Understanding the influence of parenting on early childhood health and health care utilization

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ABSTRACT

Understanding the Influence of Parenting on Early Childhood Health and Health Care Utilization

Michele Hubert

The significant variability in the use of pediatric care points to a need for a greater understanding of factors that influence early childhood health care usage. Given parents' central role in child health and service use, the effects of several parental characteristics have been examined. However, little is known about the influence of general parenting behaviours on variations in service use. *Aim:* Using 250 parent-child dyads from the Concordia Longitudinal Risk Project, this study examined whether parental support, structure and control would influence rates of early childhood usage for different types of health services and whether these effects would be moderated by conditions of disadvantage typically associated with poorer health and service use. *Results:* Greater parental support increased children's rate of non-emergency care and decreased their hospitalizations rate; however, parental support was particularly important in conditions of disadvantage. For children of parents from impoverished backgrounds, more supportive parenting was associated with higher rates of non-emergency care and visits for ear infections and acute respiratory infections. In addition, greater parental structure decreased children's rates of ear infection and acute respiratory infections and tended to decrease children's rate of emergency room visit. Greater parental control decreased children's rate of emergency room visits and tended to decrease non-emergency care. *Conclusion:* This study highlights the importance of considering broad parenting behaviours when examining variations in health and health care utilization in early

childhood and it provides the theoretical basis for developing interventions aimed at parenting in high risk populations.

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Introduction

The first few years of a child's life are particularly important for healthy growth and development and health care use is an integral part of this process. However, with approximately a quarter of children being classified as "consistently high or low" health care users (Starfield, Van den Berg, Steinwachs, Katz, & Horn, 1979) there is a need for a greater understanding of factors that influence children's health and use of pediatric services. Poor utilization may fail to protect the health of children as well as the community (Janicke, Finney & Riley, 2001) whereas an excessive usage may expose children to unnecessary medical treatment and places a burden on the health care system (Mechanic, 1995). Child health status is the main determinant of health seeking (Horwitz, Morgenstern, & Berkman, 1985; Janicke, et al., 2001; Kelleher & Starfield, 1990); however, a variety of factors in the child's environment affects their health as well as their likelihood of receiving care. Given that parents play a critical role in children's health and health care utilization, a large body of research has focused on various parental characteristics to explain variations in patterns of pediatric care.

Parental Influence on Children's Health Care Use

Parents' own health care use is the strongest parental predictor of pediatric usage across various types of health services with children's use resembling that of their parents (Minkovitz, O'Campo, Chen, & Grason, 2002; Shore, Starfield, Stidley & Hankin 1987; Ward & Pratt, 1996). Besides genetic similarities related to health status, this association can be explained by parents' general propensity to seek care (Mechanic, 1995). In addition to parents' health seeking behaviour, a number of psychosocial variables have

been shown to adversely affect pediatric care use. Parental depression has been linked to decreases in preventative care and increases in the use of emergency care (Minkovitz, C., et al. 2005; Olfson, Marcus, Druss, Pincus & Weissman, 2003). Parents' history of aggression and withdrawal has been associated with higher rates of emergency service use in their children (Serbin, Peters & Schwartzman, 1996).

There is also evidence linking parents' demographic characteristics to children's health and health care use, though some of these associations appear counter-intuitive.

Although older parents would presumably have more resources and education, which should promote child health, parents' age has been positively associated with the use of primary care (Riley, Finney, Mellits, & Starfield, 1993; Shore, et al., 1987). Perhaps these findings can be explained by factors related to accessibility and availability of health services as well as parents' awareness, vigilance and prevention orientation.

As well, socioeconomic status (SES) has been found to be an important predictor of health and health care use. Both individual and neighbourhood-level disadvantage have been examined as they are thought to represent two unique aspects of SES which may be used to better understand the pathways between SES and health.

Individual SES describes the social context of the family; those lower in the social hierarchy are typically less healthy than their more affluent counterparts (Adler et al. 1994; Marmot & Smith, 1991). Socioeconomic health disparities are found for rates of mortality and morbidity for a wide range of diseases and conditions in adulthood (Illsley & Baker, 1991; Seccombe 2000) as well as childhood (Chen, 2004, Chen, Matthews & Boyce, 2002, Starfield, Riley, Witt & Robertson, 2002), and childhood socioeconomic

status has been found to be predictive of later adult health and health-related behaviours (Van de Mheen, Stronks, Looman & Mackenbach, 1998).

Conversely, neighbourhood SES describes the social context of the group of individuals living in a given area. Neighbourhood-level disadvantage has been linked to a variety of poor health outcomes across the lifespan, even after controlling for the effects of individual SES (Chen, Paterson, 2006; Kolegard, Diderichsen, Reuterwall, & Hallqvist, 2002; Sundquist, Malmstrom, & Johansson, 2004; Mitchell, Gleave, Bartley, Wiggins, & Joshi, 2000; Pampalon & Duncan, 1999).

In spite of the greater health risks associated with living in conditions of disadvantage, individual and neighbourhood level poverty has been associated with lower rates of primary care and higher rates of emergency services use in children (Brooks-Gunn, McCormick, Klebanov, & McCarton, 1998; Nadel, 1993; Ross, Tremblay & Graham, 2004).

Despite all of the findings to date showing links between parent characteristics and children's health service use, a significant portion of the variability in pediatric health care use remains unexplained (Janicke, et al., 2001). Given the importance of parent-child interactions on children's health and wellbeing, a growing number of researchers are beginning to examine the impact of the quality of parenting on children's health and health care use. Although a variety of specific parenting practices have been associated with various aspects of children's health, a number of researchers argue that this body of research fails to take into account the complexities of parenting and underestimates its effect on children by only assessing domain-specific parenting behaviour. Conversely, broad patterns of child-rearing may play a greater role in shaping daily activities and

health behaviours and ultimately, children's health and patterns of health seeking. Understanding how general parenting styles affect utilization (i.e. the frequency of visits for various health services) has important implications for families, healthcare providers and public health interventions. First, it may enhance our understanding of the diverse factors that influence children's health and parental decision-making to seek and obtain health services for their children. Second, parenting behaviours may be more subject to modification than other parental characteristics such as mental health or socioeconomic status.

Parenting Dimensions

Broad styles of parenting differ from parenting practices in that they encompass several important aspects of parenting and they are independent of the content of individual parenting practices (Darling & Steinberg, 1993). These general styles of parenting make up the social and emotional context in which parents and children interact and through which children are socialized; they are stable across time and have been shown to influence the effectiveness of specific parenting practices (Darling & Steinberg, 1993). As well, the effects of parenting have been shown to vary as a function of the social context in which a family is embedded (Baumrind, 1972; Steinberg, Mounts, Lamborn & Dornbusch, 1991).

In order to describe parenting across a wide range of situations, developmental researchers have consistently organized important components of parenting into descriptive schemes or parenting dimensions designed to capture the nature of parenting. Parental support and control are two parenting dimensions that have received considerable attention in the child development literature. Parental support can be defined

as parental the behaviours that make the child feel comfortable and accepted, referring to parents' capacity to be affectionate and to maintain awareness of children's state and needs (Maccoby & Martin, 1983; Thomas, Gecas, Weigert, & Rooney, 1974). Greater parental support has been associated with positive outcomes including greater social competence and psychosocial functioning (Rollins & Thomas, 1979). Conversely, parental control can be defined as the parental behaviours towards the child that are intended to direct the child's behaviour in a way that they deem acceptable (Thomas et al. 1974). Greater parental control has been linked to greater instrumental competence and behavioural control (Baumrind 1991).

Although it has received comparatively less attention than parental support or control, parental structure is another dimension of parenting that has been linked to child health and development. Parental structure can be defined as the way in which parents provide organization and consistency to the child's environment. Parental structure has been associated with children's adjustment, competence, compliance and positive coping skills (Breadley & Caldwell, 1976; Emery, 1982; Hardy, Power, Jaedicke, 1993).

A common approach to the study of parenting has been to aggregate parenting dimensions into typologies of parenting behaviours. According to the theoretical framework of Baumrind (1971, 1989) and Maccoby and Martin (1983), combinations of the dimensions of parental support and control create a typology of four parenting styles: authoritative parenting (high on support and control), authoritarian parenting (low on support and high on control), permissive parenting (high on support and low on control), and neglectful parenting (low on support and control). Such typologies are based on the assumption that there are interactions between the dimensions of parenting that constitute

the parenting style (i.e. parental support and control). Some studies have found evidence of interactions between parenting dimensions in the prediction of child outcomes (e.g., Galambos, Barker, & Almeida, 2003; Pettit & Laird, 2002), however, others have failed to replicate these interactive effects (e.g. Barber, Olsen, & Shagle, 1994; Garber, Robinson, & Valentiner, 1997; Rollins & Thomas, 1979). These results call into question the validity of the parenting typologies, and for this reason, many researchers have opted to disaggregate parenting styles into their separate dimensions of parenting and then test for their interactional effects. This allows researchers to discern the unique effects of parenting dimensions as well as their joint effects.

Effects of Parenting on Children's Health and Service Use

While most of the research on parenting has focused on the implications for social and emotional development, there are a number of reasons for expecting parenting dimensions to affect children's frequency of health care use. The first area of research linking parenting to children's health and services use comes from the literature on children's treatment adherence to medical regiments for chronic illnesses. There is evidence that parenting dimensions affect the appropriateness of use of non-emergency services for childhood cancer treatments. One study examined the effect of parental support, structure and control on parent-reported adherence difficulties to the physician-recommended cancer treatment of their child (Manne, Jacobsen, Gorfinkle, Gerstein, & Redd, 1993). Although, parent structure and control did not have an effect on adherence, supportive parenting was associated with fewer adherence difficulties related to appointments and symptom-reporting; more supportive parents cancelled fewer appointments, arrived on time to appointments more frequently and reported children's

reactions to treatment with less delay. In other words, supportive parents were better at managing the requirements of their children's health condition by providing them with the necessary care. The explanation provided by the author was that supportive parents attended more to their children's physical and emotional reactions to treatment thereby affecting the likelihood of providing necessary care; this would imply that supportive parenting could potentially affect the frequency and the quality of health care use through parents' perception of children's need of health services.

Although not in relation to health care use, other studies have also found an association between parenting and children's treatment adherence as well as their health status. Davis et al. (2001) examined the effects of supportive parenting on regimen adherence and glycemic control in diabetic children between the ages of four and ten. Parental warmth, characterised by greater nurturance and responsiveness, was associated with better parent-reported adherence to diabetic regimens whereas parental restrictiveness was associated with worse glycemic control, as indicated by a higher blood glucose concentrations. In addition to the positive effects of support, Hauser et al. (1990) found that parental organization (i.e. structure) was associated with better physician-rated short-term and long-term adherence to diabetic regiments in childhood.

Taken together, these two studies provide evidence that parenting dimensions influence various aspects of illness management in chronic conditions such as diabetes. Children depend on their parents to manage their health conditions. Proper illness management is essential to maximize successful treatment outcome (DiMatteo, Giordani, Patrick, Lepper, Croghan, 2002). In contrast, poor management could potentially lead to serious complications in the course of treatment (Stroup, Teal, Tu, Weiner, Murray,

2006). Therefore, it could be inferred from the results of these two studies that parenting could also affect patterns of health care use through its effects on children's actual need of health services.

Although adherence studies provide support for an association between parenting and health and illness management in children with chronic conditions through parents' perception of children's need of health services and children's actual need, it is also likely that parenting effects on illness management extend to more acute and benign health conditions in the general population.

The second line of research supporting an association between parenting and health care use comes from the literature on children's health-related behaviours. One study examined the influences of parenting style on the development trajectories of positive health-related behaviours during the transition from childhood to adolescence. The measurement of positive health-related behaviours included 14-items related to health care use, nutrition, physical activity and hygiene. Results of this study demonstrate that authoritative parenting (i.e. high support and high control), in contrast to authoritarian (i.e. low support and high control) and neglectful parenting (low support and low control), was predictive of more positive health-related behaviours across time (Lohaus, Vierhaus & Ball, 2009). Evidence linking parenting dimensions to physical activity and dietary behaviour has consistently been found in other studies (Kremers, Brug, de Vries, & Engels, 2003; Schmitz et al., 2002; Van der Horst et al., 2007). This literature provides evidence that parenting dimensions influence a variety of health risks in childhood and adolescents which in turn could influence children's actual need of health services.

Despite differences in methodology, sample populations, and study designs, the available literature has shown a consistent association between positive parenting dimensions and various aspects of children's health. Based on the findings previously discussed, parenting dimensions could potentially affect children's frequency of service use through parents perception of children's need of health services as well as children's actual need. However, the association between parenting dimensions and the frequency of consultations for various types of services has not been tested.

