly and less time-consuming, the investigator has no control over the nature or the quality of the measurements that were made. By conducting prospective studies, researchers have the opportunity to measure variables more completely and accurately. Further, prospective studies, such as the one described in this chapter, would add to the growing body of literature on children's health care utilization.

Research Design

Based on the present knowledge of children's health care utilization, a six-month prospective cohort design was selected for this study. Given that the national average number of physician contacts in a one year period is three per child, the study was designed to capture utilization data over a one year time period. Data regarding children's health care utilization for the *prior* six months were collected when study participants entered the study as well as six months *after* they were enrolled (see Figure 3). The results of this study will be used to modify and refine the theoretical model, which will then be used for future studies.

Figure 3. Study Design

study onset

← ----------------historical------------------→ ↓ ←-----------prospective------------→

0--6months--------------------------------------12months

↓ ↓

(data collection of *prior 6-months* utilization and baseline data) (follow-up data collection)

Research Setting

This study was conducted at a nurse-managed clinic (Valencia Health Services-VHS) located in San Francisco. This clinic offers primary care services, such as well child checkups and immunizations, to a mainly Hispanic and African American population who live in the Mission District. This section of San Francisco is home to more Hispanics/Latinos (36 percent, in contrast to San Francisco's 14 percent) than any other area in San Francisco. Further, this area does not have an adequate health care workforce; four of the nine core service area census tracts are designated as Health Professional Shortage Areas (California Office of Statewide Planning and Development, 1995) and are designated as medically Underserved Areas, as defined by the U.S. Public Health Service.

Toddlers and pre-schoolers (one to five years old) account for a large number of the client population. Approximately 45 percent of the children seen at VHS are between the ages of one and five. The remaining 55 percent of the clients served at VHS include infants (under one year old-8 percent), school-age children (six to12 years old-31 percent), adolescents (13-19 years old-15 percent), and young adults (20-34 years old-one percent). The estimated 460 clients served monthly are primarily low-income; 75 percent of the clients seen have Medi-Cal insurance and a recent clinic survey showed that 46 percent of clients have a yearly income below $11,000. The majority of the clinic population is either Hispanic/Latino (55 percent) or African American (25 percent), with Caucasian (5 percent), Asian/Pacific Islanders (5 percent), and "Other" (10 percent) making up the balance. Bilingual (Spanish and English) staff and providers, including four nurse practitioners and two physicians, serve this client group. There are an estimated 2,000 clients/families who use this site as their source of primary care on a regular basis.

Sample

Criteria for Sample Selection

This study attempts to specifically examine the health care utilization of Hispanic and African American children since a major gap in utilization studies thus far has been a lack of studies of racial/ethnic minority groups. As noted in the previous chapter, the use of averaged health data of Caucasian children as the normative standard or optimal reference point may not adequately reflect the health care utilization of many ethnic populations (Latino Task Force for the Unity in Health, 1992).

Children and their families were recruited for the study if they met the following criteria: 1) one child per family who was between the ages of one and five years of age; 2) the child must have visited the clinic two or more times during the past year; 3) the child must be of Hispanic or African American descent; and 4) parents or guardians must speak either English or Spanish. If, during the recruitment period, a new client visited the clinic two or more times and met the other inclusion criteria, this child was eligible to participate in the study.

Sample Size

For many psychological or behavioral science studies, an effect size can be estimated as small, medium, or large (Cohen, 1988). The unit of analysis for this study was individual children attending Valencia Health Services for their primary care. Assuming a medium effect size of 0.25 and alpha of 0.05, with a desired power of 0.80,

and the unique contribution (R^2 change) for each of the 17 individual variables set at 0.04, the desired number of subjects for this study was 200 (Borenstein & Cohen, 1988).

Given the more cautious nature of minority populations to participate in research studies and the transient nature of the clinic population, conservative estimates of non-response (20 percent), refusal (20 percent), and attrition rates (20 percent) were anticipated. Given these assumptions a target enrollment was set at 250 to 300 subjects. Additionally, in order to make comparisons based on the child's racial/ethnic background, attempts were made to enroll approximately half of the study participants who identified themselves as African American and the remaining half who identified as Hispanic.

Data Collection Methods

Identification of Subjects

Eligible study participants were identified within the clinic's billing database and addresses and phone numbers were obtained. Although 45 percent (approximately 680) of the clinic population are children between the ages of one and five, data on individual family units attending VHS was unavailable. The assumption was made that if multiple children were living at the same address, they were considered a family even if they did not all possess the same last name. In multiple-child families, every other child's name in the electronic file was deleted to ensure that only one child per family participated in the study.

Approach

Data collection took place from August 1998 to July 1999. Given that VHS is a faculty practice owned and operated by the UCSF (University of California, San

Francisco) Department of Family Health Care Nursing, initial permission for the study was obtained from the Chair of Department as well as from the Practice Manager. A written report and questionnaire package were distributed to all staff and providers located at the clinic as well as other faculty members involved in the operation of VHS. In addition, informal meetings between the researcher, the staff, and the providers were held initially in order to explain the study and address any questions or concerns.

Recruitment of eligible children took place via mailed letters and follow-up telephone calls. Letters were sent to African American families in English and to Hispanic families in both English and Spanish. Letters outlining the study were sent out to all the African American families and a randomly selected sample of Hispanic families. Random selection of Hispanic families took place using the random selection function in the statistical software package, SPSS. Eligible study participants were then called one to two weeks after the letters had been mailed. Contact with Hispanic families was made via a bilingual research assistant, fluent in English and Spanish.

The primary mode of data collection was designed to be telephone interviews either in English or Spanish. Each family was contacted up to a maximum of ten times to accomplish enrollment. Families were called at varying times during the day and evening hours. Once successful telephone contact was made, one parent (either the mother or father or guardian, in that order) was asked to answer the questionnaire package over the telephone.

Unfortunately, roughly 60 percent of the phone numbers obtained through the billing database were either disconnected or outdated. Thus, face-to-face interviews, at the clinic site, were added to increase the response rate. Either the research assistant or the researcher tried to be present during the clinic's hours of operation in the event that an eligible study participant came to the clinic for a drop-in visit or a scheduled appointment. Although there are biases related to each mode of data collection (telephone and face-to-face), other researchers have found the multi-mode of data collection produces data of comparable quality and increases the response rate (Blumenthal, Sung, Coates, Williams, & Liff, 1995).

The researcher or research assistant told all contacted study participants the study purpose, what was required, and what they would receive in return for their participation. Confidentiality was assured. Following consent, all subjects completed a baseline interview (see Appendix B) and were given a children's book. During the baseline interview, subjects were asked about their health care utilization for the *past six months*. In order to collect health care utilization for a one-year period of time and for subjects to successfully complete the study and receive the $10 gift certificate, subjects were contacted (either in-person or by phone) a second time, six months after the baseline interview. However, difficulty contacting subjects a second time occurred, since either phone numbers were wrong or disconnected or they did not visit the clinic. Therefore, chart reviews were conducted on enrolled subjects in order to confirm he/she was still coming to the clinic for primary care and verify the number of visits made to the clinic over the period of one year.

Pilot Study

A pilot study of the instrumentation for the study was conducted, in both English and Spanish, at the clinic site in April 1998. The questionnaire package was pre-tested to determine the feasibility of face-to-face data collection. Given that the literacy level of the clinic population was unknown, self administration of the survey under supervision of the principal investigator or research assistant as well as administering interviews was tested. Twelve people were approached to participate in the study. Two people refused. The questionnaire package was administered in three sections to allow for accuracy of time-to-completion of the questions and discussion about specific problem areas. Half of the pilot study was completed with African American parents in English and the other half of the pilot study was completed in Spanish with Hispanic parents. Demographics of the people who participated in the pilot study were similar to those who were in the study.

The three sections included: 1) one-item parent-rated general health of the child (Eisen, Donald, Ware, & Brook, 1979) and questions related to health care visits made by the child and primary care giver within the last 6 months; 2) 112-item Child Behavior Checklist (CBCL) (Achenbach, 1991); and 3) 12-item Family Environment Scale-short form (FES) (Moos, 1974), 32-item Parent Behavior Checklist-short form (PBC) (Fox, 1994), 10-item short form of the Centers for Epidemiologic Studies-Depression (CES-D) (Radloff, 1977), and demographic questions.

Main feedback from Section I was difficulty following the format of the health care visits questionnaire and the difficulty understanding the term “nurse practitioner”. English-speaking clients did not know the difference between a nurse and a nurse practitioner and no official Spanish equivalent word existed.

The combination of both Sections II and III made the questionnaire package too long. Time needed to complete the survey ranged from 45 minutes to 50 minutes.

Response fatigue for clients who were both self-administering and participating in face-to-face interviews began approximately midway through Section II.

Main modifications to the questionnaire package included: 1) reformatting the Health Care Visits questionnaire for easier readability; 2) using the Spanish word, "enfermera especialista" to represent English term, "nurse practitioner"; and 3) the Child Behavior Checklist (CBCL) was replaced with the Functional Status Questionnaire. The CBCL was excluded because the amount of time needed to complete (between 25 and 35 minutes) created a barrier to participation and successful completion of the survey. In an attempt to measure some of the domains that would have been measured by the CBCL (e.g. social and pyschologic domains), the 14-item Functional Status Questionnaire (FS IIR) (Stein & Jessop, 1990) was added since it measured the physical, social, and psychologic domains of child health. Finally, rather than have study participants self-administer the survey the researcher or research assistant conducted face-to-face interviews, which also served to increase the response rate and completion rate.

Although the telephone interview methodology was not pilot tested, the researcher felt confident that the survey had been pilot tested sufficiently to gain clarity about the completion time, the most effective in-person method to administer them, and sufficient feedback regarding the various study instruments.

Human Subjects Assurance

The research study received approval from the University of California, San Francisco, Committee on Human Research (H1990-14882-01) on March 11, 1998. Two modifications were made to the original application. The first modification, which was approved on July 22, 1998, involved changes to the method of subject recruitment and mode of data collection (e.g. telephone and face-to-face interviews). The second modification, which was approved August 21, 1998, requested the addition of the tool known as the Functional Status Questionnaire (FS IIR). The study was so approved by the Human Subject's Committee for Valencia Health Services.

Preparation of the Study Instruments

Given that over 50 percent of the clinic population was Hispanic and that many of the Hispanic families preferred to speak and/or read in Mexican-American Spanish, the questionnaire package was available in both English and Spanish. For example, the Family Environment Scale was translated into Mexican-American Spanish. The double translation method was used for this study; Marín and Marín (1991) state there are several steps to this method: 1) the version in the original language is translated by translator A into the target language; 2) a second translator (translator B) takes the product of the previous step and independently translates it back into the original language; 3) the research compares both version in the original language and checks with the translators for inconsistencies; and 4) another round of translations may be necessary for sections in which there are a large number of inconsistencies. The two individuals used for the translation were both bicultural and bilingual in English and Mexican-American Spanish. Additionally, the other standardized tools were checked by the translators for their cultural equivalency.

Baseline Measures

Study instruments were selected for their relevance to the theoretical model being tested. Table 3 (pg. 46) displays how each measure operationalizes variables in the model. A literature review of each measure was completed to identify reliability and validity in other studies and to determine its appropriateness for the racial/ethnic groups being studied. All short-forms of the various instruments were used in this study. At baseline, data on variables conceptualized to influence children's health care utilization (e.g. race/ethnicity of parent/guardian, insurance status, age of parent, parent's years of education, and household income) were collected through sociodemographic information. The variable of "maternal utilization of health care" was collected using the health care visits questionnaire. In addition, data were collected on: parent's perceived general health status of the child, a child's functional status, parenting behaviors, parental depressive symptoms, and the family environment. These data were collected using the following measures: 1) a global measure of child health status developed by RAND (Eisen, Donald, Ware, & Brook, 1980) and the Functional Status IIR (FS IIR) developed by Stein and Jessop (1990); 2) Parent Behavior Checklist (PBC) developed by Fox (1994); 3) Centers for Epidemiologic Studies on Depression (CES-D) developed by Radloff (1977); and 4) Family Environment Scale (FES) developed by Moos (1974).

A global measure of child health is widely and easily used in various research applications (Lewis, Pantell, & Kieckhefer, 1989). The RAND Health Insurance Study developed a valid and reliable global measure of child health (1-item). Parent-rated general health of the child consists of the response to the single item, "Would you say your child's health in general is excellent, very good, good, fair, or poor?". The 14-item FSII-R, which are combined to create a total score, measures the physical, social, and psychologic domains of child health. The higher the score on this instrument, the higher the child's reported functioning. Cronbach's alpha, in a sample of 113 chronically ill children, for this scale is reported as 0.78 (Lewis, et al., 1989). Construct and concurrent validity of these measures have also been shown (Eisen, et al., 1980; Lewis, et al., 1989).

No reading level is reported, however, the time required for administration is approximately five to ten minutes. These instruments are available only in English.

A recently developed instrument to measure the domain of parenting behavior is the Parent Behavior Checklist (PBC). Fox (1994) states that parenting behavior is affected by a parent's attitudes and beliefs and his or her expectations of their child. The PBC is a measure of how parents are raising their young children. The PBC is a 100-item self-report scale which measures parenting of children aged one through five years. However, the 32-item short-form was used for this study. Both versions consist of three subscales, empirically derived through factor analyses: expectations, discipline, and nurturing. On all three scales, the higher the scores, the higher the expectations, the more use of discipline, and the more reported nurturing. Fox (personal communication, 1997) reports the alpha coefficients for the three subscales of the short-form are: Expectations=0.93, Discipline=0.85, and Nurturing=0.73 in a sample of 1,056 mothers, based on the child's sex and ethnic group, from a large urban area.

Items for the PBC were assessed for their clarity by using a panel of 16 professionals and 17 parents for content validity (Fox, 1994). Professionals rated each item on two dimensions. The first dimension was relevance, which was defined as the degree to which each item was appropriate for use with parents who have a child between the ages of one and five years. The second dimension was item construction, which was defined as the degree to which each item would be understandable and clear to parents (Fox, 1994). Parents were asked to rate each item for its comprehensibility and appropriateness for parents who have children between one and five years.

Many of the PBC items were written to be developmentally sensitive and can discriminate between parents of different aged children on all three subscales (Fox, 1994). However, Fox states that conceptually the Expectations subscale requires more development since is difficult to interpret using a developmentally sensitive lens (personally communication with Fox, 1999). The PBC showed adequate construct validity in the area of discriminant validity. Given that no available instruments could be found to measure the convergent or predictive validity of the PBC (Fox, 1994), the Developmental Questionnaire (DQ) was developed by Peters and Fox (1993) for the specific purpose of measuring predictive validity. The DQ, a 21 item scale, specifically assesses parental expectations. Fox and colleagues believe that asking parents about their expectations for their own children is important since parents may have a good knowledge base about child development, but may not apply this knowledge during interactions with their own child (Fox, et al., 1994). Preliminary concurrent validity, or as Nunnally (1978) would say, predictive validity between the expectations subscale of the PBC and the DQ's total score was 0.86. Further, the discipline subscale of the PBC and the DQ's total score was found to be 0.40 in a sample of 42 married and middle to upper-middle class mothers (Fox, 1994).

