This is to certify that the

dissertation entitled

Family Factors in the Psychosocial Adaptation
of Children and Adolescents with Short Stature

presented by

Carol Cracchiolo Laub

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Psychology

John Paul McKinney
Major professor

Date 9/27/95

FAMILY FACTORS IN THE PSYCHOSOCIAL ADAPTATION OF CHILDREN AND ADOLESCENTS WITH SHORT STATURE

By

Carol Cracchiolo Laub

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Psychology

1995

ABSTRACT

FAMILY FACTORS IN THE PSYCHOSOCIAL ADAPTATION OF CHILDREN AND ADOLESCENTS WITH SHORT STATURE

By

Carol Cracchiolo Laub

Children significantly below average in height are at risk for poorer psychosocial outcomes than children of normal height. However, recent investigations have yielded inconsistent results regarding the functioning of children with short stature (SS). The present study utilized both questionnaire and interview data to assess the psychosocial adjustment of children with SS (at or below the 5th percentile of height for age). Relationships between the family environment, children's and parents' self-worth, experiences related to stature, coping strategies, and child outcomes were also examined. Subjects were 33 children with SS and their parent(s), and a matched comparison group of 33 healthy children of normal stature (NS) and their parent(s).

Compared to children with NS, children with SS were rated by their parents as having more behavior problems and lower social competence. Children with SS rated themselves as having lower global self-worth and athletic competence, and as less satisfied with their physical appearance than children with NS. Girls and boys with SS had similar levels of behavior and social problems. However, girls with SS participated in fewer extracurricular activities, and rated themselves as less athletically competent and less satisfied with their physical appearance than boys with SS and children with NS. Younger children with SS reported higher levels of self-competence and global self-worth than older children with SS, but there were no age differences in parent-reported behavior problems or competence. Devaluing physical appearance was related to greater self-competence and higher global self-worth in children with SS.

The family environments of children with SS did not differ significantly from those of children with NS, although families of children with SS described themselves as somewhat less supportive. Family support was associated with better child adjustment, whereas family control and conflict were associated with poorer child outcomes. Fathers' coping, global self-worth, and the impact of their own stature were more strongly related to child outcomes than mothers'. A model of stress and coping with SS predicted 46% of the variance in child behavior problems. Methodological considerations in the assessment of coping and implications for clinical interventions are discussed.

To Rick and Emily, my greatest inspirations.

ACKNOWLEDGMENTS

I would like to extend my deepest gratitude to the chairpersons of my dissertation committee, John McKinney and Elizabeth Seagull, for their enduring support, guidance, and confidence in me. I would also like to thank the members of my dissertation committee, Hiram Fitzgerald, Robert Caldwell, and Bruce Wilson, for their willingness to contribute to the development and completion of this work. Bruce Wilson and Kathleen Seitz deserve special recognition for conceptualizing the original seeds for this research and allowing me to cultivate them into my own.

I would also like to thank my family and friends, who supported me throughout this project with their love, encouragement, confidence, and assistance. Most of all, I want to express my appreciation to my husband, Rick, for all he has done in order to make this possible.

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

Table **Page**

LIST OF FIGURES

CHAPTER 1

Review of the Literature

Introduction

The recent increase in the availability of synthetic human growth hormone has led to growing interest in the psychosocial and cognitive functioning of individuals with short stature (SS). Factors related to the expense and possible negative side-effects of treatment with synthetic human growth hormone (GH), make it especially important to clarify the nature and degree of psychosocial benefits of such treatment, particularly for individuals who are not growth hormone deficient, but may respond to such treatment nevertheless (see Appendix A for frequently used acronyms).

Short stature is the most frequent reason for referral to pediatric endocrinology clinics and is a "physiological manifestation of growth failure which results from a variety of causes" (Finley, Crouthamel, & Richman, 1982, p. 27). Rieser and Underwood (1990) divide the causes of growth failure and short stature into three broad categories: 1) intrinsic defects of the growing tissues (skeletal dysplasias, autosomal abnormalities, abnormalities of the X chromosome [e.g., Turner Syndrome], and dysmorphic or primordial dwarfism [e.g., abnormalities resulting from in utero insults or genetic defects]); 2) abnormalities in the environment of growing tissues (nutritional insufficiency, renal disease, cardiac disease, gastrointestinal disease, poorly controlled diabetes, and vitamin D resistant rickets or other metabolic problems); and 3) endocrine abnormalities (thyroid deficiency, growth hormone deficiency, and glucocorticoid excess [e.g., adrenal tumors]). Growth hormone deficiency (GHD) is one of the most widely studied growth disorders and is caused by a deficiency of growth hormone secretion secondary to pituitary gland malfunction or hypothalamic dysfunction. When growth hormone is the only hormone not secreted by the pituitary, the disorder is labeled isolated growth hormone deficiency (IGHD). When more than one of the pituitary hormones are deficient, the disorder is labeled multiple hormone deficiency (MHD) (Siegel, 1990). In many cases, the etiology of the growth hormone deficiency is unexplained or idiopathic (Siegel, 1990). Constitutional delay (CD) is a condition in which the cause for growth delay is unknown. Children with CD have normal birth weight, early growth failure, subsequent normal growth velocity, height below the 5th percentile in childhood and delayed pubertal onset, but the potential to attain normal adult height (Siegel, 1990). By contrast, familial short stature (FSS) is a condition in which the rate of growth is normal, the bone age is within 2 SD of that expected for age, and significant short stature is associated with genetic inheritance.

Regardless of its etiology, short stature has long been regarded as a social handicap which carries with it a significant degree of stigmatization, especially for very short males (Martel & Biller, 1987). In the context of a "heightist" society, short adults face discrimination in being hired for a job, starting salaries, and salary increases (Gillis, 1982). While the stigmatization and juvenilization of short individuals begins in early childhood, these social processes continue throughout adolescence and adulthood (Clopper, MacGillivray, Mazur, Voorhess, & Mills, 1986; Eisenberg, Roth, Bryniarski, & Murray, 1984; Martel & Biller, 1987). Constant exposure to stigmatization and juvenilization is likely to shape the developing self-concepts, personalities, and motivations of short individuals.

Studies of children with short stature (SS) suggest that compared to children of normal height, children with SS are more psychosocially immature and withdrawn (Gordon, Crouthamel, Post, & Richman, 1982), have more somatic complaints and less tolerance for frustration (Drotar, Owens, & Gotthold, 1980; Gordon et al., 1982), poorer academic achievement (Siegel, 1990), and experience greater juvenilization in social interactions and overprotection by their parents (Martel & Biller, 1987; Rotnem, Genel, Hintz, & Cohen, 1977). However, there is significant inconsistency in the literature regarding developmental outcomes, and gender, age, and etiological differences among children with SS. Many of these inconsistencies can be attributed in part to methodological flaws. For example, the majority of studies in this field: 1) examine heterogeneous groups of children with SS; 2) rely solely on questionnaire measures from either the parents or children; 3) fail to account for the effects of socioeconomic status; 4) fail to examine family factors affecting the child's adaptation to SS; and 5) do not provide a group of carefully matched control subjects for comparison.

While earlier investigations of children and adolescents with SS indicate that they have significant psychosocial, behavioral, and cognitive deficits (e.g., Abbott et al., 1982; Gordon et al., 1982; Holmes et al., 1982; Rotnem et al., 1977), more recent studies demonstrate average or elevated global self-esteem in children with SS (Young-Hyman, 1986; 1990). Despite positive global self-esteem, however, specific deficits in cognitive and social functioning have been identified (Siegel, 1990). In addition, of note is the fact that non-clinic populations of children with SS do not demonstrate significantly more psychosocial or behavioral problems than age-matched control children of normal height (Voss, Bailey, Mulligan, Wilkin, & Betts, 1991). The non-clinic children with SS do, however, demonstrate some tendency toward poor concentration and hyperactivity. Differences between clinic-referred and non-clinic populations of children with SS suggest that there is more significant concern about the psychosocial adjustment of those children referred for treatment for SS in either the referring physician, other significant adults (e.g., parents, teachers, grandparents), or the child him- or herself.

While it is likely that children who are referred for treatment for SS do indeed manifest greater psychosocial and behavioral distress, very little attention is given to the factors contributing to their difficulties, and who is most concerned about their growth failure (e.g., parents, physicians, children). In contrast to the significant efforts which have been made to treat SS with GH, very little work has focused on psychosocial evaluation and intervention with this population. Although treatment with GH is promising, data on adults who were treated with GH as children or adolescents is somewhat equivocal. Many children and parents have unrealistic expectations of treatment with GH and are unhappy with the results (Clopper, 1992; Grew, Stabler, Williams, & Underwood, 1983; Rotnem et al., 1980). Furthermore, in spite of height augmentation, many GHD adults continue to be socially withdrawn, have lower rates of marriage and employment, and experience psychosocial distress

(Clopper et al., 1986; Dean et al., 1986; Mitchell et al., 1986).

As advances are made in the medical treatment of SS, there is a clear need to increase our efforts to understand better the psychosocial issues which confront children with SS throughout their development into adulthood. In order to treat the patient with SS with a more biopsychosocial approach, it would be valuable to identify which children are at risk for poor psychosocial adaptation to SS. In addition, it would be useful to clarify the ways in which family factors contribute to the developmental outcomes of children with SS.

This study combined questionnaire and interview data to examine relationships between the family environment, children's and parents' experiences related to height, coping styles, and child psychosocial outcomes. In addition, the present study tested the application of a stress and coping model which links the child's diagnosis, family instrumental resources, family emotional resources and mediational processes, and child mediational processes, to child psychosocial outcomes.

Social Stigma and Stature Stereotypes

In their comprehensive review of social stigma and self-esteem, Crocker and Major (1989) define stigmatized social groups as "social categories about which others hold negative attitudes, stereotypes, and beliefs, or which, on average, receive disproportionately poor interpersonal or economic outcomes relative to members of society at large because of discrimination against members of the social category" (p. 609). Stigma theory holds that social disapproval, the hallmark of stigmatization, leads to an individual's belief that a certain attribute is undesirable to possess. The degree of stigmatization that is assigned to a characteristic is largely determined by its severity, concealability, and disruptfulness. In an attempt to normalize the stigmatizing condition, affected individuals attempt to conceal it and suffer from diminished self-esteem (Westbrook, Bauman, & Shinnar, 1992), which impacts their overall satisfaction with life (Diener, 1984).

The degree to which individuals are negatively impacted by social stigma is largely dependent on their ability to cope effectively with the everyday stressors associated with feeling different from what is considered to be "average" or desirable. Ainlay, Coleman, and Becker (1986) propose that stigma must be viewed within a developmental perspective, which takes into account continuities and discontinuities throughout the lifespan as the impact of stigma on personal development waxes and wanes. They state that "even when stigmas no longer continually tug at the individual in daily routines, they linger as memories, reflections of culture that alter people's behavior and their lives" (p. 7). These writers acknowledge the paradoxical nature of stigma, in that it can be both "dehumanizing and inspiring." The degree to which one overcomes the negative impact of stigma is dependent on numerous factors including: individual personality, physical environment, emotional and material resources, cultural beliefs, education, and social status. Through the process of "normalization" the stigmatized individual adapts to society by reducing the amount of deviation from cultural norms, and by decreasing the emphasis on the stigmatizing condition (Becker & Arnold, 1986).

Given that stature is one of the most readily apparent characteristics of an individual, extreme short stature is a stigmatizing feature which is not easily concealed from social interactions and reactions. Within the context of a "heightist" culture, short stature can be considered a social handicap, which shapes interpersonal relationships, the development of self-image and self-competence, coping styles, personality, and motivations. In one of the earlier works concerning stature, Gerling (1939) recognized that society's view of height is "often out of proportion to its real value" (p.15) . However, he dedicated the majority of his text to techniques of increasing one's apparent stature through posture, physical exercise, dress, and "stature aids," thus promoting rather than combating the root of the problem--"heightism."

Society's value of height is clearly demonstrated in the stereotypes attributed to persons of varying stature. Adults, adolescents, and children all assign more positive attributes to tall persons than short persons (Biller, 1968; Gillis, 1982; Martel & Biller, 1987; Morrow, 1984; Stafferi, 1967). For example, children from 5 to 13 years-old were asked to allocate an assortment of characteristics to 3 human silhouettes of different sizes. The shortest silhouette was described as "unsuccessful," "weak," "follower," and "no friends." In contrast, the tallest silhouette was considered "smart," strong," "leader," and "brave" (Clopper, Mazur, & Ellis, 1990). Among college undergraduates, both males and females associated positive attributes with tall men and negative qualities with short men (Martel & Biller, 1987). Tall men were ascribed adjectives such as dominant, optimistic, confident, capable, and masculine. There also exists a perceptual distortion of height based on ascribed social status. For example, adolescent males assigned occupations of higher prestige to individuals perceived as taller (Morrow, 1984), and adults increase their estimates of an individual's height as the individual's reported professional status increases (Wilson, 1968).

These perceptual biases appear to be even more pronounced in individuals who view themselves as below average in height. For example, Morrow (1984) found that the correlation between assigned occupational prestige and stature was stronger for males who perceived themselves as short. In addition, although short undergraduate males reported feeling as satisfied with their stature as their taller peers, they desired an ideal height which was more discrepant from their actual height than males of average or tall stature (Martel & Biller, 1987). The shorter group of men also placed greater importance on height in obtaining a dating partner and in professional success than average or tall men.

The concerns of short males regarding the impact of stature on professional status are based in the reality that height impacts one's likelihood of being hired for a job, one's starting salary, and salary increases (see Gillis, 1982). For example, within the same profession, workers of tall stature hold higher positions than those who are shorter, even after accounting for the effects of education and social status (Schumaker, 1982). One of the most poignant examples of heightism in American culture is reflected in our presidential elections. In 80% of the 20 presidential elections from 1904 to 1980 the taller candidate has won (Gillis, 1982). According to Martel and Biller (1987), "Given such a set of environmental circumstances, stereotyping, and cultural expectations, it is clear that a myriad of difficulties confronts the short male in terms of negotiating and solidifying a positive male identity" (p. 6).

From the discussion above, it is evident that the majority of studies on social stigma and stereotyping associated with stature has focused on males. This is due in part to cultural preferences regarding stature. Males make global evaluations about their bodies and value large stature and strength. By contrast, females make more specific evaluations about their various body parts and value smallness, except in the breasts (Fisher, 1986; Martel & Biller, 1987). Masculinity is associated with a tall well-muscled physique, whereas femininity is often associated with petite stature. In addition, feelings of being too thin are associated with lower self-esteem in boys, while feeling too heavy is related to decreased self-esteem in girls (Walsh & Wardle, 1993). Adolescent boys' ideal is to mature early and have a tall and heavy physique, while girls generally prefer to mature at a rate consistent with their peers and to be of average height and weight (Frazier & Lisonbee, 1960). These differences partially account for the higher referral rates of boys for treatment of SS than girls (Clopper, 1992). Both males and females, however, are likely to experience negative consequences as a result of SS, especially as females increasingly take on more competitive roles academically, athletically, and professionally.

Self-Image, Self-Esteem, and Self-Competence

Global self-esteem has been described as generalized feelings of acceptance, goodness, self-acceptance, self-respect, and worthiness (Crocker & Major, 1989). Self-image, or one's "multidimensional representation of oneself" (Clopper, 1992) has been associated with one's self-esteem. Several researchers of the development of self-image assume that exposure to social stigma in general (Crocker & Major, 1989), and that related to SS in particular (Martel & Biller, 1987), has a deleterious effect on self-esteem. However, there is no clear empirical evidence that members of various stigmatized groups (e.g., racial minorities, individuals with physical or mental handicaps), including those with SS, necessarily suffer from lowered self-esteem. Clopper (1992) contends that "it appears possible for children to have a poor image of their physique due to SS while maintaining high levels of overall self-esteem and self-worth" (p. 28).

Crocker & Major (1989) propose three mechanisms by which the self-esteem of stigmatized individuals is protected: 1) attributing negative feedback to one's membership in a stigmatized group, 2) comparing oneself with others in the stigmatized group, and 3) selectively devaluing areas in which their group does poorly and valuing those in which their group excels. The first two strategies might be somewhat more difficult for the child with SS to utilize, as they have limited access to others with SS and hence less identification with a SS group as a whole. However, for children with a family history of SS there is greater exposure to other individuals with a similar condition and its attendant difficulties. Identification with the group and social comparison are thus more likely to occur in children with a family history of SS, as is modeling after adult figures who have successfully (or unsuccessfully) weathered the experience of growing up with a stigmatizing condition. On the other hand, for children with no available role models or peers with SS, selective valuing might be the most effective method in protecting their self-esteem.

Harter (1986) found that children who valued most the abilities in which they felt especially competent had high self-esteem. It appears that their ability to devalue areas in which they were less proficient helped to augment their feelings of self-worth. Of particular interest to the present study is Harter's (1986) finding that all children had some difficulty in devaluing physical appearance (as well as cognitive competence and behavioral conduct). Those children who rated themselves low on these domains also had lower global self-esteem. By contrast, athletic ability and social acceptance were more easily discounted if children felt less competent in these domains.

Dissatisfaction with one's perceived physical attractiveness has also been strongly associated with dysphoria in 9-12 year-olds of normal stature (McCabe &

Marwit, 1993). In addition, viewing one's body as ineffective was moderately linked with dysphoric mood. These results were similar for both males and females. Along similar lines, self-image and depression were highly correlated in a sample of adolescents of normal stature, and self-image was the strongest predictor of recovery from depression as compared to age, education, SES, initial levels of depression, and life stressors (Fine, Haley, Gilbert, Forth, 1993). Furthermore, a sense of mastery was one of the most important components of the relationship between depression and self-image. Thus, it is likely that children with SS who feel positively about their physical appearance would have higher global self-esteem and fewer feelings of depression. Conversely, children with SS who are less satisfied with their bodies, may suffer from lower self-esteem and greater symptoms of depression.

Bukowsi and Newcomb's (1983) investigation of peer experiences and identity formation in early adolescence dovetails with the preceding studies. These researchers found that young adolescents' feelings of self-worth were related to their perceptions of social, cognitive, and physical competence. Among these variables, the strongest relationship was between social competence and global self-esteem. Social competence was more strongly related to physical competence for boys than girls, and social acceptance was more closely associated with perceived social competence for girls than boys.

Juvenilization: Living up to Expectations?

The visibility of body size makes it a significant feature of self-

> presentation and likely to be of special importance in the development of a child's sense of self. Parental judgement of the child whose shape doesn't measure up to expectations may disturb children's natural response to eating and physical activity and foster self-criticism (Walsh & Wardle, 1993, p. 1125).

Juvenilization, or being treated in accordance with one's height age rather than chronological age, is one of the most prevalent and persistent difficulties confronting individuals with short stature and delayed maturation. Because stature is one of the most visible and salient characteristics of an individual, others constantly respond to this external stimulus in ways which are developmentally inappropriate. This dissonance between others' views and expectations and one's true abilities begins early in life for individuals with short stature, and may influence the individual's self-perceptions both directly and indirectly, through comparison with others and through the processing of others' expectations (Eisenberg, Roth, Bryniarski, & Murray, 1984). Although much of the research in this area focuses on adult populations, a few studies have demonstrated that the social effects of stature begin as early as toddlerhood and continue into the elementary school years and beyond (Brackbill & Nevill, 1981; Eisenberg et al., 1984).

Eisenberg and her colleagues (1984) conducted three separate studies investigating the relationship between preschoolers' height, adults' attributions about the children, and the cognitive and social competencies of the children. In the first study, mothers of preschoolers viewed an array of two 19 month-old boys which were photographed in such a manner so that the boys appeared to be different heights. In the first array, child 1 appeared taller; in the second, child 2 appeared taller; and in the third, the boys appeared to be of equal height. The mothers were asked to complete a questionnaire which assessed their perceptions of child competency, assignment of punishment for hypothetical transgressions, and estimates of the children's ages. Significant differences related to height were found for 10 of the 12 items tested, and taller boys were consistently viewed as being more competent. There were no height effects for the assignment of punishment or estimates of the children's ages.

In a second parallel study, mothers of preschoolers were shown stimulus photographs of two girls aged 19 and 20 months (Eisenberg et al., 1984). On 5 of the 12 test items there were significant differences related to height. In each case, shorter girls were perceived as less competent than girls of average or tall height, whereas tall and average height girls were not viewed differently. Mothers tended to view the shorter girls as more dependent and helpless, but not less compliant or socially inept. Mothers rated the smaller girls as significantly younger than either girls of average or above average height. In addition, greater punishment was given to taller girls than to smaller girls, regardless of the perceived age of the child. Taken together, these two studies have implications for the expectations and reinforcements children might receive based on their stature. The authors interpret these results as demonstrative of cultural stereotypes such that smaller girls are considered more "feminine" (e.g., dainty, defenseless, cute, dependent) and taller boys are considered more "masculine" (e.g., strong, competent, dominant).

In a third study, Eisenberg et al. (1984) investigated the relationship of preschool children's height to their cognitive development and to peer evaluations of competency. Boys' but not girls' performance on Piagetian tasks of logic was positively associated with height, after controlling for age, but there were few relationships between height and peer ratings of competence. Taller boys were rated as smarter by girls, and smaller boys were rated as better at art projects by both boys and girls. There were no height effects for peer judgments of girls' competence. In light of data suggesting that intelligence is unrelated to the stature of young children (Bayley, 1956), the authors conclude that taller boys' better cognitive performance and greater popularity might be due to responses from their social environment, rather than superior innate abilities. They suggest that parents (and other adults) might be more active in shaping the cognitive development of boys than girls, and that this would be especially true for taller boys, who elicit expectations of greater competency.