Current study

The current study is part of a prospective intergenerational longitudinal project on developmental and health outcomes. This data provides the opportunity to examine the unique and relative contribution of parenting dimensions as they relate to child health outcomes by controlling for a variety of current and historical parental factors. Notably, using this data set, we are able to control for parents' propensity to seek care using a measure of parents own health care use. We are also able to control for demographic factors related to the accessibility and availability of health services.

Because the effects of the predictors of health care use can vary as a function of the type of services being considered, researchers in the field have suggested that more specific measures related to particular health conditions be used in addition to the more common types of services use seen in the literature (Anderson, 1995). Therefore, using the medical data drawn from the Concordia Longitudinal Risk study, we are able to examine patterns of health care use for specific types of services (i.e. non-emergency care, emergency room visits and hospitalization) as well as for common childhood

conditions (i.e. ear infections, acute respiratory illnesses and injuries) in order to get a better understanding of children's patterns of health care use.

Therefore, the purpose of this study was to extend the previous literature by examining how parenting dimensions affect pediatric care and child health outcomes while controlling for various parental and family factors. More specifically, this study was designed to assess the influence of parental support, structure and control on the frequency of use of three types of health services: non-emergency care, emergency room visits and hospitalization, as well as the frequency of medical consultation of three common childhood ailments: ear infections, acute respiratory infections and injuries. In order to understand the relative contribution of parenting dimensions in the prediction of health service use and health outcomes, possible confounding variables previously associated with child health and health service usage were examined in this study; these variables included parental health care use, socio-demographic factors (SES, neighbourhood risk) and parental psychosocial variables (parental depression, behavioural histories) in addition to parent and child gender.

For the current project, four hypotheses were examined. First, given that positive parenting styles have been linked more appropriate health services, the greater use of parental support, structure and control was expected to predict higher rates of visits for non-emergency care and decrease the rate of emergency care and hospitalizations use. Timely non-emergency care allows physicians to prevent, diagnose, treat and follow-up on various health conditions whereas delayed or insufficient use of non-emergency service can result in poor health outcomes and can increase the likelihood of emergency room visits and hospitalizations (Davidson, 1978; Falik, Needleman, Wells, & Korb,

2001; Halfon & Newacheck, 1996; Millman, 1993). Second, since positive parenting dimensions have been linked to better parental illness management, better health status, enhanced treatment outcomes and more positive health-related behaviours in children, the greater use of parental support, structure and control was expected to reduce the overall rate of medically attended childhood ailments including ear infections, acute respiratory illnesses and injuries. Third, based on the theoretical framework by Baumrind (1971, 1989) and Maccoby and Martin (1983), parenting dimensions were expected to interact to influence patterns of health care use. Fourth, given that parenting dimensions have been shown to vary as a function of the social context, it was expected that family and neighbourhood-level disadvantage would moderate the effects of parenting dimensions.

Methods

Identification of original Participants

Participating parents were initially recruited when they were children (1976-1977) in the context of the Concordia Longitudinal Risk Project, a prospective longitudinal study of developmental and health outcomes of a low income community sample. At the time, children were in grades 1, 4 and 7, attending French public schools of Montreal, Quebec (For a more detailed account see Schwartzman, Ledingham, & Serbin, 1985).

Current sample

After the original participants reached adulthood, many became parents, providing the opportunity for the longitudinal study of their offspring. For the current study, we used a sub-sample of the Concordia Longitudinal Risk Project and their first born child. In total, the sample consisted of 250 parent-child dyads. The sample included 165 mothers and 85 fathers, as well as 118 daughters and 132 sons. Children were at least six years old by 2006, allowing us to examine the impact of parenting on their health care use in the first 5 years of life.

Families within the current sample showed variability with respect to their demographic characteristics although a high proportion of them lived in conditions of disadvantage (see table 1). Parents in the current sample had a mean annual income of $49,088 dollars (SD= $28,391). However, 32% of families had an annual income that fell below Canada's Low Income Cut-Off (Statistics Canada) and 30.4% of families were welfare recipients during children's first five years of life. According to the Standard International Occupational Prestige Scale (SIOPS; Gazanboom & Treiman 1996),

Table 1.

Demographic Characteristics of the Familes (n=250)

Descriptive variables	Range	n	(%)	M	SD
Parents' Gender					
Mothers		165	66		
Fathers		85	34		
Children's Gender					
Daughters		132	52.8		
Sons		118	47.2		
Parents' Age at Birth of Child	18-33			25.25	3.19
Children's Age in 2006	6-22			13.93	3.64
Parents' educational attainment					
Below High School		68	27.2		
High School		47	18.8		
Cegep		118	47.2		
University		17	6.8		
Parents' Income	$6,739 - $145, 600			$49,088	$2,802
Below Canada's low income cutoff		80	32		
Welfare recipiants during child's life		76	30.4		

parents' average ratings of occupational prestige corresponded to jobs such as hairdresser and cosmetologist. In terms of the educational attainment, by the time parents reached the age of 26, 26.1% had not completed high school, 18.3% had obtained a high school diploma, 47.8% had graduated from CEGEP and 7.8% had received a university degree. On average, parents had their first child at the age of 24 (SD= 3.24).

Measures

Parenting Dimensions. A French translation of the Parent Dimension Inventory (PDI; Power, 1989; Slater & Power, 1987; see appendix A) was administered between 1999 and 2003. The PDI is a 51-item self-report measure that assesses several aspects of parenting from which three dimensions are derived; parental support, control, and structure.

The support subscales consists of parental nurturance, responsiveness to child input, and non-restrictiveness. Examples of items of the parental support include: "I encourage my child to talk about his or her troubles", "I believe that most children change their minds so frequently that it is hard to take their opinions seriously", "When I let my child talk about his/her troubles, he/she ends up complaining even more". The measure of parental control consists of two subscales: demands for self-control and demands for maturity. Examples of items of this scale include: "Children need guidance from their parents than they seem to get today"; "I try to prevent my child from making mistakes by setting rules for his/her own good". The measure of parental structure is comprised of parental consistency and organization. Examples of the parental structure include: "I follow through on discipline for my child, no matter how long it takes", "Our house is clean and orderly", "Our family is organized and together".

Higher scores on the individual scales indicate a greater frequency of parental behaviour as scores were reversed for a number of items which are scored in the negative direction. Reliability was calculated for support (Cronbach's $\alpha = .77$) and structure (Cronbach's $\alpha = .70$) based on their individual items. However the internal reliability of the control scale was low (Cronbach's $\alpha = .54$). Therefore, of twelve items that comprised the control scales, the three items with the lowest inter-item reliability were excluded, increasing the Cronbach's α to .66.

Medical Data. Quebec's Provincial health records were used to determine the medical history of all participants. These health records were drawn from databanks provided by the Régie de l'assurance maladie du Québec (RAMQ), and the Ministère de la santé et des services sociaux (MSSS). The Commission d'Accès à l'information du Québec (CAIQ) approved the procedures for identity protected access to the RAMQ and MSSS. RAMQ records contain information regarding the date of contact with a physician, type of provider, type of service or procedure received, and diagnosis. Hospitalization records obtained from the MSSS provided information on the diagnosis at admission, the treatment received, the length and frequency of hospitalizations, and the condition at discharge. Medical record covered the period from 1981 to 2006 for the parents and covered the period from birth till 2006 for the children. In order to examine parents' typical health seeking behaviours, medical data was extracted for the three years prior to the birth of their first child, removing mothers' obstetric and gynaecological visits. The medical records of the parents were used to assess the total number of health services used in this three year period. In order to examine children's patterns of health service use, medical records were used to determine the average rate per year of health

service use in early childhood (between 1-5 years of age) for three types of services including non-emergency visits (i.e. primary and speciality care), emergency room visits and hospitalizations as well as three common childhood ailments including ear infections, acute respiratory illnesses and injuries. For each child in the sample, medical data was extracted for a five year period corresponding to the ages of 1 through 5.

Socio-demographics. Socio-demographic information was obtained during a phone interview in 1987 and again between 1999 and 2003 using the Demographic Information Questionnaire.

Socioeconomic Status (SES). Since parents are in charge of young children's health and health care seeking and evidence demonstrates that current as well as past levels of SES are important predictors of adult health-related behaviours (Van de Mheen, Stronks, Looman & Mackenbach, 1998), two separate indicators of family SES were considered: parents' childhood SES and children's current SES.

Parents' childhood SES was determined using the occupational prestige of their parents during a phone interview (1987). Based on the occupation of the parents of the original participants (i.e., the grandparents of the children of this sample), the Occupational Prestige Scale (Nock & Rossi, 1979) was used to determine parents' childhood SES.

Children's current SES was assessed using parents' occupation prestige at the time of data collection (1999-2003). Based on the occupation of the parents of the children in this sample, the Standard International Occupational Prestige Scale (Gazanboom & Treiman 1996) was used to measure children's current SES.

Neighbourhood Risk. To determine the level of neighbourhood socio-economic disadvantage of children in this sample, the first three digits of each family's postal codes were entered into a program which converted the postal code into a forward sortation area number (FSA; Computing in the Humanities and Social Sciences, 2005). The FSA was then used to obtain neighbourhood-level socio-demographic information, according to the 1996, 2001 and 2006 census, about each area within which families lived. The census year used was determined by the year for which the postal code was available for a given family. If postal codes were available for more than one census year, the census data corresponding to the period closest to children's early childhood years (1-5 years) was used.

Four indices of neighbourhood-level SES were considered: the proportion of single-parent families, the proportion of families with income less than $10,000, the proportion of adults who had not continued past grade 9; and the adult unemployment rate (Electronic Data Resources Service, 2006). To obtain the proportion of single-parent families in a specific census area, the number of lone parent families was divided by the total number of all families (married parents with children, common law couples with children, lone parents with children; M = .24, SD = .10). To obtain the proportion of families with an income less than $10,000 in a given census area, the number of families with a total annual income less than $10,000 was divided by the total number of families (M = .04, SD = .03). To obtain the proportion of adults who only completed grade 9 or less in a given census area, the number of adults with grade 9 or less education was divided by the total number of adults (M = .16, SD = .06). The unemployment rate (M =

.10, SD = .05) of a given census area was not manipulated, as the statistics already existed within all census reports.

The four neighbourhood risk factors were highly correlated with one another. An exploratory factor analysis supported a single-factor solution. The weighted factor scores of the four risk factors were saved as a standardized score to compute the neighbourhood risk score *(M = 0.00, SD = 1.00)*. Negative or lower scores on the neighbourhood risk index represented lower-risk neighbourhoods. Conversely, higher scores on the neighbourhood risk index represented higher-risk neighbourhoods.

For the measure of neighbourhood risk, 23 cases were missing. Results of a missing value analysis indicated that the data was missing at random. For cases of missing values, the average value for that variable was calculated from existing data and was used to replace the missing values.

Parental Mental Health. Between 1999 and 2003, a trained psychologist conducted of the Structured Clinical Interview for DSM-IV (SCID-IV; First, et al. 2002) to assess parents for Axis I and Axis II disorders. For the purposes of this study, only information relevant to the lifetime history of anxiety and depression were considered in the analyses.

Parents' History of Aggression and Withdrawal. To examine parents' history of aggression and withdrawal, we drew from information that was collected as part of the original longitudinal study. Between 1976 and 1977, when the parents in this sample were children, they were screened using a peer evaluation measure, the Pupil Evaluation Inventory (PEI; Pekarik et al., 1976; see appendix B). This instrument contains 35 items that load on three separate factors, aggression, withdrawal and likeability. Children were

asked to nominate up to four boys and four girls in their class who best matched each item on the PEI. Aggression items included statements such as "Those who start a fight over nothing" and "Those who are mean and cruel to other children". Withdrawal items included statements such as "Those who have very few friends" and "Those who aren't noticed much". Likeability items included statements such as "Those who help others" and "Those whom everybody likes". The number of nominations received by each child was summed for both aggression and withdrawal factors. Studies have shown that peer nominations represent a reliable method of rating children's behaviour (Lyons, Serbin, & Marchessault, 1988).

Procedures

Most of the data for this study was collected during three specific time points. Time 1 data collection was conducted between 1976 and 1977. The original participants were assessed for peer nominated aggression and withdrawal. At Time 2 (1987), these participants took part in a phone interview during which their demographic characteristics were assessed. Time 3 data collection was conducted between 1999 and 2003. Again, participants were contacted by phone in order to invite them to participate in the current phase of the longitudinal study. Face to face interviews were conducted in the lab and participants were given a battery of questionnaires to complete at home and return by mail. All participants received a small honorarium as compensation for their time.