This instrument has been translated into Spanish. The preliminary results of the Spanish version contain alpha coefficients of: expectations=0.95, discipline=0.87, and nurturing=0.83 in a sample of 221 native Mexican mothers, with at least one child between the ages of one and five years, from an urban area in Guadalajara, Mexico. This checklist requires a grade three reading level and takes approximately ten minutes to complete.

Similar to the PBC, the 10-item short-form, rather than the 20-item scale, of the CES-D was used. This self-report scale which has been widely used to identify the likelihood of depression in the general population (Radloff, 1977). It was designed to encompass the major components of depression identified in the literature, with an emphasis on affective components: depressed mood, feelings of guilt and worthlessness, feelings of helplessness and hopelessness, psychomotor retardation, loss of appetite, and sleep disorders (McDowell & Newell, 1996). The CES-D is suitable for identifying symptoms of depression. The CES-D is most commonly used as a screening tool rather than a diagnostic tool. Although, the total score on the CES-D is also used for epidemiologic and other types of research studies. Radloff (1977) reported alpha coefficients of 0.85 for general population samples and 0.90 for a patient sample; split half reliability ranged from 0.76-0.85 (McDowell & Newell, 1996). The test-retest reliability is low (0.32-0.67) since the CES-D concentrates on recent symptoms.

The CES-D has shown high criterion and construct validity. When using the CES-D as a dichotomous screen, Andresen and colleagues (1994) reported high agreement with the regular 20-item form (only one misclassification, k of .97) with a standard cut-point of 10 for the short-form.

When examining the CES-D as a continuous score, Radloff (1977) reported a correlation of 0.56 with a clinical rating of severity of depression (McDowell & Newell, 1996). Further, the factor analytic structures of depressed affect, positive affect, somatic symptoms, and retarded activity were found by both Radloff (1977) and Roberts (1980). The CES-D has been used extensively in large studies; this instrument was used in the

HANES and HHANES. The CES-D is available in other languages, including Spanish and Chinese.

The Family Environment Scale (FES), developed by Moos, is a 90-item self report scale. The FES assesses the social climates of all types of families. It focuses on the measurement and description of the interpersonal relationships among family members, on the directions of personal growth which are emphasized by the family, and on the basic organizational structure of the family (Moos, 1974). From a sample of 814 individuals (recruited through churches, high-schools, and newspaper advertisements), Moos reports internal consistency (Kuder-Richardson) estimates ranging from 0.64 to 0.79. Test-retest reliability estimates were found to be acceptable, ranging from 0.68 to 0.86. In a different study of 257 individuals, internal consistency was found to only range from 0.23 to 0.75 (Loveland-Cherry, Youngblut, & Leidy, 1989). Test-retest reliability estimates are not reported for Loveland-Cherry and colleagues (1989) study. Although Loveland-Cherry and colleagues (1989) report some low internal consistency estimates for their sample, they do not report which subscale internal consistency estimates were low.

A 40-item short form of the FES is available. For the purposes of the study, two subscales, family cohesion and family conflict, from the short form were used. The higher the scores on both these subscales means there is higher family cohesion and more family conflict. Moos (1974) does not report any internal consistency reliabilities of these scales for the short form. The short form of the FES was developed to permit rapid assessments of either large families and/or groups of families (Moos, 1974). Interrater reliability was calculated using intraclass profile correlations (ICC) between ten long-form FES and ten short-form FES. The ICC was found to range from 0.80 to 0.90. Miller and colleagues (1994) state that the ICC represents a ratio of between-group and within-group variances. Thus, between-group variance represents the perceived differences across families, while within-group variance represents the perceived differences among ratings for each family. Thus, as agreement on the rating of each family increases, within-group variance decreases and ICC increases. Internal consistency reliability and content, criterion, and construct validity estimates were not reported. The FES is not available in any language except English. The FES was developed at a sixth-grade reading level.

Outcome Variable

Children's health care utilization, which included all visits to their primary health care provider (excludes visits made for vision care or dental care), was collected twice during the study using a short self-report questionnaire. The self-report data were collected at six month intervals (at baseline and then six months later) because recall of children's health care use is less likely to be forgotten than if parents were asked to recall the previous twelve months of their child's health care utilization. These data were verified using a chart review. If discrepancies between reported children's utilization of health care and chart data are found, chart data will be used. It is likely that chart data will give a more accurate representation of children's actual number of visits to their health care provider. Data on children's health care utilization were collected in terms of site, purpose (acute care visit versus well child checkup), and time interval.

The time interval for a visit was expressed in terms of contact and volume. Since all children included in this sample have already gained entry into the health care system, volume of visits was measured. Volume refers to the number of contacts and revisits in a given time interval. This measure is also important since volume tends to be nondiscretionary and largely influenced by the provider's decisions to schedule subsequent visits (Guendelman & Schwalbe, 1986).

Derived Measures

Based on data collected on sociodemographic information, the health care visits questionnaire, and from the standardized instruments, derived measures (see Table 3) were used in the analysis.

Table 1. Derived Measures

Dependent Variable	**Measures**	**Type of Data**	**Number of Variables**
Utilization rates of primary health care at VHS by children aged 1-5 years	Health care visits questionnaire Chart verification	Continuous	1
Independent Variables	**Measures**	**Type of Data**	**Number of Variables**
Education of family reference person	Demographic Information	Continuous	1
Sex of Child- Female, male	Demographic Information	Dichotomous	1
Age of Child	Demographic Information	Continuous	1
Family Structure- Marital Status	Demographic Information	Dichotomous	1
Insurance Status of child-none, MediCaid, Private	Demographic Information	Categorical	1
Household Income	Demographic Information	Ordinal	1
Race/Ethnicity of Child- Hispanic, Black, Other	Demographic Information	Categorical	2
Maternal Utilization of Health Care	Health care visits questionnaire	Continuous	1
Perceived Child Health	General health status; Functional Status -Revised	Continuous	2
Parent Behavior :			
Parent Nurturing (subscale score)	Parent Behavior Checklist	Continuous	1
Parent Discipline (subscale score)	Parent Behavior Checklist	Continuous	1
Parent Expectations (subscale score)	Parent Behavior Checklist	Continuous	1
Family Environment:			
Family Conflict (subscale score)	Family Environment Scale	Continuous	1
Family Cohesion (subscale score)	Family Environment Scale	Continuous	1
Parent Depressive Symptoms	CES-D	Continuous	1
Total Number of Independent Variables:			17

Family structure was measured based on a study participant's marital status. Married and partnered were collapsed into one category and single, separated, divorced, widowed were collapsed to form the other category.

Categorical and ordinal variables were dummy coded and added to the model. Two dummy coded variables represent the category of insurance status of the child; the category of having no insurance (none) is the reference.

Data Quality Management

The principal investigator hired and trained bilingual (Spanish and English) research assistants to help collect data since many of the Hispanic study participants spoke only Spanish or more Spanish than English. At any one time, the research team consisted of the researcher and one research assistant. Given that no one research assistant could be employed for the entire duration of the study period, each research assistant was trained on how to conduct telephone interviews, answer study participants' questions, and conduct face-to-face interviews. Data quality management was maintained through weekly meetings of the research team and by reviewing techniques (e.g. observing a face-to-face interview or telephone interview) used by the research assistant.

All questionnaires used in the study were converted to a scantron format. Using a software program, OMR Remark 3.0, completed questionnaires were then scanned into the computer and an SPSS file was created. When the data were in an electronic file, they were then checked for accuracy.

Data Analysis

Decisions about missing data were made in collaboration with the biostatistician and the dissertation committee. It was decided that if data were available for 80 percent of the instrument subscale, then mean-item substitution for that individual was implemented. If less than 80 percent of the instrument subscale was completed, then that particular case was assigned a missing score on the measure and was not used in the multiple regression.

Missing data related to maternal utilization was handled differently. Maternal utilization data was missing only for the prospective part of the study. Therefore, each missing case was substituted with the baseline interview answer to the question, "How many times did you see you health care provider in the past six months?". For those parents who answered both at baseline and during the prospective part of the study, a paired t-test revealed no statistically significant difference between those answers given during the baseline interview and those answers given during prospective data collection.

First the data were cleaned and descriptive statistics were examined for all study variables. Next, in order to establish zero-order relationships, a correlation matrix of all independent variables with the dependent variable and all independent variables with each other was created. The data were checked for multicollinearity. The independent variables, which do not occur in isolation in a child's environment, answer the research questions through two hierarchical multiple linear regression models.

Research Questions

Primary Questions and Model I

1) To what extent do parent/family factors explain variance in children's health care utilization?
2) What is the effect of child health status on child health utilization?
3) To what extent do sociodemographic/financial factors explain variance in child health care utilization?

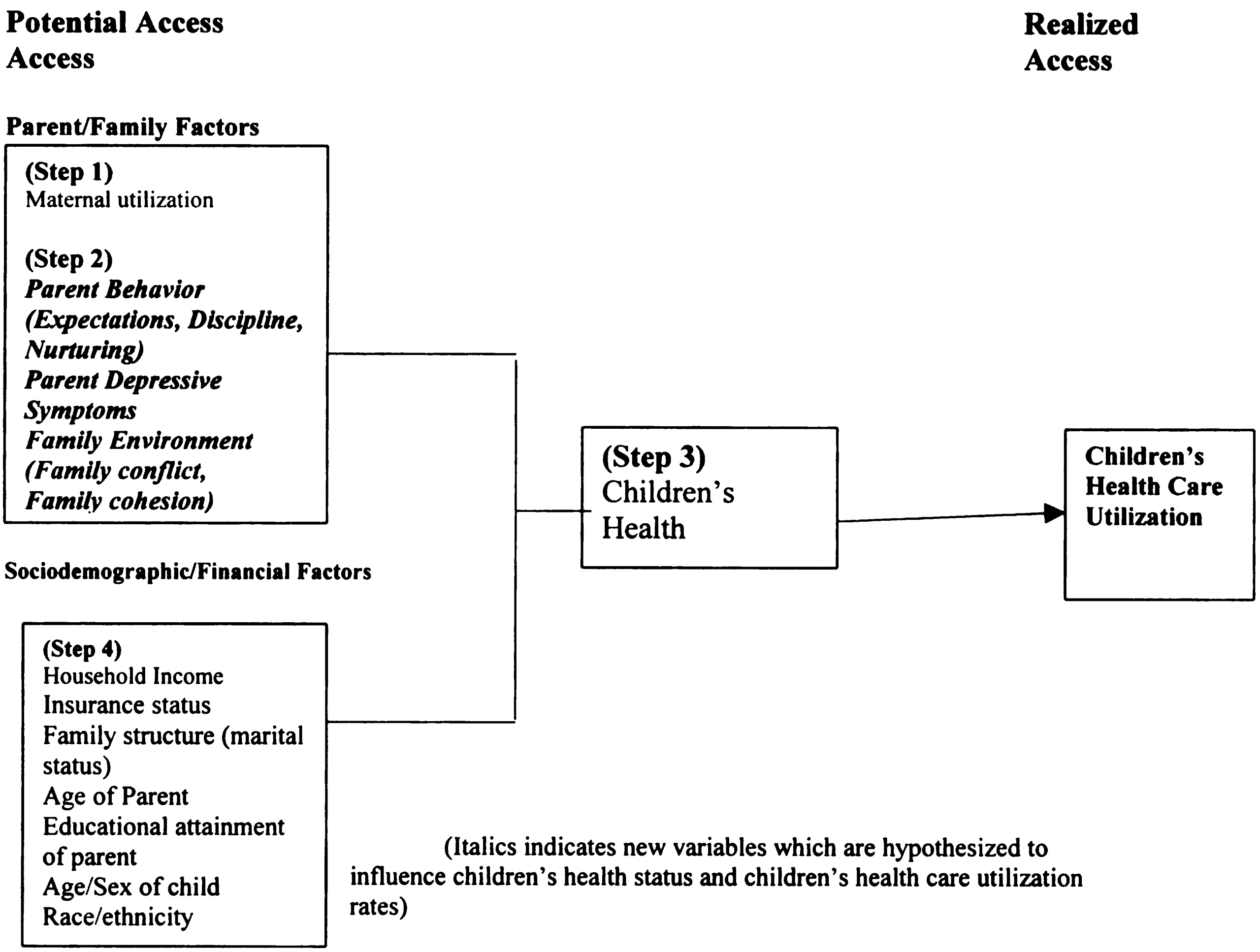
To answer the first three research questions, a four-stage hierarchical linear regression was conducted. The dependent variable in this regression was primary health care utilization of children aged one to five at VHS.

In the first step, only "Maternal Use of Primary Care" was entered. Next, all the parent/family factors of interest were entered. This set of independent variables included: Parent Behavior measured by two individual subscale scores-"Nurturing" and "Discipline"; and "Parent Depressive Symptoms" as measured by the CES-D. The results of these two steps addressed research question #2.

In the third step, variables that were conceptualized to measure child health were entered. This set of independent variables included: "Parent-rated General Health of the Child" and the FSII-R (one scale) which measures the physical, social, and psychologic domains of child health.

Finally, in the last step, all sociodemographic/financial variables were entered into the regression model. These variables included: "Yearly Household Income"; Family Structure measured by "Marital Status"; "Age of Child"; "Gender of Child"; "Race/Ethnicity of Child"; and "Years of Education Completed by Parent". The results of this step answered research question #3.

Figure 4. Children's Health Care Utilization (Model I)



(Italics indicates new variables which are hypothesized to influence children's health status and children's health care utilization rates)

Secondary Questions and Model II

4) Do specific parent/family factors including parents' behavior and/or parents' depressive symptoms explain variance in children's (aged 1-5) functional status?
   (a) Do parents' behaviors as measured by the Parenting Behavior Checklist (PBC) (discipline and nurturing) explain variance in children's health?
   (b) Does the family environment as measured by the Family Environment Scale (FES) (family conflict, family cohesion) explain variance in children's health?

(c) Do parents' depressive symptoms as measured by the Centers for Epidemiologic Studies on Depression (CES-D) explain variance in children's health?

5) Does a child's general health status (rated by the parent) explain variance in his/her functional status?

6) Do sociodemographic and financial factors explain variance in children's functional status in a low-income, minority population?