Brackbill and Nevill (1981) found similar results in their studies investigating the effect of children's height on parental expectations of achievement. In their first study parents of 11 year-old children were shown two sets of stimulus pictures depicting male and female children of different heights, all presumed to be 11 years-old. Parents were asked to assign 9 chores to each of the 5 children (either all male or female). In spite of knowledge of the children's chronological age, parents consistently had greater expectations of mastery and competence for the taller children, regardless of gender. In the second study three groups of female adults, with varying degrees of experience with children, were shown two sets of pictures depicting two same-sexed children. In the first picture the children were the same height but were assigned different ages. In the second picture the children were different heights and the younger child was taller. Subjects assigned chores of varying difficulty to each of the children. Similar to the results in the first study, female adults assigned more difficult tasks to the taller children, regardless of age. Consistent with Eisenberg et al.'s (1984) results, these findings suggest a strong link between parental expectations for achievement and competence and children's height. They also lend support to the notion that the degree of children's achievement motivation may stem from the presence or lack of parental (and other adult) pressure to achieve (Brackbill & Nevill, 1981).

Psychosocial Adjustment to SS

Psychosocial Outcomes in Childhood and Adolescence

Cognitive Functioning and Academic Achievement: Recent investigations of children with GHD and CD consistently report high rates of grade retention and academic underachievement. In their investigation of grade retention and academic achievement in a mixed sample of children with SS (CD, Turner Syndrome [TS], and GHD), Holmes, Thompson, and Hayford (1984) found that 21% of their subjects had been retained at least one grade. In spite of average intelligence, the retained children demonstrated a constellation of difficulties including: lower verbal and performance abilities, greater conduct- and personality-disordered problems, and continued poor academic achievement, despite grade retention. Etiology did not appear to have an effect on grade retention, even though this sample included girls with Turner Syndrome, who have well-documented nonverbal and visual-spatial deficits. Those most likely to be retained were adolescent girls and young boys.

In a sample of adults with GHD, 41% of all subjects repeated at least one grade, 10% repeated more than one grade, and elementary school grades were the most commonly repeated (Clopper et al., 1986). 81% of those repeating a grade did so in primary school, and of this group 62% repeated kindergarten or first grade. These differences may reflect a growing awareness of and sensitivity to psychosocial issues confronting children with differences, and a trend not to retain a child solely because of physical immaturity or size.

Although there has been some conflicting data regarding the cognitive and academic functioning of children and adolescents with SS, there is general agreement that academic underachievement is a common problem in this population. Three theories have been proposed to explain this high incidence of academic failure: 1) the low ability theory, 2) the cognitive deficit theory, and 3) the cognitive underfunctioning theory (Siegel, 1982). According to the low ability theory, low achievement is consistent with subnormal intellectual abilities which are secondary to endocrine dysfunction. The cognitive deficit theory holds that underachievement is related to specific cognitive, visual-spatial, and attentional deficits. Finally, the cognitive underfunctioning theory proposes that discrepancies between intellectual abilities and academic achievement are secondary to psychosocial and environmental factors, such as low self-esteem resulting from SS and poor parenting (Siegel, 1990). Each of these theories has gained some degree of support from the existing body of literature.

One of the most recent and comprehensive investigations of the intellectual and academic functioning of children with SS began about ten years ago through a collaborative effort of investigators throughout Michigan. In the first of these studies, Siegel (1982) examined the cognitive and affective functioning of 42 children with GHD. Two subgroups were included: 27 subjects experienced SS related to isolated growth hormone deficiency (IGHD), while 14 had SS secondary to multiple hormone deficiencies (MHD) which affected their growth hormone secretion and uptake. Subjects were between the ages of 6 and 16 years and were assessed with the Wechsler Intelligence Scale for Children-Revised (WISC-R). Overall intelligence fell within the low average range with a significantly higher incidence of verbal-performance differences than the normative sample. As a group, the GHD children had lower scores on the freedom from distractibility factor of the WISC-R. The freedom from distractibility factor is comprised of the arithmetic, digit span, and coding subscales, and low scores on this factor indicate difficulties with attention, sequencing, concentration, and short-term memory. Visual-spatial deficits and lower math achievement were also evident in 38% of the sample. Despite these academic difficulties, these children did not rate themselves as having lower self-esteem than the normative sample, and their mothers did not report behaviors indicating overprotectiveness. Subjects with MHD had developmental histories which were marked by significantly more delays and vulnerabilities than the IGHD group. Mothers of children with MHD were more overprotective than mothers of children with IGHD, perhaps in response to the perception of their children as more vulnerable.

In a three-year follow-up study, Siegel and Hopwood (1986) found achievement problems in 52% of the children with GHD, with over 33% failing at least one grade in school. Learning problems were assessed with the reading and math subtests of the Wide Range Achievement Test and the reading comprehension section of the Peabody Individualized Achievement Test. Underachievers (those who demonstrated learning difficulties) were significantly more likely to have repeated a grade, and had significantly lower scores on measures of intellect, achievement, and visual-spatial skills than those without learning problems. By contrast, there were no differences between achievers and underachievers on self-esteem and maternal attitudes. With regard to the three aforementioned theories explaining underachievement, 40% of the underachieving children had profiles compatible with the low ability theory; 36% were consistent with the cognitive deficit theory; and the underfunctioning theory applied to 24%. In the context of average abilities, the children in the underfunctioning group did not have lower self-esteem or more protective mothers. Of note is the fact that as a group, the children with GHD rated themselves higher on self-concept than the normative sample (Siegel & Hopwood, 1986). The authors suggest that other factors not measured in the study may have accounted for the academic problems in the underachieving group, such as motivation, anxiety, or stress (Siegel & Hopwood, 1986).

The third Michigan study was a seven-year follow-up of 28 of the original subjects (Siegel et al., 1988). As assessed by the WISC-R, overall intelligence for the children and adolescents with GHD remained stable (in the low average range), and scores were lower on the freedom from distractibility scale than the performance or verbal scales. Visual-spatial skills showed improvement and fell within the normal range, which was consistent with this group's low average cognitive abilities. Improvement was also noted in subjects' self-concept, particularly in the areas of physical attraction and popularity, however, academic underachievement problems persisted in about one third of the sample, with 74% of the original underachievers having continued difficulties. As a group, underachievers had lower freedom from distractibility scores than verbal or performance scores on the WISC-R. In addition, their parents rated them as having significant problems with immaturity and hyperactivity, characteristics associated with attention problems. These results are consistent with those of other researchers (Abbott et al., 1982; Lewis et al., 1986; Ryan et al., 1988), and suggest that both attentional and cognitive deficits play an important role in the underachievement of children with GHD (Siegel, 1990).

Compared to the extensive research on academic and intellectual functioning in children with GHD, fewer studies have investigated this area in children with CD and FSS. Only one study includes both individuals with FSS and CD (Gold, 1978).

Results suggest that children with CD have greater learning problems, and are diagnosed with attentional and hyperactivity problems more frequently than their counterparts with FSS. In addition, half of the children with CD had been described as immature in school or medical records, while this was true for only 1 out of 435 children with FSS.

Gordon and his colleagues (Gordon et al., 1982; Gordon et al., 1984) compared 24 children with CD to a group of healthy children, matched for gender, age, and SES. They found no differences between the groups on measures of academic, intellectual, or visual-motor functioning (Gordon et al., 1984). However, children with CD were rated by their parents as having significantly more somatic complaints, schizoidal tendencies, and social withdrawal (Gordon et al., 1982). Parents of children with CD also reflected greater difficulties setting clear limits, though they did not appear to be overly protective. Families with short children were also described as having poorer cooperation and communication. Children with CD reported lower self-concept, reflected by greater unhappiness and feeling unpopular.

In a review of the literature on the psychosocial correlates of short stature and delayed puberty, Lee and Rosenfeld (1987) conclude that overall, children with short stature have average intellectual abilities, in spite of their somewhat depressed scores on standardized tests. They also report that there is no conclusive evidence that short stature is associated with psychopathology or impaired school performance. In a more recent review article on the psychological impact of SS, Siegel, Clopper, & Stabler (1991) summarize:

> "to date, the only clear conclusion is that many significantly short children have learning problems in school, and that a combination of cognitive, physiological and psychosocial factors appear to contribute. However, it has not yet been determined whether specific learning profiles are more likely to be associated with specific diagnostic classifications" (p. 15).

Psychosocial Functioning and Social Competence: From the discussion above, it is apparent that no one conclusion can be drawn about the psychosocial functioning of children with short stature, as the data are fraught with inconsistencies. Whereas earlier investigations concluded that children with SS suffered from impaired self-esteem, more recent studies indicate that children with SS differentiate between separate areas of their self-concept, and that all are not uniformly low (Young-Hyman, 1990). It has also been suggested that by devaluing physical appearance, children with SS are able to maintain adequate global self-worth, and to derive esteem from those areas in which they feel most competent (Clopper, 1992; Crocker & Major, 1989). In contrast to reports of children with SS feeling unhappy or unpopular (Gordon et al., 1982; Rotnem et al., 1977), many children and adolescents with SS rate themselves as having high, somewhat elevated self-esteem (e.g., Young-Hyman, 1986). Furthermore, many children with SS are able to make accurate appraisals about their stature (Young-Hyman, 1986) and report satisfaction with their physical appearance (Gordon et al., 1982).

With regard to social competence, children with SS have demonstrated a pattern of social withdrawal, immature behavior, and a preference for individual rather than group activities (Gordon et al., 1982; Holmes et al., 1982, 1984; Young-Hyman, 1986). Short children tend to have fewer, but more long-term close friendships (Young-Hyman, 1986). These results may be due in part to the short child's fear of social situations in which s/he might encounter teasing, juvenilization, social ostracism, or negative feedback regarding performance or capabilities. According to Stabler and his colleagues (1980), "Not only does short stature limit the range of social roles available to the individual, but, in addition, short children tend to exhibit social behaviors which accentuate the discrepancy between their chronological age and physical stature" (p. 743).

There is some evidence that children with SS have impaired social judgment, low tolerance for frustration, and decreased competitiveness and aggressiveness (Drotar et al., 1980; Holmes et al., 1982; Stabler et al., 1980; Steinhausen & Stahnke, 1976; Young-Hyman, 1986). For example, Young-Hyman (1986) found that children and adolescents with CD, FSS, and GHD scored significantly lower on a social problem-solving task than the normative sample. In spite of this difficulty, subjects rated themselves as more competent than age norms in social skills, self-esteem, and cognitive abilities. Along similar lines, Drotar et al. (1980) studied frustration tolerance and problem-solving in children with SS. This sample of children with GHD had low tolerance for frustration, and poorer, less adaptive and mature problem-solving skills.

In their investigation of social judgments and competitiveness in children with SS, Stabler and his colleagues (1980) administered a test of cause and effect in social situations under competitive and noncompetitive conditions to a group of male children with SS and a group of age-matched male children with normal stature. While the children with SS demonstrated lower social judgment abilities than matched controls under both conditions, they did exhibit an increase in scores during the competitive trial. These results provide evidence that under conditions of increased competition, children with SS have appropriate levels of motivation to achieve.

It can be argued that adolescence would be a period of particular challenge for the individual with SS, as delayed physical and sexual maturation would become more prominent in the context of peer attainment of puberty, and might thwart or retard the normative developmental processes of identity formation, individuation, socialization, and psychosexual mastery (Dean et al., 1986). Holmes et al.'s (1986) longitudinal study of the psychosocial correlates of SS lends support to the hypothesis of increased distress during adolescence. Subjects were children and adolescents who had been followed for three years after their initial evaluation for SS due to GHD, CD, or Turner Syndrome (TS). Results indicate that the subjects experienced an age-related decline in adjustment during adolescence, with decreases in school and social competence at 12 and 14 years of age. During this period psychosocial functioning fell to about 1 S.D. below the mean, while it was preceded and followed by functioning at the 50th percentile. By approximately 17 years of age, school and social competence had normalized. The most significant academic problems were experienced by adolescent females (primarily those with TS and GHD), whose performance was 1.5 S.D. below the mean. By contrast, younger children with CD had the highest academic performance, and boys generally performed at their expected age levels. Overall, younger children with SS exhibited more behavior problems and demonstrated significantly more externalizing and internalizing behavior problems (e.g., social withdrawal and somatic complaints).

In their investigation of boys with CD and GHD, Holmes, Hayford, and Thompson (1982) found no differences in behavior patterns based on diagnosis. They did, however, find that age was a more important factor in psychological adjustment than specific diagnoses. Older boys with SS were rated by their parents as having significantly more obsessive-compulsive and less aggressive tendencies than younger boys, and older boys were more conforming and inhibited. Parents rated both age groups as significantly more withdrawn than the normative sample for the measure.

Taken together, the data concerning the psychosocial adjustment of children and adolescents with SS depicts a fairly well-functioning group, with specific deficits in academic and social competence. Younger children appear to have greater behavior problems in general, while adolescence is characterized by more internalizing behavior problems and deficits in self-competence. While there is little empirical evidence suggesting significant differences in the psychosocial functioning of boys and girls, the literature on social stigma and stereotypes supports the hypothesis that girls with SS will experience fewer psychosocial difficulties. This is partially supported by the higher referral rates of boys to specialty clinics for concerns about stature. Until the research in this area takes on a more biopsychosical and systemic approach, however, no firm conclusions can be drawn regarding the multiple factors which affect child adjustment to SS. As Siegel (1990) aptly summarizes the current state of affairs, "the literature to date is glaringly void of studies investigating family interactional patterns in terms of the differences that cohesiveness, adaptability, and triangulation may have on the overall functioning of these physically and psychologically vulnerable children" (p. 37). The present study represents an attempt to fill this gap in the existing body of literature by addressing the family factors and processes that impact children's psychosocial adjustment to SS.

Psychosocial Outcomes in Adulthood

The long-term psychosocial outcomes associated with SS have been documented primarily in adult populations of individuals with GHD, many of whom had received growth hormone therapy as children and/or adolescents. These data provide a somewhat disconcerting picture of adult psychosocial functioning in individuals with SS, and in particular those with GHD. Lower rates of employment and marriage are consistently reported in this population than in matched control groups or regional norms (Bjork, Jonsson, Westphal, & Levin, 1989; Clopper, MacGillivray, Mazur, Voorhess, & Mills, 1986; Dean, McTaggart, Fish, & Friesen, 1986; McGauley, 1989; Mitchell, Libber, Johanson, Plotnik, Joyce, Migeon, & Blizzard, 1986; Ranke, 1987). Of note is that rates of employment and marriage in at least one population of adults with GHD are lower than those found in populations of adults with other chronic diseases (Dean, McTaggart, Fish, and Friesen, 1986). Furthermore, these relatively poor psychosocial outcomes appear to be unrelated to final adult height attained (Dean et al., 1986; Zimet et al., 1993). Many of these adults with GHD did not live independently from their parents and fewer obtained driver's licenses than in comparable age groups (Bjork et al., 1989; Clopper et al., 1986; Dean et al., 1986) The majority of these subjects report that juvenilization continued to impact their lives negatively both professionally and socially in adulthood (Clopper et al., 1986; Dean et al., 1986; Mitchell et al., 1986). Adults with SS also have reported lower quality of life, greater social isolation, greater health problems, more anxiety and depression, higher rates of participation in counselling, and lower feelings of well-being than adults of normal stature (Bjork et al., 1989; Dean eta l., 1986; McGauley, 1989; Mitchell et al., 1986).

By contrast, in Mitchell et al.'s (1986) study of adults with GHD, subjects rated themselves as higher on self-satisfaction, personal worth, and sociability, and lower on physical attributes and self-criticism than a comparison group. The authors interpret these results as indicating a significant degree of denial and repression in their sample of adults with GHD (Mitchell et al., 1986). Zimet and his colleagues (1993) also report higher rates of restraint and repressive defensiveness in his sample of short adults without GHD than in a normative sample. Finally, despite an improvement in height, those individuals who received GH therapy were still significantly short as adults and continued to manifest numerous psychosocial difficulties (e.g., Dean et al., 1986; Bjork et al., 1989). On the other hand, many researchers argue that compared to adults of normal stature, those with SS do not demonstrate significantly more psychosocial distress and live productive and fulfilling lives (e.g., Clopper et al., 1986; Mitchell et al., 1986; Zimet et al., 1993).

Family Factors and Child Adjustment to SS

Conflict, Control, and Support: There is evidence that having a child with medical concerns results in the perception of the child as "vulnerable" (Green & Solnit, 1964; Thomasgard & Metz, 1995). This process has also been reported in parents of children with SS (Rotnem et al., 1980) and may exacerbate parents' existing concerns about a child who is physically challenged and different from his/her peers. This view of the child with SS as vulnerable or at risk can result in parent-child interactions which promote juvenilization, overprotection, difficulty setting appropriate limits, overconcerns with bodily functioning, and academic underachievement (Clopper et al., 1986; Rotnem et al., 1977; Young-Hyman, 1986). The psychosocial competence of children with SS can be fostered, however, within a nurturing and supportive family environment in which parents encourage age-appropriate behavior and development (Abbott et al., 1982; Rotnem et al., 1977; Young-Hyman, 1986).

The dimensions of family support, control, and conflict have long been implicated as important factors impacting children's psychosocial adjustment in general, and self-esteem in particular. For example, Hoelter & Harper (1987) examined a number of family variables (family size, composition, conflict, and support) and their relationship to adolescent self-esteem. These authors found that family support was the most important family factor in the development of adolescent self-esteem and identity salience for both boys and girls. In addition, family conflict was negatively related to adolescents' self-esteem. Parental authoritarianism and control also have also been linked to lower self-esteem in adolescents (Buri et al., 1988; Buri, 1989; Demo et al., 1987), while authoritative parenting is positively related to adolescents' self-esteem (Buri, 1989). Children's perceptions of family support and cohesiveness are positively related to their self-esteem, while their perceptions of family conflict are inversely correlated with self-esteem (Cooper et al., 1983). Further, adolescents' perceptions of good communication and participation with their parents is associated with higher self-esteem.

Gecas and Schwalbe (1986) found gender differences in the relationship between parent behaviors (support, control/autonomy, and participation) and adolescents' self-perceptions. Boys' self-esteem was more affected by the control/autonomy dimension, while girls' self-esteem was more dependent on parental participation and support. Fathers' behaviors were more consequential than mothers' for the development of self-esteem, especially for boys. Of note is that children's perceptions of the family environment, rather than the parents', are more strongly associated with children's reports of self-esteem (Demo et al., 1987; Gecas & Schwalbe, 1986).

The family factors of support, control, and conflict have also been linked to children's behavioral, social, and academic competence. There is a particularly large body of literature linking family conflict, especially conflict between parents, to child behavior problems (see Block et al., 1981, 1986; Christensen et al., 1983). The relationship between parental conflict and child behavior problems has been stronger for boys than for girls (Emery & O'Leary, 1982; Block et al., 1981, 1986). Parental discord has also been related to children's feelings of unacceptance (Emery & O'Leary, 1982). In adolescent populations, family conflict has been associated with poorer psychological adjustment, increased anxiety, lower self-esteem and life satisfaction, and lower feelings of control (Enos & Handal, 1986; Slater & Haber, 1984). In addition, Moos and Moos (1986) report that a supportive and stimulating family environment is most conducive to children's social and cognitive development. Further, they report that families characterized by structure and support foster children's scholastic self-concepts, while highly controlling and conflicted families do not. Finally, in a group of children with poor school performance, greater behavior problems (particularly internalizing behaviors) were found in children whose families were less supportive and more controlling (Thompson et al., 1990).

Family functioning has also been strongly associated with both child and parent adjustment to childhood chronic illnesses. According to Moos and Moos (1986),"In general, supportive family environments, characterized by high cohesion and expressiveness and low conflict, are associated with family members' better adjustment and greater ability to deal with stress, especially when coping with personal physical illness or a spouse's mental and behavior problems," (p. 30). Similarly, Thompson and his colleagues (1992a) found that mothers of children with cystic fibrosis demonstrated higher levels of adjustment when their families were supportive and less conflicted.

Kronenberger and Thompson (1990) derived three factors from the Family Environment Scale (Moos & Moos, 1986) in a sample of families with chronically ill children: supportive, conflicted, and controlling factors. Chronically ill children whose families were supportive had fewer internalizing behavior problems and higher scores on sociability. In addition, children from conflicted families had more externalizing behavior problems and lower scores on sociability. The results underscore the family's ability to moderate the effects of stress on the functioning of children and their families. In a sample of adolescents with spina bifida, Murch and Cohen (1989) found that low family conflict and control buffered the effects of stressful life events on the adolescents' psychological adjustment. Family conflict has been associated with externalizing behavior problems in a group of children with five different chronic illnesses (Wallander et al., 1989). On the other hand, family cohesion and expressiveness were positively related to social competence, while control was negatively related to social competence. These "psychological family resources" accounted for a significant amount of the variance in the chronically ill children's psychological and social adjustment, beyond that accounted for by "family utilitarian resources" (i.e., maternal education and family income). Family communication and ability to resolve conflict have also been related to adolescents' adjustment to diabetes (Wysocki, 1993). Along similar lines, patients with psychosomatic disorders tend to come from families which are relatively high on control (Waring & Russell, 1980). These results are consistent with the clinical observations of Minuchin and his colleagues (i.e., Minuchin, Rosman, & Baker, 1978).

In sum, this body of research indicates that the family environment has important effects on child self-esteem, and academic and psychosocial competence. These results are consistent across families with healthy children and children with chronic illness. In particular, families that are characterized by mutual support, authoritative parental control which encourages age-appropriate child mastery, and low levels of conflict, buffers the stresses associated with child chronic illness in both parents and children. Within this family environment, optimal levels of parental and child adjustment are possible, in spite of the many challenges imposed by child chronic illness. These family factors of support, control, and conflict, are deemed equally important for the psychosocial adaptation of children with SS. Short stature is comparable to other childhood chronic illnesses in many ways: its chronicity, the somewhat uncontrollable nature of its course, the need for long-term medical interventions and sometimes invasive procedures, the emotional and financial stresses it places on the child and family, parental concerns about treatment decisions and the child's physiological and psychosocial development, and its constant threat to the child's sense of mastery, independence, and control. Therefore, it is hypothesized that high levels of family support, low levels of control, and low levels of conflict will predict higher levels of child self-esteem and psychosocial competence in children with SS.