In addition to the three phases of data collection, children's census and health data were extracted from their respective databases for the years corresponding to early childhood; due to the prospective nature of this study, children were not born at the same time and therefore the period of early childhood differed from one child to the next.

Results

Of the total number of pediatric services received (7892), 81% of visits were for non-emergent care, 16% of visits were for emergency care and 3% were for hospitalizations. The average rate of consultation per year was 4.43 (SD= 3.03) for non-emergency care, .89 (SD= 1.16) for emergency room visits and .19 (SD = .36) for hospitalizations. As for the reasons for medical consultations, 20% of the visits were for ear infections, 14% of the visits were for acute respiratory infections and 6% of the visits were for injuries. The average rate of consultation per year was 1.09 (SD= 1.24) for ear infections, .80 (SD= 0.75) for acute respiratory infections and .44 (SD = .61) for injuries (see table 2).

Preliminary Analyses

Descriptive analyses of all variables were performed in order to screen for outliers and to examine the distributions for skewness. Outliers were reduced to their standardized scores of three. However, even after addressing outlying values, the distributions of all measure of parent and child health service use remained positively skewed. Therefore, a logarithmic or square root transformation was performed as appropriate. The transformations corrected skewness in most of the distributions and these transformed variables were used for data analyses. Transformations did not correct for skewness for two variables, hospitalization and injuries, therefore, they were transformed into dichotomous variables. In order to facilitate presentation, the original names of the transformed variables and their original means and standard deviations are presented in the text.

Table 2.

Descriptive Statistics of the Health Outcome Variable (n=250)

Health	Range	Mean	Median	SD
Rate per year of Non-Emergency service use	0 - 19	4.43	3.83	3.03
Rate per year of Emergency Room Visits	0 - 6.3	0.89	0.5	1.16
Rate per year of Hospitalizations	0 - 4.2	0.19	0	0.36
Rate per Year of Ear Infections	0 - 9	1.09	0.67	1.24
Rate per Year of Acute Respiratory Infections	0 - 4	0.89	0.67	0.75
Rate per year of Injuries	0 - 3.3	0.44	0.2	0.61

Prior to analyses, person's correlations were run to determine the interrelations among variables (see Table 3). Notably, parental support was positively associated with parents' gender (i.e. mothers reported more supportive parenting styles than fathers; pearson's r = .16, p <.05), parents' childhood SES (pearson's r = .13, p <.05), children's current SES (pearson's r = .29, p <.05), parents' age at birth (pearson's r = .12, p <.05) and parental structure (pearson's r = .22, p <.05). Parental control was positively correlated with parent gender (i.e. mothers reported more controlling parenting styles than fathers; pearson's r = .22, p <.05), aggression (pearson's r = .17, p <.05) and negatively correlated with parental age at birth (pearson's r = -.28, p <.05).

Main Analyses

Regression analyses were performed with SPSS (Statistical Package for the Social Science) to examine the extent to which parenting dimensions could explain differences in measure of early childhood health service usage (i.e. non-emergency service, emergency room visits, hospitalization, ear infections, acute respiratory infections and injuries) while controlling for various aspects of the family environment (see table 4 and 5 for the final step of the regression and appendix C for the full regressions).

Hierarchical regressions were preformed for non-emergency services, emergency room visits, ear infections and acute respiratory infections, as they were continuous outcome variables. Since the hospitalization and injury outcomes variables were transformed into dichotomous variables, logistic regressions were performed for these variables. For all analyses, the control variables (i.e. parent and child gender, parent health care use, parent and child SES, neighbourhood risk, parental anxiety and

Table 3.

Intercorrelations among Variables (n=250)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Parents' Gender	-	-0.08	0.29*	-0.05	-0.05	0.09	-0.23*	0.03	0.15*	0.14*	0.25*	0.16*	-0.04	0.22*	-0.04	-0.05	-0.09	-0.07	0.06	-0.10
2. Children's Gender	-	-	0.00	0.03	-0.01	-0.00	-0.03	-0.02	-0.01	-0.07	0.00	0.01	-0.01	0.01	0.03	0.01	-0.01	0.11'	0.05	0.08
3. Parents' Health	-	-	-	-0.12'	-0.04	0.04	-0.09	0.13*	0.08	0.21*	0.08	-0.07	0.01	0.08	0.15*	0.15*	0.07	0.10	0.21*	0.10
4. Parents' Childhood SES	-	-	-	-	0.12'	-0.14*	0.09	-0.20	-0.04	-0.06	-0.04	0.13*	0.10	-0.01	-0.05	-0.27	-0.08	-0.11'	-0.17*	-0.15*
5. Childrens' Current SES	-	-	-	-	-	-0.22*	0.28*	-0.27*	-0.05	-0.14 *	-0.12'	0.29*	0.08	-0.10	0.07	-0.09	-0.11'	-0.03	0.05	-0.07
6. Neighborhood Risk	-	-	-	-	-	-	-0.14*	0.04	0.05	0.09	-0.01	-0.09	-0.04	0.01	-0.13*	0.17*	-0.20*	0.01	-0.03	0.15*
7. Parents' Age at Birth	-	-	-	-	-	-	-	-0.21*	-0.10	-0.14*	-0.13*	0.12*	0.07	-0.28*	0.30*	-0.12'	-0.13*	-0.00	0.07	-0.02
8. Parents' Aggression	-	-	-	-	-	-	-	-	-0.13*	0.20*	0.07	-0.08	-0.06	0.17*	-0.12'	0.04	0.04	-0.06	0.02	0.05
9. Parents' Withdrawal	-	-	-	-	-	-	-	-	-	0.03	0.04	-0.03	0.01	0.05	-0.04	0.02	0.03	0.01	-0.06	0.03
10. Parental Depression	-	-	-	-	-	-	-	-	-	-	0.27*	-0.04	-0.01	0.10	0.02	0.07	0.11'	0.10	0.05	0.06
11. Parental Anxiety	-	-	-	-	-	-	-	-	-	-	-	0.04	-0.10	0.04	-0.06	-0.03	0.02	-0.12*	0.01	0.01
12. Support	-	-	-	-	-	-	-	-	-	-	-	-	0.22*	-0.04	0.13*	-0.06	-0.19*	0.00	0.07	-0.06
13. Structure	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03	-0.04	-0.13*	-0.08	-0.10	-0.13*	-0.04
14. Control	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.20*	-0.18*	-0.01	-0.10	-0.10	0.06
15. Non-Emergency visits	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19*	0.20*	0.39*	0.59*	0.13*
16. Emergency Room Visits	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30*	0.22*	0.48*	0.31*
17. Hospitalizations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.18*	0.16*	0.05
18. Ear Infections	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30*	0.01
19. Acute Respiratory Infections	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13*
20. Injuries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note. ' $p < .10$, * $p < .05$

Table 4.

Results of the Final Equation of Regression Models for Type of Health Service Use (n=250)

	Non-Emergency Room Visits			Emergency Room Visits			Hospitalizations	
	B	SE B	β	B	SE B	β	OR	95% CI
Parent gender	0.01	0.02	0.02	0.06	0.04	0.11	1.74	0.90 - 3.37 ^{t}
Child gender	0.01	0.01	0.04	0.01	0.02	0.01	1.05	0.61 - 1.81
Parents' health care use	0.15	0.05	0.20 *	0.26	0.11	0.15 *	1.53	0.62 - 3.76
Parents' history of SES	-0.20	0.13	-0.09	-1.13	0.31	-0.23 *	0.24	0.02 - 3.09
Children's current SES	-0.20	0.14	-0.10	-0.13	0.31	-0.03	0.18	0.01 - 2.48
Neighborhood risk	-0.03	0.02	-0.12 *	0.06	0.03	0.12 ^{t}	0.56	0.41 - 0.74 *
Age at birth of child	0.02	0.01	0.26 *	-0.03	0.01	-0.16 *	0.91	0.82 - 0.99 *
Aggression	-0.03	0.02	-0.11 ^{t}	-0.02	0.04	-0.04	0.91	0.67 - 1.22
Withdrawal	-0.01	0.02	-0.03	0.00	0.04	0.00	1.07	0.79 - 1.45
Depression	0.02	0.02	0.07	0.04	0.05	0.06	1.41	0.96 - 2.09 ^{t}
Anxiety	-0.02	0.02	-0.08	-0.04	0.04	-0.06	0.96	0.66 - 1.38
Support	0.02	0.01	0.15 *	0.02	0.02	0.06	0.83	0.69 - 1.00 *
Structure	-0.02	0.02	-0.10	-0.06	0.04	-0.11 ^{t}	0.90	0.68 - 1.20
Control	-0.05	0.03	-0.13 ^{t}	-0.21	0.06	-0.17 *	0.84	0.51 - 1.37

Model statistic for Non-Emergency Visits: adj. R^2 = .14, F(14, 235) = 3.95, p <.05; Model statistic for Emergency Room Visit: adj. R^2 = .14, F(14, 235) = 3.82, p <.05; Model statistic for Hospitalizations: χ^2(14, N = 235) = 37.40, p <.05.

^{t}p < .10, *p < .05.

Table 5.

Results of the Final Equation of Regression Models for Common Childhood Ailments (n=250)

	Ear Infections			Acute Respiratory Infections			Injuries	
	B	SE B	β	B	SE B	β	OR	95% CI
Parent gender	0.02	0.01	0.10	0.01	0.02	0.03	2.30	1.20 - 4.41 *
Child gender	0.03	0.02	0.12 ^{t}	0.01	0.01	0.06	0.75	0.44 - 1.28
Parents' health care use	0.07	0.04	0.12 ^{t}	0.13	0.04	0.21 *	2.23	0.91 - 5.43 ^{t}
Parents' history of SES	-0.23	0.12	-0.12 ^{t}	-0.29	0.11	-0.16 *	0.10	0.01 - 1.15 ^{t}
Children's current SES	-0.11	0.12	-0.07	0.01	0.12	0.01	0.57	0.05 - 7.03
Neighborhood risk	-0.01	0.01	-0.03	-0.01	0.01	-0.04	1.34	1.01 - 1.77 *
Age at birth of child	0.00	0.00	-0.04	0.00	0.00	0.06	1.02	0.93 - 1.12
Aggression	-0.03	0.01	-0.12 ^{t}	0.00	0.01	-0.02	0.99	0.74 - 1.34
Withdrawal	0.00	0.01	0.00	-0.02	0.01	-0.07	1.08	0.80 - 1.45
Depression	0.04	0.02	0.16 *	0.01	0.02	0.04	1.07	0.74 - 1.56
Anxiety	-0.05	0.02	-0.18 *	-0.01	0.02	-0.03	1.08	0.76 - 1.54
Support	0.01	0.01	0.08	0.01	0.01	0.11 ^{t}	1.03	0.86 - 1.23
Structure	-0.03	0.01	-0.13 *	-0.03	0.01	-0.15 *	0.93	0.70 - 1.23
Control	-0.03	0.02	-0.09	-0.03	0.02	-0.09	1.41	0.85 - 2.33

Model statistic for Ear Infections: adj. R^2 = .06, F(14, 235) = 2.17, p <.05; Model statistic for Acute Respiratory Infections: adj. R^2 = .07, F(14, 235) = 2.34, p <.05; Model statistic for Injuries: χ^2(14, N = 235) = 21.25, p <.10.

^{t}p < .10, *p < .05.

depression, parental aggression and withdrawal) were entered into the first step of the regression. Parental support, structure and control were entered into the second step of the regression.

For the hierarchical regressions, once the main effects were identified, relevant interactions were entered into the third step of the regressions using centered variables to compute the interaction terms without risk of collinearity (Aiken & West, 1991). In order to further examine significant interactions, these interactions were plotted by solving the regression equation at a chosen level of X_2, in this case, levels corresponding to one standard deviation above and below the mean were used, as the higher and lower levels of X_2 respectively. For each slope, the chosen value of X_2 was substituted in the rearranged regression equation: $Y' = (A + B_2X_2) + (B_1 + B_3X_2)X_1$ (Aiken & West, 1991).

Results indicated that the overall regression was significant for non-emergency visits (adj. $R^2 = .14$, $F(14, 235) = 3.95$, $p < .05$), emergency room visits (adj. $R^2 = .14$, $F(14, 235) = 3.95$, $p < .05$) and hospitalizations ($\chi^2(14, N = 235) = 37.40$, $p < .05$), ear infections (adj. $R^2 = .06$, $F(14, 235) = 2.17$, $p < .05$), acute respiratory infections (adj. $R^2 = .07$, $F(14, 235) = 2.34$, $p < .05$), such that these models accounted for a significant proportion of the variance in children's health care usage. The overall regression for injuries was non-significant although it approached significance ($\chi^2(14, N = 235) = 21.25$, $p < .10$).