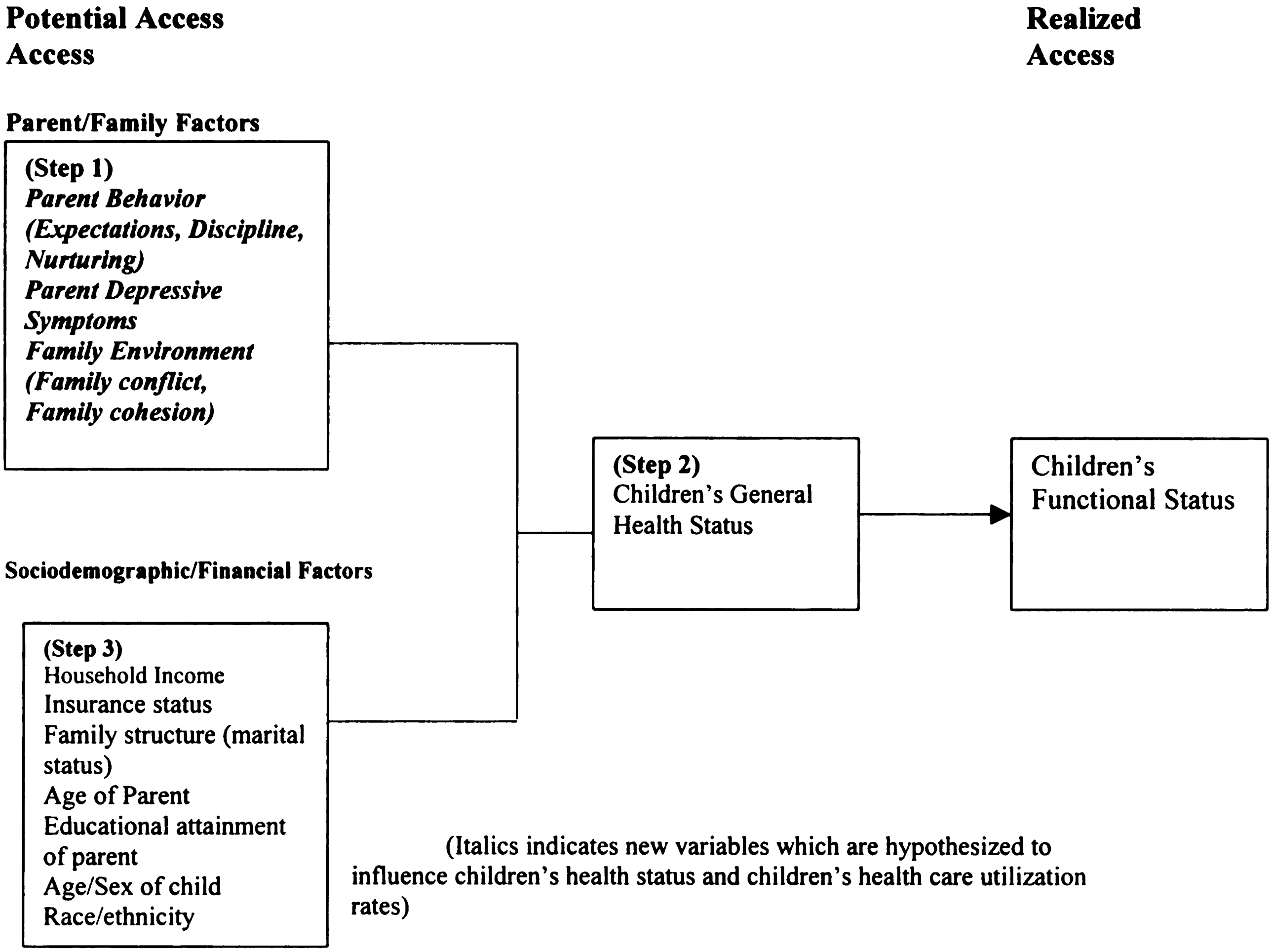
To answer these three research questions, a three-stage hierarchical linear regression was conducted using the statistical package SPSS for Windows. The dependent variable was functional health status of children aged one to five at VHS.

To determine whether parent/family factors explains variation in children's functional status, variables were entered in two blocks. In the first step the parent/family variables were entered. This set of independent variables included: Parent Behavior measured by two individual subscale scores-"Nurturing", and "Discipline"; and "Parent Depressive Symptoms" measured using the CES-D. The results of this step answered research question #4.

In the second step, "Parent-rated General Health of the Child" was entered in order to answer question #5. The last step involved sociodemographic and financial factors were added. This set of independent variables included: "Yearly Household Income"; Family Structure measured by "Marital Status"; "Age of Child"; "Gender of Child"; "Race/Ethnicity of Child", and "Years of Education Completed by Parent". The results of this step answered research question #6.

At each step, the researcher examined whether the R^2 change for each set of variables was significant. If the R^2 change was significant, each individual variable in the set was tested for its unique contribution (squared semi-partial correlation) in explaining the variance in children's functional health status.

Figure 5. Children's Functional Status (Model II)



(Italics indicates new variables which are hypothesized to influence children's health status and children's health care utilization rates)

Statistical Considerations

There is one statistical consideration related to meeting the assumption of statistical independence in this study. Glantz and Slinker (1990) state that the deviations of all members of the population from the plane of means (when there is >1 predictor in model) are statistically independent. For example, the deviation associated with one member of the population has no effect on the deviations associated with other members.

Thus, only one child per family was eligible to participate in the study since the data on children from multiple-child families are not independent because the maternal variables are the same for each child.

Chapter IV

Results

Introduction

This chapter presents the results of the study. Following a description of the sample and the performance of instruments on the sample, the regression analyses are reported.

Description of the Sample

Over 300 children from individual families were estimated to be eligible for participation in the study. The names of eligible study participants were obtained via the clinic's billing database. Given that there were over 200 individual Hispanic families that use the clinic, a random selection of 150 eligible Hispanic families was taken. Of these 150 children, six no longer came to the clinic for their health care and nine parents refused to participate. The population of eligible African American children was selected since 116 individual families used this clinic site for their primary care. Of the 116 African American children, seven no longer came to the clinic for their health care and two parents refused to participate. The main reasons given for refusal were because parents did not have enough time or because the parent was distressed about their ill child.

Using a combination of telephone and face-to-face interviews to collect data, a total of 199 children from individual families at Valencia Health Services Clinic were recruited and enrolled in the study. One hundred and three Hispanic and 93 African American parents successfully completed the baseline interviews. Overall, once families were contacted (either via telephone or because they came to the clinic) the response rate was 96 percent.

Demographics

Tables 2a and 2b display demographic information of the study participants who were admitted to the study and successfully completed baseline interviews. Together, these tables provide information about the family environment within which the child was living.

Table 2a. Ratio Demographics of the Family Environment/Parents Participating in the Study

	Total Sample	Hispanic	African American
	196	103	93
Age of Adult			
Mean	30.3	30.98	29.32
Std. Deviation	7.8	7.21	8.46
*Years of School			
Completed	11.0	9.98	*11.97
Mean	3.3	3.93	2.01
Std. Deviation			

*Indicates a statistically significant difference (p<.01) between Hispanic and African American ethnic groups (African American > Hispanic)

Table 2b. Categorical Demographics of the Family Environment/Parents Participating in the Study

	N	%	Hispanic	% of Hispanic group	African American	% of African American group
	196	100.0	103	51.2 (% of total)	93	46.3 (% of total)
Gender						
Females	172	88.1	84	82.6	88	94.6
Males	24	11.9	19	18.4	5	5.3
Language spoken at home						
Only Spanish	41	20.4	41	39.8	0	0
Spanish more than English	36	17.9	36	34.9	0	0
Both Equally	14	7.0	14	13.6	0	0
English more than Spanish	7	4.0	7	6.8	0	0
Only English	98	0.7	5	4.9	93	100
•Marital Status						
Married	81	42.8	71	•68.9	11	11.8
Partnered (living together)	29	14.4	16	15.5	12	11.7
Single	66	32.8	12	11.7	•54	58.1
Separated	10	5.0	3	2.9	7	7.5
Divorced	8	4.0	0	0	8	8.6
Widowed	2	1.0	1	1	1	1.1
•Yearly Household Income						
$0-$9,999	53	26.4	13	12.6	•40	43.0
$10,000-$14,999	41	20.4	22	21.3	17	18.3
$15,000-$19,999	24	11.9	13	12.6	11	11.8
$20,000-$29,999	38	18.9	24	23.3	13	13.9
$30,000-$39,999	21	10.4	17	16.5	3	3.2
Above $40,000	14	7.0	9	8.7	4	4.3
Do Not Know	10	5.0	5	4.9	5	5.4
•Insurance Status of Parent						
Not Insured	29	14.4	26	25.2	3	3.2
MediCal	101	50.2	25	24.3	•74	79.6
Private	71	35.3	52	50.5	16	17.2

•Indicates a statistically significant difference (p<.01) between the Hispanic and African American ethnic groups (African American > Hispanic)

The most commonly reported primary caregiver for children in the study were female (88.1 percent). When both parents came to the clinic with their child, the mother would almost always volunteer to answer the questionnaire. The sample consisted of 51.2 percent who self-identified as Hispanic/Latino, 46.3 percent as African American, and 2.5 percent as other. Seventy-five percent of the Hispanics enrolled in the study reported speaking only Spanish or Spanish more than English at home. All the African American study participants spoke only English at home. Although the mean age of the sample was 30.3 years old, a parent's age ranged from 16 to 57 years old. Approximately two-thirds (65.2 percent) of the primary caregivers were between the ages of 16 and 32 years old. 73.1 percent of parents completing the questionnaire completed their grade 12 education.

Almost half (46.8 percent) of the study population reported their yearly household income to be less than $15,000 whereas 41.2 percent reported a yearly household income between $15,000 and $40,000. Only seven percent of this sample made above $40,000. Most of the primary caregivers had either MediCal (50.2 percent) or private (35.3 percent) health insurance.

The age in years of children participating in the study is displayed in the ratio demographic Table 3a. Table 3b displays the categorical information regarding gender, ethnicity, and insurance status of the child.

Table 3a. Ratio Demographics of Children in the Study

	Total	Hispanic	African American
	199	103	96
Age of Child			
Mean	2.68	2.77	2.54
Std. Deviation	1.22	1.13	1.29

Table 3b. Categorical Demographics of Children in the Study

	Total Sample	%	Hispanic	% of Hispanic group	African American	% of African American group
	199	100	103	51.2 (% of total)	96	47.8 (% of total)
Gender						
Females	101	50.7	56	54.4	45	46.9
Males	98	49.3	47	45.6	51	53.1
*Insurance Status of child						
Not Insured	7	3.5	6	5.8	1	1
MediCal	130	65.7	48	46.6	*82	85.4
Private	62	30.8	49	47.6	13	13.5

*Indicates a statistically significant difference (p<.01) between the Hispanic and African American ethnic groups (African American > Hispanic)

Gender (50.7 percent female, 49.3 percent male) and ethnicity (51.2 percent Hispanic, 47.7 percent African American, 0.9 percent other) of children were equally distributed. Almost all the children (96.5 percent) had some form of health insurance. However, Chi-square analysis revealed that it was statistically significant that most African American children had MediCal as their health insurance. In addition, compared with the adults, more children were covered by MediCal (65.7 percent vs. 50.2 percent) than with private insurance (30.8 percent vs. 35.3 percent). The McNemar test indicated that there was no statistically significant difference between types of health insurance held by children and their parents.

Chi-square analysis also indicated statistically significant differences between the two ethnic groups. African American children live more often in single-parent family structures (p<0.001) versus Hispanic children who are more likely to live in two-parent homes. African American parents (62 percent of the African American sample versus 36 percent of the Hispanic sample) more often reported a yearly household income between $0-$14,999 ($p<0.001$); There was a more equal distribution between yearly household income categories ($0-above $40,000) in the Hispanic group.

There was no statistically significant difference in age between the two ethnic groups. However, independent t-test analysis revealed that there was a statistically significant ($p<0.001$) difference in the years of education completed by African Americans and Hispanics. In this sample, the mean years of school completed by Hispanics was approximately at the grade 10 level versus African Americans who more often had completed grade 12. The difference in years of completed education, between the two ethnic groups, could be as little as one year to as much as three years.

Reliability Estimates of the Instruments

In order to determine the reliability of the FSIIR, CES-D, FES, and PBC, Cronbach's alpha coefficient was used to examine the internal consistency of each instrument. Since there are few studies which have examined the internal consistency for these instruments in a Hispanic or African American population, these results were compared to Nunnally's (1978) accepted standard of a correlation of 0.70 or higher

Tables 4, 5, 6, and 7 displays how the instruments performed in this study compared to how they performed in past studies.

Table 4. Cronbach's Alpha for FS IIR (14-item short-form)

	Present Study (n=191)	Lewis, et al (1989) (n=113)	Stein & Jessop (1990) (n=732)
Cronbach's Alpha	0.73	0.78	0.86

Table 5. Cronbach's Alpha for CES-D (10-item short form)

	Present Study (n=195)	Andresen, et al. (1994) (n=1,206)
Cronbach's Alpha	0.74	Not reported (used dichotomous screen)

Table 6. Cronbach's Alpha of Two Subscales for the FES-(40-item short form)

Subscale	Present Study (n=195)	Moos (1974) (n=285)
Conflict	0.04	N.R.
Cohesiveness	0.39	N.R.

N.R.-internal consistencies not reported for the short form scales

The Cronbach's alpha ranged from 0.04 to 0.39 for the two FES subscales. Given that none of these subscales had an acceptable Cronbach's alpha in this sample, they were not used in the regression analyses.

Table 7. Cronbach's Alpha for PBC Subscales (32-item short form)

Subscale	Present Study	Fox (1994) (n=1,056)
Nurturing (n=191)	0.66	.73
Expectations (n=191)	0.84	.93
Discipline (n=193)	0.81	.85

The Cronbach's alpha ranged from 0.66 to 0.84 for the three PBC subscales. Upon consultation with dissertation member Dr. Anita Stewart, the researcher made the decision to include the Nurturing variable in the regression analyses even though it does not meet the accepted standard of 0.70. This decision was due to the conceptual importance of parental nurturing and because the alpha approached 0.70.

Table 8 indicates the scale score means and standard deviations of the two ethnic groups, Hispanic and African American. The last two rows of this table show the mean score and standard deviations of maternal and child primary health care utilization.