Parental Self-Esteem and Impact of Stature: The relationships between a) parental self-esteem and child adjustment, and b) parents' stature experiences and child adjustment, have only been examined in a peripheral manner. In their study of the lineage transmission of interpersonal competence, Filsinger and Lamke (1983) found strong relationships between parents' social competence and their older adolescent's interpersonal competence and social self-esteem. In addition, children's success in intimate relationships was significantly inversely linked to mothers' social distress and avoidance. Children's feelings of social competence were significantly related to fathers' social self-esteem. From these limited results we can predict that higher parental self-competence will be directly related to child self-esteem, and indirectly related to child psychosocial adjustment, via its effects on child self-esteem.

Even less is known about the relationship of parental experiences related to stature and its impact on child functioning. One study found that parents who themselves were short viewed their children with SS as more socially competent than parents of average stature (Young-Hyman, 1986). This finding may suggest a compensatory process whereby parents with a history of SS themselves view their child with SS in a more positive light. It is likely, however, that parents' experiences related to stature will have both positive and negative effects on child self-esteem, coping, and adjustment. This will largely be determined by the degree to which parents themselves have adjusted to their own experiences related to stature.

Coping Strategies: There are no known studies which directly investigate the coping styles of individuals with SS. In addition, only one study was found that assesses the relationship between parents' and children's defense and coping mechanisms. No significant relationships were found between the defenses and coping styles of male children and their fathers, and only moderate associations were found between mothers' and sons' coping styles (Peshkess, 1977). Furthermore, the description and assessment of children's coping strategies has only recently begun to be investigated and there are few standardized instruments available to measure coping in children (Causey & Dubow, 1992; Knapp et al., 1991).

Coping has been defined as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141). Coping strategies differ as a function of the perceived stress at hand. Problem-focused coping involves an individual's attempts to mange or alter a stressor. Emotion-focused coping represents the individual's efforts to regulate emotional distress caused by a stressor. Another taxonomy has been proposed which divides these mechanisms into approach and avoidance coping (Roth & Cohen, 1986). Approach coping strategies are "behavioral, cognitive, or emotional activities oriented toward a stressor (e.g., seeking information)," while avoidance coping strategies are "behavioral, cognitive, or emotional activities oriented away from a stressor in order to avoid it (e.g., ignoring the stressor)," (Causey & Dubow, 1992, p. 47).

In general, avoidance or emotion-focused coping strategies are associated with poorer adjustment, whereas approach or problem-focused coping techniques are related to more positive functioning (Causey & Dubow, 1992). Using self-report and peer-report measures of coping with 4th through 6th graders, Causey and Dubow (1992) found that girls used approach strategies more often, while boys chose avoidance strategies more frequently. Approach coping was positively associated with behavioral conduct esteem and global self-worth. Avoidance coping was positively related to self-reported anxiety, and inversely related to global self-worth and behavioral conduct. Similarly, Compas et al. (1988) found that in children's coping with an interpersonal stressor, emotion-focused coping was associated with greater self-reports and maternal reports of emotional and behavioral problems, while problem-focused coping was negatively related to adjustment difficulties. Avoidance coping strategies were used more often by adolescents with depressive or conduct disorders than by a healthy control or physically ill control group (Ebata & Moos, 1989).

Studies of parental coping techniques reveal findings which are consistent with studies of children's coping reported above. Problem-focused (approach) coping was associated with decreased psychological distress in mothers of physically disabled children, whereas emotion-focused (avoidance) coping was related to higher levels of maternal distress (Miller et al., 1992). Similarly, palliative (avoidance) coping was associated with poorer adjustment in mothers of children with cystic fibrosis (Thompson et al., 1992a).

Given the above evidence linking coping strategies to psychosocial adjustment, it is predicted that parents' and children's use of approach coping strategies will be related to better child psychosocial outcomes, and reliance on avoidance coping strategies will be linked to poorer child adjustment.

Transactional Stress and Coping Model

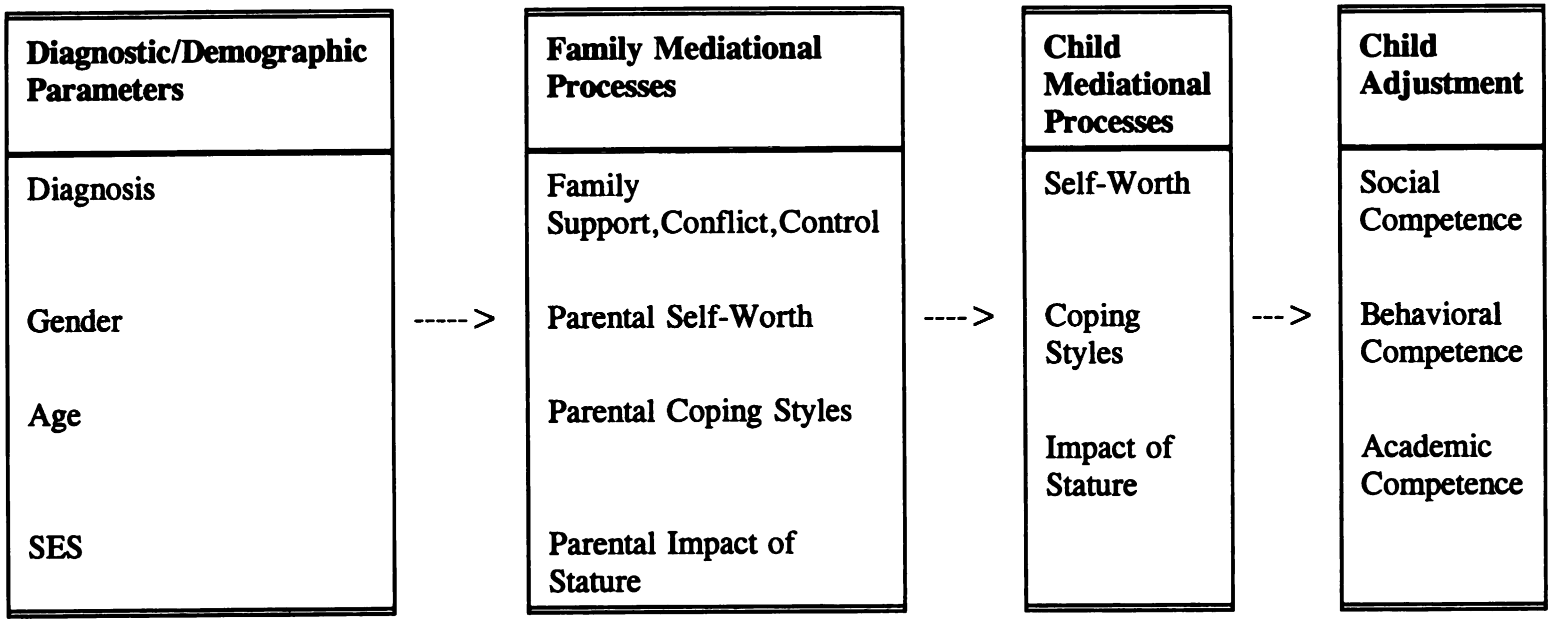
Thompson and his colleagues (1992b) have proposed a transactional stress and coping model for chronic childhood illness which is based on an ecological systems theory perspective. Within this model chronic childhood illness represents a stressor to which the individual and family systems attempt to adapt. The relationship between illness and outcomes is a function of biomedical, psychosocial, and developmental processes (Thompson et al., 1992b). Severity is the illness parameter, and age, gender, and SES are the demographic parameters. The focal point of the model is child and family processes which mediate the relationship between illness and outcomes, beyond the contributions of illness and demographic parameters. The model also includes psychosocial/mediational processes which potentially reduce the impact of stress. These include: cognitive appraisals of stress, expectations of locus of control and efficacy, coping methods, and family functioning.

This model was used to investigate the processes in the emotional adjustment of mothers who had children with cystic fibrosis (Thompson, Gustafson, & Spock, 1992a). Maternal adjustment was not related to the illness severity or demographic parameters. Adjustment was, however, significantly related to the proposed psychosocial/mediational processes which accounted for 35 and 40% of the variance in maternal anxiety and depression, respectively (Thompson et al., 1992a). Higher maternal adjustment was associated with family supportiveness, low levels of perceived daily stress, and less reliance on palliative (avoidance) coping methods.

This research model was subsequently expanded to include the processes which affect the psychological adjustment of children with chronic illness. These psychological/mediational processes include expectations of locus of control and self-esteem. Child coping methods are also included in the model, but have not been empirically tested, for lack of an adequate measure of children's coping responses (Thompson et al., 1992b). Based on an ecological-systems theory perspective, the authors predicted that child psychological adjustment would be affected by the stress and symptoms in other family members. This is based on a large body of literature linking parental depression with child emotional and behavior problems (e.g., Compas et al., 1989; Daniels et al., 1987). The results supported the psychosocial mediational processes of child self-esteem and maternal anxiety in child adjustment. In particular, children who reported lower self-esteem also had poorer adjustment, as measured by maternal reports of behavior problems and self-reported distress. The illness and demographic parameters accounted for only small amounts of variance in child adjustment, whereas self-esteem accounted for a significant amount of the variance in child adjustment as reported by both mother and child. Maternal anxiety also accounted for a significant increase in variance in both mother- and child-reported child adjustment. These results highlight the interactional nature of parent and child psychological/mediational processes and their impact on child adjustment to chronic illness.

The present study tested a modified version of the Transactional Stress and Coping Model of Thompson and his colleagues (1992b) (see Figure 1). Changes have been made in order to accommodate the variables of interest in the present study which are thought to be related to children's psychosocial adaptation to SS. Both parent and child coping were included in the model, and were assessed with semi-structured interviews.

Figure 1. Stress and Coping Model For Short Stature



Limitations of Previous Research on SS

The body of literature investigating the psychosocial and cognitive functioning of children with SS is marked by numerous inconsistencies. Differences in the results of comparable studies can be accounted for in part by methodological differences and shortcomings. For example, one of the major limitations of the literature on SS has been the practice of combining heterogeneous samples of children with SS, some of whom have well-documented cognitive deficits and physical stigmata (e.g. Turner Syndrome and achondroplasia). The inclusion of such disparate groups makes it difficult to isolate the effects of SS on psychosocial adjustment from the effects of other physical differences or cognitive and behavioral difficulties. In addition, combining children whose SS is secondary to cranial tumors or radiation for life-threatening illnesses with children with CD, GHD, and FSS, seems equally inappropriate. The power of statistical comparisons has been limited by small sample sizes, some of which do not exceed 15. In addition, few studies provide carefully matched control groups of children with normal stature. Researchers have not routinely controlled for socioeconomic status, which is especially important when studying cognitive and academic functioning.

With regard to measurement issues, earlier studies on the psychosocial functioning of children with SS suffered from a lack of standardized and well-validated test instruments. Many of these investigations relied on anecdotal data. In addition, there has been a lack of consistency in the definitions of the operational constructs studied (Siegel, 1990). The majority of studies in this area have relied on parent-, teacher-, or self-report measures. While these are all valuable sources of information which provide different perspectives, they are subject to defensive or otherwise biased responding. As discussed above, it is clear that denial and repression are common in both children and adults with SS (Siegel & Hopwood, 1986; Voss et al., 1993; Zimet, 1993), which brings into question the reliability of the subjective measures curently in use. Qualitative research methods (e.g., semi-structured interviews) might allow for more in-depth querying and clarification when denial or minimization is thought to occur. Interview data could corroborate information obtained in self-report measures.

By far the most serious shortcoming of this body of research is the failure to address family factors which might impact children's psychosocial adjustment to SS. There is a clear need for a more systemic focus, which includes both parent and child perceptions and experiences, and addresses the relationships between these variables. Those studies that do include family factors are usually based on maternal reports only, with relative neglect of fathers' contributions to children's developmental outcomes. Fathers have been shown to be especially important to children's developing self-concept (Amato & Ochiltree, 1986), particularly for male children (Gecas & Schwalbe, 1986). In addition, as Rotnem et al. (1982) found that fathers had greater difficulty accepting the diagnosis of SS than mothers, it is likely that their responses will have important implications for child adjustment to SS. Finally, there have been no investigations which look at the relationship between parental functioning (e.g., self-esteem, coping strategies) and child adjustment to SS. This may be especially important when parents themselves have a history of SS.

Overview and Research Questions

The present study was designed to improve upon past methodological weaknesses in the literature on child psychosocial adjustment to SS as follows:

1) While the current sample of children includes mixed diagnoses (CD, GHD, FSS, and CD/FSS), it does not include diagnostic categories in which affected individuals have additional cognitive, physical, or psychological difficulties (e.g., TS, achondroplasia).

2) The psychosocial adjustment of children with SS was compared to that of a group of children with normal stature, matched for age, gender, ethnicity, and SES.

3) A major focus of this study was to test a stress and coping model for SS, including family and child psychological and mediational processes which were predicted to affect child outcomes.

4) Both mothers and fathers were included in this study.

5) Questionnaires were combined with a semi-structured interview in order to obtain more detailed qualitative data on the impact of stature and coping styles of parents and children.

The following research questions were addressed in this investigation: 1) Do children with short stature demonstrate significantly more psychosocial and behavioral problems than a matched group of children of with normal stature?

2) Are there gender, age, or diagnosis effects in children's adaptation to short

stature?

3) Do children with short stature devalue physical appearance as a way of maintaining overall high self-esteem and positive affect?

4) Do the family environments of children with short stature differ from those of children with normal stature?

5) How do family factors impact children's adjustment to short stature?

6) How do the coping styles of parents relate to child coping and child adjustment?

7) Is a model of stress and coping useful for understanding the individual and family processes which affect child adjustment to SS?

CHAPTER 2

Hypotheses

1) Children and adolescents with SS will be rated by their parents as having significantly more psychosocial and behavioral problems than a matched group of children with normal stature.

2) Children and adolescents with SS will rate themselves as having lower self-competence than a matched group of children with normal stature.

3) Boys with SS will demonstrate greater psychosocial and behavioral problems and lower self-competence than a) girls with SS, and b) children of normal stature.

4) Younger children with SS (under 12 years) will demonstrate a) greater self-competence, and b) greater psychosocial and behavior problems than older children and adolescents with SS (12 years and above).

5) Children with SS who have a perceived or diagnosed family history of SS (FSS and FSS/CD) will demonstrate better psychosocial adjustment than those without a perceived or diagnosed family history of SS (GHD and CD).

6) Children with SS who devalue physical appearance will have a) higher self-esteem, and b) fewer internalizing behavior problems than those who regard appearance as more important.

7) Families of children with SS will be more controlling than families of children with normal stature.

8) Families factors of a) high support, and b) low control and conflict will be

associated with: a) higher child self-esteem, and b) better adjustment (social, academic, and behavioral competence) both for a) children with SS, and b) children with normal stature.

9) The type of coping strategies used by parents will be positively related to the type of coping strategies used by their children.

10) Children's approach (rather than avoidance) coping strategies will be associated with better child psychosocial adjustment.

11) The relationship between children's psychosocial adjustment to SS and diagnostic/demographic parameters will be mediated by family emotional resources and mediational processes (a) support, b) conflict, c) control, d) parents' self-worth, e) parents' impact of stature, and f) parents' coping strategies), and child mediational processes (a) self-worth, b) impact of stature, and c) coping strategies).

CHAPTER 3

Method

Subjects

Subjects were 33 children between the ages of 6 and 18 years with short stature (SS) and their parents, and a comparison group of 33 children of normal stature. There were 23 boys and 10 girls in each group. Participants were recruited through a university pediatric endocrinology clinic and were at or below the fifth percentile of height (-1.6 SD) expected for age and gender. Patients with a history of serious chronic illness, cranial tumor, developmental delay/mental retardation, achondroplasia, Turner's Syndrome, chromosomal abnormalities, or physically disfiguring conditions were excluded from the study. These exclusion criteria were designed to eliminate other factors which might negatively impact the child and family's adjustment to SS. In this manner, the subject population was limited to children and families whose primary challenge was coping with short stature and its attendant difficulties. Also excluded were patients who did not speak fluent English. Eligible participants carried the following diagnoses: 1) hypopituitarism/growth hormone deficiency (GHD), including cases of growth hormone deficiency which are idiopathic or due to pituitary pathology (n=4); 2) familial short stature (FSS), in which the rate of growth is normal and short stature is linked to genetic inheritance (n=8); and 3) constitutional delay of growth (CD), in which a delayed rate of growth causes short stature and delayed puberty, but a normal final adult height is obtained (n=16). Four subjects were diagnosed as having both familial short stature and constitutional delay (FSS/CD). One subject had SS of unknown etiology. The following diagnostic criteria are used in the Michigan State University Pediatric Endocrinology Clinic where subjects with SS were recruited:

1.) GHD: a) peak GH of < 10 ng/ml after administration of a provocative stimulus and/or;
  b) 24-hr. average concentration of GH < 3.2 ng/ml and;
  c) bone age delay > 2 SD's from chronological age and;
  d) growth rate < 4.2 cm/yr.
2.) CD: a) bone age delay > 2 SD's from chronological age and;
  b) 5th percentile height or below.
3.) FSS: a) 5th percentile height or below
  b) bone age within 2 SD's of age expectancy.

Subjects who have received or were receiving some type of pharmacological intervention (e.g., GH) were not excluded from the study, as long as they met the criterion for height (at or below the 5th %tile) at the time of recruitment. Twenty-four subjects had never received pharmacological treatment; 3 had in the past but were not currently; and 6 were currently under treatment (2 for under 6 months and 4 for over six months) at the time of their participation.

Of the 39 potential candidates approached to participate in the study, four families declined. Three of these families were concerned about possible negative repercussions of participation and did not want to emphasize their childrens' SS. The fourth family was in the process of a divorce. Although the parents were willing to participate, the child declined. Two more families agreed to participate, but did not respond to attempts to contact them after the initial meeting. In three additional families the children agreed to complete questionnaires, but did not wish to participate in the interview. In one family, the mother completed questionnaires, but deferred participation in the interview. Thirty children with SS and their families provided both questionnaire and interview data, while 3 completed only questionnaire data.

The 33 subjects with SS came from predominantly middle class, Caucasian, two-parent families. Socioeconomic status was measured by the Revised Duncan Standardized Socioeconomic Index (TSEI2) averaging both parents' scores, as recommended by Mueller and Parcel (1981). The mean TSEI2 of these families was 40.22 (consistent with managerial and administrative positions) with a range of 17.70 to 76.90 (laborers to professionals). The average yearly income of this group fell in the $40,000-$49,000 range. The mean age of the children was 11.91 years, with a range of 6.25 to 17.83 years. Twenty-eight of the children were Caucasian, 2 were Asian, 1 was Hispanic, and 1 was bi-racial (Caucasian/African-American). Three of the children were adopted as infants.

A control group of 33 children of normal stature (between the 10th and 90th percentiles of height for age and gender) who were never referred to a physician because of concerns related to stature, were matched with the SS subjects on gender, age (+/- 11 months), SES, and ethnicity. These subjects were recruited through a primary care pediatric clinic and through flyers circulated within the same geographic area from which the SS group was drawn (e.g., at schools, churches, and through personal contacts). The same exclusion criteria discussed above were used in selecting matched controls. The mean age of this group was 11.65 years with a range of 5.83 to 17.33 years. Adequate matches were made for ethnicity for all subjects except one Hispanic girl with SS who was matched with a Caucasian girl of normal stature. The mean Duncan TSEI2 for the comparison group was 42.80 and was not significantly different from that of the SS group ($t=.59$; $p=.55$). One of the children in this group was adopted as an infant.

Procedures

Potential SS subjects were identified from a patient roster prior to their appointment at the pediatric endocrinology clinic. They were sent a letter explaining the purpose of the study and were informed that they would be called within one week in order to answer any questions and to discuss their interest in participation (see Appendix B). If the parent(s) and the child agreed to participate, a meeting with the primary investigator was arranged either before or after their clinic appointment to discuss issues pertaining to confidentiality and consent, and to administer questionnaires and conduct an interview with each family member individually. Families were assured that confidentiality would be maintained, that their participation in the study would not impact their medical care in any way, that the information they provided throughout the course of the study would not be part of their medical record, and that they could terminate participation at any time. These procedures to ensure participant confidentiality and ethical treatment have been approved by the University

Committee on Research Involving Human Subjects (UCRIHS) (see Appendices C and D).

Both written and verbal instructions were given for completing the questionnaires (see Appendix E). Parents and children were instructed to complete their forms independently and not to discuss their answers until everyone had completed them. If a child required assistance when the investigator was unavailable, parents were requested to help their child without influencing responses. In order to reduce the amount of time required to complete both the questionnaires and interviews, while one family member completed the interview, the others filled out their questionnaires. The order of administration of the interview and questionnaires was randomly alternated so that an equal number of parents and children completed the interview prior to the questionnaires. All interviews were conducted privately and were videotaped. In cases where families were not comfortable being videotaped, the interviews were audiotaped. In some instances, it was not possible to send letters to potential subjects with SS prior to their appointment at the endocrine clinic because of late additions to the clinic schedule, schedule or address changes, or uncertainty about diagnoses. Recruitment then occured during their clinic visit and the interviews were scheduled at a convenient time for the family.

The comparison group of children with normal stature (NS) was recruited with flyers in a primary care pediatrics clinic and other community establishments (e.g., churches, sports facilities, childcare centers, and laundromats), and through personal contacts. Families were screened briefly for exclusionary criteria and for demographic variables, to ensure their appropriateness and match. All other procedures were the same as those followed with the SS subjects.

While it would have been preferable to conduct all of the interviews in person, some of the families traveled a great distance to clinic (e.g., over 350 miles) and/or were unable to stay for the interviews after their appointment, or to return to or meet at the Clinical Center. Under these circumstances, the primary investigator either conducted the interviews in the subject's home or over the telephone. When face-to-face interviews were not possible, telephone interviews were deemed appropriate and practical, and they prevented the loss of subjects due to geographic or time constraints. All phone interviews were audiotaped and families completed their questionnaires independently at home and returned them in the mail.