Consistent with our hypothesis, parental support was a significant predictor of the rate of non-emergency service use and of hospitalization such that greater parental support increased the rate of non-emergency service use ($\beta = .15$, $p < .05$) and decreased

the rate of hospitalizations (OR = .83, $p < .05$, CI= .69-.99), though parental support did not affect children's rate of emergency room visits. In other words, supportive parents took their children to the doctor for non-emergency care more than other parents (i.e. more preventive and sick visits), and their children were hospitalized less frequently, but this dimension did not affect emergency room visit frequency (i.e. their children had as many trips to the emergency department as others). The children of supportive parents therefore had a relatively higher percentage of their total medical visits to non-emergency facilities (generally a sign of appropriate care and service usage, as well as better health). In addition, support acted protectively with regard to hospitalizations, also indicative of better child heath.

Contrary to expectations, parental structure did not have a significant effect on the rate of non-emergency visits or hospitalizations although the effect of parental structure on children's rate of emergency room visits approached significance ($\beta = -.11$, $p < .10$). The greater use of parental structure tended to decrease children's rate of emergency room visits.

Parental control tended to decrease children's rate of non-emergency service use ($\beta = -.13$, $p < .10$) and significantly decreased children's rate of emergency room visits ($\beta = -.17$ $p < .05$). That is, these children used health services, of both types, less frequently than children of less controlling parents. Control did not, however, affect the rate of hospitalization.

As for the effects of parenting on common childhood illnesses, although there was no significant effect of parental support on children's common childhood ailments,

parental support tended to increase the rate of medically attended acute respiratory infections ($\beta = .11$ $p < .10$).

Parental structure significantly predicted the rate of consultation for ear infections and acute respiratory infections ($\beta = -.14$, $p < .05$ and $\beta = -.15$, $p < .05$ respectively); greater parental structure decreased children's rates of medically attended ear infection and acute respiratory infections which was in line with our hypothesis. However, parental structure did not have a significant effect on children's rates of injuries.

Parental control did not affect children's rate of medically attended ear infections, acute respiratory infections or injuries.

In addition to the individual effects of parenting dimensions on patterns of health care use, their interactive effects were examined. There was an interactive effect of parental support and structure on children's rate of emergency room visits (adj. $R^2 = .15$; $F(15, 234) = 3.89$, $p < .05$; figure 1). At low levels of parental structure, lower parental support was associated with a higher rate of emergency room visits than higher parental support. At higher levels of parental structure, lower parental support was associated with a lower rate of emergency room visits than higher parental support

The moderational effects of family and neighbourhood-level disadvantage on parenting dimensions were examined. The only significant interactions were between parents' childhood SES and parental support. Parents' childhood SES moderated the effects of parental support on children's rate of non-emergency care (adj. $R^2 = .16$; $F(15, 234) = 4.26$, $p < .05$), ear infections (adj. $R^2 = .08$; $F(15, 234) = 2.35$, $p < .05$) and the interaction approached significance for acute respiratory infections (adj. $R^2 = .08$; F(15,

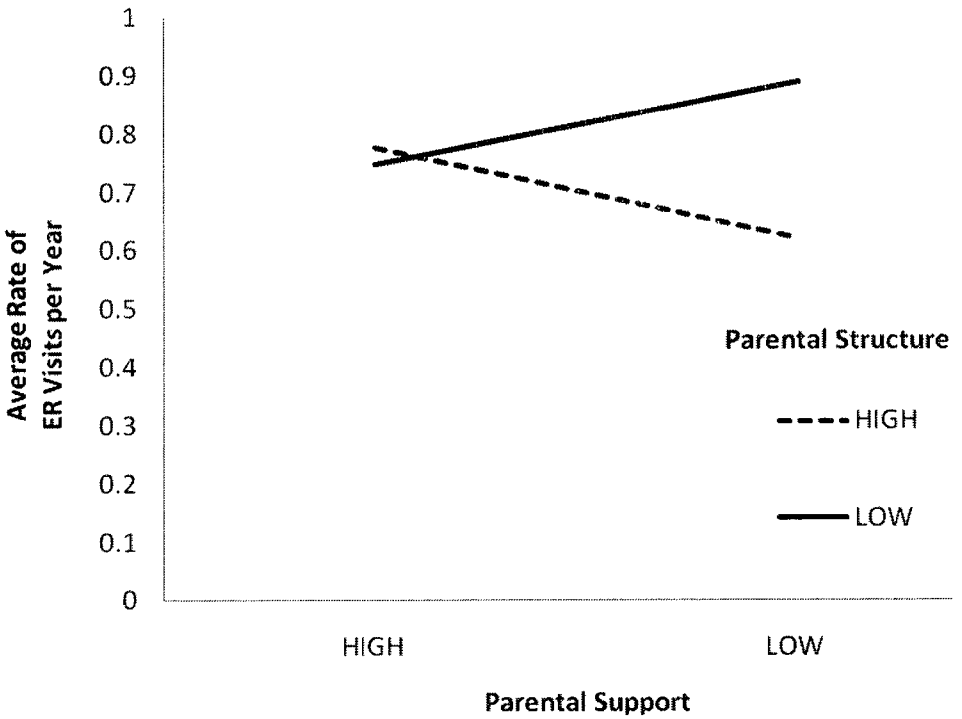

Figure 1. The average rate of emergency room visits per year as a function of parenting styles (support, structure).

234) = 2.39, $p < .05$). The interactive effects were the same for non-emergency care and acute respiratory infections (figure 2 and 3). For children of parents from a lower childhood socioeconomic background, more supportive parenting was associated with higher rates of non-emergency care and visits for medically attended acute respiratory infections than less supportive parenting. For children of parents from a higher childhood socioeconomic background, parental support had no effect on rates of non-emergency care or acute respiratory infections.

Similarly, for children of parents from a lower childhood socioeconomic background, more supportive parenting was associated with higher rates of ear infections than less supportive parenting. For children of parents from a higher childhood socioeconomic background, more supportive parenting was associated with a lower rate of medically attended ear infections then less support parenting (figure 4). In summary, support had "protective" effects primarily among parents from low SES backgrounds.

As for the effects of the control variables, parent health care use was significantly predictive of the rates of non-emergency care ($\beta = .20$, $p < .05$), emergency room visits ($\beta = .15$, $p < .05$) and acute respiratory infections ($\beta = .21$, $p < .05$). In other words, parents who used more health services had children with higher rates of non-emergency care, emergency care and acute respiratory infections.

Parents' childhood SES negatively predicted rates of emergency care visits ($\beta = -.23$, $p < .05$), and acute respiratory infections ($\beta = -.16$, $p < .05$) and tended to negatively predict ear infections ($\beta = -.12$, $p < .10$) and injuries (OR = .10, $p < .10$, CI= .01-.1.15),

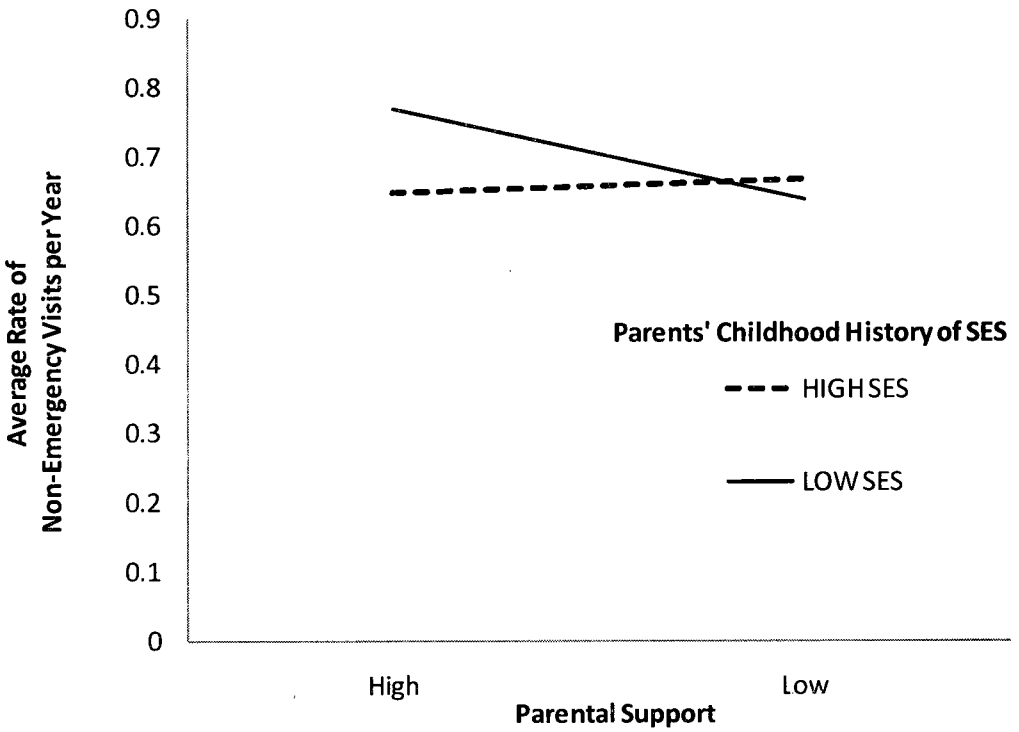

Figure 2. Relationship between parental support and the average rate of non-emergency visits per year as moderated by parents' childhood history of SES

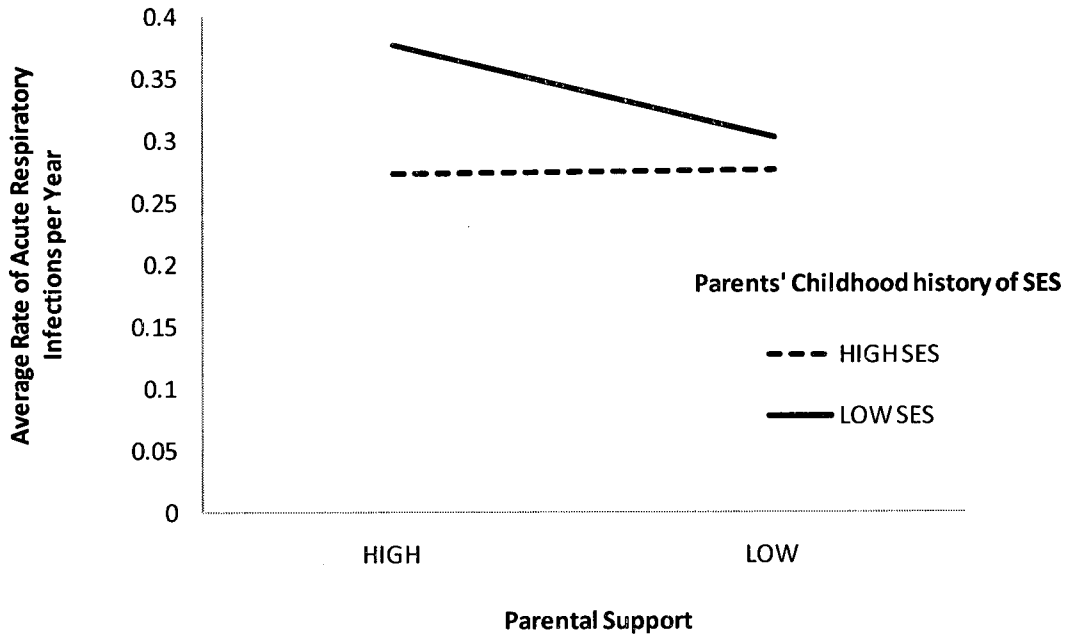

Figure 3. Relationship between parental support and the average rate of medically attended acute respiratory infections per year as moderated by parents' childhood history of SES