Table 8. Scale Scores for Sample

	Ethnicity of Child	N	Mean	Std. Deviation	Items and scoring
*Parent-rated General Health Status of the Child					1-item RAND
	Hispanic	103	3.50	0.96	Higher = better rating of health
	African American	96	3.86	1.06	
Functional Status of the Child					14-item FSIIR
	Hispanic	102	36.51	3.60	Higher = better functioning
	African American	96	36.41	3.45	
*Parental Depressive Symptoms					10-item CES-D
	Hispanic	103	6.65	5.87	Higher = more depressive symptoms
	African American	96	9.45	5.87	
*Nurturing subscale	Hispanic	103	30.82	4.97	10-item scale of PBC
	African American	96	32.61	4.83	Higher = more nurturing
Discipline subscale	Hispanic	103	13.36	3.56	10-item scale of PBC
	African American	96	14.18	4.88	Higher = more discipline
Expectations subscale	Hispanic	103	33.23	8.25	12-item scale of PBC
	African American	96	31.34	9.98	Higher = more expectations
Maternal Utilization for the Year					
	Hispanic	103	3.34	3.90	
	African American	96	4.73	6.03	
Actual visits of Child	Hispanic	96	5.32	3.35	
(primary care)	African American	90	4.47	2.90	

*Indicates a statistically significant difference ($p<0.05$) between the two ethnic groups.

There were no statistically significant differences between the two ethnic groups on the "Functional status of the Child," "Discipline" or "Expectations" subscales, "Maternal Health Care Utilization," or "Actual Number of Visits a child made to his/her primary health care provider". However, independent t-tests reveal statistically significant differences between the two ethnic groups on three scales: "The Parent-rated General Health of the child," "Parental Depressive Symptoms," and the "Nurturing subscale". African American parents reported slightly better ratings for their child's general health than Hispanic parents. African American parents also reported higher nurturing scores than their Hispanic counterparts.

The largest difference between the means occurred between the two ethnic groups' scores on the CES-D (Parental Depressive Symptoms). Children who were African American had parents who scored significantly higher (worse) on this scale than children who had Hispanic parents. Not only is the difference between the African American and Hispanic parents statistically significant, it is also clinically significant. The cutoff score for identifying persons as being likely to have "depressive symptoms," for the 10-item version of the CES-D is ≥10 (Andresen, Malmgren, Carter, & Patrick, 1994). Approximately 42 percent (40/96) of the African American sample scored ≥10, whereas 23 percent (24/103) of Hispanic parents scored ≥ 10 on the CES-D short-form.

Regression Analyses

Excluded Variables

Four of the independent variables were excluded from the model. "Family conflict" and "Family cohesiveness" were excluded since Cronbach's alpha was not acceptable. The "Parent expectations" variable was excluded due to multicollinearity

(0.70) with the variable “Age of the child” as well as the difficulty in the interpretation of this scale. Finally, “Health Insurance of the child” was excluded since only seven children (3.5 percent of sample) did not have health insurance.

In order to be included in the first regression model, subjects needed to complete both the baseline interview and still use VHS as their child’s primary health care site six months after the baseline interviews was administered. A total of 187 families successfully completed the study. The main reasons for losing study subjects included: 1) families moved out of the Mission District neighborhood where the clinic was located (n=6), 2) families moved out of the state of California (n=5), and 3) families chose to take their children to a different clinic for their primary care (n=1). Of the 187 subjects who completed the study, 178 study participants were included in the first regression analysis. No statistically significant differences of either sociodemographics or measures were found between the 178 people who were included in the first regression analysis and the 21 study participants who were not included (due to incomplete data) in this analyses.

Study subjects needed to complete baseline interviews in order to be included in the second regression model. As noted above, a total of 199 individual children and their families were recruited and enrolled in the study. Of the 199 study participants, 190 were included in the second regression analysis. Again, no statistically significant differences of either sociodemographics or measures were found between the 190 people who were included in the second regression analysis and the 9 study participants who were not included (due to incomplete data) in this analysis.

Main Regression Models

Model I

Table 9 displays the Pearson Correlations for the first regression model in the study. Independent variables include: "Maternal Utilization for the Year," Parental Depressive Symptoms," "Nurturing subscale," "Discipline subscale," Functional Status of the Child," "Parent-rated General Health of the Child," "Yearly Household Income," "Years of Education Completed by the parent," "Age of Child," "Gender of Child," "Ethnicity of Child," and "Marital Status". The dependent variable was the "Child's Actual Number of Primary Health Care Visits for the year". Several correlations were significant at the $p<.05$ and at the $p<.001$ level.

Table 9. Pearson Correlation of Factors Influencing Children's Health Care Utilization

	Actual number of visits for the year	Maternal Utilization for the year	Parental Depressive Symptoms	Nurturing subscale	Discipline subscale	Functional Status of the Child	Parent-rated General Health	Years of school completed	Household income	Age of child	Gender of child	Hispanic vs. African American	Marital Status (Married vs. Single)
Actual number of visits for the year	1.00												
Maternal Utilization for the year	-. 099	1.00											
Parental Depressive Symptoms	.054	**.196	1.00										
Nurturing subscale	.016	-.069	-.103	1.00									
Discipline subscale	-.087	**-.245	**..311	-.070	1.00								
Functional Status of the Child	-.096	-.022	**-.411	**..254	**-..242	1.00							
Parent-rated General Health	**-.257	.020	**-..230	.049	-.123	**..337	1.00						
Years of school completed	**-.211	.011	.001	**..255	.056	.014	*.155	1.00					
Household income	-.112	-.114	*-.165	.030	**-..230	*.126	. 098	*.174	1.00				
Age of child	**-.215	-.039	-.021	.071	*.136	-.030	-.121	.055	-.024	1.00			
Gender of child	.054	-.050	-.024	-.094	-.006	-.072	-.038	-.059	-.072	-.061	1.00		
Hispanic vs. African American	115	*-.136	**-.208	**-.180	*-.131	.017	*-.159	**-.364	**..322	.093	-.055	1.00	
Marital Status (Married vs. Single)	-.023	*.164	**..235	**..190	.079	.084	.013	**. 198	**-.302	.012	.040	**-.563	1.00

*p<.05, **p<.001

Table 10 displays the model summary for the hierarchical linear regression. The variables were entered into the model in a specific order to test any independent effects between variables of interest and the dependent variable. However, only steps three and four, where child health and family sociodemograpics entered the model, were statistically significant.

Table 10. Model Summary for Children's Health Care Use as the Dependent Variable (n=178)

Model	Adjusted R Square	R Square Change	F Change	Sig. F Change	Standardized Coefficient	Significance	Partial R^2
Step 1	.004	.010	1.755	.187			
Maternal Utilization for the Year					-.085	.258	.01
Step 2	.001	.014	0.806	.492			
Parental Depressive Symptoms					.029	.727	.00
Nurturing subscale					.099	.202	.01
Discipline subscale					-.081	.305	.00
Step 3	.056	.064	5.998	.003			
Functional Status of the Child					-.042	.619	.00
General Health Status of the Child					-.230	.004	.04
Step 4	.129	.101	3.411	.003			
Years of School Completed					-.121	.145	.01
Yearly Household Income					-.124	.134	.01
Age of the Child					-.248	.001	.05
Gender of the Child					.022	.760	.00
Hispanic vs. African American					.116	.235	.01
Marital Status (Marital vs. Single)					.026	.773	.00

Note: Regression coefficients are standardized so that they represent the amount of change in the dependent variable that is attributable to a one unit change in the standard score of the predictor variables, independent of all other variables examined.

The dependent variable in the first hierarchical regression was the child's number of visits to his/her primary health care provider. Analysis of variance showed that for the overall model, only the third (p<.05) and fourth (p<.01) steps were statistically significant. In addition, the residual analysis showed that the data fit all assumptions of multiple regression.

The independent variables were entered into the analysis in a hierarchical linear manner in order to examine any possible unique contributions variables might add to the model. In the first step, the total sum of "Maternal Primary Health Care Utilization for the year" was entered. Next, variables which have rarely been studied in relation to children's health care utilization were entered: "Parental Depressive Symptoms," "Nurturing subscale" score, and the "Discipline subscale" score. In the third step, the health status variables, "Functional Status of the Child" and "Parent-rated General Health of the child," were entered. Finally, in the fourth step, the main demographic variables were entered: "Yearly Household Income," "Years of Education Completed," "Age of Child," "Gender of Child," "Ethnicity of Child," and "Marital Status".

The first multiple regression model includes 12 independent variables that combined to account for 13 percent of the variance, summarized in Table 10. In the final step, the significant (p<.05) factors influencing a child's use of primary health care was parent rated general health of the child and the age of the child. The higher the parent's rating of a child's general health, the less primary care he/she used. Further, the younger a child, the more primary care he/she used.

Table 11 displays the Pearson Correlations for the second regression model in the study. Independent variables include: "Nurturing subscale," "Discipline subscale," "Parental Depressive Symptoms," "Parent-rated General Health of the Child," "Years of School Completed by the Parent," "Yearly Household Income," "Age of Child," "Gender of Child," "Ethnicity of Child," and "Marital Status". Given that the researcher viewed a global measure of a child's health status (which most likely takes into account mainly the child's physical health status) as one component of child health, the dependent variable was the "Functional Status of the Child" in this model. The tool which measured functional status was designed to measure physical, social, and psychologic domains of child health. Several correlations were statistically significant at the $p<.05$ level and the $p<.01$ level.

Table 11. Pearson Correlations for Factors Influencing Functional Status of the Child

	Functional Status of the Child	Nurturing subscale	Discipline subscale	Parental Depressive Symptoms	Parent-rated General Health	Years of School Completed	Yearly Household Income	Age of child	Gender of child	Hispanic vs. African American	Marital Status (Married vs. Single)
Functional Status of the Child	1.00										
Nurturing subscale score	**.268	1.00									
Discipline subscale score	**-.222	-.071	1.00								
Parental Depressive Symptoms	**-.393	-.095	**.258	1.00							
Parent-rated General Health	**.329	.065	*-.144	**-.177	1.00						
Years of School Completed	-.003	**.238	.046	.010	*.143	1.00					
Yearly Household Income	.116	.038	**-.210	**-.188	**.181	.097	1.00				
Age of Child	.022	.072	*.169	-.048	*-.132	.076	.004	1.00			
Gender of Child	-.053	-.097	-.026	-.029	-.030	-.085	-.091	-.098	1.00		
Hispanic vs. African American	.000	**-.197	-.101	**-.228	**-.189	**-.349	**.331	.095	-.063	1.00	
Marital status (Married vs. Single)	-.080	**.200	.071	**.264	.027	**.176	**-.305	.013	.017	**-.561	1.00

*p<.05, **p<.001

Table 12 displays the model summary for the hierarchical linear regression. Again, variables were entered into the model in a specific order to test the individual effects of variables of interest with the child's functional status. This table shows that variables entered both at step one and step two were statistically significant at the p<.01 level. Variables entered at step three were not statistically significant.

Table 12. Model Summary for Functional Status of the Child as the Dependent Variable (n=190)

	Adjusted R Square	R Square Change	F Change	Sig. F Change	Standardized Coefficient	Significance	Partial R^2
Step 1	.209	.222	17.650	.000			
Nurturing Subscale					.236	.001	.05
Discipline Subcale					-.083	.222	.01
Parental Depressive Symptoms					-.299	.000	.07
Step 2	.265	.059	15.056	.000			
General Health Status of the child					.249	.000	.05
Step 3	.254	.013	.558	.763			
Years of School completed by the Parent					-.115	.119	.01
Yearly Household Income					.043	.556	.00
Age of the Child					.006	.930	.00
Gender of the Child					-.042	.513	.00
Hispanic vs. African American					-.072	.415	.00
Marital Status (Married vs. Single)					-.055	.489	.00

Note: Regression coefficients are standardized so that they represent the amount of change in the dependent variable that is attributable to a one unit change in the standard score of the predictor variables, independent of all other variables examined.

The independent variables were entered into the analysis in a hierarchical linear manner in order to examine any possible unique contributions variables might add to the model. Analysis of variance showed that the overall model was statistically significant

($p<.01$) at each step. Similar to the regression model where the child's utilization of primary care was the dependent variable, the residual analysis showed that the data fit all assumptions of multiple regression.

In the first step, variables which have rarely been studied in relation to children's functional status were entered: "Parental Depressive Symptoms," "Nurturing subscale score," and "Discipline subscale score". Next, "Parent-rated General Health of the Child" was entered. Finally, all main demographic variables were entered: "Yearly Household Income," "Years of Education Completed by the Parent," "Age of Child," "Gender of Child," "Ethnicity of Child," and "Marital Status".

The second multiple regression model includes 10 independent variables that combined to account for 19 percent of the variance, summarized in table 14. However, this model accounts for 25 percent of the variance. The significant ($p<.01$) factors influencing a child's functional status included the amount of nurturing a child received, parental depressive symptoms, and parent's perceived general health of the child. The more parental nurturing a child received, the higher his/her functional status. The more depressive symptoms a parent reported, the lower the child's reported functional status. Finally, the higher the parent's perception of the child's general health, the higher the reported functional status of the child. None of the demographic characteristics appeared to have any affect on a child's functional status.

Sub-Models

Given that there were statistically significant differences between the two ethnic groups, two additional sub-models were tested. First, two different multivariate analyses (sub-model 1a and 1b) were performed according to ethnicity of the child. Variables were entered into the model in the same order as the main regression model examining the affect of variables on children's health care use. The dependent variable remained the "Actual Number of Visits a child had to his/her primary health care provider". Independent variables included: "Maternal Utilization for the year," "Parental Depressive Symptoms," "Nurturing subscale," "Discipline subscale," "Parent-rated General Health of the Child," "Years of School Completed," "Yearly Household Income," "Age of Child," "Gender of Child," and "Marital Status". Since the general health status of the child accounted for all the variance between the two health measures, the decision was made to exclude "Functional Status of the Child" due to a decrease in sample size. No other variables were excluded from this analysis since all other variables are considered conceptually important.

The regression analysis for the African American children contained 85 cases. This model (sub-model 1a) explained a total variance of 21 percent, as seen in table 13. Analysis of variance showed that the overall model was statistically significant only at the last step ($p<.002$). Thus, only step four of the model was examined for variables that had a strong effect on children's use of healthcare.

Table 13. Model Summary for African American Children Only (n=85)

Model	Adjusted R Square	R Square Change	F Change	Sig. F Change	Standardized Coefficient	Significance	Partial R^2
Step1	-.010	.002	.167	.683			
Maternal Utilization for the Year					.028	.808	.00
Step 2	.007	.052	1.472	.228			
Parental Depressive Symptoms					.038	.736	.00
Nurturing subscale					.080	.460	.01
Discipline subscale					-.157	.181	.02
Step 3	.067	.068	6.115	.016			
Parent-rated General Health of the child					-.358	.001	.11
Step 4	.211	.182	3.882	.004			
Years of School Completed					-.157	.176	.02
Yearly Household Income					-.017	.879	.00
Age of the Child					-.378	.001	.12
Gender of the Child					.087	.405	.01
Marital Status (Married vs. Single)					.056	.583	.00

Note: Regression coefficients are standardized so that they represent the amount of change in the dependent variable that is attributable to a one unit change in the standard score of the predictor variables, independent of all other variables examined.