A considerable body of literature comparing face-to-face with telephone interviews lends support to mixing these two methodological approaches. For example, studies investigating adult hypertension (Chwalow, Balkav, Costigliola, & Deeds, 1989), psychiatric epidemiology (Fenig, Levav, Kohn, & Yelin, 1993), depression (Wells, Burnam, Leake, & Robins, 1988), drug use and sexual behavior in Hispanics (Marin & Marin, 1989), and sexual behavior in college females (Bermak, E., 1989) have found significant agreement between the two methods with no significant differences with regards to rate and depth of self-disclosure (e.g., Quinn, Gutek, & Walsh, 1980), interviewee discomfort, codability, and accuracy of response. Chwalow et al. (1989) state that "the use of more than one method of data collection with the same sample, while facilitating the augmentation of the response rate, will not necessarily bias the study results," (p.321). In addition, Rogers (1976) concludes that "the quality of data obtained by telephone on complex attitudinal and knowledge items, as well as personal items is comparable to that collected in person," (p. 51). While this body of data is based on adult subjects, Reich & Earls (1990) conducted a parallel study with an adolescent population (12-17 yrs.). They found that face-to-face and telephone interviewing did not differ in the reporting of diagnostic categories or in response rates to embarrassing or personal questions. Adolescent subjects interviewed by telephone did, however, report fewer symptoms than those interviewed in person. There have been no known comparable investigations involving telephone and face-to-face interviews with children.

A greater proportion of telephone interviews were conducted for the comparison group than the SS group. In the SS group, 37% of the children, 38% of the mothers, and 65% of the fathers participated in telephone interviews. In the comparison group, 53% of the children, 53% of the mothers, and 81% of the fathers were interviewed by telephone. This difference was due in part to fewer opportunities for personal contact with the comparison families, and possibly less investment on their part in study participation.

Measures

Demographic Parameters/Instrumental Family Resources

Wallander and his colleagues (1989) have defined utilitarian family resources as "structural characteristics of the family which may aid in dealing with acute and chronic problems related to the child's handicap" (p. 376). Previous research has included the following characteristics as utilitarian or instrumental family resources: parents' age and education, family income, family size, and duration of marriage. In the present study, each parent completed a Child and Family Information Questionnaire in order to provide information regarding family demographics as well as instrumental family resources such as: parents' ethnicity, education, employment status, family size, and gross annual income (see Appendix F).

Family Mediational Processes

Psychosocial Family Resources: The psychosocial family resources of interest in the present study include family support, control, and conflict. These three factors were assessed with the Family Environment Scale-2nd Edition (FES-Moos & Moos, 1986) and the Children's Version of the Family Environment Scale (CVFES-Pino, Simons, & Slawinowski, 1984). The FES is a 90-item true-false questionnaire, comprised of 10 subscales, designed for adolescents and adults. Children from 6 to 12 years completed the CVFES, which pictorially depicts 30 items comparable to those on the FES, and yields the same 10 subscales. The items on the CVFES require children to choose which of three pictures most closely resembles their own family. The 10 subscales of the FES and CVFES assess environmental characteristics of the family within three broad domains: the Personal Growth Domain consists of types of family activities, interests, and values, and includes the Achievement Orientation, Independence, Active-Recreational Orientation, Moral-Religious, and

Intellectual-Cultural subscales; the System Maintenance Domain represents the degree to which structure, control, and rules govern family life and is composed of the Control and Organization subscales; finally, the Relationship Domain characterizes the importance and types of interpersonal relationships within the family and includes the Expressiveness, Cohesion, and Conflict subscales. Moos and Moos (1986) report internal consistencies ranging from .61 to .78 and two-month test-retest reliabilities ranging from .68 to .86 for the FES subscales. The authors' findings also support adequate construct and discrmininant validity of the subscales (Moos & Moos, 1986).

In their work investigating characteristics of families with chronically ill and healthy children, Kroneberger and Thompson (1990) derived three higher order dimensions characterizing family environments: the Supportive, Controlling, and Conflicted factors. The Supportive factor represents "the degree of mutual commitment and support for expression of feelings and for active participation in social and recreational activities" (Thompson, et al., 1992a, p. 579) and is composed of the sum of scaled scores from the Cohesion, Expressiveness, Active-Recreational Orientation, Intellectual-Cultural Orientation, and Independence subscales (Chronbach alpha = .81). The Controlling factor reflects "emphasis upon control, ethical and religious values, achievement orientation, and a lack of independence" (Thompson et al., 1992a, p. 579) and is the sum of the Control, Moral-Religious Emphasis, and Achievement Orientation subscale scores, minus the score for the Independence subscale (Chronbach alpha = .65). The Conflicted factor represents "high conflict, poor organization, and a lack of mutual commitment and support" within the family

(Thompson et al., 1992a, p. 579) and is comprised of the Conflict score minus the scores for the Cohesion and Organization scales (Chronbach alpha = .84).

Kronenberger and Thompson (1990) demonstrated the construct validity and utility of these three higher order factors in their investigation of family environments of chronically ill and healthy children. They found that chronically ill children with behavior problems came from more conflicted and less supportive families. More specifically, the Conflicted factor was positively related to externalizing behavior problems and negatively related to sociability. The Supportive factor was negatively related to Internalizing behavior problems and positively associated with sociability. These investigators also replicated the three factors in a sample of healthy children. Additional studies have linked the three factors to child psychosocial adjustment. For example, Thompson, Lampron, Johnson & Eckstein (1990) found that in a sample of children with poor academic performance, children with greater behavior problems (especially internalizing behaviors) had less supportive and more conflicted families. In addition, in a sample of children with myelodysplasia, the Supportive and Conflicted dimensions were related to internalizing and externalizing behavior problems, respectively (Thompson, Kronenberger, Johnson, & Whiting, 1989).

Based on Moos and Moos' (1986) construct of the family environment profile, family members' individual scores for each of the three factors (hereafter referred to as support, control, and conflict) were averaged into composite family scores in the present study. This approach was consistent with the view of the family as a system, and reflected the transactional nature of family members' perceptions and behaviors.

It also facilitated the examination of the relationship between the family climate and child psychosocial outcomes.

Parental Self-Worth: Parents' feelings of self-competence was assessed with the Self-Perception Profile for Adults (Messer & Harter, 1986). This 50-item questionnaire taps the following twelve domains: intelligence, job competence, athletic competence, physical appearance, sociability, close friendship, intimate relationships, morality, sense of humor, nurturance, household management, adequacy as a provider, and global self-worth. This questionnaire has a similar format to the Self-Perception Profiles for Children and Adolescents (see below). Messer and Harter (1986) report internal consistency reliabilities ranging from .63 to .92 for two different samples of adults including full-time working men and women, part-time working women, and homemakers. The adequate provider scale was found to be unreliable in samples of homemakers and part-time working women.

Impact of Stature and Coping Strategies: The impact of stature on the parents and their coping strategies were also assessed as additional mediational processes to adequate child adjustment. The Semi-Structured Interview detailed below provided the data for these variables.

Child Mediational Processes

Self-Worth: Harter's Self-Perception Profile for Children (Harter, 1982) and Self-Perception Profile for Adolescents (Harter, 1988) were used to assess subject's self-perceptions of their own competencies in a number of different domains:

academic, social, athletic, physical appearance, and behavioral conduct. The adolescent profile also includes three additional scales which were not used in this study: job competence, close friendship, and romantic appeal. Both child and adolescent forms also include a global self-worth scale. The children's form includes 36 items, while the adolescent form contains 45. Each item depicts two contrasting statements, from which children choose the one they are most like (e.g., "Some kids are happy with their height and weight BUT Other kids wish their height or weight were different."). Second, they decide if the statement is "really true" or "sort of true" for them. The alpha reliabilities of the scale for children range from .73 to .87 (Harter, 1982; 1983) and for adolescents they range from .85 to .95 (Harter, 1988). For the Self-Perception Profile for Children, Harter (1983) reports good test-retest reliabilities for samples retested at three month and nine month intervals and adequate convergent and construct validity.

Particularly relevant to this study is the finding that in a sample of 6th and 7th graders, physical appearance was the domain most highly correlated with global self-worth. Also of note were moderate relations among the social acceptance, athletic competence, and physical appearance domains. Harter (1983) speculates that athletic ability and physical attractiveness lead to greater popularity and acceptance among peers.

Of special interest to this study is the degree to which subjects value physical appearance. In order to assess the degree to which physical appearance is valued (or devalued), subjects completed an importance rating for this domain. Importance ratings are included at the end of the Self-Perception Profile for Children and Adolescents. Items on the Importance Scale are structured similarly to those on the Self-Perception Profiles. First, subjects choose which of two statements is most like them. Second, they indicate whether this is "sort of true" or "really true" for them (e.g., "Some kids think it's important to be good looking in order to feel good about themselves BUT Other kids don't think that's very important at all").

Impact of Stature and Coping Strategies: The impact of stature on the children and their coping strategies were also assessed as additional mediational processes to adequate adjustment. The Semi-Structured Interview detailed below provided the data for these measures (see Appendices G and H).

Child Adjustment

Child adjustment was assessed with a parent-report measure, The Child Behavior Checklist (CBCL-Achenbach & Edelbrock, 1983), one of the most widely used measures for assessing children's social competence and behavior problems. Of particular interest to this study were the areas of behavioral, social, and academic (scholastic) competence. First, parents or parent-figures report on the degree of their child's involvement and success in social activities and relationships, and academic subjects. Second, parents complete a 113-item checklist by indicating the degree to which their child has demonstrated the described behavior during the previous 6 months, from 0 (indicating that the item is not true of the child) to 2 (indicating that the item is very true or often true of the child). The Child Behavior Profile is scored from the CBCL and consists of three competence scales (activities, social, and school) and eight behavior problem scales derived from factor analysis (withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behavior, and aggressive behavior). In addition, the behavior problem scales are divided into two broad-band factors labeled "internalizing" and "externalizing". The internalizing category includes: withdrawn, somatic complaints, and anxious/depressed behaviors. The externalizing category consists of delinquent and aggressive behaviors. Normalized T-scores, based on populations of nonclinical samples, are available for the competence scales, behavior problem scales, and the broad-band factors ($M=50$, $SD=10$). Discriminative validity is demonstrated by significant differences on all social competence and behavior problem scores between clinical and nonclinical samples. Median test-retest reliability is .89 and interparent correlations for total behavior problems in a sample of 4-16 year-old children was .64 (Achenbach & Edelbrock, 1983). Construct validity is also reportedly high (Achenbach, 1978; Achenbach & Edelbrock, 1979).

In this sample, mothers' and fathers' CBCL scores were strongly and significantly related. Pearson correlations between parents' scores ranged from $r=.37$ to $r=.84$ (all with p's$<.01$, based on 47 or 48 pairs), with a mean of $r=.63$. Interparent correlations for the internalizing and externalizing broad band factors were $r(48)=.66$, $p<.001$ and $r(48)=.78$, $p<.001$, respectively, and for total behavior problems was $r(48)=.78$, $p<.001$. Therefore, when both parents' scores were available, they were averaged into a composite score for each scale.

Semi-Structured Interview

Both parents and children participated in an individual semi-structured interview (see Appendices G and H). The interview was developed for this study in order to explore the impact of stature on subjects' development, personality, coping strategies, self-concept, and overall competence. All interviews were audio- or video-taped and tapes were coded by reading the interviewer's abbreviated transcript notes while simultaneously watching and/or listening to the tapes.

Interview Coding Scheme

1) Parent and Child Family History of SS: Parent and child interviews were coded for the presence or absence of a perceived family history of short stature. This was based on the individual's subjective perceptions of height, and not on a clinical diagnosis or height estimate. The perceived presence of a family history of SS was also coded for proximity to the individual (e.g., parent, sibling, grandparent).

2) Coping Strategies: Avoidance and approach coping strategies were coded for each parent and child interview. Avoidance coping included: distracting and avoiding, ignoring, emoting, etc. Approach coping included: problem-solving, seeking support, cognitive decision making, confrontion of an individual or situation, etc. See Appendices I and J, the "Coping Coding Manual" and sample "Coding Sheet," for a more detailed description of the coping categories and examples of strategies. Proportion scores based on each category of coping response divided by the total number of coping responses were calculated for each subject. Because there were only two categories of coping, the proportion scores were somewhat redundant.

Therefore, results will be discussed in terms of approach coping.

3) Impact of Stature on Adjustment: After reviewing a subset of interviews, it became apparent that stature could have both a positive and negative impact on subjects' lives. In order to assess the unique contributions of each of these dimensions, two global assessments of the positive and negative impact of stature on parents' and children's adjustment and life experiences were coded. Positive and Negative Impact scores ranged from 0 (no positive/negative impact) to 3 (strongly positive/negative impact), and were assigned after coders reviewed the subject's entire interview.

Inter-rater Reliability

The first step in coding the semi-structured interviews consisted of identifying coping strategies. The second step involved classifying each strategy as either Approach or Avoidance coping. Finally, coders assigned a Negative and Positive Impact of Stature score after reviewing each interview in its entirety. A clinical psychology graduate student served as the primary coder and an undergraduate senior psychology major, without knowledge of subjects' group membership, served as a secondary coder. The secondary coder assisted in establishing and maintaining reliability, and once reliability was sustained, independently coded a subset of interviews. Training for coding coping strategies first involved reviewing, discussing, and understanding the coding manual, categories, and behavioral examples of the categories. Second, the coders reviewed, discussed and coded together a subset of training interviews. Coders then independently coded a subset of training interviews which were followed by discussion and resolution of differences. As suggested by Gelfand and Hartman (1984), acceptable levels of reliability were considered at least .70 for coping strategies and coping categories, and an r of at least .60 for Negative and Positive Impact scores. Once these levels of reliability were maintained, coders independently coded interviews. The primary coder coded approximately five times as many interviews as the secondary coder. Rater drift was prevented by weekly accuracy checks in which the secondary coder coded about every fourth interview of the primary coder. Discrepancies in coding were settled through discussion. After coping strategies were identified, those which both coders agreed upon (after resolving differences) were rated as either Approach or Avoidance coping.

Reliability for identifying coping strategies was calculated by the following formula suggested by Hakim-Larson and Hobart (1987) for segmenting speech units: number of perfect agreements/one-half the sum of Rater A's total responses plus Rater B's total responses. Inter-rater agreement on 24% of all the interviews was .70. Reliability for coping categories (perfect agreement/total units) was .96. The Pearson correlation coefficient between raters' Negative Impact scores was $r(39)=.74$, $p<.001$, and for the Positive Impact scores was $r(39)=.60$, $p<.001$.

Figure 2. Variables and Measures

VARIABLE	MEASURE
Diagnostic/Demographic Parameters	
Diagnosis	Child and Family Information
SES	Questionnaire/Duncan TSEI2
Family Mediational Processes	
Family Support, Conflict, Control	Family Environment Scale
Parental Self-worth	Adult Self-Perception Profile
Parental Coping Styles	Semi-Structured Interview
Parental Impact of Own Stature	Semi-Structured Interview
Child Mediational Processes	
Self-worth	Self-Perception Profile for Children or Adolescents
Coping Styles	Semi-Structured Interview
Impact of Stature	Semi-Structured Interview
Child Adjustment	
Social Competence	Child Behavior Checklist (CBCL)
Behavior Problems	CBCL
Academic Competence	CBCL

CHAPTER 4

Results

Statistical significance testing has been an area of considerable controversy, especially within the past decade. More recently, there has been a growing body of literature which criticizes the reliance of social science on significance testing, and suggests alternative methods for determining the significance or importance of research findings (see Carver, 1993; Judd, McClelland, & Culhane, 1995; Shaver, 1993; and Thompson, 1993). Kraemer and Thiemann (1988) emphasize that "specification of the critical effect size and the required power...must be realistic, not idealistic," (p.28). Similarly, Judd et al. (1995) suggest that "there is nothing sacred about an alpha level arbitrarily set at .05. When the sample size is small and constrained, an increase in power at somewhat greater risk of Type I error may be worthwhile. This is often true in applied research," (p. 445). These researchers also suggest that effect sizes, rather than levels of significance, be the focus of attention (Carver, 1993). Judd et al. (1995) add that even small effect sizes may be of "both theoretical and practical importance," (p. 438).

The data analyses of this study were guided by these arguments. Because the sample size was relatively small, it was deemed appropriate to increase power by setting the alpha level at .10. While this increased the chance of Type I error, the risks associated with it were judged to be less than those of Type II error. This decision was based partly in the fact that the body of research on SS and its impact on children and their families is quite limited. In addition, identifying areas of concern has widespread implications for clinical intervention with children with SS and their families.

Hypotheses 1 and 2: Group Differences

A series of one-way analyses of variance (ANOVA) was run in order to test the hypothesis that children and adolescents with SS would be rated by their parents as having more psychosocial and behavioral problems than children with normal stature (NS). The hypothesis was partially supported by the data (see Table 1). In general, children with SS have higher scores on all of the behavior problem scales than children with NS. These group differences are statistically significant for social problems, internalizing behavior problems, and total behavior problems, with the SS group exhibiting greater difficulties. In addition, as compared to children with NS, children with SS are rated as having significantly lower overall competence; this includes less involvement in extracurricular activities, having fewer close friends, and less frequent contact with the friends that they do have. No correction for multiple comparisons was made in these analyses, because the present study is concerned with results that are clinically significant. While this approach risked inflating Type I errors, the probability of this occuring was decreased by the small sample size and low power. Nevertheless, these results need to be interpreted with some caution.

Table 1.

Group Comparisons for the Child Behavior Checklist[1]

	Short Stature n=33		Normal Stature n=33	
SCALE	Mean	SD	Mean	SD
Total Social Competence	45.92	6.90	53.88††	9.19
Activities	48.00	5.37	50.39*	4.86
Social	43.45	7.25	49.80††	6.14
School[2]	47.73	7.85	49.42	6.56
Social Problems	55.91	6.10	52.08†	3.68
Thought Problems	54.62	6.69	52.48	3.75
Attention Problems	55.91	8.68	53.56	5.83
Internalizing Behavior Probs.	51.35	10.00	45.94**	9.73
Social Withdrawal	53.52	6.22	51.95	3.39
Somatic Complaints	56.17	7.02	54.97	5.61
Anxious Depressed	54.82	7.45	52.70	4.28
Externalizing Behavior Probs.	49.77	10.29	46.33	10.01
Aggressive Behavior	54.41	7.23	53.05	6.05
Delinquent Behavior	53.98	6.17	52.55	4.63
Total Behavior Problems	51.35	10.54	44.77**	11.19

[1] Composite T-scores averaged for mothers and fathers when both available.
[2] n=32 for the short stature group on this scale.
*$p < .10$
**$p < .05$
†$p < .01$
††$p < .001$

Another series of one-way analyses of variance was run to test the hypothesis that children with SS would have lower self-competence than children with NS (see Table 2). On all but one of the Self-Perception Profile scales, children with SS rated themselves as having lower competence, with significant differences between groups for global self-worth, athletic competence, and physical appearance. Thus, the hypothesis was partially supported by the data. Of note is the fact that children with SS rated themselves as having somewhat more socially appropriate behavior than children with NS, although this difference was not statistically significant. Similar to the analyses above, these results need to be interpreted carefully as no correction was made for multiple comparisons.

Table 2.

Group Comparisons for the Self-Perception Profile

	Short Stature n=32		Normal Stature n=33	
SCALE	Mean	SD	Mean	SD
Global Self-Worth	3.15	.61	3.46[b]	.57
Athletic Competence	2.74	.86	3.15[b]	.57
Behavioral Conduct	3.14	.58	2.98	.70
Physical Appearance	2.76	.80	3.06[a]	.56
Scholastic Competence	3.08	.74	3.16	.66
Social Acceptance	2.93	.64	3.19	.68

[a] $p < .10$
[b] $p < .05$

Further (post-hoc) analyses were performed to assess differences between the two groups in coping, the impact of height, and self-descriptions of height. A two-tailed unpaired t-test was conducted to test for group differences in coping strategies. There was no difference between children with SS and NS in their proportional use of coping strategies (t=.63, df=39, p=.53). Thus, children with SS were no more likely than children of NS to use approach or avoidant coping strategies. With regard to stature, there was no significant difference between the two groups in their positive impact scores (t=.19, df=58, p=.85). However, compared to children of NS, children with SS received significantly higher negative impact scores (t=7.02, df=50.85, p<.001) and more frequently described themselves as below average in height (t=6.47, df=44.88, p<.001).

Hypothesis 3: Gender Differences

The hypothesis that boys with SS would demonstrate greater psychosocial and behavior problems than girls with SS and children with NS was assessed in two ways. First, a 2 X 2 analysis of variance (ANOVA) was run to examine gender by stature interaction effects and gender main effects. This initial step was performed because of a potential confound in comparing boys with SS and girls with SS to children with NS. Any observed differences in this comparison could be due to general gender differences, rather than to differences specific to children with SS. This preliminary analysis revealed no significant gender by stature interaction effects. Hence, a series of one-way analyses of variance followed, comparing the three groups (SS boys, SS girls, and NS children) on the outcome variables (all of the CBCL scales and factors, and the Self-Perception Profile scales). As demonstrated by Tables 3, 4, and 5, the hypothesis is only partly supported by the data.

Tables 3, 4 and 5 display only the analyses resulting in significant F-values ($p<.10$). For the CBCL behavior scales (see Table 3), significant between-group differences ($p<.05$) were found for Total Behavior Problems and Social Problems. Boys with SS had significantly more behavior problems than children with NS, however girls with SS did not differ significantly from either group. Girls with SS had the most internalizing behavior problems, but between-group differences did not reach the .05 criterion on this factor. Boys with SS also demonstrated more significant social problems than children with NS, while girls with SS demonstrated levels of social problems between, but not significantly different from, the other two groups.