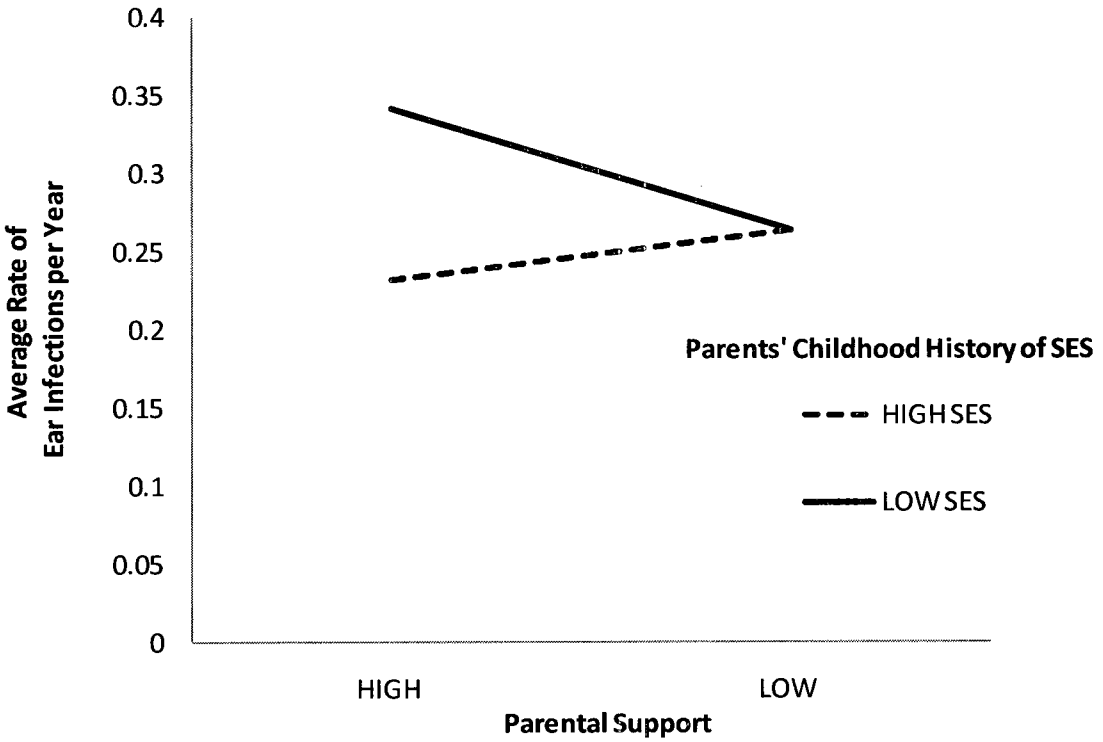

Figure 4. Relationship between parental support and the average rate of medically attended ear infections per year as moderated by parents' childhood history of SES

such that children of parents from lower SES backgrounds had higher rates of emergency room visits and medically attended acute respiratory, ear infections and injuries than parents from higher socioeconomic backgrounds.

There was a negative relationship between neighbourhood risk and non-emergency care (β = -.12, $p < .05$) and hospitalizations (OR = .56, $p < .05$, CI= .41 - .74); children from higher neighbourhood risk had lower rates of non-emergency care and hospitalization than their peers from more affluent neighbourhoods. In contrast, neighbourhood risk was positively associated with injuries (OR = 1.34, $p < .05$, CI= 1.01 - 1.77) and tended to be positively associated with emergency room visits (β = .12, $p < .10$), children from higher neighbourhood risk had higher rates of injuries and emergency care than their peers from more affluent neighbourhoods.

Parents' age at birth positively predicted non-emergency care (β = .26, $p > .05$), such that children of younger parents were less likely to use non-emergency care. Conversely, parents' age at birth negatively predicted ER visits (β = -.16, $p > .05$) and hospitalization (OR = .91, $p < .05$, CI= .82 - .99), such that children of younger parents were more likely to have higher rates of emergency care and hospitalizations than older parents.

Parental depression positively predicted rates of ear infections (β = .16, $p > .05$); depressed parents were more likely to consult a health care professional for their child's ear infections. Lastly, there was a negative relationship between anxiety and ear infections (β = -.18, $p > .05$); anxious parents were less likely to consult for their child's ear infections then parent without a history of anxiety.

Discussion

The aim of this study was to examine whether parenting dimensions would affect patterns of health care seeking in early childhood beyond the influence of parents' health seeking behaviours, psychosocial variables and demographic characteristics. The first hypothesis of this study was that the greater use of parental support, structure and control would increase the rates of visits for non-emergency care and would decrease the rates of emergency room visits and hospitalizations. As expected, children of more supportive parents had a higher rate of non-emergency visits and had fewer hospitalizations. In order to understand how parental support influences the frequency of use of these types of health services received in childhood, it is important to examine the three parenting concepts that underlie this scale. The parental support scale consists of nurturance, responsiveness and non-restrictiveness. Nurturance refers to the emotional climate of the parent-child relationship, responsiveness refers to the degree to which the children's feelings and desires are considered during parental decision making, and non-restrictiveness refers to the extent that children are allowed to express themselves. Given that more supportive parents are more nurturing, responsive and non-restrictive, it is possible that supportive parents create a secure environment in which children are encouraged to express their needs and health complaints. It is also likely that supportive parents take the symptoms and health complaints of their children more seriously, resulting in greater use of non-emergency services for treatment and preventative care. Conversely, the greater access to non-emergency care has been shown to help prevent

illness and complications of health conditions (Starfield, Shi, & Macinko, 2005) which could explain why parental support is linked to fewer hospitalizations. A third possibility is that the relation between supportive parenting style and health usage is explained by other personal characteristics which supportive parenting reflects. For example parents who adopt a more supportive parenting strategies in dealing with their children may be simply more responsible and conscientious individuals making proper use of non-emergency care including preventive checkups and vaccinations etc. thereby preventing illness and decreasing the need for hospitalizations. In this case, the effect on health care use would not operate through parent-child interactions but through parental characteristics.

Although parental support predicted children's rate of non-emergency visits and hospitalizations, it did not predict the rate of emergency room visits which was contrary to expectations. Perhaps the reason it did not affect the frequency of emergency room visits is that there may be two opposing effects of parental support, on the one hand parental support may increase parents responsively to children's health complaints prompting more emergency room visits for acute care but on the other hand parental support may reduce illness through better health management thereby decreasing the need for emergency service use. The effects of support were moderated by the socio-economic background of parents, as discussed below.

Parental structure tended to decrease children's rates of emergency room visits; however, this effect was only marginally significant. Given that parental structure describes the way in which parents provide organization and consistency to the child's

environment, more structured parents may be keeping children healthier, and thus out of the emergency department, first, by providing a safe and organized environment to live in (i.e. a clean house free of environmental hazards) and second, through the consistent use of discipline that allows children to internalizing specific rules of conduct including those related to health (e.g. "Stay away from cleaning products", "Don't leave the toys in the stairs", etc).

Contrary to expectations however, parental structure was not associated with the rate of use of non-emergency or hospitalizations. This is particularly surprising given that organizational skills are important when it comes to making and keeping appointment. However, it is possible that little parental organization is actually required for parents to provide care when children's health problems warrant medical attention. Similarly, parental consistency in child rearing may not translate to higher rates of services use for any problem other than those requiring acute medical care provided by emergency departments.

As predicted, children of more controlling parents had lower rates of emergency visits. However, in contrast to what we expected, children of more controlling parents also tended to have lower rates of non-emergency visits. Although this finding was not in line with our predictions, taken together with the results of the effect of parental control on rates of emergency room visits, it may suggest that at least during early childhood, the greater use of parental control may have a protective effect on health resulting in lower rates of both types of ambulatory care (i.e. non-emergency care and emergency room visits). This is possibly due to the fact that parents using higher levels of control are more

closely involved in directing the child's life which may be beneficial for children's health and health related behaviours at this young age. A second possibility is that parents who are high on control have children that are more responsible and compliant with authority, engaging in less health damaging behaviours. Alternatively, a third possibility is that individuals using higher levels of control may be keeping their children away from health services altogether, opting instead to treat their children at home.

The second hypothesis of this study was that the greater use of parental support structure and control would reduce the rate of medically attended acute respiratory infections, ear infections and injuries. Contrary to expectations, the individual effect of parental support did not have an effect on ear infections and injuries and it only tended to increase acute respiratory infections (significant interactions came through and are discussed below). As predicted however, children of more structured parents had fewer overall visits for acute respiratory illnesses and ear infections. Similar to the explanation of the effects of structure on emergency room visits, more structured parents may be decreasing the frequency of visits for ear infections and acute respiratory infections through the environment parents provide for their children (e.g. cleaner homes may protect against germs associated with the onset of both acute respiratory infections and ear infections) as well as the socialization of children's health related behaviours (e.g. hand washing).

Surprisingly, there were no effects of parental on rates of medically attended injuries. Perhaps the frequency of injuries in sample was too small to detect effects of parenting dimensions.

The third hypothesis of this study was that parenting styles would interact to influence patterns of health care use. Of all the possible interactive effects between parenting dimensions on the frequency of health care use for the different types of health service, there was only one significant interaction. Parental structure and support interacted to predict emergency room visits. At low levels of parental structure, lower parental support was associated with a higher rate of emergency room visits than higher support. Conversely, at higher levels of parental structure, lower parental support was associated with a lower rate of emergency room visits than higher support. These findings suggest that, living in less predictable and more disorganized environment characterized by lower emotional support and responsiveness may be particularly detrimental to children's health.

There was no interactive effect between parental support and control which is inconsistent with the typological approach of parenting styles built on the assumption that it is necessary to consider the interactive effects of the dimensions of parental support and control (Baumrind, 1971; Maccoby & Martin, 1983). This finding provides additional support for the disaggregation of parenting styles into their separate dimensions.

The fourth hypothesis of this study was that disadvantaged conditions (parents' history of SES, children's current SES and neighbourhood risk) would moderate the effects of parenting on children's health seeking patterns. Of all three indices of socioeconomic status and the three dimensions of parenting, only parents' childhood SES interacted with parental support to affect children's patterns of health care use. The combined effect of parental support and parents' childhood SES influenced the rates of

non-emergency service use, ear infections and acute respiratory infections. For children of parents from a lower childhood socioeconomic background, more supportive parenting was associated with higher rates of non-emergency care and visits for medically attended acute respiratory infections than less supportive parenting. For children of parents from a higher childhood socioeconomic background, parental support had no effect on rates of non-emergency care and acute respiratory infections. Likewise, for children of parents from a lower childhood socioeconomic background, more supportive parenting was associated with higher rates of consultations for ear infections then less supportive parenting. However, for children of parents from a higher childhood socioeconomic background parents, more supportive parenting was associated with a lower rate of medically attended ear infections then less support parenting.

Drawing on the evidence linking childhood socioeconomic disadvantage to poor health-related behaviours in adulthood (Van de Mheen et al., 1998), these interactions seem to suggest that children of parents from disadvantaged background are at increased risk of poor health and health care use, but that more supportive parenting is protective against the effects of poverty on health-seeking behaviour. Unfortunately, parents from disadvantaged conditions may be the very parents that are less likely to be supportive in their parenting. In this study, supportive parenting was positively correlated with parents' childhood SES (r=.13) and children's current SES (r=.29).

Although some of the hypotheses of this study were not supported, most of the findings suggest that the greater use of parental support, structure and control have a beneficial impact on children's health and patterns of health usage. This study highlights

the importance of considering parenting dimensions when evaluating health and health care utilization in early childhood. It also underscores the value of examining different types of health services and health outcomes, given that the effect of parenting as well as a number of other predictors, differed according to the type of care being considered

Although this was not the focus of our study, there were interesting effects of certain control variables that are worth mentioning. First, although, two separate indicators of individual SES were considered in this study (i.e. past and current), parents' childhood SES had a stronger influence on patterns of health care use then children's current SES. Children of parents from disadvantaged backgrounds had significantly higher rates of emergency room visits, acute respiratory infection and tended to have higher rates of ear infections and injuries then parents from higher prestige background. This is consistent with the evidence demonstrating that child SES can have longstanding influences on adult health-related behaviours (Van de Mheen et al., 1998), However, this is the first study that examines the effects of childhood SES on health and health care use in the next generations and the first one to provide evidence that the SES in which a child is raised may have greater effects on health and health seeking behaviours in the next generation then the SES of that subsequent generation.

Another control variable that merits attention is neighbourhood risk. Children from disadvantaged neighbourhoods had lower rates of non-emergency care and tended to have higher rates of emergency care and injuries which is consistent with the previous literature (Brooks-Gunn et al., 1998; Nadel, 1993). However, in contrast to the previous literature, children in higher risk neighbourhoods had fewer hospitalizations. Perhaps this

is because children from high risk neighbourhoods are receiving less non-emergency care and are not getting screened for conditions requiring hospitalizations (i.e. surgery).

Limitations

Though this study provides new insight into the factors that influence child health and service use, there are some limitations that merit acknowledgement and should be considered when planning future research in this area. First, the amount of explained variance in this study is low to modest. However, modest effect sizes are relatively common in health service research (e.g. Janicke, et al. 2001; Horwitz et al., 1985; Kelleher, & Starfield 1990; Riley et al., 1993), as there are many factors that contribute to children's patterns of health care use.

Second, for the measure of parenting dimensions, social desirability bias may influence parent reports of support, structure and control. Future research should incorporate additional measures of parenting, preferably based on observations.