As expected, most of the variance in the main regression model can be explained when the model is tested in African American children. The partial correlations for the final step for sub-model 1a show that the statistically significant variables were the same as in the main regression model: "Parent- rated General Health of the Child" and "Age of the Child" (Table 10).

The regression analysis for Hispanic children contained 92 cases. This model (sub-model1b) explained only 4 percent of the total variance. Analysis of variance showed that the overall model was not statistically significant, therefore, the investigator did not examine each step in the hierarchical linear regression.

The second sub-model examined the effect of poverty on children's health care utilization. In order to magnify the effect of the "yearly household income" variable all families who made between $10,000-$19,999 were excluded from this model. If there were any statistically significant effects due to poverty, then this would become apparent in the last step when all the sociodemographic variables are entered into the model.

The dependent variable for sub-model two remained the same: "The Actual Number of Visits a child had to his/her primary health care provider". Independent variables also remained the same as the main regression model where variables were examined in relation to children's health care use.

The total number of cases for this model was 116. This model (sub-model 2) accounted for 12 percent of the variance. Analysis of the variance showed that only step three ($p<.05$) and step four ($p<.05$) were statistically significant. However, only the variable added at step three (parent rated general health of the child) was statistically significant. The sociodemographic variables, which were added in the final step, were not statistically significant even after excluding families whose household income was between $10,000 and $29,999.

Research Questions and Hypotheses Answered

In order to answer questions one, two, and three a hierarchical linear regression was completed where the child's use of primary health care was the dependent variable.

Primary Questions

1) To what extent do parent/family factors explain variance in children's health care utilization?

Steps one and two in the second regression model included the parent/family factors of interest. The analysis of variance showed that the overall model at both these steps was not statistically significant. In addition, there was no statistical significance at either step. Given that neither of these steps was statistically significant, it appears that parent/family factors do not help to explain children's health care utilization.

2) What is the effect of child health status on child health utilization?

The overall model at step three was statistically significant. Further, when child health status, which was measured using the parent-rated general health of the child and the FS IIR, was added to the model, six percent of the variance was accounted for. Upon examining the standardized coefficients, a child's functional status was not statistically significant in this regression model. However, the general health status of the child remained statistically significant both at step three and when all the variables were in the model. Thus, the child's perceived general health status influences a child's use of primary health care.

3) To what extent do sociodemographic/financial factors explain variance in child health care utilization?

Given that the overall model at this step was statistically significant, the investigator examined the final step in this model. Sociodemographic/financial factors accounted for another six percent of the variance. The standardized coefficients showed that a child's age was the only statistically significant variable of the sociodemographic/financial variables that were added to the model. The child's age accounted for six percent of the total variance in the model. Thus, sociodemographic/financial factors, specifically a child's age, do account for some of the variance in a child's health care utilization.

To answer questions four, five, and six a second regression model was completed.

Secondary Questions

4) Do specific parent/family factors including parents' behavior and/or parents' depressive symptoms explain variance in children's (aged 1-5) functional status?
    (a) Do parents' behaviors as measured by the Parenting Behavior Checklist (PBC) (discipline, nurturing, expectations) explain variance in children's health?
    (b) Does the family environment as measured by the Family Environment Scale (FES) (family conflict, family cohesion) explain variance in children's health?
    (c) Do parents' depressive symptoms as measured by the Centers for Epidemiologic Studies on Depression (CES-D) explain variance in children's health?

Step one accounted for 21 percent of the explained variance in this model. The standardized coefficients for step one indicate that all variables (nurturing subscale, discipline subscale, and parental depressive symptoms) entered in this step were statistically significant. In addition, when all the variables are entered into the model, the effect of parental nurturing and parental depressive symptoms remains statistically significant. However, parental discipline does not remain statistically significant in the final model. Therefore, certain parent/family factors are associated with a child's functional status.

5) Does a child's general health status (rated by the parent) explain variance in his/her functional status?

In step two of this regression model, the child's general health score was entered. This variable accounts for five percent of the total explained variance in the model. A statistically significant effect was found both at step two and in the final step. Thus, parent's perceptions of the child's general health status is associated with functional status.

6) Do sociodemographic and financial factors explain variance in children's functional status in a low-income, minority population?

Although not statistically significant, sociodemographic and financial variables which were entered in the final step explained one percent of the variance in this model. Given the results of this step, sociodemographic and financial factors do not contribute in a statistically significant way to our understanding of factors associated with a child's functional status.

Chapter V

Discussion

Introduction

The purpose of this study was to predict the relationships between a number of predisposing, enabling, and need variables and child functional status as well as visits to the child's primary health care site. The findings indicate that different factors affect children's health care use versus those that affect a child's functional status. This chapter presents the interpretation of the findings and acknowledges the limitations of the study. Finally, implications for nursing research are discussed.

Meaning of Findings

Sample

This study is unique in that it examined the use of health care and functional status of two racial/ethnic groups, African American and Hispanic. Despite statistically significant differences in sociodemographic characteristics between the two groups, overall, this sample remains fairly homogenous. Many enabling factors such as health care costs and access to care were held relatively constant in this study of a community-based pediatric clinic. At this clinic a provider saw any family who needed health care. Almost all families had health insurance coverage, low educational attainment, and a low income. In studying pediatric health care utilization, past studies (Newacheck, 1992; Riley, et al., 1993; Tessler & Mechanic, 1979) have mainly used large national data sets that contain many thousands of children and their families or more than one study site. Given the homogeneity of this sample, it is not surprising that the regression analyses in this study did not explain much of the variance or that only a few of the independent

variables were not found to be statistically significant. In addition, the sample size was too small to test for possible interactions between variables (e.g. parenting behaviors and a child's health and functional status).

Instruments/Measures

Four independent variables were excluded from the analysis. "Insurance of Child" was excluded since 96.5 percent of the study sample had insurance. The Family Environment Scale (FES), which contained two measures of interest, "Family Conflict" and "Family Cohesion", were dropped from the regression analyses since the internal consistency was poor. Although Moos (1974) reports the internal consistency to range from 0.64 to 0.79 for the long form, the internal consistency of the short form for this sample ranged from 0.02 (for the conflict scale) to 0.36 (for the cohesiveness scale). The reliability estimates for this sample were even lower than those found by Loveland-Cherry and colleagues (1989) (0.23 to 0.75) in their study of 257 individuals, using the long form.

One reason for the lower internal consistency estimates could be the socioeconomic and racial/ethnic makeup of this study sample. Loveland-Cherry and colleagues (1989) tested the FES on a mostly Caucasian, two-parent, married sample. Moos (1974) tested his instrument, the FES, on a study population (which included African American and Mexican American families) recruited through churches, newspaper advertisements, and high-school children. Although Moos does not discuss the demographics of his sample, one can make at least two assumptions about his population. First, children who attend church usually have married parents, all of whom live in a single dwelling. Second, recruiting families through newspaper advertisements assumes that everyone has access to a newspaper and can read at a grade five level.

This study sample consisted of mainly African American families, who were mostly single mothers, and two-parent Hispanic families. Many single parents answered "no" to statements which they felt did not pertain to their situation. Take the statement, "We tell each other about our personal problems". Many of the single parent families, which were female headed, would simply answer "no" because she did not tell her children about her personal problems.

In order to obtain more consistent answers from a study population, Loveland-Cherry and colleagues (1989) recommend a Likert type format rather than the present dichotomous "true, false" format. In addition to this recommendation, revising existing items to reflect cultural norms for different racial/ethnic groups may be appropriate. Although all families' most likely experience conflict and possess cohesiveness, the statements in the FES may not have captured these constructs in a culturally sensitive method. For example, many of the African American families had difficulty answering the statement; "We often seem to be killing time at home". Although this statement is supposed to represent the construct of family cohesiveness, it is possible that many families in this sample would not use the statement of "killing time at home" in their description of this construct.

Parents often asked what was meant by "killing time". For many Hispanic parents, this phrase was an "American saying". African American parents would quickly respond to this statement by telling the researcher that "they were always busy doing stuff and not just sitting around". Given that there is a general assumption of diminished

work ethic among African Americans (Moore & Pinderhughes, 1993), it could be that African American parents thought that this question was attempting to stereotype them. This particular phrase either was not understood or elicited a defensive response from many study participants.

The format of two statements: "Family members rarely become openly angry and Family members hardly ever lose their tempers" was confusing to subjects. Both of these statements require an individual to give an answer that was not intuitive. Many times, parents would answer "no or false" to this statement when in fact, they meant to answer "yes or true". Although the statement was being read to each individual, respondents seemed to ignore the words "rarely and hardly ever", thus giving an answer that did not accurately depict their family environment.

The fourth measure excluded from the analyses was the "Expectations subscale". The Pearson correlation between the "Expectations subscale" and "Age of Child" showed signs of multicollinearity (r=.70). As expected, a parent's expectations increased as the child's age increased. In addition, the raw scores from the Expectations subscale were difficult to interpret since the age of the child ranged from one to five. Fox (personal communication, 1999) recommends converting the raw score to a standardized T-score in order to interpret the data. However, there were no conversion tables available at the time of this study.

Interpretation of the Expectations subscale is also difficult since conceptually, extreme parental expectations in either direction (high or low) could result in either positive or negative outcomes for a child (personal communication with Fox, 1999). Very high expectations could result in encouragement of achievement (positive) or in excessive pressure to succeed (negative). On the other hand, very low expectations could be equated with giving a child independence to learn (positive) or parental laxness, which may lead to behavior problems related to lack of parental guidance (negative) (Brenner & Fox, 1999).

Model I-Children's Health Care Utilization as the Dependent Variable

Based on the results of this study, few predisposing, enabling, or need factors appear to be related to the probability of a child visiting their primary health care provider. This is due, in part, to some of the limitations of the study which will be discussed later in the paper. Two variables, a child's age and the parents' perceived general health of the child had the strongest effect on a child's use of health care.

Given that this sample had a fairly young population of study participants, the strong effect of the predisposing variable, a child's age, on health care use is expected. This effect of a child's age on his/her health care utilization is consistent with virtually all other studies. The younger a child, the more health care he/she will use.

The next best predictor of a child's health care use for this sample was a need variable, the parent's perceived general health of his/her child (higher scores indicated that the child's general health was better). Also consistent with most other studies, as the parent's perception of his/her child's general health decreased, the child's health care visits increased.

It is intriguing that of the two health measures, only the parent's perceived general health of his/her child appeared to influence children's health care use. However, Pearson correlations showed that the higher a child's functional status, the higher his/her general health was rated. Given that functional status and the child's general health rating are positively correlated (r=.33) at a statistically significant level (p<.01), it may be that the child's general health rating is a proxy in the linear regression equation when predicting utilization in children. Thus, only when a parent perceives his/her child to need health care will a health care provider then see the child. An alternative explanation is that measures which tap parents' perceptions of their children's functioning may remain relatively stable over time and not reflect recent changes in functioning (even though the functional status questions were asked about the last two weeks) (Lewis, Pantell, & Kieckhefer, 1989). The parent's perception about a child's general health may change more frequently, depending on whether or not the child is ill.

Parental use of their primary care was found not to be related to their child's primary health care utilization, in this study sample. This result is somewhat surprising since past studies have shown maternal utilization to be a powerful predictor of child use (Newacheck & Halfon, 1986; Riley, et al., 1993; and Wolfe, 1980). However, most past studies had samples which contained mainly Caucasian (between 75 percent to 90 percent) study participants. It is possible that parental utilization (either maternal or paternal) is not a powerful predictor of children's utilization in Hispanic or African American families. Although Guendelman and Schwalbe (1986) did not include parental utilization as a variable in their study of medical care utilization by Hispanic children, these investigators did find that different predictors influenced the volume of a child's health care visits in different racial/ethnic groups. Health status was the best predictor of volume in the Hispanic group whereas age followed by health status was the best predictor of volume in the African American group (Guendelman & Schwalbe, 1986).

Another reason why parental utilization may not be a powerful predictor of children's utilization could be due to recall bias. With the exception of Riley and colleagues (1993) study using a health maintenance organization's database, most past studies have relied upon the mother's (or father's) report of both the child's health care use and parental self-report of his/her own use of health care. Remembering how many times in the past six months a child visited their primary health care was not immediately or easily recalled by most parents participating in this study (hence the use of chart data for children's health care use). Similarly, parents had difficulty remembering how many times they had visited their primary health care provider in the last six months. The problem with recall appeared even more difficult for parents who had more than one child. Given that parent's use of their primary health care provider could only be collected via self-report, underreporting or overreporting of parental health care use could account for why this variable was not a powerful predictor in this sample.

Other researchers have raised concerns about the validity of self-reported provider visits relative to medical records. Cleary and Jette (1984) found that at least ten percent of their sample had discrepancies of four visits or more. In another study report that researchers found that 27.8 percent of patients overreported the number of physician visits while 44.1 percent underreported this number (Glandon, Counte, & Tancredi, 1992). Specific to children, a study on proxy respondents of the 1978 National Health Interview Survey found that four percent of parents under-reported physician visits in the last year and two percent underreported hospitalizations in the past year (Mosely & Wolinsky, 1986).

None of the enabling variables that were of specific interest (parenting behaviors and parental depressive symptoms) had a strong effect on children's utilization of health care. There are two possible reasons why parenting behaviors didn't have any affect on utilization. First, it is possible that the subscales are not being optimized to capture an accurate picture of parenting behaviors. Although only two subscales (nurturing and discipline) were used in this study, there are presently three subscales (higher scores = more nurturing, discipline, and expectations) which give three different scores. The designer of the Parenting Behavior Checklist (PBC) recently completed a study that examined the relationship between known determinants of behavior problems in young children and clusters of parenting behaviors (Brenner & Fox, 1999). However, there is no current method to take these scores and reliably "classify or profile" parents into categories such as Baumrind's (1986) parenting styles (authoritarian, authoritative, and permissive). Perhaps when the PBC can be used to reliably classify parents, the relationship between children' health care use and parenting can be revisited.

Second, it could be that the constructs of parental nurturing and discipline, as measured by the PBC are, in fact, not directly related to children's use of health care. Although it is known that parents influence their children's use of health care, it is only known that parent's beliefs about health directly influences a child's use of health care. Tinsley & Holtgrave (1989) found that the extent to which mothers believe in their control over their infant's health is related to the frequency and timeliness of their use of preventive health services. These researchers successfully related parental health beliefs (the parents' health locus of control concerning their children) to parent utilization of childhood preventive services. Based on the results of this study, both nurturing and discipline have some effect on a child's functional status. It could also be that there is a complex effect between parenting behaviors, a child's health and functional status, and the child's use of health care.