On the competence scales of the CBCL, significant F-values were found for activities and social competence (see Table 4). Girls with SS participated in significantly fewer extracurricular activities than boys with SS and children with NS, who did not differ significantly from each other on this scale. Boys and girls with SS had similar levels of social competence, which were significantly lower than that of children with NS.

Table 3.

One-Way Analysis of Variance (ANOVA) for Stature X Gender Groups and CBCL Behavior Problem Scales

		CBCL Scales					
		Total Behavior Problems*		Internalizing Behavior Problems		Social Problems*	
Group	N	M	SD	M	SD	M	SD
SS Boys	23	51.33	9.54	51.30	8.49	56.33	6.35
SS Girls	10	51.40	13.14	51.45	13.38	54.95	5.66
NS Children	33	44.77	11.19	45.94	9.73	52.08	3.68
F		2.97[a]		2.44[a]		5.00[b]	

*SS Boys are significantly different from NS Children at the .05 level, while SS Girls do not differ significantly from the other two groups.

[a] $p < .10$
[b] $p < .01$

Table 4.

One-Way Analysis of Variance (ANOVA) for Stature X Gender Groups and CBCL Competence Scales

		CBCL Scales			
		Activities*		Social**	
Group	N	M	SD	M	SD
SS Boys	23	49.20	4.41	43.13	7.08
SS Girls	10	45.25	6.55	44.20	7.98
NS Children	33	50.39	4.86	49.80	6.14
	F	4.07[b]		7.36[c]	

*SS Girls are significantly different from SS Boys and NS Children at the .05 level, while SS Boys and NS Children do not differ significantly from each other.

**NS Children are significantly different from SS Boys and SS Girls at the .05 level, while SS Boys and SS Girls do not differ significantly from each other.

[a] $p<.10$
[b] $p<.05$
[c] $p<.01$

Table 5.

One-Way Analysis of Variance (ANOVA) for Stature X Gender Groups and Self-Perception Scales

		Self-Perception Scales			
		Athletic Competence		Physical Appearance*	
Group	N	M	SD	M	SD
SS Boys	23	2.78	.77	2.88	.87
SS Girls	10	2.65	1.06	2.51	.59
NS Children	33	3.15	.57	3.06	.56
F		2.65[a]		2.49[a]	

*SS Girls are significantly different from NS Children at the .05 level, while SS boys do not differ significantly from the other two groups.

[a] $p < .10$

On the Self-Perception Profile, significant F-values were found for the athletic competence and physical appearance scales (see Table 5). While group differences on the athletic competence scale did not reach significance at the $p<.05$ level, girls with SS rated themselves the lowest, children with NS the highest, and boys with SS rated themselves between the two. On the physical appearance scale, girls with SS rated themselves significantly lower than children with NS, while boys with SS rated themselves between the two groups and did not differ significantly from either of them.

Hypothesis 4: Age Differences

The hypothesis that younger children (under 12 years) with SS would demonstrate greater self-competence, but also greater psychosocial and behavior problems than older children and adolescents with SS (12 years and older), was only partially supported by the data. A series of one-way analyses of variance assessed group differences on the child outcome measures. On the Self-Perception Profile for Children and Adolescents, the younger group rated themselves significantly higher on athletic competence ($F[1,30]15.55$, $p<.001$), physical appearance ($F[,30]4.73$, $p<.05$), behavioral conduct ($F[1,30]=3.37$, $p<.10$), and global self-worth ($F[1,30]=3.25$, $p<.10$). There were no significant differences between the groups on the scholastic competence or social acceptance scales of this profile. In addition, contrary to the hypothesis, there were no significant age group differences on any of the competence and behavior problem scales and factors of the CBCL. A post-hoc two-tailed unpaired t-test revealed no significant difference between the age groups in their use of approach or avoidant coping strategies.

Hypothesis 5: Family History of SS

It was predicted that children who have either a perceived or diagnosed family history of SS would demonstrate better psychosocial adjustment than those without a perceived or diagnosed family history of SS. This hypothesis was tested in two sets of analyses, examining perceptions of familial short stature (FSS) separate from diagnosed FSS. The semi-structured interview provided data regarding children's perceptions of family members' stature. Of the 30 children with SS who participated in the interview, only 6 of them did not perceive a family member (e.g., parent, sibling, grandparent, etc.) as below average in height. A series of one-way analyses of variance provided comparisons between children with SS with and without a perceived family history of SS on the outcome measures (CBCL and Self-Perception Profile scales). No significant group differences were found except for one, which was in the opposite direction to that which was predicted. On the Self-Perception Profile, children with SS who reported a perceived family history of SS rated themselves as less satisfied with their physical appearance than those without a perceived family history of SS ($F[1,27]=5.20$, $p<.05$).

In order to test the second half of Hypothesis 4, a series of one-way analyses of variance was run to assess differences on the outcome measures between the 2 diagnostic groups of children with SS who <u>did not</u> have a family history of SS (CD and GHD) and the 2 diagnostic groups that did (FSS and CD/FSS). Only one between-group difference was found. Children with a family history of SS were rated significantly higher on the CBCL scale of social competence than those without FSS ($F[1,30]=7.12$, $p<.05$). Comparable results were found when the one-way ANOVA's were run comparing all four diagnostic groups on the outcome measures. Children with FSS had the highest social competence scores, whereas children with CD had the lowest ($F[3,28]=2.94$, $p=.05$). The difference between these two groups was significant at the $p<.05$ level. Children with GHD had the second lowest scores and children with CD/FSS had the second highest scores on the social competence scale, but no other groups were significantly different from one another. Therefore, examining the 4 diagnostic groups separately did not mask the effect, and it provided more specific data regarding group differences.

Hypothesis 6: Devaluing Physical Appearance

One-way analyses of variance were also used to test the hypothesis that children with SS who devalued physical appearance would have greater self-esteem and fewer internalizing behavior problems than children with SS who felt that physical appearance was more important. The Harter Self-Perception Profile Importance Rating Scale provided the measure of children's value of physical appearance. The children with SS were divided into a devaluing group ($n=21$) and a valuing group ($n=11$) using a median split on the importance of physical appearance rating ($\text{devalue}<2.75<\text{value}$). These two groups were compared in a series of one-way analyses of variance on the Self-Perception Profile Scales, the CBCL internalizing factor, and the CBCL narrow-band scales which comprise the internalizing factor (anxious/depressed, somatic complaints, and withdrawal). Post-hoc analyses also compared the groups on the CBCL parent ratings of activities, social, and school competence.

As predicted, compared to children with SS who valued physical appearance, those who devalued it rated themselves as having higher: school competence (F[1,30]=4.43, p<.05), athletic competence (F[1,30]=3.44, p<.10), and global self-worth (F[1,30]=3.20, p<.10). In addition, children who devalued physical appearance rated themselves as significantly more satisfied with the way they look (F[1,30]=8.02, p<.01). Comparisons of the two groups on the CBCL behavior scales, internalizing factor, and competence scales yielded no significant between-group differences, except for one which was opposite to that which was expected. Children who devalued physical appearance were rated as having more somatic complaints than children who valued it (F[1,30]=3.40, p<.10). Thus, hypothesis 5 was only partially supported by the data.

Additional post-hoc analyses revealed that there was a strong correlation between how children felt about their physical appearance and their global self-worth (r[65]=.64, p<.001). This relationship was more robust for children with SS (r[32]=.84, p<.001) than for children with NS (r[33]=.32, p<.10). However, there was no difference between the groups in the degree of importance they placed on their physical appearance (t=0, df=62, p=1).

Hypotheses 7, 8, 9, and 10 : Family Factors in Child Outcomes

Pearson correlations assessed relationships between family members on each of the family environment factors. None of the intra-family correlations were statistically significant for the support factor, while correlations for control and conflict ranged from .31 to .63 and were all significant at at least the $p<.05$ level. Associations between parents were the strongest, and those between each parent and child were comparable. Pearson correlations between the composite (averaged) factors for this sample of 66 families were as follows: support and control ($r=-.16$, $p=.20$), support and conflict ($r=-.68$, $p<.001$), and control and conflict ($r=-.20$, $p=.12$). Thus, only family support and conflict were significantly correlated.

Two-tailed unpaired t-tests were used to assess whether families of children with SS were more controlling than families of children with NS. While families of children with SS were slightly more controlling than families of children with NS, this difference was not statistically significant ($t=.56$, $df=64$, $p=.58$). Thus, Hypothesis 6 was not supported by the data. Post-hoc analyses on the two other family factors revealed that compared to families of children with NS, families with SS were viewed as somewhat less supportive ($t=1.64$, $df=64$, $p=.11$), but no different in terms of family conflict ($t=-.28$, $df=64$, $p=.78$).

Hypothesis 8 predicted that families high in support and low in both control and conflict would have children with higher self-esteem and psychosocial adjustment than families with other combinations of these family environment factors. First, Pearson correlations assessed the relationships between the family environment factors and child outcomes (Self-Perception Profile; CBCL competence scales, behavior problem scales and factors). As illustrated in Table 6, family support is the factor most strongly related to child adjustment, whereas family conflict is the least. Additionally, family support is the only factor that correlates with the scales of the Self-Perception Profile. Global self-worth, school competence, and social acceptance are all moderately and positively related to family support. Family support also is correlated with the most scales on the Child Behavior Checklist. It is moderately and _negatively_ related to total behavior problems, withdrawal, anxious/depressed, social problems, externalizing behavior, and aggression. On the other hand, family support is moderately and _positively_ related to total competence and social competence. Family control is positively associated with total behavior problems, social problems, attention problems, externalizing, and delinquent behavior. Family conflict is moderately and positively correlated with thought problems, externalizing behavior, and aggression. In sum, Hypothesis 8 is generally supported by the data derived from the Pearson correlations. Family support was associated with better child psychosocial adjustment, whereas family control and conflict were associated with poorer child adjustment. Family support proved to be most highly related to child adjustment, while family conflict was the least and family control was between the two.

Table 6.

Pearson Correlations Between the Family Environment Factors and Child Outcome Measures

Child Measures	**Family Environment Factors**		
Self-Perception Profile	Family Support	Family Control	Family Conflict
Global Self-Worth	.33[c]	-.10	-.14
School Competence	.31[b]	-.04	-.18
Social Acceptance	.27[b]	.04	-.04
Athletic Competence	.08	-.07	.00
Physical Appearance	.15	-.01	-.19
Behavioral Conduct	.14	-.05	-.19
Child Behavior Checklist			
Total Problems	-.24[a]	.23[a]	.18
Internalizing Behavior	-.20	.15	.09
Withdrawal	-.23[a]	.15	.12
Somatic Complaints	-.09	.09	.10
Anxious/Depressed	-.23[a]	.19	.14
Social Problems	-.23[a]	.23[a]	.16
Attention Problems	-.15	.20[a]	.16
Thought Problems	-.09	.08	.23[a]
Externalizing Behavior	-.31[b]	.22[a]	.30[b]
Delinquent Behavior	-.16	.24[a]	.09
Aggression	-.37[c]	.14	.33[c]
Total Competence Index	.27[b]	-.03	-.09
Activities	.04	.02	.04
Social	.35[c]	-.10	-.08
School	.15	-.03	-.11

*Note: n=65 for Self-Perception Profile corr's.; n=66 for CBCL corr's.

[a] $p < .10$

[b] $p < .05$

[c] $p < .01$

Hypothesis 8 was further assessed in a second set of analyses. The three family environment factors (support, control, conflict) were divided into high and low groups based on median splits. Next, a series of one-way analyses of variance compared families who were high in support and low in both control and conflict (n=14) to all other families (n=52) on the child outcome measures (Self-Perception Profile; CBCL competence scales, behavior problem scales and factors). These analyses yielded few statistically significant between-group differences. On the Self-Perception Profile, children from families high in support and low in control and conflict rated themselves as more satisfied with their physical appearance than children from the other families, but this difference did not reach significance at the .10 level (F[1,63]=2.63, p=.11). On the CBCL, children from the high support, low conflict and control group were rated as having fewer externalizing behavior problems (F[1,64]=2.77, p=.10) and fewer delinquent behaviors (F[1, 64]=4.69, p<.05). No other group comparisons resulted in significant differences, although most were in the direction predicted by the hypothesis. Thus, the two sets of analyses provided limited support for the hypothesized relationships between family support, control, and conflict on the one hand, and child psychosocial adjustment on the other.

The data were only partly supportive of Hypothesis 9, which predicted that parents' use of coping strategies would be positively related to children's coping strategies. Pearson correlations indicated no relationship between mothers' and children's coping, and revealed a moderate positive correlation between fathers' and children's coping (r[30]=.33, p<.10). To look more closely at the levels of associations between parents' and children's coping, the correlations were run separately for boys and girls. For boys' coping, the correlation was $r(24)=.35$, $p<.10$ with fathers, and $r(32)=.04$, $p=.84$ with mothers. The correlation between girls' and fathers' coping was $r(6)=.41$, $p=.42$, and with mothers' was $r(7)=.53$, $p=.22$. Based on the size of the correlation coefficient for girls' and fathers' coping, the level of association appears to be comparable to that of boys and fathers. This suggests that the lack of significance for girls was due to the small sample size. On the other hand, while there was no association between boys' and mothers' coping, there is a possible association between girls' and mothers'. Of interest is the fact that mothers' and fathers' coping were more strongly related ($r[36]=.34$, $p<.05$) than parents' and children's coping.

Similarly, the prediction that children's approach coping would be associated with better child psychosocial adjustment than avoidance coping was generally unsupported by the data. To test Hypothesis 10, Pearson correlations were run between children's coping style and the outcome measures (Self-Perception Profile scales, CBCL competence scales, and behavior problem scales and factors). These analyses resulted in only two statistically significant correlations at the .10 level. There was a small negative association between approach coping and withdrawal ($r[41]= -.27$, $p<.10$) and a small positive relation between approach coping and somatic complaints ($r[41]= .26$, $p<.10$). The latter finding is contrary to that which was predicted.

Hypothesis 11: The Stress and Coping Model

The predicted relationships among the variables in the Stress and Coping Model (see Figure 1) were examined first with Pearson correlations and then assessed with a series of multiple regression analyses. Pearson correlations between the outcome and predictor variables are displayed in Tables 7, 8, and 9. Among the diagnostic/demographic parameters, child social competence was positively correlated with stature and SES (see Table 7). By contrast, behavior problems were negatively related to stature and SES. Academic competence was significantly and positively associated with SES.

Of the family mediational variables, family support and mothers' negative impact of stature had moderate positive associations with social competence (see Table 8). On the other hand, mothers' (approach) coping and fathers' negative impact of stature were both negatively related to social competence. Child behavior problems were moderately and positively related to family control and father's coping, and moderately negatively associated with family support and father's global self-worth. Academic competence correlated significantly with both parents' global self-worth.

Table 7.

Pearson Correlation Coefficients for the Diagnostic/Demographic and Child Adjustment Variables of the Stress and Coping Model

	OUTCOME VARIABLES		
PREDICTOR VARIABLES	Social Competence	Behavior Problems	Academic Competence
Stature	.43[d]	-.29[b]	.12
Gender	-.04	.18	-.10
Age	.02	-.08	.13
SES	.27[b]	-.33[c]	.37[c]

Note: $\underline{n}=66$ for Social Competence and Behavior Problems; $\underline{n}=65$ for Academic Competence

[a] $p<.10$
[b] $p<.05$
[c] $p<.01$
[d] $p<.001$

Table 8.

Pearson Correlation Coefficients for the Family Mediational and Child Adjustment Variables of the Stress and Coping Model

		OUTCOME VARIABLES	
PREDICTOR VARIABLES	Social Competence	Behavior Problems	Academic Competence
Family Support	$.35^{c}$ (66)	$-.24^{a}$ (66)	.15 (65)
Family Conflict	-.08 (66)	.18 (66)	-.11 (65)
Family Control	-.10 (66)	$.23^{b}$ (66)	-.03 (65)
Mothers' Global Self-Worth	.18 (66)	-.14 (66)	$.29^{b}$ (65)
Fathers' Global Self-Worth	.04 (49)	$-.42^{c}$ (49)	$.25^{a}$ (49)
Mothers' Coping	$-.29^{b}$ (55)	.21 (55)	-.06 (54)
Fathers' Coping	-.21 (40)	$.37^{b}$ (40)	-.13 (39)
Mothers' Neg. Impact	$.25^{a}$ (59)	.07 (59)	-.21 (58)
Fathers' Neg. Impact	$-.28^{a}$ (44)	-.02 (44)	-.05 (43)
Mothers' Pos. Impact	.12 (59)	-.08 (59)	.14 (58)
Fathers' Pos. Impact	.19 (44)	-.23 (44)	.09 (43)

$^{a}p<.10$
$^{b}p<.05$
$^{c}p<.01$
$^{d}p<.001$

Table 9.

Pearson Correlation Coefficients for the Child Mediational and Child Adjustment Variables of the Stress and Coping Model

	OUTCOME VARIABLES		
PREDICTOR VARIABLES	Social Competence	Behavior Problems	Academic Competence
Children's Global Self-Worth	.23[a] (65)	.02 (65)	.01 (64)
Children's Coping	.18 (41)	.11 (41)	.06 (41)
Children's Neg. Impact	-.45[d] (60)	.11 (60)	-.04 (59)
Children's Pos. Impact	.14 (60)	.01 (60)	.17 (59)

[a] p<.10
[b] p<.05
[c] p<.01
[d] p<.001

Overall, the child mediational variables were not strongly associated with child adjustment (see Table 9). Social competence was positively related to global self-worth, and negatively related to children's negative impact of height. Behavior problems and academic competence did not correlate significantly with any of the child mediational variables.

Of the 60 families that participated in the semi-structured interview, there were only 28 in which all three family members (child, mother, and father) gave responses which could be coded as coping strategies. Therefore, the multiple regression analyses testing the Stress and Coping Model were run on this subset of 28 families. This sample was composed of 23 boys and 5 girls, and 19 children with SS and 9 with NS. The predictor variables from each set were regressed onto the outcome variables in a hierarchical procedure, as determined a priori by the model. More specifically, variables within the diagnostic/demographic parameters, then the family mediational processes, and finally the child mediational processes were regressed onto the child psychosocial adjustment variables as measured by the CBCL social competence, total behavior problems, and school competence scales. The order of entry of the predictors indicates the increment in child psychosocial adjustment accounted for by the inclusion of family mediational processes and child mediational processes beyond that attributed to the diagnostic/demographic parameters. The order of entry within sets of the predictor variables was determined by a forward stepwise procedure. First, the diagnosis parameter (short stature/normal stature) was entered, followed by the demographic parameters of gender, age, and SES. The magnitude of the variance accounted for by each demographic parameter established the order of entry. Next, the family mediational processes (family support, control, and conflict; parents' self-esteem; parents' coping styles; and parents' impact of stature) were allowed to enter the regression if they met the criteria for inclusion: accounting for additional variance in the outcome variable significant at the .10 level. In sum, the regression analyses were stepwise within sets of predictor variables and hierarchical between sets of predictor variables.

Preliminary analyses involved regressing each set of predictor variables independently onto the outcome variables using a forward stepwise procedure. These results are depicted in Blocks 1 through 3 of Tables 10 and 11. Only those variables which entered the model are present in the tables. Following the method of Thompson, Gustafson, Hamlett, and Spock (1992), the standardized regression coefficients (*b*) represent the relationship between each predictor variable and child adjustment. The R^2 change (squared semipartial correlation) depicts the increment of variance accounted for by each predictor. The corresponding F indicates whether this increment is significant. Finally, the cumulative R^2 represents the total variance in the outcome accounted for by the predictors in the model.

Table 10 illustrates the results from the regression analyses for total behavior problems. Block 4 depicts the final step of the analyses in which all sets of the predictors are entered into the model in a hierarchical fashion. Of the diagnosis and demographic parameters, stature accounted for 12% of the variance in behavior problems, and children with SS had greater behavior problems. However, once block 2 was entered, stature was no longer significant. Family mediational processes (specifically, fathers' coping and fathers' positive impact of stature) accounted for an additional 4% and 3% of the variance in behavior problems, respectively. Of note is that fathers' coping was positively related to behavior problems, while fathers' positive impact of stature was negatively related to this outcome. None of the child mediational variables were significant. Together the variables of the model predicted 46% of the variance in total behavior problems. Because only the fathers' predictor variables entered the model from family mediational processes and there were more boys than girls in the sample, the possibility existed of an interaction between child gender and fathers' predictors. Therefore, two multiple regression analyses were performed in which child gender, father predictor (coping or positive impact of stature), and the child gender X father predictor interaction were regressed onto total behavior problems. Both of the interactions were nonsignificant. Thus, the association between fathers' predictors and total behavior problems was not moderated by child gender.

None of the sets of variables significantly predicted any variance in child academic competence. Thus, the model did not adequately predict the relationships among the diagnostic/demographic parameters, family mediational and child mediational processes, and child academic competence.

Table 10.

Summary of the Hierarchical Multiple Regression Scores for Total Behavior Problems

Variables	b^a	R^2 change	F^b	Cumulative R^2
Block 1				
Stature	-.34	.12	3.43[c]	.12
Block 2				
Fathers' Coping	.51	.26	9.08[e]	.26
Fathers' Pos. Imp.	-.45	.20	9.35[e]	.46
Block 3				

Block 4				
Stature	-.34	.12	3.43[c]	.12
Fathers' Coping	.44	.16	5.46[d]	.27
Fathers' Pos. Imp.	-.44	.19	8.47[e]	.46

[a] Standardized regression coefficient.
[b] F test on R^2 change.
[c] $p < .10$
[d] $p < .05$
[e] $p < .01$
[f] $p < .001$

Table 11.