Third, this sample of parents was initially recruited from low income urban districts; therefore there is an over-representation of parents from low income backgrounds limiting the generalizability of these results. However, as research shows health disparities associated with conditions of disadvantage (Brook-Gunn et al., 1998; Nadel, 1993), it is important to look at the determinants of health and service use in these high risk children. Though research in this type of at risk population merits attention, further research needs to be conducted to see if parenting affects children's health usage in the general population.

Forth, due to the prospective intergenerational nature of this study, children varied in age at the third phase of data collection (1999-2003); for a number of children, this meant that the data collected during phase 3 was after the period of early childhood. However, most of the measures, including parenting and parents' mental health, are considered to be stable across time (Darling & Steinberg, 1993; Merikangas, 2003). Nonetheless, future research should incorporated measures that are taken during the period for which health data is being collected.

Implications and Future Directions

In addition to the benefits on various aspects of children's development, this study demonstrates that greater support, structure and control have positive impacts on early childhood health and health service use. Given these results and those of prior studies linking parenting styles to illness-management, treatment outcomes on children's health-related behaviours, focusing on general aspects of parenting may be a useful direction for future research on children's health and pediatric care.

The knowledge of how parenting dimensions are associated with children's health and health care use in different social contexts is also important for targeting specific groups of the population when developing health education programs. Studies such as this one provide the theoretical basis for developing interventions aimed at parenting in high risk populations as children from disadvantaged conditions are the ones that are the most at risk and stand to gain the most benefits from theses interventions. Public health interventions that incorporate parenting training on support, structure and control as well

as specific parenting behaviours may be more successful in preventing a variety of health problems than current efforts focussing on individual parenting behaviours alone.

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Appendix A

French Version of the Parenting Dimensions Inventory

Rempli par: **Mère** **Père** No d'identification: _____

PDI

Les énoncés suivants portent sur des sujets d'intérêt et de préoccupation dans l'éducation des enfants pour certains parents. Tous les parents n'ont pas le même point de vue face à ces sujets. Encerclez le chiffre qui s'applique le mieux à votre façon de faire avec votre enfant.

Pas du tout représentatif de moi 1	Très peu représentatif de moi 2	Un peu représentatif de moi 3	Assez représentatif de moi 4	Très représentatif de moi 5	Tout à fait représentatif de moi 6

1.	J' encourage mon enfant à parler de ses problèmes.	1	2	3	4	5	6
2.	Je maintiens toujours jusqu' au bout la discipline établie pour mon enfant, peu importe le temps que cela prend.	1	2	3	4	5	6
3.	Parfois c'est tellement long entre le moment où mon enfant se conduit mal et le moment où j'ai l'opportunité d'y réagir, que je laisse cela passer.	1	2	3	4	5	6
4.	Je ne permets pas à mon enfant de se mettre en colère contre moi.	1	2	3	4	5	6
5.	Il y a des fois où je n'ai tout simplement pas l'énergie pour faire en sorte que mon enfant se conduise comme il le devrait.	1	2	3	4	5	6
6.	Il y a des fois où je n'ai tout simplement pas l'énergie pour faire en sorte que mon enfant se conduise comme il le devrait.	1	2	3	4	5	6
7.	Mon enfant me persuade de changer d'idée après que je lui aie refusé une demande.	1	2	3	4	5	6
8.	Je crois que mon enfant devrait être encouragé(e) à faire les choses mieux que les autres enfants.	1	2	3	4	5	6
9.	Mon enfant et moi vivons souvent des moments intimes et chaleureux ensemble.	1	2	3	4	5	6
10.	J'encourage mon enfant à être curieux(se), à explorer et à questionner les choses	1	2	3	4	5	6
11.	Je trouve cela intéressant et éducatif d'être avec mon enfant pendant de longues périodes.	1	2	3	4	5	6
12.	Je ne crois pas que les enfants devraient recevoir de l'information sexuelle.	1	2	3	4	5	6

13.	Je crois que les enfants doivent écouter et se taire.	1	2	3	4	5	6
14.	Je crois que ce n'est pas toujours une bonne idée d'encourager les enfants à parler de leurs inquiétudes parce que parfois cela les perturbe davantage.	1	2	3	4	5	6
15.	J'encourage mon enfant à exprimer ses opinions.	1	2	3	4	5	6
16.	Je m'assure que mon enfant sache à quel point j'apprécie ce qu'il essaie d'accomplir.	1	2	3	4	5	6
17.	Je laisse savoir à mon enfant à quel point je suis humilié(e) et désappointé(e) lorsqu'il se conduit mal.	1	2	3	4	5	6
18.	Je crois qu'un enfant doit être entraîné à la propreté le plus tôt possible.	1	2	3	4	5	6
19.	Je crois que la plupart des enfants changent d'idée tellement souvent qu' il est difficile de prendre leurs opinions au sérieux.	1	2	3	4	5	6
20.	Je n'ai pas ou très peu de difficulté à m'en tenir aux règles de conduite que j' ai établies pour mon enfant, même lorsque des proches parents (incluant les grands-parents) sont présents.	1	2	3	4	5	6
21.	Lorsque je laisse mon enfant parler de ses problèmes, il finit par se plaindre davantage	1	2	3	4	5	6
22.	Je m'attends à ce que mon enfant soit reconnaissant envers ses parents et apprécie tous les avantages qu'il a.	1	2	3	4	5	6
23.	Une fois que j'ai décidé comment réagir/intervenir à une mauvaise conduite de mon enfant, je tiens jusqu'au bout.	1	2	3	4	5	6
24.	Je respecte les opinions de mon enfant et je l'encourage à les exprimer.	1	2	3	4	5	6
25.	Je ne menace jamais mon enfant de le punir à moins d'être certain(e) de pouvoir tenir parole.	1	2	3	4	5	6
26.	Je ne menace jamais mon enfant de le punir à moins d'être certain(e) de pouvoir tenir parole.	1	2	3	4	5	6

Voici une liste d'énoncés concernant les attitudes parentales envers l'éducation des enfants. Comparez les deux énoncés et déterminez avec lequel vous êtes le plus en accord. Encerclez le chiffre qui correspond.
Si vous êtes également en accord avec les deux énoncés, encerclez également en accord avec l'énoncé A et B .

Fortement plus en accord avec A 1	Modérément plus en accord avec A 2	Légèrement plus en accord avec A 3	Également en accord avec A et B 4	Légèrement plus en accord avec B 5	Modérément plus en accord avec B 6	Fortement plus en accord avec B 7

A		B
De nos jours, on met trop d'emphase sur l'obéissance de la part des enfants.	1 2 3 4 5 6 7	De nos jours, les parents sont trop soucieux de laisser faire aux enfants ce qu'ils veulent.
Les enfants ont besoin de plus de liberté qu'ils n'en ont actuellement pour arriver à se faire leur propre idée sur les choses.	1 2 3 4 5 6 7	Les enfants ont besoin de plus de direction qu'ils n'en ont actuellement de la part de leurs parents.
Je me soucie plus que la plupart des parents que je connais de faire en sorte que mes enfants m'obéissent.	1 2 3 4 5 6 7	Je me soucie moins que la plupart des parents que je connais de faire en sorte que mes enfants m'obéissent.
J'essaie d'empêcher mes enfants de faire des erreurs en établissant des règles pour leurs propres bien.	1 2 3 4 5 6 7	J'essaie de donner à mes enfants la liberté de faire des erreurs et d'apprendre de celles-ci.
Si les enfants ont trop de règles à suivre, ils deviendront des adultes malheureux.	1 2 3 4 5 6 7	Il est important d'établir et d'imposer des règles aux enfants pour qu'ils deviennent des adultes heureux.

IV Pour chacun des énonces suivants, encerclez le chiffre qui indique la fréquence à laquelle cet énoncé est vrai pour votre famille.

Jamais 1	Une fois de temps en temps 2	Quelquefois 3	Fréquemment 4	La plupart du temps 5	Toujours 6

Durant la semaine, nous suivons un horaire régulier pour les soupers.	1 2 3 4 5
Notre maison est propre et en ordre.	1 2 3 4 5
Notre famille est organisée et unie.	1 2 3 4 5
Nous arrivons à faire toutes les choses qui ont besoin d'être faites dans la maison.	1 2 3 4 5

V. Encerclez le nombre de tâches régulières assignées à vos enfants dans les domaines suivants:

Aucune 0	Une 1	Deux 2	Trois ou + 3

Les repas (aller à l'épicerie, cuisiner, mettre la table, laver la vaisselle, etc.).	0 1 2 3
Entretien (nettoyer une pièce, faire le lit, sortir les déchets, etc.).	0 1 2 3
Lessive (mettre les vêtements sales au panier, les laver, les repasser, etc.).	0 1 2 3
Travail sur le terrain (tondre le gazon, ramasser les feuilles, balayer les allées, etc.).	0 1 2 3
Prendre soin d'un ou des animaux domestiques (chien, chat...., les nourrir, faire une promenade, nettoyer la litière, etc.).	0 1 2 3
Autre (garder les enfants, arroser les plantes, laver l'auto, ramasser le courrier).	0 1 2 3

VI. Voici différentes situations qui se produisent fréquemment à l'enfance. Vous pouvez avoir vécu ou non ces expériences avec vos propres enfants.
Imaginez que chacune de ces situations vienne de se produire et indiquez quelles sont les chances que vous réagissiez ainsi.

Très peu probable 0	Peu probable 1	Probable 2	Très probable 3

1) **Votre enfant est sorti à l'extérieur sans avoir ramassé ses jouets comme vous l'aviez demandé.**

Ignorer la situation.	0 1 2 3
Retirer un privilège (p. ex. pas de dessert, de télé) ou ajouter une corvée (p. ex. ranger les jouets).	0 1 2 3
L'envoyer dans sa chambre ou le mettre en punition sur une chaise.	0 1 2 3
Lui donner une fessée ou le frapper.	0 1 2 3
Parler à l'enfant (discuter des possibilités, expliquer pourquoi vous voulez qu'il fasse ou ne fasse pas telle chose).	0 1 2 3
Le gronder.	0 1 2 3
Lui rappeler la règle de conduite ou lui répéter la directive.	0 1 2 3

2) **Après s'être disputé pour des jouets, votre enfant frappe un camarade.**

Ignorer la situation.	0 1 2 3
Retirer un privilège (p. ex. pas de dessert, de télé) ou ajouter une corvée (p. ex. ranger les jouets).	0 1 2 3
L'envoyer dans sa chambre ou le mettre en punition sur une chaise.	0 1 2 3
Lui donner une fessée ou le frapper.	0 1 2 3
Parler à l'enfant (discuter des possibilités, expliquer pourquoi vous voulez qu'il fasse ou ne fasse pas telle chose).	0 1 2 3
Le gronder.	0 1 2 3
Lui rappeler la règle de conduite ou lui répéter la directive.	0 1 2 3

3) **Votre enfant devient effronté pendant que vous le disciplinez.**

Ignorer la situation.	0 1 2 3
Retirer un privilège (p. ex. pas de dessert, de télé) ou ajouter une corvée (p. ex. ranger les jouets).	0 1 2 3
L'envoyer dans sa chambre ou le mettre en punition sur une chaise.	0 1 2 3
Lui donner une fessée ou le frapper.	0 1 2 3
Parler à l'enfant (discuter des possibilités, expliquer pourquoi vous voulez qu'il fasse ou ne fasse pas telle chose).	0 1 2 3
Le gronder.	0 1 2 3
Lui rappeler la règle de conduite ou lui répéter la directive.	0 1 2 3

4) **Vous recevez une note de la part du professeur disant que votre enfant a été dérangeant à l'école.**

Ignorer la situation.	0 1 2 3
Retirer un privilège (p. ex. pas de dessert, de télé) ou ajouter une corvée (p. ex. ranger les jouets).	0 1 2 3
L'envoyer dans sa chambre ou le mettre en punition sur une chaise.	0 1 2 3
Lui donner une fessée ou le frapper.	0 1 2 3
Parler à l'enfant (discuter des possibilités, expliquer pourquoi vous voulez qu'il fasse ou ne fasse pas telle chose).	0 1 2 3
Le gronder.	0 1 2 3
Lui rappeler la règle de conduite ou lui répéter la directive.	0 1 2 3

5) **Vous surprenez votre enfant à mentir à propos de quelque chose qu'il a fait et que vous désapprouvez.**

Ignorer la situation.	0 1 2 3
Retirer un privilège (p. ex. pas de dessert, de télé) ou ajouter une corvée (p. ex. ranger les jouets).	0 1 2 3
L'envoyer dans sa chambre ou le mettre en punition sur une chaise.	0 1 2 3
Lui donner une fessé ou le frapper.	0 1 2 3
Parler à l'enfant (discuter des possibilités, expliquer pourquoi vous voulez qu'il fasse ou ne fasse pas telle chose).	0 1 2 3
Le gronder.	0 1 2 3
Lui rappeler la règle de conduite ou lui répéter la directive.	0 1 2 3

6) Vous apercevez votre enfant en train de jouer dans une rue passante où vous lui avez défendu d'aller pour raisons de sécurité.