Parental depressive symptoms (higher scores indicate more depressive symptoms), as measured by the CES-D, may also have a complex effect rather than a direct one on utilization. Although parental depressive symptoms have a strong effect (more depressive symptoms = lower functional status) on a child's functional status, these symptoms do not necessarily mean that a child will have higher or lower utilization. Again, there could be an interaction between parents' depressive symptoms and a child's functional status. One explanation is that the effect of parental psychological distress in relationship to higher health care use is associated more with Caucasians than with other racial/ethnic groups (Riley, et al., 1993). Thus, this study would not have found a significant relationship between parental depressive symptoms and children's use since there were no Caucasians included in the sample. A related possibility is that racial/ethnic groups other than Caucasians have a higher threshold for responding to symptoms with health care seeking (Riley, et al., 1993).

Model II-Functional Status of Children as the Dependent Variable

Szilagyi & Schor (1998) state that child health is a multidimensional state which contains four general categories: biological and physiological, symptoms (which refers to specific symptoms noted by patients and which often affects health care seeking behavior), functional status (which refers to the ability of patients to function within their environment), and perceived well-being. Functional status was used as a dependent variable (versus the child's general health status) in this model since the researcher was examining the effects of the family environment (e.g. parenting behaviors, parental depressive symptoms) on the child's health. Further, there is no single definition of child health that has served all purposes or has been adopted universally (Szilagyi & Schor, 1998). The FSQ-S was designed to measure a child's functional status, which includes the physical, social, and psychologic domains of child health (Lewis, et al., 1989; Stein & Jessop, 1990). Further, this measure assesses behavioral responses to illness that interfere with normal social role performance. The results of this study found that two specific variables, namely parent nurturing and depressive symptoms, influenced a child's functional status.

The more nurturing, defined as strategies parents use to promote their child's psychological growth, a child received from his/her primary caregiver, the higher the child's functional status. Even after all other variables were entered into the model, parental nurturing had a strong effect on a child's functional status. This result is not surprising since it has been found that parental warmth consistently predicts favorable developmental outcomes for children (Dix, 1991). Further, Goldberg (1977) state that unresponsive or inconsistent parental actions to a child's signs of illness, hurt, or emotional upset are thought to increase vulnerability to behavioral problems.

Parental discipline is defined as how a parent responded to difficult child behaviors (Fox, 1994). The discipline techniques that this subscale measured were mainly about when and where a parent might use physical punishment (60 percent of questions). Other questions contained in the subscale were about verbal punishment, either yelling at the child (30 percent) or telling the child he/she was bad (10 percent). When the parental discipline variable (p=.08)was entered into the model, it comes close to being statistically significant; the less a parent disciplined their child, the better the child's functional status. However, once all the variables were entered, the effect of parental discipline on a child's functional status decreased and remained statistically insignificant. The relationship between these two variables is interesting since the literature in the area of discipline and health has been scarce and contradictory.

On one hand, Gottman and Katz (1989) report families with marital discord tend to have a parenting style that is cold, unresponsive, angry, and low in limit setting and structuring. Children from such homes tend to play at a lower level with peers, display more negative peer interactions, and have worse health (Gottman & Katz, 1989). On the other hand, power assertion (e.g. physical punishment or displays of anger) from a warm and nurturant parent is more effective than power assertion administered by a parent who is normally cold toward a child (Grusec & Goodnow, 1994).

The lack of a statistically significant finding between parental discipline and a child's functional status could be due to limitations in the study (which will be discussed later) or because the conceptualization of discipline (physical and verbal punishment) is not culturally appropriate. Subjects for the field testing of the Parent Behavior Checklist (PBC) were mothers from a large, urban area in the Midwest. Just over 80 percent of this test population were Caucasian.

Parental discipline in different ethnic/cultural groups has not been studied much in the past. However, since there are other parental practices such as co-sleeping or toilet training that vary between cultures, then it is reasonable to think that discipline could also vary between cultures. For example, parent-child co-sleeping is culturally appropriate and considered "normal" in most cultural groups outside the U.S. (Pachter & Harwood, 1996). Lozoff and colleagues (1984) found that cosleeping was routine in 35 percent of Caucasian families and 70 percent of African American families in the U.S. It was also found that these sleeping arrangements in Caucasian families were associated with family stress, disruptive sleep problems, ambivalent maternal attitudes toward the child, and lower parental education. In the African American families, cosleeping was not associated with stress, ambivalence, or sleep problems.

The predisposing variable of "Parental Depressive Symptoms" was another factor found to influence a child's functional status. It was found that the higher the parental depressive symptoms, the lower the child's functional status. The effect of symptoms of depression remained statistically significant even after all other variables were entered into the model. This result adds to the growing body of literature examining the effect of depression on children's health. Dix (1991) states that children of depressed parents are in poorer physical health than children who do not have depressed parents. This finding shows that not only do children appear to have poorer physical health, they also seem to have poorer behavioral responses to illnesses that interfere with normal social role performance.

Given that little is known about the impact of parental depression on infants and toddlers (Dix, 1991), this finding is of interest. The fact that there is a significant relationship between parental depressive symptoms and child's functional status is expected since mothers who are depressed have been characterized as self-preoccupied, unable to respond to the needs of their children, and are uninvolved in their child's ongoing behavior (Downey & Coyne, 1990). Further, behavior of children is perceived more negatively with mothers who are depressed (Brody & Forehand, 1986).

A statistically significant correlation between "Parental Depressive Symptoms" and parental discipline was also found. The more depressive symptoms (the higher the score, the more depressive symptoms) a parent reported, the higher he/she scored on the Discipline subscale. This result is consistent with what has been found in the past. Depressed mothers show heightened levels of child-directed hostility and negativity, and their attempts to control the child's behavior are marked by coercion rather than by negotiation (Dix, 1991). A strong association was found between hostile child-directed behavior, including shouting and slapping, and mother's depressive symptoms (Panaccione & Whaler, 1986).

In addition to nurturing, discipline, and parental depressive symptoms, the need variable of general health status of a child (the higher the score, the better health the child was rated) was also found to influence a child's functional status. Given that the relationship between a child's functional status and his/her general health status appears to be bi-directional, the child's general health status is seen in the model as a predictor variable. Szilagyi and Schor (1998) state that patients will seek care because they are distressed by symptoms related to a decrease in their functional status or their sense of well-being. In addition, although self-rated general health status has consistently been found to predict mortality and morbidity in adults (Myhre, Stewart, & Yordi, 1996), further research is needed to understand if this same relationship exists between morbidity and mortality in children and parent-rated general health status of the child.

It is not necessarily the case that children's functional status only predicts their general health status. In children, it is possible that general health status (a global measure) is a subset of their functional status (includes physical, social, and psychologic domains of child health). Further, it has been found that bias reduces as the information becomes more specific, whereas it increases for responses to questions evaluating psychological conditions, pain, or quality of life (Fernández, Gispert, Rué, Glutting, Plasència, & Segura, 1999). In step two and in the final step, general health status of the child remained statistically significant. The higher the child's general health, the better functional status the child possessed. This result is expected since a child who is rated to be in better health should be healthier and thus have less behavioral responses to illness.

The Pearson correlation showed that general health of the child was significantly associated with a child's functional status. However, the correlation was not large enough to suspect multicollinearity. Therefore, this result leads one to believe that health status and functional status are measuring two different concepts. The one-item question measures the parent's perception of his/her child's general health. The FS IIR specifically measures the parent's perception of his/her child's general, physical, role, and behavioral functioning (Szilagyi & Schor, 1998). A tool, such as the FS IIR that will measure aspects of a young child's health is important since most child health measures are specific to school-aged children or adolescents.

None of the sociodemographic variables seemed to have a statistically significant effect on a child's functional status. This finding could be related to some of the study limitations, which will be discussed later in this paper.

Sub-models

Together sub-models 1a and 1b encourage researchers to explore how race/ethnicity affect health care use. When separate regression analyses were completed, the African American group appears to account for most, if not all the variance in Model

II. Perhaps the specified model does not accurately capture factors influencing Hispanic children's health care utilization. Past researchers who used many of the same variables found fewer significant differences in factors contributing to health care use (versus entry into a health care system) among Hispanics, African Americans, and Caucasians (Guendelman & Schwalbe, 1986). The researcher is in agreement with past researchers that the relationship between race/ethnicity and volume of visits is complex and warrants further exploration.

Significance of the Study

Recruitment and retention of minority populations

This study of a low-income, highly transient minority population adds to our understanding in several areas. First, much was learned in trying to recruit potential participants for the study. Although there are different biases associated with various data collection methods, a multi-mode method is desirable in order to increase the response and completion rate. Telephone administration is a more cost-effective method to collect data. However, many people in this sample did not own telephones or had a contact number of where a message could be left or pager, or the phone number obtained through the clinic was wrong or disconnected. Even after data were collected at time one and contact information updated, when the research team members attempted to reach study participants at time two (6 months later), 40 percent of updated phone numbers were either wrong or disconnected.

Face-to-face interviews are more time-consuming and costly. Yet, when potential subjects were approached in the clinic to participate in the study, the refusal rate was virtually non-existent. Overall, using both telephone and face-to-face interviews

accounted for the 96 percent response rate. Participation in the study would have been more difficult to obtain if only one data collection method was used.

Another recruitment and retention technique felt to be successful by the researcher was the use of incentives. Parents were appreciative of both the children's book (given upon completion of the questionnaire) and the $10 gift certificate (given after completion of the follow-up questions). Although families did not receive a lot of compensation for their time, the value and importance of their participation was communicated through using these incentives.

One factor which was extremely important to obtaining such a high participation and response rate was the acceptance of the research team by the front office staff. These office staff were key personnel in gaining entry to the study population. The families who use VHS as their child's source of primary care have come to this clinic for many years and are very familiar with the front office staff. Often, when a member of the research team approached a potential study participant at the clinic, there was an informal exchange of looks between the front office staff and the parent(s) of the child. It was during these informal looks that the staff would nod to the patients, as if giving their approval to the patients that participating in the study was "okay" and that patients could trust the researchers.

Family Measures

Although the internal consistency reliabilities of the "Parent rated General Health of the Child", the FSQ-S, the PBC, and the CES-D were acceptable for this study, the FES had poor reliability. This finding is significant since the FES was determined to be the best tool to measure family conflict and family cohesiveness. Unfortunately the FES, which was designed in 1974, has not been updated or revised to account for "nontraditional" families such as single parent families. As previously noted, although this tool was designed using families from African American and Hispanic backgrounds, the wording used to represent some of the concepts does not appear culturally sensitive.

It was unfortunate that the family environment variables could not be added to the linear regression equations in this study. The theory that the family environment does affect children's health and their use of health care should be furthered explored. Riley and colleagues (1993) found that family conflict was associated with a higher volume of care. Further, children of single parent families tend to have more physician visits than other children when other factors including need, insurance status, and other demographic characteristics are held constant (Halfon, et al., 1995). Refining or designing measures that are culturally sensitive in addition to taking into account various family configurations would be worthwhile.

Health Measures

Despite the limitations of this study, it adds to our understanding of factors that influence children's functional status and their use of health care. It is possible that a child's functional status is a moderating variable between parenting behaviors and a child's perceived health status. For example, little parental nurturing and more parental depressive symptoms negatively affect the child's functioning. As the child responds to his/her parent by "not eating well, not sleeping well, or seeming unusually irritable", the parent's perception of the child's general health moves from excellent or very good to fair or good. It is then, with the parent's perception that his/her child is less healthy than before, that the child will visit his/her primary care provider.

The Child's Environment

The child's immediate external environment, his/her family, significantly contributes to his/her functional status. More specifically, parent's mental health and their attitudes towards child-rearing affect their child's general, physical, role, and behavioral functioning. Parents are responsible for promoting children's wellness and preventing children's illness from the moment of conception (Tinsley & Lees, 1992). For the reason that a child's family plays an integral role on how well his/her physical, social, and emotional needs are met, future studies examining children's health should include some measure of the family environment.

The relationship between the family environment (e.g. parental attitudes and beliefs) and children's use of health care remains unclear. However, since it is known that some family characteristics (e.g. violence in the family, single parenthood) are risk factors for poor outcomes in children, this relationship should continue to be explored. It is possible that parenting attitudes towards child-rearing has an indirect effect on a child's use of health care but that parenting beliefs has a more direct effect. The concepts of parenting attitudes, beliefs, and behaviors needs to be more clearly defined and the relationships between different variables revisited.

Limitations

There are five chief limitations to this study. First, as previously noted, this study population was fairly homogenous in its sociodemographic characteristics such as family income and children's health insurance coverage. One example is that there was not much variance in the range of family incomes; 88 percent of the families in this study made below $40,000. Sub-model two showed that even with the magnification of the effect of poverty, there was no additional variance accounted for. Despite statistically significant differences in sociodemographics between the two racial/ethnic groups, sub-models 1a and 1b showed that race/ethnicity did not account for more variance in the model.

Another factor thought to influence the range of variables associated with both the functional status of children and children's health care use is the desire for study participants to give answers that were socially acceptable. For example, the reported scores on the Discipline subscale could be the effect of social desirability bias. The range on this scale was from 10-30 (a higher score indicates more use of discipline), however, the mean scale score was 13.92. For this sample, a low score is somewhat unexpected since most literature points out that parents with low socioeconomic status tend be more punitive and power assertive (versus reasoning) (Fox & Solis-Camara, 1997; McLoyd, 1990; and Sachs, Pietrukowicz, & Hall, 1997). Fox & Solis-Camara (1997) found that Mexican fathers from a lower socioeconomic status had higher scores on the Discipline subscale. In addition, McLoyd (1990) reports that mothers who are poor, compared to their more advantaged counterparts, value obedience more, are less likely to use reasoning, and more likely to use physical punishment as a means of disciplining and controlling the child. In the case of single mothers, they were less at ease, less spontaneous, and less responsive to their children's communications (Weinraub and Wolf, 1983).

Third, the sample was biased since study participants were enrolled if they used the clinic as their child's source of primary care. This study examined only children who already had gained entry into the health care system and were visiting the clinic on a somewhat regular basis (all eligible subjects had to have two or more visits during the last year). Children who did not visit the clinic regularly (at least for their yearly well child checkup as well as one other time) were not included in this sample. Thus, it is not known if any of the factors included in the study might have helped a child stay healthy and away from the clinic. Had non-utilizers been included in this study, the findings may have been different. For example, it could be that parents with many depressive symptoms (very high scores on the CES-D) have children who do not see their primary care provider as much as needed.