Summary of the Hierarchical Multiple Regression Scores for Social Competence

Variables	b^a	R^2 change	F^b	Cumulative R^2
Block 1				
Stature	.57	.33	12.69[f]	.33
SES	.34	.11	5.01[d]	.44
Block 2				
Family Control	-.46	.21	7.02[d]	.21
Mothers' GSW	.34	.12	4.37[d]	.33
Block 3				
Child's Neg. Impact	-.51	.26	9.24[e]	.26
Block 4				
Stature	.57	.33	12.69[f]	.33
SES	.33	.11	5.01[d]	.44
Family Control	-.35	.11	5.72[d]	.55
Mothers' GSW	.29	.08	4.87[d]	.63
Child's Coping	.38	.12	10.31[e]	.75

[a] Standardized regression coefficient.
[b] F test on R^2 change.
[c] $p<.10$
[d] $p<.05$
[e] $p<.01$
[f] $p<.001$

The results of the multiple hierarchical regression analyses for social competence are found in Table 11. The diagnostic and demographic parameters of stature and SES accounted for 44% of the variance in social competence. Family mediational processes (family control and mother's global self-worth) and child mediational processes (child's negative impact of stature) accounted for an additional 19% and 12%, respectively. When all the variables entered the model, however, SES was no longer significant. Altogether, the predictor variables of the stress and coping model accounted for 75% of the variance in child social competence. Because the amount of variance accounted for was suspiciously high, a Durbin-Watson diagnostic test of collinearity was run. Collinearity is the condition in which independent variables are highly correlated, thus making it difficult to separate out their independent effects. The Durbin-Watson statistic (2.32) was out of bounds, indicating a problem of collinearity in the model between child coping and stature. Hence, post-hoc analyses were performed in which alternative models were tested.

First, Block 4 of the multiple regression was run in which child coping was allowed to enter the model first, followed by the remaining predictors, which were forced into the model according to their order in the previous analysis. The resulting R^2 was .75 ($F=12.91$, $p<.001$), and the Durbin-Watson statistic (2.20) was out of bounds, indicating a recurrent problem with collinearity. In a second analysis, all of the predictors except child coping were entered in a forced entry according to the original analysis. In the final step, child coping was allowed to enter the model. This analysis resulted in an R^2 of .75, and the Durbin-Watson statistic (2.32) was still out of bounds. When child coping was removed from the model, the predictors accounted for 63% of the variance in social competence, and the Durbin-Watson statistic (1.98) was close to acceptable limits. The large change in the R^2 associated with the inclusion (or exclusion) of child coping in the model appeared spurious, and due in part to collinearity. This was supported by the fact that there was no association between child coping and social competence at the bivariate level (r(28)=.15, p=44). Hence, the contribution of child coping to the model remains unclear.

A final set of post-hoc analyses was performed in which coping was removed from the model altogether. The same procedures were followed as in the original hierarchical multiple regression analyses. These analyses had a number of advantages over those which included coping. First, they allowed the model to be run with a larger number of subjects (n=66). Second, they offered a view of the model without the problems of collinearity caused by coping. Tables 12, 13, and 14 illustrate the results.

Table 12 depicts the results for total behavior problems as the outcome variable. The diagnostic and demographic parameters of stature, SES, and age accounted for 27% of the variance. Family conflict contributed an additional 5% of the variance in behavior problems. The child mediational variables failed to enter the model. Altogether, the predictor variables accounted for 32% of the variance in child behavior problems. Table 13 illustrates the results for academic competence as the outcome. Only stature accounted for a significant amount of the variance (14%) in academic competence, once all of the variables were entered in the model. For social competence (see Table 14), 25% of the variance was attributed to stature. Family support, mothers' positive impact of stature, and fathers' negative impact of stature scores accounted for an additional 24% of the variance. None of the child mediational variables were significant. The diagnostic/demographic parameters and family mediational processes accounted for a total of 49% of the variance in social competence.

Table 12.

Summary of the Hierarchical Regression Scores for Total Behavior Problems: Coping Removed from the Model

Variables	b^a	R^2 change	F^b	Cumulative R^2
Block 1				
SES	-.33	.11	8.06[e]	.11
Stature	-.27	.07	5.61[d]	.18
Block 2				
Fathers' GSW	-.30	.09	3.87[c]	.09
Fathers' Pos. Imp.	-.25	.06	2.93[c]	.15
Block 3				

Block 4				
Stature	-.36	.13	5.91[d]	.13
SES	-.28	.08	3.71[c]	.20
Age	-.25	.06	3.17[c]	.27
Family Conflict	.26	.05	2.91[c]	.32

[a] Standardized regression coefficient.
[b] F test on R^2 change.
[c] $p<.10$
[d] $p<.05$
[e] $p<.01$
[f] $p<.001$

Table 13.

Summary of the Hierarchical Multiple Regression Scores for Academic Competence:

Coping Removed from the Model

Variables	b[a]	R^2 change	F[b]	Cumulative R^2
Block 1				
SES	.37	.13	9.73[c]	.13
Block 2				

Block 3				

Block 4				
Stature	.37	.14	6.56[d]	.14

[a] Standardized regression coefficient.
[b] F test on R^2 change.
[c] $p < .10$
[d] $p < .05$
[e] $p < .01$
[f] $p < .001$

Table 14.

Summary of the Hierarchical Multiple Regression Scores for Social Competence:
Coping Removed from the Model

Variables	b[a]	R^2 change	F[b]	Cumulative R^2
Block 1				
Stature	.43	.19	14.73[f]	.19
SES	.24	.06	4.79[d]	.24
Block 2				
Family Support	.52	.27	14.59[f]	.27
Mothers' Pos. Imp.	.25	.06	3.53[c]	.33
Fathers' Neg. Imp.	-.24	.06	3.40[c]	.38
Family Conflict	.27	.05	3.36[c]	.43
Block 3				
Child's Neg. Impact	-.44	.20	13.91[f]	.20
Block 4				
Stature	.50	.25	13.02[f]	.25
Family Support	.38	.13	7.81[e]	.37
Mothers' Pos. Imp.	.26	.06	4.31[d]	.44
Fathers' Neg. Imp.	-.23	.05	3.72[c]	.49

[a] Standardized regression coefficient.
[b] F test on R^2 change.
[c] $p<.10$
[d] $p<.05$
[e] $p<.01$
[f] $p<.001$

CHAPTER 5

DISCUSSION

Group Differences

The results of this study are generally consistent with a large body of research that indicates poorer psychosocial and behavioral adjustment in children with SS as compared to children with NS. In this sample, children with SS were rated by their parents as having significantly more total behavior problems, internalizing behavior problems, and social problems and significantly less social competence and involvement in extracurricular activities than children with NS. In addition, as compared to their peers of NS, children with SS rated themselves as having significantly lower global self-worth, athletic competence, and satisfaction with their physical appearance.

In spite of these results, there were fewer statistically significant group differences in this sample than expected, based on previous investigations. For example, children with SS have consistently been found to have greater externalizing behavior problems and attention deficits (Abbott et al., 1982; Gold, 1978; Lewis et al., 1986; Ryan et al., 1988; Siegel et al., 1982, 1986, 1990). In addition, failure to find differences between the groups on parents' ratings of academic/scholastic competence is inconsistent with a large body of literature indicating that children with SS have specific learning disabilities which contribute to academic underachievement (Siegel et al., 1982, 1986, 1990). The present findings parallel those of Sandberg, Brook, and Campos, (1994) who found no differences between children with SS and those with NS on the same measure used in this study, and Gordon et al. (1982; 1984), who found no differences on measures of academic achievement. Gordon and his colleagues (1982; 1984) also reported greater somatic complaints, social withdrawal, and schizoidal tendencies in the SS children--differences not found in the present study.

With regard to the self-perceptions of children with SS, the findings of previous studies have been largely inconsistent. In the present study, children with SS report lower global self-worth and less satisfaction with their physical appearance than their counterparts with NS. These results support the theoretical discussions of Crocker and Major (1989) regarding the impact of social stigma, and are consistent with the results of Martel and Biller's (1987) interview study of short young adult males. These results are inconsistent, however, with the average or elevated self-worth reported by children with SS in Siegel's (1982) and Young-Hymans' (1986; 1990) investigations. Further, these results challenge Clopper's (1992) contention that even in the face of dissatisfaction with one's outward appearance, overall self-worth can be high. In this sample of children, the relationship between global self-worth and satisfaction with physical appearance was strong, and more so for short children than those with NS.

Of interest is the fact that children with SS rated themselves as having more socially appropriate behavior than children with NS. In addition, they felt equally as competent in social relationships. These self-perceptions are somewhat discrepant from parental reports of child behavior and social problems. Inflated self-perceptions of children with SS in these areas may be the result of defensive responding (e.g., denial or repression), similar to that reported by Zimet and his colleagues (1993) and Mitchell et al. (1986). An additional explanation for differences in parent- and child-reported behavior and social competence may be that children with SS have impaired judgment with regards to their own behavior and its impact in social situations. This explanation is supported by Young-Hyman's (1986) study in which children with SS had significant difficulty on a social problem-solving task, but rated themselves as highly competent at it.

The failure to find more statistically significant between-group differences in this study may be due in part to the small sample size. In addition, it may be indicative of a recent trend in the study of SS in which less psychopathology is found in individuals with SS than in the past (see Stabler & Underwood, 1994). Fewer differences between populations of individuals with SS and those of normal height may be a result of increased knowledge of and sensitivity to the needs and difficulties of short persons. As a result, children with SS may be referred for treatment earlier in their lives, and they may receive more comprehensive care than in the past. Although participation in counseling or psychotherapy was not formally assessed in the present study, 8 children with SS and their families acknowledged receiving this assistance, due in large part to difficulties related to SS. By contrast, only 2 families in the NS group acknowledged participation in therapy for behavior and adjustment problems.

The group differences that were found in the present study are clinically important and have implications for interventions with children with SS. In particular, interventions with children with SS need to focus on increasing positive feelings about themselves, especially their physical appearance, and involving them in activities and athletics which are not contingent on size (e.g., gymnastics, soccer, wrestling, tennis).

Gender Differences

Overall, there were fewer differences between boys and girls with SS than were predicted. Whereas boys with SS were expected to demonstrate poorer psychosocial adjustment than both girls with SS and children with NS, this hypothesis was only partially supported by the data. In the areas that boys with SS demonstrated significantly more difficulties than children of NS (total behavior problems and social problems), girls with SS did not differ significantly from either group. Both boys and girls with SS had significantly lower social competence than children with NS as rated by their parents. In addition, girls with SS demonstrated more internalizing behavior problems, less involvement in extra-curricular activities, and rated themselves lower on athletic competence and physical appearance than the other two groups. Girls with SS differed significantly from both groups in their participation in clubs, on teams, or in social organizations.

In spite of greater social acceptance and desirability of a small physique in females, these results suggest that clinical short stature impacts boys and girls in similar ways. More importantly, there are areas in which girls with SS fare more poorly than boys with SS. Yet ironically, girls are less likely to be referred for treatment of SS (Clopper, 1992). One explanation for the higher than expected rate of psychosocial problems in girls with SS could be that in order for them to be referred for treatment, they or their parents must experience greater distress or concern regarding their stature and its impact. Given this possibility together with girls' tendency to have more concerns about their physical appearance than boys (Frazier & Lisonbee, 1950), it is not surprising that girls with SS were the least satisfied with the way they look. In addition, as females have increasingly entered traditionally male-dominated arenas (e.g., competitive athletics, employment outside the home, and politics) stature has potentially increased in importance for them. In light of data suggesting that small females are regarded as more dependent and helpless and less competent (Eisenberg et al., 1984), a more "average" stature might facilitate females' abilities to compete and succeed in these areas.

Age Differences

As anticipated, younger children with SS generally had greater feelings of self-worth than older children and adolescents with SS. This appears to be due largely to the fact that height and height differences are not as apparent or important to younger children. More specifically, areas in which stature might have a greater negative impact (e.g., competitive athletics, social relationships, dating) become more important with age. Hence, the feelings of self-worth of younger children may be protected somewhat from the negative effects of SS.

Contrary to predictions, there were no significant differences between younger and older children with SS in terms of parent-reported behavior problems or competence. These results differ from those of Holmes et al. (1985; 1986), who found more significant behavior problems in younger children with SS. It is unclear why similar group differences were not present in this sample. One possible explanation may be that in the past, those children who were referred for SS at an early age were those who manifested more significant behavior problems. Today, primary care physicians are more aware of the etiology and potential consequences of SS. Hence, children may be referred for treatment of SS at an earlier age because of the potential for future psychosocial difficulties, but not necessarily because of current problems.

An alterative explanation is that this group of older children is functioning more poorly than would be expected, given the results of previous studies. However, examination of the individual behavior problem scales of the CBCL leads to a different conclusion. Neither age group differs from the standardization sample by more than .78 of a standard deviation. Thus, overall both groups are functioning fairly well from a behavioral standpoint. The possibility remains that an undetected age effect was masked by the division into young and old age groups, in which early adolescents fare more poorly than younger and older children, as suggested by the Holmes et al. (1985; 1986) studies. Future efforts should focus on these possible age effects through longitudinal designs.

The Impact of a Family History of SS

Based on theories of social stigma and identification with a stigmatized group, (Crocker & Major, 1989) children with SS who had a perceived or diagnosed family history of SS were expected to have better psychosocial adjustment than those without. This hypothesis was largely unsupported by the data. One unexpected result was that children who perceived that they had a family history of SS rated themselves as significantly less satisfied with their physical appearance than those who did not. It may be that the presence of a family member with SS is a constant reminder to the child or adolescent of his or her own SS. This may heighten the child's sense of being "different" at a time when being "normal," or identifying with the majority, is particularly important (Erikson, 1968). In the case of familial short stature, identification with the stigmatized group may not preserve one's feelings of self-worth, as suggested by Crocker and Major (1989).

It would help to know what kind of role models the short family members provide for children with SS. If a parent or older sibling has had a particularly difficult time coping with their own SS, and they do not feel good about themselves or their physical appearance, it is possible that the child or adolescent will internalize and model this. Alternatively, having negative feelings about a family characteristic may be a means of separation or individuation for the child or adolescent with SS.

Comparisons of the four diagnostic groups of children with SS produced one significant difference in the expected direction. Children with FSS and CD/FSS were rated by their parents as having higher social competence than children with GHD and

CD. Young-Hyman (1986) found similar results in that short parents rated their children with SS as more socially competent than parents of average stature. One possible reason for this difference is that parents with SS themselves may more strongly facilitate their child's social relationships, as they may be more keenly aware of their importance. An alternative but compatible explanation is that parents with SS themselves may rate their children as more socially competent as a defensive or compensatory mechanism in which they perceive their child more positively than taller parents. While not directly related to this area of research, other studies have found such compensatory processes in the parent-child relationship. Specifically, parents buffer the negative effects of stress on their children and work harder to make interactions with their children more positive in the context of greater parenting stress (Engfer, 1988; Brody et al., 1986; Belsky et al., 1990).

While few studies have examined differences between the diagnostic groups of children with SS, those that do indicate significantly more psychosocial problems in children with CD. In the present study, children with CD were rated as having significantly more problems on only one scale, social competence. Thus, the range of problems previously reported (learning difficulties, inattention, immaturity, and hyperactivity) in children with CD (Gold, 1978; Gordon et al, 1982; 1984) did not emerge in this sample. However, there is some indication that children with CD have more difficulties in their social relationships. It can be speculated that the combination of both SS and delayed onset of puberty is particularly damaging to these children's social relationships. Although the delayed onset of puberty would only be an issue for those children whose peers were entering puberty, 62.5% of the children with CD in this sample were 12 years old or older. Thus, the majority of these children potentially were behind their age mates in both growth and sexual maturation. This puts them at an even greater disadvantage socially, as pubertal development is valued among their peers (Martel & Biller, 1987) and size and strength become increasingly important in judgments of physical attractiveness, athletics, and even the ability to perform jobs. In addition, the combination of delayed pubertal development and SS would exacerbate the discrepancy in physical appearance between children with CD and their normally-developing peers, making them appear even younger. Consequently, late-developers who are also short are more prone to juvenilization. More immature, dependent, and impulsive social behaviors on the part of late-developers (see Martel & Biller, 1987) are at least in part due to social expectations, juvenilization, and a recurring cycle in which the less socially competent behaviors perpetuate a view of the child with CD as less mature emotionally and socially.

The Importance of Physical Appearance

In this study both children with SS and those with NS rated physical appearance as moderately important to them. This is similar to Harter's (1986) finding that children found it difficult to devalue physical appearance. In addition, there was a significant relationship between satisfaction with physical appearance and global self-worth, and this was stronger for children with SS than those with NS. As predicted, children with SS who devalued physical appearance rated themselves as more competent in school and athletics than those who valued it more. It may be that particular strengths in academics and sports allowed these children to place less emphasis on the way they look. Children in the devaluing group also reported higher feelings of overall self-worth, and were more satisfied with their appearance. It is unclear whether satisfaction with appearance enabled these children to place less emphasis on it, or whether devaluing appearance facilitated feelings of satisfaction. This is an area in need of further investigation.

Contrary to predictions, devaluing physical appearance was not associated with fewer internalizing behavior problems. In fact, children in the devaluing group were rated by their parents as having more somatic complaints than children in the group which valued physical appearance. Perhaps for at least some of the children in the devaluing group, repression or denial of the importance of physical appearance is associated with greater somatization (e.g., Mitchell et al., 1986 & Zimet et al., 1993).

Family Factors in Child Outcomes

Failure to find differences between families of SS and NS children on the controlling factor may be due in part to the clinical setting from which the SS patients were drawn. The Michigan State University Endocrine Clinic is staffed by a multi-disciplinary team which includes a psychologist and social worker. Considerable attention is paid to psychosocial issues surrounding each child's diagnosis and treatment. Hence, families of children with SS recruited from this setting may be more sensitive to psychosocial issues, and in particular to overcontrolling and juvenilization, than parents of children receiving treatment elsewhere.

Post-hoc analyses comparing families of children with SS and NS on the support and conflict factor produced one interesting result. Whereas the families did not differ in terms of conflict, families of children with SS described themselves as somewhat less supportive. While this difference was not statistically significant ($p=.11$), one could speculate that a larger n would have produced a significant difference. The support factor is comprised of the following scales: cohesion, expressiveness, activity/recreational, intellectual/cultural, and independence. Perhaps stresses associated with the diagnosis and treatment of SS result in a breakdown of family support at multiple levels. First, parents may not agree on whether there is a problem, and how to handle it. This could result in communication difficulties between parents. Second, issues around independence may arise in the parent-child relationship (e.g., who is responsible for what part of the treatment, age-appropriate expectations, concerns about participation in sports). Third, siblings of children with SS may find it difficult to be supportive of patients because they view them as receiving more of their parents' time and attention. Fourth, altogether the family may have difficulty sharing concerns, and may prefer to "not talk about the problem." Additionally, the financial burden incurred by some families as a result of treatment with GH may limit their ability to spend time together in recreative pursuits.

The semi-structured interviews provide some evidence for a deterioration of support in some families. One family had two adolescent sons with CD, the younger of whom was a study participant. When contacted about the study, the mother requested that the father not be contacted because he would be "mad." Apparently, the father disagreed with the mother about whether the boys had a problem, and about treatment decisions. Hence, the mother took sole responsibility for the boys' medical care. Both boys had received treatment with testosterone, the cost of which was not covered entirely by their insurance. Because of the high cost of treatment, the company the father worked for allegedly raised their insurance premiums. Subsequently, the father received considerable negative feedback from his co-workers because their premiums similarly increased. In addition, the mother reported feeling ostracized from their place of worship, as the community reportedly felt that the boys should not receive medical treatment for a trait with which they were born. The older brother was unable to be supportive of the younger brother, as he allegedly had significant difficulty coping with and accepting his own CD, and refused to talk about it. The study participant excelled in wrestling, and gained considerable esteem from his success in it. He verbalized feeling that his father could not accept his sons because they did not live up to his expectations. In spite of this somewhat bleak scenario, this young man was able to cope fairly well with his condition and maintain a high sense of self-worth. The support he received from his mother appeared to help buffer him from other stresses both within and outside the family.

Overall, family support was the factor most strongly related to child adjustment in terms of both child self-perceptions and parent reports of child competence and behavior problems. Family control and conflict were only related to parent-reported behavior problems, and conflict had the fewest significant associations. Family support was associated with greater child competence and self-worth, and fewer behavior problems, while both conflict and control were associated with greater behavior problems. These results are comparable to the growing body of research that links factors of the family environment to child outcomes. Inconsistent with this literature is the failure of the present analyses to find links between the control and conflict factors and child self-worth. In addition, based on the large body of research linking family conflict to poor child self-esteem and behavior problems, there were fewer associations overall than would be expected between the conflict factor and child outcomes (see Jaycox & Repetti, 1993). Lack of associations between these variables may be attributable to the measures of control and conflict. Specifically, combining the individual scales of the FES into the three factors may have diluted some of the individual associations the scales might have had with the outcomes. Supporting this argument is the fact that much of the research uses the single conflict scale of the FES as the measure of family conflict (Jaycox & Repetti, 1990; Moos & Moos, 1986; Murch & Cohen, 1989). Kronenberger and Thompson (1990), the researchers who developed the factors, only assessed relationships between the mothers' scores on the factors and mothers' reports of child behaviors. The present results are similar in that conflict is associated with externalizing behaviors. However, they differ in that an association was found between control and externalizing behavior, as well as total problem behaviors and other narrow band scales, not reported by Kronenberger and Thompson (1990). In addition, using individual scores rather than family composite scores on the family factors might have yielded different results.

Combining the three family factors into a constellation of high support, low conflict, and low control permitted comparisons between this hypothesized "ideal" family environment and all others. Children from families with this constellation were rated as having fewer externalizing and delinquent behaviors, and they reported greater satisfaction with their own physical appearance. Failure to find more significant differences between the family groups may be due in part to the fact that families were divided into low and high groups on each factor. This dichotomization may have masked effects, especially those attributed to family control, which may be most adaptive at moderate levels. This assumption is based on Baumrind's (1967) parenting typologies, and data indicating that a moderate level of control, or "authoritative" control, fosters more positive child adjustment in general, and self-esteem in particular (Baumrind, 1967; Buri, 1989). In families coping with child chronic illness (and specifically SS), a moderate level of control might be particularly facilitative of adequate child adjustment. A moderate level of control may provide children with SS with the confidence that they can master developmental tasks independently, while providing them with enough guidance that they feel supported.