Ignorer la situation.	0 1 2 3
Retirer un privilège (p. ex. pas de dessert, de télé) ou ajouter une corvée (p. ex. ranger les jouets).	0 1 2 3
L'envoyer dans sa chambre ou le mettre en punition sur une chaise.	0 1 2 3
Lui donner une fessée ou le frapper.	0 1 2 3
Parler à l'enfant (discuter des possibilités, expliquer pourquoi vous voulez qu'il fasse ou ne fasse pas telle chose).	0 1 2 3
Le gronder.	0 1 2 3
Lui rappeler la règle de conduite ou lui répéter la directive.	0 1 2 3

Merci de votre collaboration.

Apendix B

Pupil Evaluation Inventory

ÉVALUATION PAR LES PAIRS - garçons

Voici la liste des items présentés aux enfants et le facteur correspondant à chacun.

A - Agressivité
I - Isolement social
P - Popularité

Les énoncés précédés de - - correspondent à la version présentée en première année.

L'énoncé # 1 ne se rattache à aucun facteur et ne sert que de pratique.

La liste concernant les filles est identique à celle rédigée ci-dessous.

- -		1.	Ceux qui sont plus grands que les autres.
	P	2.	Ceux qui aident les autres.
	A	3.	Ceux qui ne sont pas capables de rester assis tranquilles.
	A	4.	Ceux qui essaient de mettre les autres dans le trouble.
- -	I	5.	Ceux qui sont trop timides pour se faire des ami(e)s facilement.
- -	I	6.	Ceux qui se sentent trop facilement blessés.
	A	7.	Ceux qui prennent des airs supérieurs et qui pensent qu'ils valent mieux que tout le monde.
	A	8.	Ceux qui font les clowns et qui font rire les autres.
- -	A	9.	Ceux qui commencent la chicane à propos de rien.
	I	10.	Ceux qui ne semblent jamais s'amuser.
	I	11.	Ceux qui sont bouleversés quand ils ont à répondre aux questions en classe.
	A	12.	Ceux qui disent aux autres enfants quoi faire.

I 13. Ceux qui sont d'habitude les derniers choisis pour participer à des activités de groupe.

- - P 14. Ceux que tout le monde aime.

A 15. Ceux qui s'empêtrent tout le temps et se mettent en difficultés.

- - A 16. Ceux qui rient des gens.

- - I 17. Ceux qui ont très peu d'ami(e)s.

A 18. Ceux qui font des choses bizarres.

P 19. Ceux qui sont tes meilleurs amis.

- - A 20. Ceux qui ennuient les gens qui essaient de travailler.

A 21. Ceux qui se mettent en colère quand ça ne marche pas comme ils veulent.

- - A 22. Ceux qui ne portent pas attention au professeur.

A 23. Ceux qui sont impolis avec le professeur.

- - I 24. Ceux qui sont malheureux ou tristes.

P 25. Ceux qui sont particulièrement gentils.

- - A 26. Ceux qui se comportent comme des bébés.

A 27. Ceux qui sont méchants et cruels avec les autres enfants.

- - I 28. Ceux qui ne veulent pas jouer.

A 29. Ceux qui vous regardent de travers.

A 30. Ceux qui veulent faire les fins devant la classe.

- - A 31. Ceux qui disent qu'ils peuvent battre tout le monde.

- - I 32. Ceux que l'on ne remarque pas beaucoup.

- - A 33. Ceux qui exagèrent et racontent des histoires.

- - A 34. Ceux qui se plaignent toujours et qui ne sont jamais contents.

- - P 35. Ceux qui semblent toujours comprendre ce qui se passe.

ÉVALUATION PAR LES PAIRS - filles

Voici la liste des énoncés présentés aux enfants et le facteur correspondant à chacun.

A - Agressivité
I - Isolement
P - Popularité

Les énoncés précédés de - - correspondent à la version présentée en première année.

L'énoncé # 1 ne se rattache à aucun facteur et ne sert que de pratique.

La liste concernant les garçons est identique à celle rédigée ci-dessous.

- -		1.	Celles qui sont plus grandes que les autres.
	P	2.	Celles qui aident les autres.
	A	3.	Celles qui ne sont pas capables de rester assises tranquilles.
	A	4.	Celles qui essaient de mettre les autres dans le trouble.
- -	I	5.	Celles qui sont trop timides pour se faire des ami(e)s facilement.
- -	I	6.	Celles qui se sentent trop facilement blessées.
	A	7.	Celles qui prennent des airs supérieurs et qui pensent qu'elles valent mieux que tout le monde.
	A	8.	Celles qui font les clowns et qui font rire les autres.
- -	A	9.	Celles qui commencent la chicane à propos de rien.
	I	10.	Celles qui ne semblent jamais s'amuser.
	I	11.	Celles qui sont bouleversées quand elles ont à répondre aux questions en classe.
	A	12.	Celles qui disent aux autres enfants quoi faire.

I 13. Celles qui sont d'habitude les dernières choisies pour participer à des activités de groupe.

- - P 14. Celles que tout le monde aime.
A 15. Celles qui s'empêtrent tout le temps et se mettent en difficultés.

- - A 16. Celles qui rient des gens.

- - I 17. Celles qui ont très peu d'ami(e)s.

A 18. Celles qui font des choses bizarres.

P 19. Celles qui sont tes meilleures amies.

- - A 20. Celles qui ennuient les gens qui essaient de travailler.

A 21. Celles qui se mettent en colère quand ça ne marche pas comme elles veulent.

- - A 22. Celles qui ne portent pas attention au professeur.

A 23. Celles qui sont impolies avec le professeur.

- - I 24. Celles qui sont malheureuses ou tristes.

P 25. Celles qui sont particulièrement gentilles.

- - A 26. Celles qui se comportent comme des bébés.

A 27. Celles qui sont méchantes et cruelles avec les autres enfants.

- - I 28. Celles qui ne veulent pas jouer.

A 29. Celles qui vous regardent de travers.

A 30. Celles qui veulent faire les fines devant la classe.

- - A 31. Celles qui disent qu'elles peuvent battre tout le monde.

- - I 32. Celles que l'on ne remarque pas beaucoup.

- - A 33. Celles qui exagèrent et racontent des histoires.

- - A 34. Celles qui se plaignent toujours et qui ne sont jamais contentes.

- - P 35. Celles qui semblent toujours comprendre ce qui se passe.

ÉVALUATION PAR LES PAIRS

AGRESSIVITÉ

3. Ceux qui ne sont pas capables de rester assis tranquilles.

4. Ceux qui essaient de mettre les autres dans le trouble.

7. Ceux qui prennent des airs supérieurs et qui pensent qu'ils valent mieux que tout le monde.

8. Ceux qui font les clowns et qui font rire les autres.

- - 9. Ceux qui commencent la chicane à propos de rien.

12. Ceux qui disent aux autres enfants quoi faire.

15. Ceux qui s'empêtrent tout le temps et se mettent en difficultés.

- - 16. Ceux qui rient des gens.

18. Ceux qui font des choses bizarres.

- - 20. Ceux qui ennuient les gens qui essaient de travailler.

21. Ceux qui se mettent en colère quand ça ne marche pas comme ils veulent.

- - 22. Ceux qui ne portent pas attention au professeur.

23. Ceux qui sont impolis avec le professeur.

- - 26. Ceux qui se comportent comme des bébés.

27. Ceux qui sont méchants et cruels avec les autres enfants.

29. Ceux qui vous regardent de travers.

30. Ceux qui veulent faire les fins devant la classe.

- - 31. Ceux qui disent qu'ils peuvent battre tout le monde.

- - 33. Ceux qui exagèrent et racontent des histoires.

- - 34. Ceux qui se plaignent toujours et qui ne sont jamais contents.

ISOLEMENT SOCIAL

- - 5. Ceux qui sont trop timides pour se faire des ami(e)s facilement.

- - 6. Ceux qui se sentent trop facilement blessés.

10. Ceux qui ne semblent jamais s'amuser.

11. Ceux qui sont bouleversés quand ils ont à répondre aux questions en classe.

13. Ceux qui sont d'habitude les derniers choisis pour participer à des activités de groupe.

- - 17. Ceux qui ont très peu d'ami(e)s.

- - 24. Ceux qui sont malheureux ou tristes.

- - 28. Ceux qui ne veulent pas jouer.

- - 32. Ceux que l'on ne remarque pas beaucoup.

POPULARITÉ

2. Ceux qui aident les autres.

- - 14. Ceux que tout le monde aime.

19. Ceux qui sont tes meilleurs amis.

25. Ceux qui sont particulièrement gentils.

- - 35. Ceux qui semblent toujours comprendre ce qui se passe.

PUPIL EVALUATION INVENTORY

* Items used in Grade 1

Prog. #	PEI #		AGGRESSION ITEMS
1		3.	Those who can't sit still.
2		4.	Those who try to get other people into trouble
3		7.	Those who act stuck-up and think they are better than everyone else.
4		8.	Those who play the clown and get others to laugh.
5	(1)*	9.*	Those who start a fight over nothing.
6		12.	Those who tell other children what to do.
7		15.	Those who always mess around and get into trouble.
8	(2)	16.	Those who make fun of people.
9		18.	Those who do strange things.
10	(3)	20.	Those who bother people when they're trying to work.
11		21.	Those who get mad when they don't get their way.
12	(4)	22.	Those who don't pay attention to the teacher.
13		23.	Those who are rude to the teacher.
14	(5)	26.	Those who act like a baby.
15		27.	Those who are mean and cruel to other children.
16		29.	Those who give dirty looks.
17		30.	Those who want to show off in front of the class.

18	(6)	31.	Those who say they can beat everybody up.
19	(7)	33.	Those who exaggerate and make up stories.
20	(8)	34.	Those who complain nothing seems to make them happy.

Prog. #	PEI #		
			WITHDRAWAL ITEMS
21	(9)	5.	Those who are too shy to make friends easily.
22	(10)	6.	Those whose feelings are too easily hurt.
23		10.	Those who never seem to be having a good time.
24		11.	Those who are upset when called on to answer questions in class.
25		13.	Those who are usually chosen last to join in group activities.
26	(11)	17.	Those who have very few friends.
27	(12)	24.	Those who are unhappy or sad.
28	(13)	28.	Those who often don't want to play.
29	(14)	32.	Those who aren't noticed much.
			LIKEABILITY ITEMS
30		2.	Those who help others.
31	(15)	14.	Those who are liked by everyone.
32		19.	Those who are your best friends.
33		25.	Those who are especially nice.

34	(16)	35.	Those who always seem to understand things.

PUPIL EVALUATION INVENTORY

AGGRESSION ITEMS

Male Profile

Those who can't sit still.

Those who play the clown and get others to laugh.

Those who make fun of people.

Those who bother people when they're trying to work.

Those who don't pay attention to the teacher.

Those who want to show off in front of the class.

Gender Neutral Profile

Those who act stuck-up and think they are better than everyone.

Those who start a fight over nothing.

Those who tell other children what to do.

Those who give dirty looks.

Those who try to get other people into trouble

Those who always mess around and get into trouble.

Those who do strange things.

Those who get mad when they don't get their way.

Those who are rude to the teacher.

Those who act like a baby.

Those who are mean and cruel to other children.

Those who say they can beat everybody up.

Those who exaggerate and make up stories.

Those who complain nothing seems to make them happy.

WITHDRAWAL ITEMS

Those who are too shy to make friends easily.

Those whose feelings are too easily hurt. (*Not used*)

Those who never seem to be having a good time.

Those who are upset when called on to answer questions in class.
(*Not used*)

Those who are usually chosen last to join in group activities.

Those who have very few friends.

Those who are unhappy or sad.

Those who often don't want to play.

Those who aren't noticed much.

LIKEABILITY ITEMS

Those who help others.

Those who are liked by everyone.

Those who are your best friends.

Those who are especially nice.

Those who always seem to understand things.

Pekarik, E. G., Prinz, R. J., Liebert, D. E., Weintraub, S., & Neale, J. M. (1976). The Pupil Evaluation Inventory: A sociometric technique for assessing children's social behaviour. *Journal of Abnormal Child Psychology, 4*(1), 83-97

Appendix C

Full Regression Models

Table 1.