Internal validity of this study was also threatened because all data were collected using only one measure for each construct. Cook and Campbell (1979) label this type of threat "mono-operation bias", where just one measure is used to represent each of the possible effect constructs. In addition, this study is limited by the "mono-method bias", where all measures use the same means of recording the responses (Cook & Campbell, 1979). Most of the data were collected using parental report. Further, there are specific difficulties in measuring child health using proxy (in this case, parents) respondents (Szilagyi & Schor, 1998).

Lastly, given that the study contained a sample from only one site, the generalizability may be restricted to the current population of clients who use this clinic as their child's source of primary care. This limitation suggests the importance of replicating the study using a broader source of community-based primary care clinic sites. The increasing trend towards a health care system that is integrated through the delivery of primary care (Pew Health Professions Commission, 1995) emphasizes the need to continue studying factors influencing children's use of primary health care.

Implications for Nursing

A lack of statistical significance should not overshadow the importance of these findings in the clinical arena. As noted in an earlier section, more parental nurturing increases the functional status of the child. In addition, a child's functional status is negatively impacted when the parent has more depressive symptoms. If the child's functional status continues to decrease, the parent's perception of the child's general health will also decrease and lead to more health care use by the child.

When a child does visit his/her primary health care provider, routine and systematic assessment of parenting skills should also be included. In addition, since families from disadvantaged backgrounds appear to have more stressors (e.g. low-income, no telephone, lack of transportation), parents should be screened for clinical depressive symptoms. These community-based clinics could provide both a referral system for parents needing mental health services or workshops to improve parenting skills. Another alternative would be to provide more intra- and interdisciplinary health services at one location. A "one stop shopping" approach where families could have the bulk of their health care needs met is likely to improve health outcomes of children as well as parents.

As well as clinical implications for nurses, there are also challenges for nurses to be involved in future research endeavors. This study showed the importance for nurses to be involved in health services research. In the past, much of health services research has focused on how programs (e.g. Child Health Insurance Program) can help individuals. This profession brings the unique perspective of caring for the individual within his/her environment and that children cannot be separated from their families. In order to help refine theoretical models (to include the family unit) in the field of health services research, nurses must continue to use their training and background in this area of inquiry.

Future Research

Based on this study, recommendations for future research can be made. First, validity of the theoretical model and its subsequent analyses must be tested in a larger, more diverse sample. Thus, a study design which incorporates more clinic sites either at the city, county, state, or national level would be appropriate. Working with the designers of established national data sets to include more parenting and family measures in a supplement would be worthwhile. In order to ensure a diverse community sample and increase participation and completion of the study, researchers should use multiple methods of data collection, incentives, and trusted community members.

The current standard and most feasible means of judging child health is through parent assessment. However, in order to decrease biases related to only one method of collecting data (via proxy respondents), future studies should try to incorporate the use of more independent measures. For example, when measuring functional status in healthy children, a researcher could use the assessment of a physician or nurse practitioner in addition to using the FS IIR.

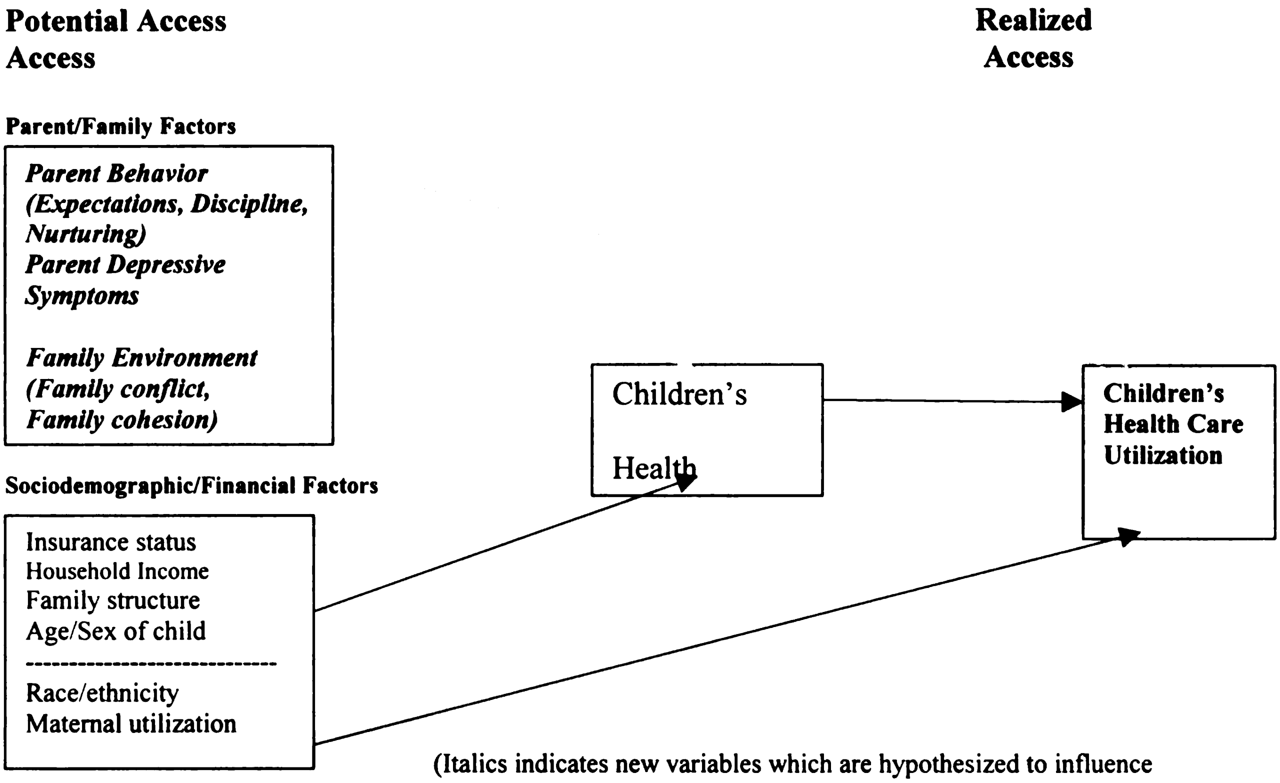
In addition to refinement of existing instruments, more instruments that measure family concepts such as family conflict or family cohesiveness need to be designed. In this study, the family environment could not be examined in relation to a child's functional status or his/her use of health care. However, a child's immediate external environment, his/her family, has been found to influence his/her health behaviors. A dysfunctional family environment (e.g. high family conflict, low family cohesion) predisposes a child to a higher risk for poor social (e.g. ability to develop and maintain social relationships) and emotional health outcomes (Schor, 1995). Examining the family paradigm may be useful in understanding adherence of parents to a child's medical treatments and health care check-ups as well as understanding why some families use more health care services than others.

Equally important is the need to generate more theory and research on parenting taking into account the diversity and complexity of contemporary families. To date, there is a dearth of information regarding parenting constructs such as parental nurturing, expectations, discipline, strain, and competence (Sabatelli & Waldron, 1995). Similar to recommendations concerning family measures, existing parenting measures need to be improved upon and new measures need to be developed.

Another area related to measurement is the need to have instruments which are sensitive to different racial/ethnic groups. This is especially important when measuring family or parenting constructs. For example, the use of corporal and verbal punishment to measure the construct of parental discipline may characterize Caucasian parents but not Hispanic parents. Little work, if any, has been done in this area. Tools that have been designed are mainly available only in English and have been tested for reliability and validity on a mostly Caucasian population.

Finally, in addition to more closely examining the relationship between family functioning and children's health care use and children's functional status, future work is needed in understanding appropriate use of primary health care services. Tied to this research is to examine factors related to inappropriate use of the emergency room. The challenge for nurses will be to continue to be involved in future research and also to design interventions and influence policies that promote appropriate use of health care services, especially in low-income transient populations.

Figure 6. Factors Influencing Children's Health Care Use



(Italics indicates new variables which are hypothesized to influence children's health status and children's health care utilization rates)

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APPENDIX A

TABLE 1.

Pediatric Primary Care Utilization Studies

	Sample Size	Sample Source	Study Design
Tessler & Mechanic, 1978	175 mothers 336 children (<12 yrs)	Prepaid group practice or fee-for-service insurance plan	Prospective Cohort
Wolfe. 1980	1,107 children (1-11 yrs)	1975 Rochester Community Child Health Survey	Retrospective Cohort
Horwitz, et al., 1985	513 children (<5 yrs)	Prepaid group practice affiliated with Yale University	Prospective Cohort
Starfield, et al., 1985	2,250 children (0-12 yrs)	Prepaid group practice in Columbia Medical Plan	Prospective Cohort
Guendelman, et al., 1986	30,286 children (0-17 yrs)	1979 Health Interview Survey (HIS)	Retrospective Cohort
Newacheck, et al., 1986	31,593 children (0-17 yrs)	1978 National Health Interview Survey (NHIS)	Retrospective Cohort
Woodward, et al., 1988	684 children in Ontario 4-16 yrs	1981 Ontario Child Health Study	Retrospective Cohort
Newacheck, 1992	17,110 children (<18 yrs)	1988 National Health Interview Survey (NHIS)	Retrospective Cohort
Short & Lefkowitz, 1992	2,695 children (<4 yrs)	1987 National Medical Expenditure Survey	Retrospective Cohort
Riley, et al., 1993	450 children (5-11 yrs)	Columbia Medical Plan	Retrospective Cohort

TABLE 2.

Predictors of Pediatric Utilization

Study:	Tessler & Mechanic, 1978	Wolfe, 1980	Horwitz, et al., 1985	Starfield, et al., 1985	Guendelman, et al., 1986	Newacheck, et al., 1986	Woodward, et al., 1988	Newacheck, 1992	Short & Lefkowitz, 1992	Riley, et al., 1993
Potential Access										
Predisposing Variables: Financial										
Parent's level of Education	X	X	X		X	X	X	X	X	X
Non-Financial										
Child's Age	X	X	X	X	X	X	X	X	X	X
Sex	X	X	X	X		X		X	X	X
Race/Ethnicity	X	X	X		X	X		X	X	X
Child's Health Status	X	X	X	X	X	X	X	X	X	X
Family environment		X					X			X
Enabling Variables: Financial										
Child's Insurance coverage		X			X	X		X	X	
Family Income	X	X	X		X	X	X	X	X	X
Non-financial										
Family Structure	X	X	X		X	X	X	X	X	X
Mother's Psychological Health	X		X				X			X
Geographic Location of family					X	X	X	X	X	
Need Variables:										
Maternal Utilization pattern		X		X		X		X		X
Child health need	X		X		X			X		
Mother's attitudes and beliefs	X		X							
Realized Access										
Utilization										
Type		X								
Site							X		X	
Purpose	X (illness)		X (illness)						X	
Time Interval: *contact*		X			X	X	X	X		
volume	X	X	X	X	X	X	X	X	X	X

APPENDIX B

Children's Health Care
UCSF Department of Family Health Care Nursing

Instructions: These questions are about you *and* your child. The answers to the questions will help us learn how to improve the care we provide to you and your family.

- Please answer all questions. There are **no right or wrong answers**.
- If you cannot answer a question, just go on to the next question.
- Answering these questions ***will not affect your insurance status or care in any way.***

Statement of Confidentiality

All answers are strictly confidential. The answers will be used only for this study. This information will not be given to anyone without your consent, except as required by law.

THANK-YOU!!!

Valencia Pediatric and Family Practice
University of California, San Francisco

Your Child's General Health

Instructions: This information is about your child's general health. Read each question carefully. **Fill in the circle** of the *one answer* that most closely fits your child. **Do not skip any question**. Please begin with the first question.

1. In general, would you say your child's health is Excellent, Very Good, Good, Fair, or Poor?

Excellent ○
Very Good ○
Good ○
Fair ○
Poor ○

2. During the **past 3 months**, how much have you worried about your child's health?

A great deal ○
Somewhat ○
A little ○
Not at all ○

3. During the **past 3 months**, how much pain or distress has your child's health caused him or her?

A great deal ○
Somewhat ○
A little ○
None at all ○

4.

	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
A. This child's health is excellent.	○	○	○	○	○
B. This child seems to resist illness very well.	○	○	○	○	○
C. This child seems to be less healthy than other children I know.	○	○	○	○	○
D. When there is something going around, this child usually catches it.	○	○	○	○	○

How Well Has Your Child Been?
(Functional Status Questionnaire-FS IIR)

Here are some statements that mothers have made to describe their children. Please fill in the circle, thinking about this child during the **last 4 weeks**.

During the **last 4 weeks**, how often did this child:

	Never or rarely	Some of the time	Almost always
1. Eat well	○	○	○
2. Sleep well	○	○	○
3. Seem contented and cheerful	○	○	○
4. Act moody	○	○	○
5. Communicate what (he/she) wanted	○	○	○
6. Seem to feel sick and tired	○	○	○
7. Occupy (him/herself)	○	○	○
8. Seem lively and energetic	○	○	○
9. Seem unusually irritable or cross	○	○	○
10. Sleep through the night	○	○	○
11. Respond to your attention	○	○	○
12. Seem unusually difficult	○	○	○
13. Seem interested in what was going on around (him/her)	○	○	○
14. React to little things by crying	○	○	○

About Your Family
(Family Environment Scale-FES)

Instructions: There are 12 statements on this form. They are statements about families. You are to decide which of these statements are true of your family and which are false. If you think the statement is **TRUE** or **MOSTLY TRUE** of your family, please **fill in the circle** in the**TRUE** column. If you think the statement is **FALSE** or **MOSTLY FALSE** of your family, please **fill in the circle** in the **FALSE** column.

You may feel that some of the statements are true for some family members and false for others. Fill in the circle in the **True** column if the statement is **TRUE** for most members. Fill in the circle in the **False** column if the statement is **FALSE** for most members. If the members are evenly divided, decide what is the stronger overall impression and answer accordingly.

Remember, we would like to know what your family seems like to *you*. So ***do not*** try to figure out how other members see your family, but do give us your general impression of your family for each statement.