Coping

Research hypotheses regarding coping were only partially supported by the data. Child coping was only significantly related to fathers' coping, and not to mothers'. Stronger father-child rather than mother-child relationships on coping parallel the results of previous studies in which: a) fathers' behaviors had a greater impact on adolescent self-esteem than mothers' (Gecas & Schwalbe, 1986), and b) fathers' acceptance was the strongest predictor of adolescents' functioning in the school setting (Forehand & Nousiainen, 1993). These results may be interpreted several ways. Considering a social power differential, fathers traditionally hold the most authority and power within the family. Thus, children may be more likely to model their fathers' rather than their mothers' behaviors. In addition, with the increase of females' entering previously male-dominated roles, it would be more socially acceptable for girls to identify with a masculine role model than for boys to identify with a feminine role model (i.e., their mothers). Alternatively, others have speculated that fathers' lesser involvement in child-rearing and socialization may make their interactions with children that much more salient (Forehand & Nousiainen, 1993; Gecas & Schwalbe, 1986). Children may also strive harder to gain their fathers' approval and attention through behaviors that they believe fathers value. With regard to coping with SS in particular, Rotnem et al. (1982) report that fathers had more difficulty accepting their child's diagnosis than mothers. Within this context, children may find coping with their diagnosis of SS that much more challenging.

In general, child coping was not strongly related to child adjustment. The only relationship in the predicted direction was a negative association between approach coping and social withdrawal. One unexpected finding was a positive relationship between approach coping and somatic complaints. Or, alternatively worded, those children who used more avoidant coping strategies were rated as having fewer somatic complaints. At first glance this relationship appears counterintuitive, given the existing literature relating less positive child adjustment to avoidant coping. However, it makes sense within the framework of chronic illness and coping proposed by Phipps, Fairclough, & Mulhern (1995). Examining the coping processes of children with cancer, these authors reframe what previously has been referred to as "repressive adaptation," as an avoidant coping style they labeled "blunting". While both processes have similar results, "protecting the self from full awareness of threatening aspects of reality (Phipps et al., 1995, p. 218)," blunting is more purposeful and under more conscious control, and therefore a coping (rather than a defensive) mechanism. These authors found more blunting responses in their sample of pediatric oncology patients than in a comparison group. They attribute the previously reported lower rates of depression in children with cancer to this blunting (avoidant) coping style, albeit more primitive than a monitoring/approach style. Thus, in the present study avoidant coping may protect children from threatening/distressing knowledge or experiences, and hence result in lower somatic complaints.

Taken together, this theoretical framework and the results of this study call into question the view of one coping strategy as more adaptive than another. Both approach and avoidant strategies serve the purpose of protection against stress.

Whether one type of response is linked to more positive outcomes than the other appears to be largely situation-specific. For example, the same strategy may not be equally adaptive for pediatric oncology patients or children with SS as it is for healthy "normal" children. Future efforts should focus on clarifying which coping strategies lead to more positive outcomes and under what conditions.

Failure to find more significant correlations between child coping and child adjustment may be due to problems with the current method of rating coping responses. This will be explored further below. In addition, analyses including the child coping variable included a smaller number of subjects, as all subjects did not produce coping responses in their semi-structured interview. A reduction in the sample size likely reduced the chance of finding significant results for coping.

The Stress and Coping Model

Before examining the stress and coping model, relationships between the predictor and outcome variables were tested with Pearson correlations. Some of these results are notable. First, of all of the child outcomes, academic competence had the fewest significant correlations with the predictors. Only SES and both parents' global self-worth were significantly and positively related to child academic competence.

Among the relationships between the family mediational variables and child adjustment, a few were opposite to those which were expected. For example, mothers' approach coping was negatively related to child social competence while fathers' approach coping was positively related to child behavior problems. These results indicate that some aspect of parents' approach coping is detrimental to child adjustment. It is possible that approach coping could reflect a general style of being more assertive or confrontational, without necessarily being hostile. If this style were reflected in mothers' or fathers' parenting or child-rearing practices, it might be experienced by children as intimidating or aggressive. In addition, if children were to model this behavior, it might be judged as socially inappropriate or aggressive. This might account for higher parental reports of behavior problems and lower social competence.

Of similar interest was the positive relationship between mothers' negative impact of stature score and child social competence. This relationship may be further evidence of a compensatory process whereby some parents (especially mothers) take extraordinary strides to protect their children from stress. In this case, mothers who themselves experienced difficulties as a result of their height may go out of their way to protect their child from similar experiences. Hence, they may facilitate the child's social competence by encouraging the child's involvement in social activities or peer-oriented organizations (e.g., sports teams, scouts, sleep-overs). The opposite relationship between fathers' negative impact of stature score and child social competence may suggest that mothers' are more likely to buffer their children in a compensatory mechanism than fathers. In addition, fathers' own experiences appear to more directly "spill-over" into their relationships with their children (Engfer, 1988). Evidence of stronger buffering in the maternal caregiving system lends some support to these speculations (Easterbrooks & Emde, 1988).

Given the proximal relationship of the child mediational variables and the outcome variables in the model, there were fewer significant correlations between the two than were expected. Specifically, social competence was the only outcome associated with the child mediational variables of global self-worth and negative impact of stature (-). The lack of associations between child coping and the outcome variables are inconsistent with previous findings (Causey & Dubow, 1992; Compas, 1988; Ebata & Moos, 1989). Differences in measures of coping may have led to these disparate results. Specifically, child coping has primarily been assessed by self-report measures, whereas the present study utilized a semi-structured interview to elicit coping responses. Since children generated their own examples of stressful events/experiences and the coping strategies they used to deal with them in this study, a more limited range of responses was given than would be available in questionnaire measures. In addition, because of the open-ended nature of the interview, in many cases no coping responses were elicited. Other difficulties with the present measure of coping are discussed below.

In the first phase of the analysis of the stress and coping model, stature, fathers' coping, and fathers' positive impact of stature score all predicted a significant amount of variance in total behavior problems. Family demographic parameters and child mediational processes failed to account for any variance in total behavior problems. These results differ from those of Thompson et al. (1992b), who found that child self-worth accounted for significant variance in both mother-reported internalizing and externalizing behaviors. This set of analyses highlights the importance of fathers' behaviors and experiences (namely coping and positive impact of stature) with regard to child adjustment. The results are also consistent with those of earlier analyses in which children with SS were rated as having more behavior problems than their peers of NS.

The stress and coping model failed to predict any of the variance in child academic competence. In addition, when the model was run predicting social competence, it suffered from collinearity between the child coping and stature variables. Hence, the second phase of the analyses involved running the regressions on a trimmed model which excluded all family members' coping. These analyses provided somewhat more reliable results.

Analyses of the trimmed model for total behavior problems as the outcome revealed that diagnostic/demographic parameters accounted for 27% of the variance, and family conflict accounted for an additional 5% of the variance. Again, child mediational factors were not predictive of total behavior problems. For academic competence only stature accounted for a significant amount of the variance (14%), with children with SS faring more poorly than children with NS. Lastly, in the final set of analyses for social competence, stature accounted for 25% of the variance, while family mediational processes, (family support, mothers' positive impact of stature, and fathers' negative impact of stature), accounted for a 24% increment in variance. Child mediational processes failed to enter the model.

Overall, the results lend support to the mediational role of family factors in child behavior problems and social competence. In particular, both parents' coping and impact of height scores, as well as family conflict and support, were predictive of child adjustment in the models tested. Of note is the fact that the family mediational processes were assessed by parent and child self-report, and behavioral observation. Contrary to the predicted relationships in the stress and coping model, no support was provided for the inclusion of child mediational processes (children's self-worth, coping styles, and the impact of stature). It is unclear why the child mediational variables were not predictive of child adjustment. However, it is possible that these variables are better thought of as additional child outcomes, rather than mediators. Because of problems of collinearity in the child coping variable, it is unclear what role it has in the model. An additional problem with the coping variable may be that it is a proportion score, and therefore bounded.

Study Limitations and Future Directions

The current study has a number of limitations which should be considered when interpreting the results. A considerable shortcoming is the relatively small sample size. This appeared to contribute to fewer significant results and to problems of collinearity. Also due to the small sample size, any conclusions regarding the results should be viewed with caution. Another obvious limitation of this study is its cross-sectional and correlational design which precludes making assumptions about the direction of causality between the study variables. A longitudinal design would allow for the examination of "stability and change in psychosocial adjustment, psychosocial/mediational processes, and their interrelationship, over time and in relation to developmental tasks and periods of risk and resiliency" (Thompson et al., 1992b, p. 754).

There were a number of pitfalls in the assessment of parents' and children's coping. Because of the open-ended nature of the interview, it frequently failed to elicit coping responses, especially for subjects of NS and their parents. In addition, parents of children with SS were more likely to produce coping responses related to their child's diagnosis and treatment. This may have inflated their tendency toward approach coping relative to parents of NS children, because they were coping with problems related to their child. More specifically, it may be easier for parents to cope in a proactive or approaching style where their child is concerned, as opposed to coping with a problem of a more personal nature (e.g., being overweight). These observations are supported by the significant and moderate correlations between parents' approach coping and child stature in the negative direction. In addition, the method of coding did not take into account developmental changes in subjects' coping strategies. With regard to the model of stress and coping, a considerable amount of variance remained unaccounted for in the outcomes. The model should be expanded to include: degree of medical involvement/intrusiveness of treatment, parents' and children's stress appraisal, parents' psychosocial functioning, and children's cognitive abilities. Rather than dividing stature into SS and NS groups, it might be better if measured in terms of deviation from the mean for age.

The present study has a number of noteworthy strengths. It included a fairly homogeneous sample of children with SS who were compared to a group of carefully matched control subjects of NS. In addition, the combination of parent and child self-report and observer ratings avoided problems associated with common method variance. Further, the results provided some support for the validity of the coping and impact of stature ratings. More importantly, this study clarified the nature of the relationships between family factors and children's psychosocial adjustment to SS. The inclusion of fathers in the study provided a view into family processes which has historically been neglected. The results indicate that fathers' behaviors and experiences have unique and especially strong contributions to children's adjustment. Finally, the model of stress and coping provided a conceptual framework from which to assess the relationships between diagnostic/demographic parameters, family and child mediational processes, and child adjustment.

The results of this study have significant implications for future research efforts and intervention programs. Subsequent investigative efforts of family factors in children's psychosocial adjustment to SS should correct the methodological flaws of the present study, especially those concerning coping. The interview needs to be more structured and more specific with regard to the nature of the stressor, developmental changes in coping strategies, and perceived effectiveness of the coping strategy. Data obtained from the interview should be corroborated with a multimodal assessment of coping including parent-, teacher- and peer-report, as well as behavioral observation.

The results of this study also indicate a clear need for supportive intervention for children with SS. While the present group of children with SS appear to be functioning well overall, they do manifest areas of particular difficulty as compared to a matched group of children with NS. Specifically, these children with SS have social difficulties and more behavior problems, especially those of an internalizing type. In addition, they report deficits in their feelings of self worth, athletic competence, and satisfaction with their physical appearance. These results also delineate a clear need for the early identification and referral for treatment of girls with SS. While girls and boys with SS were more similar in their outcomes than expected, the girls had more difficulties with internalizing behaviors, participated in fewer extracurricular activities, and felt less positive about their athletic abilities and physical appearance. These results also highlight the importance of family factors, especially, parents' own experiences and behaviors, in child adjustment. In particular, fathers' variables were more strongly linked to child outcomes than mothers'. In light of fathers' lower levels of participation in the study, it appears that extra efforts should be made to include them in intervention programs.

Very little published work is available regarding psychosocial interventions with children of SS. However, preliminary results are promising (Eminson, Powell, & Hollis, 1994). While both children with SS and their families are in need of support, it appears that support alone is not sufficient to alleviate areas of concern (Eminson et al., 1994). Social skills training, coping skills building, and cognitive problem-solving should be used in combination with support groups for parents, patients, and siblings. Parents should be included in the skills training so that they can reinforce the concepts and behaviors being learned. Family sessions might also serve to bolster feelings of support within the family, moderate issues of control, and decrease areas of conflict, especially those pertaining to the diagnosis and treatment of SS. In addition, the intervention should include a didactic component in which subspecialty team members (e.g., physicians, nutritionists, nurses, social workers, and psychologists) address areas of concern for the children and their families. Intervention should also include facilitation of the children's involvement in non-threatening social activities and organizations in which success is not dependent on stature. Considering the cost of pharmacological treatment of SS, and a failure to demonstrate clear and consistent improvement in psychosocial symptoms with hormone therapy, this line of psychological intervention should be the focus of future research efforts and may be promising, especially for short "normal" children experiencing psychosocial distress.

APPENDICES

APPENDIX A

APPENDIX A

Frequently Used Acronyms

SS = short stature

GH = growth hormone

GHD = growth hormone deficient

IGHD = isolated growth hormone deficiency

MHD = multiple hormone deficiency

CD = constitutional delay of growth

FSS = familial short stature

NS = normal stature

APPENDIX B

APPENDIX B

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF PEDIATRICS/HUMAN DEVELOPMENT
B240 LIFE SCIENCES
(517) 353-5042

EAST LANSING • MICHIGAN • 48824-1317

MEMO

FROM: Pediatric Endocrinology Clinic

TO: Parents of children referred for evaluation of short stature

Dear Parents:

Our clinic is conducting a study about the impact of stature on children and their families, and we would like to invite your family to participate. We are trying to better understand how children and their families perceive and experience different aspects of height. Based on the information families share with us, we will develop services to address areas of concerns, especially those pertaining to short stature.

Participation in this study includes an interview of the parents and the child and completion of a few questionnaires. The interviews will take about 30 minutes each and will be conducted by a pediatric psychologist. You always have the right to refuse to answer a question. The interview provides you with an opportunity to share your thoughts and concerns about the issue of height. The questionnaires provide us with a description of your child, yourself, and your family, and can be completed at your leisure at home.

You will receive a phone call from one of our team members to describe the study further and to ask whether you are interested in participating. If you do decide to participate, we will schedule your interviews over the phone, either on the day of your next appointment with our clinic, or at a more convenient time for you and your family. If it is not possible for the interviews to be done in person, they may be done over the telephone. Questionnaire packets will be distributed either at the time of the interview, or sent out in the mail. All of your family's responses will be confidential and your decision to participate will not affect your child's treatment at our clinic in any way. In addition, participation may be terminated at any time, and you may refuse to answer a question.

We appreciate your taking the time to consider participating in this research project. We hope that it will be an interesting and helpful experience to all participants. You should expect to receive a phone call within a week of receiving this letter.

Carol C. Laub. ma.

Bruce E. Wilson, M.D.
Pediatric Endocrinologist

Carol C. Laub, M.A.
Pediatric Psychology Fellow

APPENDIX C

APPENDIX C

MICHIGAN STATE
UNIVERSITY

January 28, 1994

TO: Dr. Bruce E. Wilson
B240 Life Sciences Building

RE: IRB #: 91-076
TITLE: PSYCHOSOCIAL ADAPTATION AND SUPPORTIVE INTERVENTION IN FAMILIES WITH CHILDREN WITH SHORT STATURE
REVISION REQUESTED: N/A
CATEGORY: Full Review
APPROVAL DATE: January 11, 1994

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project including any revision listed above.

Renewal: **UCRIHS approval is valid for one calendar year, beginning with the approval** date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

Revisions: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

Problems/ Changes: Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

OFFICE OF
**RESEARCH
AND
GRADUATE
STUDIES**
**University Committee on
Research Involving
Human Subjects
(UCRIHS)**
Michigan State University
225 Administration Building
East Lansing, Michigan
48824-1046
517/355-2180
FAX 517/336-1171

If we can be of any future help, please do not hesitate to contact us at (517) 355-2180 or FAX (517) 336-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

APPENDIX D

APPENDIX D

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF PEDIATRICS/HUMAN DEVELOPMENT
B240 LIFE SCIENCES
(517) 353-5042

EAST LANSING • MICHIGAN • 48824-1317

Informed Consent:

Our clinic is conducting a study about stature and we would like to invite your family to participate. We are trying to better understand how children and their families perceive and experience different aspects of height. Based on the information families share with us, we will develop services to address areas of concern, especially those pertaining to short stature.

Participation in this study includes an initial interview of the parents and the child, and completion of a few questionnaires. The interview will be conducted by a pediatric psychologist, and each person always has the right to refuse to answer a question. The interview will be similar to one we routinely use in other subspecialty clinics. Many families have found it very helpful to share their thoughts and ideas in greater detail. Often, it is the first opportunity for everyone to share their thoughts and/or experiences about the issue of height.

The interview will take approximately 1 1/2 hours altogether, and it will be held at the M.S.U. Clinical Center, or by telephone when it is not possible to conduct it in person. There will also be a few questionnaires for you to fill out. **YOUR ANSWERS WILL BE CONFIDENTIAL AND WILL NOT BE PART OF YOUR CHILD'S CLINICAL CENTER RECORD.**

Interviews will be videotaped or audiotaped, in order to facilitate data collection. At any time during the interview, any person may request that the tape be discontinued or erased. You always have the option to have the tape erased. We will also address any questions you may have regarding the use of these tapes for data collection.

Summaries of the information we gather, and statistics used will be based on group data, but will not identify individuals or their families. All families who participate will receive a copy of our findings and recommendations upon request.

If you choose not to participate, your child's medical evaluation and care will not be affected in any way.

If your family would like to participate in this study, please sign below and check which level of participation you desire.

_____ Family interviews and questionnaires. _____ Questionnaires only.

______________________________ ______________
Mother's Signature Date

______________________________ ______________
Father's Signature Date

______________________________ ______________
Child's Signature Date

APPENDIX E

APPENDIX E

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF PEDIATRICS/HUMAN DEVELOPMENT
B240 LIFE SCIENCES
(517) 353-5042

EAST LANSING • MICHIGAN • 48824-1317

Dear

We appreciate your willingness to participate in our study investigating parents' and children's perceptions and experiences related to height. We are interested in how and in what ways individuals' stature may have had an impact on their lives.

Please find enclosed a set of questionnaires for you and ____________ to complete at home. All instructions are included and are fairly self-explanatory. However, on occasion families have questions on how to complete the forms. Should questions arise in your family, please do not hesitate to call me at 353-5042. Leave a message and I will get back to you as soon as possible.

It is **very important** that **everyone** complete these questionnaires **individually**. If you would like to discuss your answers, please do so only after everyone is finished. If ______________ needs assistance in understanding how to complete the questionnaires, please help to explain the instructions, but do not help in choosing answers.

We have provided you with a self-addressed, stamped envelope for returning the forms to us. We appreciate your investment of time and effort and hope that this will be an interesting experience for your family.

Sincerely,

Carol C. Laub

Carol C. Laub, M.A.
Pediatric Psychology Fellow

Elizabeth A. Seagull

Elizabeth A. Seagull, Ph.D.
Pediatric Psychologist
Supervisor

APPENDIX F

APPENDIX F

CHILD AND FAMILY INFORMATION: STATURE PROJECT

1.) ID Number _____________

2.) Date of Interview _____________

3.) Age ____________

4.) Date of Birth __________________

5.) Sex
    1. Female
    2. Male

6.) Relationship to the child:
    1. Mother
    2. Father
    3. Step-mother
    4. Step-father
    5. Other (specify) _____________

7.) Marital Status:
    1. Never married
    2. Married
    3. Separated
    4. Divorced and Single
    5. Divorced and Remarried
    6. Widowed
    7. Cohabitating
    8. Other (specify) ________________

8.) If applicable, how many years have you and your mate been together? __________

9.) What is your ethnic heritage?
    1. European American (White)
    2. African American
    3. Hispanic (Black)
    4. Hispanic (White)
    5. Asian American
    6. Native American (Indian)
    7. Other (specify) ________________

10.) What is your mate's ethnic heritage? (Use numbers above.) _______________

11.) What is your religion?
1. Protestant (specify denomination) ______________
2. Roman Catholic
3. Orthodox
4. Jewish
5. Moslem
6. None
7. Other (specify) _________________

12.) What is your mate's religion? (Use numbers above.) ___________________

13.) What was the last grade in school that you completed?
1. 8th grade or less
2. some high school
3. high school degree or equivalent (GED)
4. some college or 2 year degree
5. BA or BS degree
6. Master's degree
7. Doctorate

14.) Did you receive any special education services in school (e.g., special ed. classes, speech therapy)?
1. Yes
2. No

If yes, what type(s) of service(s)? ______________________________

If yes, in what grades did you receive this/these service(s)? _________________

15.) What was your grade average in Junior High School?
1. A range
2. B range
3. C range
4. D or below

16.) What was your grade average in High School? _______

17.) What was your grade average in College? _______

18.) Were there any major changes in your academic performance over time?
1. No
2. Yes (specify) ____

19.) To what do you attribute this change/these changes?
1. Got harder
2. Got easier
3. Got help
4. Adjustment difficulties
5. Peer problems
6. Other (specify) _____________________

20.) Employment status:

1. Student
2. Keeping House
3. Work Full Time
4. Work Part Time
5. Unemployed
6. Disabled
7. Retired
8. Other (specify) ________________

21.) Usual Occupation:

1. Professional, Technical, Managerial
2. Office, Clerical, Sales
3. Craftsman
4. Entertainer, Musician
5. Operative
6. Service Worker
7. Laborer
8. Other ________________________
9. No work experience
10. Student
11. Homemaker

Describe Occupation____________________________________

22.) Mate's Employment Status (Use numbers above.): ________________

23.) Mate's Occupation (Use numbers above.): ________________________________

24.) Gross Annual Family Income:

1. less than $10,000
2. $10,000 to 19,000
3. $20,000 to 29,000
4. $30,000 to 39,000
5. $40,000 to 49,000
6. $50,000 to 59,000
7. $60,000 to 69,000
8. $70,000 to 79,000
9. $80,000 to 89,000
10. $90,000 and above

25.) Total number of children between you and your mate: ____________

26.) Number of children living in your household: ______________

APPENDIX G

APPENDIX G

Parents' Interview

In meeting with parents who are concerned about their children's growth delay, we continue to be impressed with their caring, sensitivity, and concern about their child's adjustment- at home, in school, and with friends. We would like to understand more about what is helpful to your child's adjustment, as well as what makes coping more difficult.