Regression Models for Non-Emergency Visits (n=250)

		Adj. R^2	B	SE B	β
Step 1		0.11			
	Parent Gender		0.00	0.02	0.00
	Child Gender		0.01	0.01	0.05
	Parents' Health Care Use		0.14	0.05	0.18 *
	Parents' History of SES		-0.20	0.14	-0.09
	Children's Current SES		-0.12	0.13	-0.06
	Neighborhood Risk		-0.03	0.02	-0.12 t
	Age at Birth of Child		0.02	0.01	0.30 *
	Aggression		-0.03	0.02	-0.12 t
	Withdrawal		-0.01	0.02	-0.04
	Depression		0.02	0.02	0.06
	Anxiety		-0.02	0.02	-0.06
Step 2		0.14			
	Parent Gender		0.01	0.02	0.02
	Child Gender		0.01	0.01	0.04
	Parents' Health Care Use		0.15	0.05	0.20 *
	Parents' History of SES		-0.20	0.13	-0.09
	Children's Current SES		-0.20	0.14	-0.10
	Neighborhood Risk		-0.03	0.02	-0.12 *
	Age at Birth of Child		0.02	0.01	0.26 *
	Aggression		-0.03	0.02	-0.11 t
	Withdrawal		-0.01	0.02	-0.03
	Depression		0.02	0.02	0.07
	Anxiety		-0.02	0.02	-0.08
	Support		0.02	0.01	0.15 *
	Structure		-0.02	0.02	-0.10
	Control		-0.05	0.03	-0.13 t
Step 3		0.16			
	Parent Gender		0.00	0.02	0.01
	Child Gender		0.01	0.01	0.06
	Parents' Health Care Use		0.14	0.05	0.19 *
	Parents' History of SES		-0.21	0.13	-0.10
	Children's Current SES		-0.14	0.14	-0.07
	Neighborhood Risk		-0.03	0.01	-0.11 t
	Age at Birth of Child		0.02	0.01	0.25 *
	Aggression		-0.03	0.02	-0.11 t
	Withdrawal		0.00	0.02	-0.01
	Depression		0.02	0.02	0.06
	Anxiety		-0.02	0.02	-0.07
	Support		0.02	0.01	0.12 t
	Structure		-0.02	0.02	-0.09
	Control		-0.05	0.03	-0.11 t
	Support X Parents' History of SES		-0.21	0.08	-0.16 *

$^{t}p < .10$, $*p < .05$.

Table 2.

Regression Models for Emergency Room Visits (n=250)

		Adj. R^2	B	SE B	β
Step 1		0.90			
	Parent Gender		-0.08	0.04	-0.13 *
	Child Gender		0.01	0.03	0.01
	Parents' Health Care Use		0.25	0.11	0.15 *
	Parents' History of SES		-1.19	0.31	-0.24 *
	Children's Current SES		-0.07	0.31	-0.02
	Neighborhood Risk		0.07	0.03	0.13 *
	Age at Birth of Child		-0.02	0.01	-0.11
	Aggression		-0.03	0.04	-0.06
	Withdrawal		0.00	0.04	0.00
	Depression		0.03	0.05	0.04
	Anxiety		-0.03	0.05	-0.04
Step 2		0.14			
	Parent Gender		0.06	0.04	0.11
	Child Gender		0.01	0.02	0.01
	Parents' Health Care Use		0.26	0.11	0.15 *
	Parents' History of SES		-1.13	0.31	-0.23 *
	Children's Current SES		-0.13	0.31	-0.03
	Neighborhood Risk		0.06	0.03	0.12 t
	Age at Birth of Child		-0.03	0.01	-0.16 *
	Aggression		-0.02	0.04	-0.04
	Withdrawal		0.00	0.04	0.00
	Depression		0.04	0.05	0.06
	Anxiety		-0.04	0.04	-0.06
	Support		0.02	0.02	0.06
	Structure		-0.06	0.04	-0.11 t
	Control		-0.21	0.06	-0.17 *
Step 3		0.15			
	Parent Gender		0.07	0.04	0.12 t
	Child Gender		0.02	0.03	0.03
	Parents' Health Care Use		0.27	0.11	0.16 *
	Parents' History of SES		-1.16	0.30	-0.23 *
	Children's Current SES		-0.14	0.31	-0.03
	Neighborhood Risk		0.06	0.03	0.11 t
	Age at Birth of Child		-0.03	0.01	-0.15 *
	Aggression		-0.02	0.04	-0.04
	Withdrawal		0.00	0.04	0.00
	Depression		0.03	0.05	0.04
	Anxiety		-0.05	0.04	-0.07
	Support		0.03	0.02	0.07
	Structure		-0.07	0.03	-0.12 t
	Control		-0.20	0.06	-0.21 *
	Support X Structure		0.04	0.02	0.12 *

$^t p < .10$, $^* p < .05$.

Table 3.
Regression Model for Ear Infections (n=250)

		Adj. R^2	B	SE B	β
Step 1		0.05			
	Parent Gender		0.02	0.01	0.74
	Child Gender		0.03	0.02	0.12 †
	Parents' Health Care Use		0.07	0.01	0.10
	Parents' History of SES		-0.24	0.12	-0.13 *
	Children's Current SES		-0.08	0.12	-0.05
	Neighborhood Risk		-0.01	0.01	-0.03
	Age at Birth of Child		0.00	0.00	-0.01
	Aggression		-0.03	0.01	-0.13 †
	Withdrawal		0.00	0.02	0.00
	Depression		-0.04	0.02	0.16 *
	Anxiety		-0.04	0.02	-0.16 *
Step 2		0.06			
	Parent Gender		0.02	0.01	0.10
	Child Gender		0.03	0.02	0.12 †
	Parents' Health Care Use		0.07	0.04	0.12 †
	Parents' History of SES		-0.23	0.12	-0.12 †
	Children's Current SES		-0.11	0.12	-0.07
	Neighborhood Risk		-0.01	0.01	-0.03
	Age at Birth of Child		0.00	0.00	-0.04
	Aggression		-0.03	0.01	-0.12 †
	Withdrawal		0.00	0.01	0.00
	Depression		0.04	0.02	0.16 *
	Anxiety		-0.05	0.02	-0.18 *
	Support		0.01	0.01	0.08
	Structure		-0.03	0.01	-0.13 *
	Control		-0.03	0.02	-0.09
Step 3		0.08			
	Parent Gender		0.02	0.02	0.07
	Child Gender		0.03	0.01	0.13 *
	Parents' Health Care Use		0.07	0.04	0.11
	Parents' History of SES		-0.24	0.12	-0.13 *
	Children's current SES		-0.07	0.12	-0.04
	Neighborhood Risk		0.00	0.01	-0.02
	Age at Birth of Child		0.00	0.00	-0.05
	Aggression		-0.03	0.01	-0.12 †
	Withdrawal		0.00	0.01	0.02
	Depression		0.04	0.02	0.15 *
	Anxiety		-0.05	0.02	-0.17 *
	Support		0.01	0.01	0.06
	Structure		-0.03	0.01	-0.12 †
	Control		-0.03	0.02	-0.09
	Support X Parents' History of SES		-0.15	0.07	-0.14 *

†p < .10, *p < .05.

Table 4.

Regression Models for Acute Respiratory Infections (n=250)

		Adj. R^2	B	SE B	β
Step 1		0.05			
	Parent gender		0.01	0.01	0.04
	Child gender		0.01	0.01	0.06
	Parents' health care use		0.12	0.04	0.19 *
	Parents' history of SES		-0.30	0.12	-0.17 *
	Children's Current SES		0.06	0.11	0.04
	Neighborhood risk		-0.01	0.01	-0.04
	Age at birth of child		0.01	0.00	0.09
	Aggression		0.00	0.01	-0.02
	Withdrawal		-0.02	0.01	-0.08
	Depression		0.01	0.02	0.03
	Anxiety		0.00	0.02	-0.01
Step 2		0.07			
	Parent gender		0.01	0.02	0.03
	Child gender		0.01	0.01	0.06
	Parents' health care use		0.13	0.04	0.21 *
	Parents' history of SES		-0.29	0.11	-0.16 *
	Children's Current SES		0.01	0.12	0.01
	Neighborhood risk		-0.01	0.01	-0.04
	Age at birth of child		0.00	0.00	0.06
	Aggression		0.00	0.01	-0.02
	Withdrawal		-0.02	0.01	-0.07
	Depression		0.01	0.02	0.04
	Anxiety		-0.01	0.02	-0.03
	Support		0.01	0.01	0.11 ᵗ
	Structure		-0.03	0.01	-0.15 *
	Control		-0.03	0.02	-0.09
Step 3		0.08			
	Parent gender		0.01	0.02	0.03
	Child gender		0.01	0.01	0.07
	Parents' health care use		0.12	0.04	0.20 *
	Parents' history of SES		-0.30	0.11	-0.17 *
	Children's Current SES		0.05	0.12	0.03
	Neighborhood risk		-0.01	0.01	0.06
	Age at birth of child		0.00	0.00	-0.03
	Aggression		0.00	0.01	-0.01
	Withdrawal		-0.01	0.01	-0.06
	Depression		0.01	0.02	0.03
	Anxiety		-0.01	0.02	-0.03
	Support		0.01	0.01	0.09
	Structure		-0.03	0.01	-0.15 *
	Control		-0.03	0.02	-0.08
	Support X Parents' History of SES		-0.11	0.07	-0.11 ᵗ

ᵗp < .10, *p < .05.

Table 5.

Regression Models for Hospitalizations (n=250)

		OR	95% CI
Step 1			
	Parent Gender	2.07	1.10 - 3.90 *
	Child Gender	1.08	0.63 - 1.84
	Parents' Health Care Use	1.71	0.71 - 4.12
	Parents' History of SES	0.16	0.01 - 1.99
	Children's Current SES	0.09	0.01 - 1.04 *
	Neighborhood Risk	0.56	0.42 - 0.75 *
	Age at Birth of Child	0.91	0.83 - 0.99 *
	Aggression	0.88	0.66 - 1.19
	Withdrawal	1.08	0.80 - 1.45
	Depression	1.40	0.95 - 2.05 ^{t}
	Anxiety	0.96	0.67 - 1.37
Step 2			
	Parent Gender	1.74	0.90 - 3.37 ^{t}
	Child Gender	1.05	0.61 - 1.81
	Parents' Health Care Use	1.53	0.62 - 3.76
	Parents' History of SES	0.24	0.02 - 3.09
	Children's Current SES	0.18	0.01 - 2.48
	Neighborhood Risk	0.56	0.41 - 0.74 *
	Age at Birth of Child	0.91	0.82 - 0.99 *
	Aggression	0.91	0.67 - 1.22
	Withdrawal	1.07	0.79 - 1.45
	Depression	1.41	0.96 - 2.09 ^{t}
	Anxiety	0.96	0.66 - 1.38
	Support	0.83	0.69 - 1.00 *
	Structure	0.90	0.68 - 1.20
	Control	0.84	0.51 - 1.37

$^{t}p < .10$, $*p < .05$.

Regression Model for Injuries (n=250)

		OR	95% CI
Step 1			
	Parent Gender	2.09	1.12 - 3.88 *
	Child Gender	0.75	0.44 - 1.27
	Parents' Health Care Use	2.15	0.90 - 5.17 [t]
	Parents' History of SES	0.10	0.01 - 1.18 [t]
	Children's Current SES	0.62	0.06 - 6.83
	Neighborhood Risk	1.33	1.01 - 1.75 *
	Age at Birth of Child	1.01	0.92 - 1.10
	Aggression	1.02	0.76 - 1.37
	Withdrawal	1.08	0.81 - 1.46
	Depression	1.08	0.74 - 1.57
	Anxiety	1.08	0.76 - 1.53
Step 2			
	Parent Gender	2.30	1.20 - 4.41 *
	Child Gender	0.75	0.44 - 1.28
	Parents' Health Care Use	2.23	0.91 - 5.43 [t]
	Parents' History of SES	0.10	0.01 - 1.15 [t]
	Children's Current SES	0.57	0.05 - 7.03
	Neighborhood Risk	1.34	1.01 - 1.77 *
	Age at Birth of Child	1.02	0.93 - 1.12
	Aggression	0.99	0.74 - 1.34
	Withdrawal	1.08	0.80 - 1.45
	Depression	1.07	0.74 - 1.56
	Anxiety	1.08	0.76 - 1.54
	Support	1.03	0.86 - 1.23
	Structure	0.93	0.70 - 1.23
	Control	1.41	0.85 - 2.33

[t] $p < .10$, * $p < .05$.