	True	**False**
1. Family members really help and support one another.	○	○
2. Family members often keep their feelings to themselves.	○	○
3. We fight a lot in our family.	○	○
4. We often seem to be killing time at home.	○	○
5. We say anything we want to around home.	○	○
6. Family members rarely become openly angry.	○	○
7. We put a lot of energy into what we do at home.	○	○
8. It's hard to "blow off steam" at home without upsetting somebody.	○	○
9. Family members sometimes get so angry they throw things.	○	○
10. There is a feeling of togetherness in our family.	○	○
We tell each other about our personal problems.	○	○
11. Family members hardly ever lose their tempers.	○	○

Health Care Visits

Instructions: This information is about all of your child's health care visits (not just at Valencia Pediatric Practice). Write in how many times your child saw a health care provider (e.g. nurse practitioner, doctor) during the ***past 6 months.***

	N umber of visits:	***Type of visit***:		
		How many visits were for **follow-up?**	How many visits were due to a **sick child?**	How many visits were **well child visits (includes immunizations)**
In the **past 6 months,** how many times did your child see: A nurse practitioner or doctor at Valencia Pediatric Practice?	______	______ →	______ →	______
In the **past 6 months,** how many times did your child go to: Any other clinic (such as Monteagle pediatric clinic)?	______	______ →	______ →	______
An Emergency Department?	______			
In the **past 6 months,** how many times was your child admitted to the hospital (e.g. same day surgery or overnight)?	______			

How Have You Been Feeling?
(CES-D)

Instructions: Below is a list of some of the ways you may have felt or behaved. Please indicate how often you have felt this way during the **past** week by, **filling in the circle**.

	Rarely or None of the Time (Less than 1 day)	**Some or a Little of the Time (1-2 days)**	**Occasionally or a Moderate Amount of Time (3-4 days)**	**Most or All of the Time (5-7 days)**
1. I was bothered by things that usually don't bother me.	○	○	○	○
2. I had trouble keeping my mind on what I was doing.	○	○	○	○
3. I felt depressed.	○	○	○	○
4. I felt that everything I did was an effort.	○	○	○	○
5. I felt hopeful about the future.	○	○	○	○
6. I felt fearful.	○	○	○	○
7. My sleep was restless.	○	○	○	○
8. I was happy.	○	○	○	○
9. I felt lonely	○	○	○	○
10. I could not get "going".	○	○	○	○

Demographic Information—For Research Purposes Only

1. Are you Female: ○
Male: ○

2. What language do you primarily speak at home?

Only Spanish	○
Spanish more than English	○
Both Equally	○
English more than Spanish	○
Only English	○
Other ____________________	○

3. What is your Race/Ethnicity?:

African American	○
Hispanic/Latino	○
Asian	○
White	○
American Indian	○
Pacific Islander	○
Other (please specify)__________	○

4. What is Your Age? ☐☐

0	○	○
1	○	○
2	○	○
3	○	○
4	○	○
5	○	○
6	○	○
7	○	○
8	○	○
9	○	○

5. How many years of school have you completed ? ☐☐

0	○	○
1	○	○
2	○	○
3	○	○
4	○	○
5	○	○
6	○	○
7	○	○
8	○	○
9	○	○

Demographic Information (con't)-For Research Purposes Only

6. What is your yearly household income from all sources (before taxes)?

- $0-$9,999 ○
- $10,000-$14,999 ○
- $15,000-$19,999 ○
- $20,000-$29,999 ○
- $30,000-$39,999 ○
- Above $40,000 ○
- Don't know ○

7. Who else lives in your household besides you (fill in circle for all that apply)?

- Your husband/wife ○
- Your partner ○
- Your child or children ○
- Your step children ○
- Your relative's children ○
- Your partner's children ○
- Your parents ○
- Your grandparents ○
- Your in-laws ○
- Other relatives ○
- NON-relatives ○

8. What is your marital status?

- Married ○
- Separated ○
- Divorced ○
- Widowed ○
- Single ○
- Partnered (living together) ○

9. What type of health insurance do you have?

- Not Insured ○
- MediCal ○
- Private (get through your job/spouse's job) ○

ONE MORE PAGE TO GO!!

****THE REST OF THESE QUESTIONS ARE ABOUT YOUR CHILD****

10. What type of health insurance does YOUR CHILD have?

Not insured ○
MediCal ○
Private (get through job) ○

11. What is your child's Age? ☐

1 ○
2 ○
3 ○
4 ○
5 ○

12. What is your child's race/ethnicity?

African American ○
Hispanic/Latino ○
Asian ○
White ○
American Indian ○
Pacific Islander ○
Other ________________ ○

13. Is your child Female: ○
Male: ○

Cuidado de Salud de los Niños
Departamento de Enfermería para el Cuidado de Salud de la Familia
Universidad de California, San Francisco

Instrucciones: Las siguientes pregunatas son sobre Usted. y su niño(a). Las respuestas que nos dé nos ayudará a mejorar el cuidado médico que le ofrecemos a Usted y a su familia.

- Por favor responda todas las preguntas. **No hay respuestas correctas o incorrectas.**
- Si no puede responder alguna pregunta, por favor pase a la próxima.
- El responder estas preguntas **no afectará su seguro o cuidado médico en ninguna forma.**

Declaraión de Privacidad

Todas las respuestas serán tratadas en forma confidencial. Todas las respuestas serán usadas sólamente para este estudio. La información que nos dé no será dada a nadie sin su permiso, a menos que séa requerido por la ley.

¡¡¡ GRACIAS !!!

Práctica Pediátrica a Familia de Valencia
Universidad de California, San Francisco

La Salud General de su Niño

Instrucciones: Esta información es sobre la salud general de su niño. Por favor lea cada pregunta detallådamente. **Llene el círculo** que mejor describe la situación de su niño. **No deje ninguna pregunta en blanco.** Por favor empiece con la primera pregunta.

1. En general, diría que la salud de su niño es Excelente, Muy Buena, Buena, Regular, o Mala?

Excelente ○
Muy Buena ○
Buena ○
Regular ○
Mala ○

2. En los **últimos 3 meses,** cúan preocupada ha estado usted por la salud de su niño?

Bastante ○
Algo ○
Un poco ○
Nada ○

3. En los **últimos 3 meses**, a su niño ¿cuánto dolor o angustia le ha cuasado los problemas de salud?

Bastante ○
Algo ○
Un poco ○
Nada ○

4.	Definitívamente Cierto	Mas o Menos Cierto	No Se	Mas o Menos Falso	Definitívamente Falso
A. La salud de este niño/a es excelente.	○	○	○	○	○
B. Este niño/a logra no enfermarse mucho.	○	○	○	○	○
C. Este niño/a se enferma mas que otros niños y niñas.	○	○	○	○	○
D. Cuando hay algo de qué contagiarse, este niño/a suele enfermarse.	○	○	○	○	○

¿Cuán Bien Ha Estado Su Niño o Niña?
(FS IIR)

He aquí algunas declaraciones que madres han hecho para describir a sus niños. Por favor llene al círculo para cada frase, pensando en este niño/a en las **últimas 4 semanas**.

En las **últimas 4 semanas** ¿Con que requencia su niño/a:

	Nunca o rarmente	Algunas veces	Casi siempre
1. Comió bien	○	○	○
2. Durmió bien	○	○	○
3. Estuvo contento/a y algre	○	○	○
4. Actuó de mal humor	○	○	○
5. Comunicó lo que quería	○	○	○
6. Se sintió enfermo/a cansado/a	○	○	○
7. Se entretuvo solo	○	○	○
8. Estuvo activo/a y energético/a	○	○	○
9. Estuvo excepcionalmente enojado/a irritable	○	○	○
10. Durmió toda la noche	○	○	○
11. Respondió a sus atenciones	○	○	○
12. Estuvo excepcionalmente dificultoso/a	○	○	○
13. Estuvo interesado/a en lo que pasaba a su alrededor	○	○	○
14. Reaccionó llorando por cosas sin importancia	○	○	○

Acerca de su Familia
(FES)

Instruccions: Hay 12 frases en este formulario. Son frases sorbre le familia. Usted debe decidír cuales de estas frases son ciertas (aplican a su familia), y cuales son falsas (no aplican a su familia). Si usted piensa que la frase es **CIERTA**, o **PRINCIPALMENTE CIERTA** sobre su familia, por favor **llene el círculo** en la columna marcada con **CIERTO.** Si usted piensa que la frase es **FALSA**, o **PRINCIPALMENTE FALSA** con respecto a su familia, por favor **llene el círculo** en la columna marcada **FALSO.**

Puede que sienta que algunas de las frases aplican a algunos miembros de la familia y no a otros. Por favor **llene el círculo** en la columna **CIERTO**, si es que la frase el **CIERTA** sobre la mayoría de los miembros de la familia. Por favor **llene el círculo** en la columna **FALSO**, si es que la frase es **FALSA** sobre la mayoría de los miembros de la familia. Si hay igual cantidad de miembros de familia en ambas categorias, por favor decida cual es su impresion general de la familia, y marque la respuesta que le parezca mas adecuada.

Recuerde que nosotros queremos saber como ve usted a su familia. O sea que por favor ***no trate*** de pensar que opinan los otros de su familia. Más bien para cada frase, por favor dénos su impresión general acerca de su familia.

	Cierto	**Falso**
1. Los miembros de la familia reálmente se ayudan y apoyan el uno al otro.	○	○
2. Los miembros de la familia guardan sus sentimientos a si mismos.	○	○
3. En mi familia nos peleamos mucho.	○	○
4. En la casa malgastamos el tiempo frequentemente.	○	○
5. En el hogar decimos lo que nos plasca.	○	○
6. Los meimbros de la familia rara vez expresan su enfado abiertamente.	○	○
7. Le ponemos gran dedicación a lo que hacemos en la casa.	○	○
8. En el hogar es dificil desfogarce sin herir (los sentimientos) de alguien.	○	○
9. A vececs miembros de la familia se enfadan tanto, que tiran cosas.	○	○
10. Hay un sentimiento de unión en nuestra familia.	○	○
11. Nos contamos nuestros problemas personales.	○	○
12. Los miembros de la familia casi nunca pierden la serenidad/compostura (cuando se enfadan).	○	○

Visitas Para el Cuidado De la Salud

Instrucciones: Esta información es de acerca de todas las visitas (médicas) para el cuidado de la salud de su niño(a). (No solamente visitas a la Clínica Pediátrica de Valencia). Por favor escriba a las veces que su niño(a) visto un proveedor de salud (Enfermera especialista, doctor) en los ***últimos 6 meses.***

	Número de visitas	***Tipo de visitas***		
1.En los **ultimos 6 meses:** ¿En cuántas de estas visitas vió su niño(a) un proveedor de salud		¿Cuántas vistitas fueron para **seguimiento** después de otra cita?	¿Cuántas visitas fueron a **causa de niño enfermo?**	¿Cuántas visitas fueron para **niño sano (incluyendo vacunas)**?
...una enfermera especialista o un doctor en la Clínica Pediátrica de Valencia?	____________	____________ →	____________ →	____________
2. En los **últmos 6 meses**: ¿Cuántas veces visitó su niño(a)				
a cualquier otra clínica (Clínica Pediátrica de Monteagle, etc)?	____________	____________ →	____________ →	____________
¿...a la sala de Emergencia de un hospital?	____________			
otra visita______________				
______________________	____________			
3. En los **últimos 6 meses**: ¿Cuántas veces internaron a su niño(a) al hospital (para operación o pasando la noche)	____________			
4. En **los últimos 6 meses**: ¿Cuantas veces visitó <u>**Ud**</u> su proveedor de salud (enfermera de espcialista o doctor)	____________			

¿Como se ha Sentido?
(CES-D)

Instrucciones: Lea las frases de abajo que desciben cómo se puede haber sentido o comportado Usted **reciéntemente.** Por favor **llene el círculo** que representa con qué frecuencia se ha sentido de esta manera durante la última semana.

	Raramente o ninguna vez (menos de un día)	**Alguna o pocas veces (1-2 días)**	**Ocasionalmente o una cantidad moderada (3-4 días)**	**La mayor parte o todo el tiempo (5-7 días)**
1. Me molestaron cosas que normalmente no me molestan.	○	○	○	○
2. Tenía dificultad en mantener mi mente en lo que hacía.	○	○	○	○
3. Me sentía deprimido(a).	○	○	○	○
4. Sentía que todo lo que hacía era un esfuerzo.	○	○	○	○
5. Me sentía con esperanza sobre el futuro.	○	○	○	○
4. Me sentía con miedo.	○	○	○	○
7. No podía dormir bien.	○	○	○	○
8. Estaba contento(a).	○	○	○	○
9. Me sentía solo(a).	○	○	○	○
10. No tenía ganas de hacer nada.	○	○	○	○

Información demográfica- Para uso del Estudio Sólamente

1. Es Ud. Mujer: ○
Hombre: ○

2. ¿Qué lenguaje hablan principlamente en la casa?

Solo Español ○
Español mas que Inglés ○
Los dos igual ○
Inglés mas que Español ○
Solo Inglés ○
Otro idioma __________ ○

3. ¿Cuál es su Raza o Grupo Étnico?

Africano Americano ○
Hispanico/Latino ○
Asiático ○
Blanco ○
Indio Norte Americano ○
Isleño del Pacífico ○
Otro (por favor especifique) _____________ ○

4. ¿Cuál es su edad?	☐	☐	**5. ¿Cuántos años de escuela completó?**	☐	☐
0	○	○	0	○	○
1	○	○	1	○	○
2	○	○	2	○	○
3	○	○	3	○	○
4	○	○	4	○	○
5	○	○	5	○	○
6	○	○	6	○	○
7	○	○	7	○	○
8	○	○	8	○	○
9	○	○	9	○	○

Información Demográfica (cont.)-Solo Para propósitos del Estudio

6. ¿Cuál es el ingreso anual total de su hogar (antes de impuestos)?

$0-$9,999	○
$10,000-$14,999	○
$15,000-$19,999	○
$20,000-$29,999	○
$30,000-$39,999	○
Mas de $40,000	○
No sé	○

7. ¿Quién vive en su misma casa (marque todos los que apliquen)?

Su esposo/esposa	○
Su compañero/a	○
Sus hijos	○
Sus padres	○
Sus abuelos	○
Suegros	○
Otros parientes	○
gente no-parientes	○

8. ¿Cuál es su estado marital?

Casada/o	○
Separada/o	○
Divorciada/o	○
Viuda/o	○
Soltera/o	○
Viviendo con alguien	○

9. ¿Qué clase de seguro médico tiene?

Sin seguro	○
MediCal	○
Privado (por medio del trabjo)	○

¡¡ Solo una página mas!!

LA SIGUIENTE INFORMACIÓN ES DE ACERCA DE SU NIÑO(A)

10. ¿Qué tipo de seguro médico tiene SU NIÑO(A)?

Sin seguro ○
MediCal ○
Privado (por medio del trabajo) ○

11. ¿Cuál es la edad de su niño(a)? ☐

1 ○
2 ○
3 ○
4 ○
5 ○

12. ¿Cuál es la etnicidad or raza de su niño(a)?

Africano Americano ○
Hispanico/Latino ○
Asiático ○
Blanco ○
Indio Norte Americano ○
Isleño del Pacífico ○
Otro ________________ ○

13. ¿Es su niño(a)...?
Mujer: ○
Hombre: ○