Since children's perspective and understanding may be limited by their age, or level of development, we are interviewing both children and parents in this study to gather information on the impact of height. We would like you to tell us about your own experiences. As you were growing up, how did your height affect you- in what areas, at what ages? Maybe it had little effect, and other characteristics or abilities were more important to you. We would like to know that. We are trying to better understand when and how height impacts on people so that we can offer information, groups, or programs for those specific concerns that may be helpful to kids' adjustment. We value whatever you can tell us , or remember, in answer to these questions. If you do not want to answer any of these questions, please feel free to let me know, and I will move on.

1.) First of all, can you tell me who was in your family when you were growing up? (complete genogram)

2.) Were there any other people in the household that you haven't mentioned?

3.) For each of these people, did you think they were of average height, below or above average height for their age? (complete for each family member)

4.) Were there any medical or emotional concerns for each person that you mentioned?

5.) How would you describe yourself physically? (probe for height-above, below, or average)

Is the way that you have just described yourself physically, different from how you saw yourself in the past?

(If yes, what led to the changes?)

In thinking back to how it was for you growing up:

6.) In general, how much do you think your height affected you and your life?

> When was the first time you became aware of your height as something important?
>
> What were some positive aspects of it?
>
> What were some negative aspects of it?
>
> As I mentioned above, sometimes people's height and their experience with it changes with age. Have you always felt like this (refer to answer in #6), or was it different when you were in elementary school, middle school, high school?

7.) What kind of judgments do you think people made of you, based on your height?

8.) In your family, did anyone ever make comments about your height, tease you, or joke about it? (if so, probe for:)

> Who made what comments?
> How did it feel?
> How did you handle it?
> How did your parents handle it?

9.) With other kids your own age, what height ever something that was an issue?

> With kids the same sex? Opposite sex?
>
> Do you think your height ever affected your social life or dating?

10.) What did you do in your spare time? Hobbies? Sports? Extracurricular?

> Did your height affect what you decided to do in these areas?

11.) In school did you feel shorter/taller/or the same as other kids in your class?

> Sometimes if kids feel self-conscious for one reason or another, they may find it hard to concentrate , or to do their work. Do you think your height affected how well you did in class? (if so probe further)

12.) Do you think your height affects you in your job, or getting hired? (or for those not working, "in your life as an adult now")

13.) In what ways do you think your life would have been different if you had been:

Taller?
Shorter?

14.) Can you remember an experience from your growing up, which involved your height or physical appearance which felt very positive, or made you feel very happy, proud, or joyful?
If yes, can you describe this for me?

15.) Can you remember an experience from your growing up involving your height or physical appearance which was very hurtful to you, or where you felt very angry, sad, or ashamed?
If yes, can you describe this for me?

16.) Have you ever known anyone else who had a difficult time in life because they were especially short or tall?
If yes, indicate the height problem, and describe the incident.

17.) Do you think the impact of height is different for boys than it is for girls?
If yes, describe.

Now I want to ask you just a few questions about (child's name)...

18.) What did you observe which first concerned you about his/her height? (Had others mentioned anything?)

How old was s/he when this first occurred?
What do you think the cause is behind his/her growth delay?
What do you hope will come out of your contact with the Endocrine clinic?

19.) What specifically worries you about how (child's name) will adjust to his/her present growth level?

20.) Do you have any other concerns about (child's name) that may not be related to his/her height?

APPENDIX H

APPENDIX H

Children's Interview

I understand that you came to the MSU Endocrinology Clinic because you or your parents wanted to make sure that you were growing OK. Is that right? Were there any other reasons?

We are doing a study to find out from kids and their parents what they think about their height, and how that feels to them. I'm going to ask you several questions, and we'd like you to help us out by answering them the best way you know how. If you don't understand a question, stop me, and I'll explain it better. If you don't want to answer a question, just tell me, and I'll go on to the next one. Are you ready?

1.) First of all, who is in your family? (construct genogram)

2.) Are there any other people in the home that you haven't mentioned?

3.) For each of these people, do you think they are shorter, taller, or the same as other people their age? (record for each person listed)

4.) Do you think you are shorter, taller, or the same as other people your age?
    (If different, probe for a little, a moderate amount, or a lot...)

    Is the way that you just described yourself physically, different from how you saw yourself in the past?

    (If yes, "What led to the changes?")

5.) In general, how important do you think your height is? (probe for extent of importance- a little, moderate amount, a lot)

6.) Do you think other people notice your height?
    (If so, "What do they think about it?")

7.) In your family, does anyone ever make comments about your height, tease or joke about it? (if so, probe:)
    Who made what comments?
    How did it feel?
    How did you handle it?
    How did your parents handle it?

8.) With other kids your own age, is height ever a problem, or something they talk about?

With kids the same sex? Opposite sex?

Do you think your height affects who your friends are?
(if older, "Do you think it affects dating?")

9.) What do you do in your spare time? Hobbies? Sports? Extracurricular?

What do you think you're best at?

10.) In school, do you feel shorter/taller/or the same as other kids in your class?

Sometimes if kids feel self-conscious for one reason or another, they may find it hard to concentrate or do their work. Do you think your height affects how well you do in school? (if so probe further)

11.) In what ways do you think your life would be different if you were:
Taller?
Shorter?

12.) Can you remember a time when you felt really good because someone said something about your height or you could do something special because of it?

If yes, "Can you describe this for me?"

13.) Can you remember a time when you felt really bad because either someone made fun of you, or you couldn't do something because of your height?

If yes, "Can you describe this for me?"

14.) Have you known anyone else who had a hard time in life because they were especially short or tall?
If yes, indicate height problem, and describe the incident.

15.) Do you think being short or tall is different for boys than for girls?
If yes, describe how it differs.

16.) How do you think your mother feels about her height?

Do you think that's OK with her?

17.) How do you think your father feels about his height?

Do you think that's OK with him?

18.) Is there anything you'd like to add, that wasn't mentioned already?

APPENDIX I

APPENDIX I

Coping Coding Manual

APPROACH (Problem-focused)

problem solving: Ex.: In response to difficulty lifting people at work: "I learned how to do it with my legs, how to get around it."

seeking support: Telling parents, teachers, friends about teasing, a problem, or feelings.

cognitive decision making: Structuring one's way of thinking about something so as to make it more acceptable.
Ex.: "I just have a different way of coping with me being small and stuff like that. I didn't care what anyone else thought of me, it was just what I thought of myself."
"I always thought that when someone made fun of you it was because something was lacking in them."

confronting the situation or individual: Ex.: In response to friends teasing other short people: "I say well look at me, I'm like that too."
"If someone would ask me why I'm so short I'd just tell 'em."

selective devaluing: Placing less value on an attribute in which one fares poorly.
Ex.: "When I think of all the things that are important about a person, I've never really had trouble adjusting to the fact that I'm below average in height."
"I think that what you know is more important than your height."

attributing negative experience to prejudice: Ex.: In response to being picked last for baseball team: "I think it was because of my stature- I really believe that."

comparing self to others with similar qualities/challenges: "I had some abilities that were outstanding for my size."
"Compared to the rest of my family, I was normal."

positive reappraisal: Evaluating or viewing a quality or situation in a more positive light so as to make it more accepatable.
Ex.: "Who I feel sorry for are the really tall people."
"I think being short has given me more character."

positive self-talk: " I think in my head, 'I'm gonna be taller than this person, then when they see me they're not gonna make a joke about it because they'll know I'm serious.'"

positive acceptance: "I thought I didn't have any control over it [height] so why worry."

compensation: Compensating for lack of ability or perceived inadequacy in one area by learning to excel in another.

Ex.: "I might go out for the swim team because height doesn't matter."
"My pride came with accomplishments-succeeding in school."

AVOIDANCE (Emotion-focused)

avoiding: "I deliberately did not want to participate in any kind of sport because I was so awkward and slow and even when I gained my full abilities back I was apprehensive of that."

distracting: Doing something to take mind off of stressor. "I just became a workaholic."

ignoring: "I was the type that just ignored it."
"We just walk away from the situation."
"I just don't even pay attention to them."

denying: Child says taller than other kids when in reality they are the shortest in their class.
Frequent responses of "I don't know."
Contradictory responses (e.g., little girl says it makes her sad to be short and would do anything to get taller, then later says she's not really worried or concerned about her height).
"It's not important at all. It really doesn't matter." (Then later discusses how much he would like to be taller).

emoting/emotional discharge: Responses which are driven by emotions, rather than cognitions (e.g., yelling, physical aggression, crying).
Ex.: "But then I learned to tease them back when I got a little bit older. What goes around comes around."

self-blaming: "I was like why am I so short and stuff like that, why'd I have to be so short, and stuff like that, so small."

minimizing: Downplaying the importance or negative impact of a quality, situation, or feeling.
Ex.: "They're just a couple inches taller than me so it don't matter."
"It doesn't really bother me that much."

cognitive avoidance: "Forget about it. Just erase it from your memory. Don't think about it."

resigned acceptance: Subject demonstrates that s/he feels helpless or resigned to situation, without positive resolution of negative feelings.
"There's nothing anybody can do about it. I just have to take it."

withdrawing: Social or emotional disengagement.
Ex.: "I guess maybe it made me a little bit introverted."

magical/wishful thinking: In response to teasing: "I wished I was like real tall sometimes."

APPENDIX J

APPENDIX J

Sample Coding Sheet

Subj. No. SS-23 Coder: CCL

1.) Family Hx. SS: Yes ; 2.) If yes, family member(s): Father .
3.) Self-description of stature: Below Average
4.) Coping Strategies (AP=appraoch, AV=avoid):

AV	"I mean I wasn't like desperate for an appointment, but I was just curious." (minimizing)
AV	"I'm wondering if I would've been better off not going [to clinic]...I don't know if I had to know I wasn't gonna grow any more. Might as well be convinced otherwise." (avoidance)
AV	"It was only bad for a couple-for like a day and a half." (minimizing)
AP	"I'm just part of a vaguer minority group." (compares self to others with similar attributes)
AV	"I started crying when I left [clinic]-like I couldn't hold it back." (emoting)
AV	Yelled at father upon leaving clinic. (emoting)
AP	"I lifted weights for a while because I thought maybe if I get muscley..." (compensation)
AP	"But there's a lot more things I'd rather worry about than getting big." (acceptance/selective devaluing)
AP	Called mother to discuss results of clinic visit and the way he was feeling. (seeks support)
AV	Re: father's height: "Not really small cuz we're the same height." (minimizing)
AV	Re: teasing in the sixth grade: "I blocked it out of my head." (avoiding/denying)
AV	Re: teasing in the sixth grade: Became "extremely aggressive." (emoting)
AV	"I have to put up with it [being short], which really sucks." (resigned acceptance)
AP	"I don't think I'm little on the inside. I know a lot of other people who are little on the inside." (positive self-talk)
AV	"Because of all the weird treatment I got, I began to think it was something I did. I thought it was my fault." (self-blame)
AP	"But as I said before, at least I know I'm not ugly and stuff. I'm sure some ugly people wouldn't mind being shorter." (positive reappraisal)

5.) Positive Impact: 0 6.) Negative Impact: 3 7.) Comments (e.g., other neg.):

LIST OF REFERENCES

LIST OF REFERENCES

Abbott, D., Rotnem, S., Genel, M., & Cohen, D. (1982). Cognitive and emotional functioning in hypopituitary short-statured children. Schizophrenia Bulletin, 8, 310-319.

Achenbach, T. M. (1978). The Child Behavior Profile: I. Boys aged 6-11. Journal of Consulting and Clinical Psychology, 46, 478-488.

Achenbach, T. M., & Edelbrock, C. S. (1979). The Child Behavior Profile: II. Boys aged 12-16 and girls aged 6-11 and 12-16. Journal of Consulting and Clinical Psychology, 47, 223-233.

Achenbach, T. M., & Edelbrock, C. S. (1983). Manual for the Child Behavior Checklist and Revised Child Behavior Profile. Burlington: University of Vermont.

Ainlay, S. C., Becker, G., Coleman, L. M. (Eds.). (1986). The dilemma of difference: A multidisciplinary view of stigma. N.Y.: Plenum Press.

Ainlay, S. C., Coleman, L. M., & Becker, G. (1986). Stigma reconsidered. In S. C. Ainlay, G. Becker, & L. M. Coleman (Eds.), The dilemma of difference: A multidisciplinary view of stigma (pp. 1-13). N.Y.: Plenum Press.

Amato, P. R., & Ochiltree, G. (1986). Family resources and the development of child competence. Journal of Marriage and the Family, 48, 47-56.

Bayley, N. (1956). Individual patterns of development. Child Development, 27, 45-74.

Baumrind, D. (1967). Child care practices anteceding three patterns of preschool behavior. Genetic Psychology Monographs, 75, 43-88.

Becker, G., & Arnold, R. (1986). Stigma as a social and cultural construct. In S. C. Ainlay, G. Becker, & L. M. Coleman (Eds.), The dilemma of difference: A multidisciplinary view of stigma (pp. 39-57). N.Y.: Plenum Press.

Bermak, E. (1989). Effect of telephone and face-to-face communication on rated extent of self-disclosure by female college students. Psychological Reports, 65, 259-267.

Biller, H. B. (1968). A multiaspect investigation of masculine development in kindergarten-age boys. General Psychology Monographs, 76, 89-139.

Bjork, S., Jonsson, B., Westphal, O., & Levin, J. (1989). Quality of life of adults with growth hormone deficiency: A controlled study. Acta Paediatrica Scandinavia, 356, 55-59.

Block, J. H., Block, J., & Gjerde, P. (1986). The personality of children prior to divorce: A prospective study. Child Development, 57, 827-840.

Block, J. H., Block, J., & Morrison, A. (1981). Parental agreement-disagreement on child-rearing orientations and gender-related correlates in children. Child Development, 52, 965-974.

Brackbill, Y., & Nevill, D. D. (1981). Parental expectations of achievement as affected by children's height. Merrill-Palmer Quarterly, 27, 429-441.

Bukowski, W., & Newcomb, A. (1983). The association between peer experiences and identity formation in early adolescence. Journal of Early Adolescence, 3, 265-274.

Buri, J. R. (1989). Self-esteem and appraisals of parental behavior. Journal of Adolescent Research, 4, 33-49.

Buri, J. R., Louiselle, P. A., Misukanis, T. M., & Mueller, R. A. (1988). Effects of parental authoritarianism and authoritativeness on self-esteem. Personality and Social Psychology Bulletin, 14, 271-282.

Carver, R. P. (1993). The case against statistical significance testing, revisited. Journal of Experimental Education, 61, 287-292.

Causey, D. L., & Dubow, E. F. (1992). Development of a self-report coping measure for elementary school children. Journal of Clinical Child Psychology, 21, 47-59.

Christensen, A., Phillips, S., Glasgow, R., & Johnson, S. (1983). Parental charactersitics and interactional dysfunciton in families with child behavior problems: A preliminary investigation. Journal of Abnormal Child Psychology, 11, 153-166.

Chwalow, A. J., Balkav, B., Costigliola, D., & Deeds, S. (1989). Comparison of different data collection methods within a study sample: Telephone vs. home interviews. Health Education Research, 4, 321-328.

Clopper, R. R. (1992). Short stature, stigma, and behavioral adjustment. Growth, Genetics, and Hormones, 8, 27-30.

Clopper, R., MacGillivray, M., Mazur, T., Voorhess, M., & Mills, B. (1986). Post-treatment follow-up of growth hormone deficient patients: Psychosocial status. In B. Stabler & L. Underwood (Eds.), Slow grows the child (pp. 83-96). Hillsdale, N.J.: Lawrence Erlbaum Associates.

Clopper, R. R., Mazur, T., & Ellis, M.A. (1990, May). Assignment of personal attributes to human silhouettes of physical varying size: Children's perceptions of peers. Poster presented at the Third Annual North Coast Regional Meeting of the Society of Pediatric Psychology, Detroit, MI.

Combs, A. W., Richards, A. C., & Richards, F. (1976). Perceptual psychology. N.Y.: Harper and Row.

Compas, B. E., Malcarne, V. L., & Fondacaro, K. M. (1988). Coping with stressful events in older children and young adolescents. Journal of Consulting and Clinical Psychology, 56, 405-411.

Compas, B. E., Phares, V., & Ledoux, N. (1989). Stress and coping preventive interventions for children and adolescents. In L. Bond & B. E. Compas (Eds.), Primary prevention and promotion in the schools (pp. 319-340). London: Sage.

Cooper, J., Holman, J., & Braithwaite, V. (1983). Journal of Marriage and the Family, 45, 153-159.

Crocker, J., & Major, B. (1989). Social stigma and self-esteem: The self-protective properties of stigma. Psychological Review, 96, 608-630.

Daniels, D., Moos, R. H., Billings, A. G., & Miller, J. J., III (1987). Psychosocial risk and resistance factors among children with chronic illness, healthy siblings, and healthy controls. Journal of Abnormal Child Psychology, 15, 295-308.

Dean, H. J., McTaggart, T. L., Fish, D. G., & Friesen, H. G. (1986). Long-term social follow-up of growth hormone deficient adults treated with growth hormone during childhood. In B. Stabler & L. Underwood (Eds.), Slow grows the child (pp. 73-82). Hillsdale, N.J.: Lawrence Erlbaum Associates.

Demo, D., Small, S., & Savin-Williams, R. (1987). Family relations and the self-esteem of adolescents and their parents. Journal of Marriage and the Family, 49, 705-715.

Diener, E. (1984). Subjective well-being. Psychological Bulletin, 95, 542-575.

Drotar, D., Owens, R., & Gotthold, J. (1980). Personality adjustment of children and adolescents with hypopituitarism. Child Psychiatry and Human Development, 11, 59-66.

Easterbrooks, M. A., & Emde, R. N. (1988). Marital and parent-child relationships: The role of affect in the family system. In R. Hinde & J. Stevenson-Hinde (Eds.), Relationships within Families (pp. 83-103). N.Y.: Oxford University Press.

Ebata, A. T., & Moos, R. H. (1989, April). Coping and adjustment in distressed and healthy adolescents. Paper presented at the meeting of the Society in Research for Child Development, Kansas City, MO.

Eisenberg, N., Roth, K., Bryniarski, K. A., & Murray, E. (1984). Sex differences in the relationship of height to children's actual and attributed social and cognitive abilities. Sex Roles, 11, 719-734.

Emery, R., & O'Leary, D. (1982). Children's perceptions of marital discord and behavior problems of boys and girls. Journal of Abnormal Child Psychology, 10, 11-24.

Eminson, D., Powell, R., & Hollis, S. (1994). Cognitive behavioral interventions with short statured boys: A pilot study. In B. Stabler & L. Underwood (Eds.), Growth, Stature, and Adaptation (pp. 135-150). Chapel Hill, N.C.: University of North Carolina at Chapel Hill.

Engfer, A. (1988). The interrelatedness of marriage and the mother-child relationship. In R. Hinde & J. Stevenson-Hinde (Eds.), Relationships within Families (pp. 104-118). N.Y.: Oxford University Press.

Enos, D., & Handal, P. (1986). The relation of parental marital status and perceived family conflict to adjustment in white adolescents. Journal of Consulting and Clinical Psychology, 54, 820-824.

Erikson, E. (1963). Childhood and society. N.Y.: W. W. Norton and Co.

Fenig, S., Levav, I., Kohn, R., & Yelin, N. (1993). Telephone vs. face-to-face interviewing in a community psychiatric survey. American Journal of Public

Health, 83, 896-898.

Filsinger, E., & Lamke, L. (1983). The lineage transmission of competence. Journal of Marriage and the Family, 45, 75-80.

Fine, S. Haley, G., Gilbert, M., & Forth, A. (1993). Self-image as a predictor of outcome in adolescent major depressive disorder. Journal of Child Psychology and Psychiatry, 34, 1399-1407.

Fisher, S. (1986). Development and structure of the body image. Hillsdale, N.J.: Lawrence Erlbaum Associates.

Forehand, R., & Nousiainen, S. (1993). Maternal and paternal parenting: Critical dimensions in adolescent functioning. Journal of Family Psychology, 7, 213-221.

Frazier, A., & Lisonbee, L. K. (1960). Adolescent concerns with physique. School Review, 58, 397-405.

Gecas, V., & Schwalbe, M. (1986). Parental behvior and adolescent self-esteem. Journal of Marriage and the Family, 48, 37-46.

Gefland, D., & Hartmann, D. (1984). Child behavior analysis and therapy. N.Y.: Pergamon Press.

Gerling, C.J. (1939). Short stature and height increase. N.Y.: Harvest House.

Gillis, J. S. (1982). Too tall, too small. Champaign, IL: Institute for Personality and Ability Testing, Inc.

Gold, R. (1978). Constitutional growth delay and learning problems. Journal of Learning Disabilities, 11, 427-429.

Gordon, M., Crouthamel, C., Post, E., & Richman, R. (1982). Psychosocial aspects of constitutional short stature: Social competence, behavior problems, self-esteem, and family functioning. Journal of Pediatrics, 101, 477-480.

Gordon, M., Post, E., Crouthamel, C., & Richman, R. (1984). Do children with constitutional delay really have more learning problems? Journal of Learning Disabilities, 17, 291-293.

Green, M., & Solnit, A. J. (1964). Reactions to the threatened loss of a child: A vulnerable child syndrome. Pediatrics, 34, 58-66.

Grew, R., Stabler, B., Williams, R., & Underwood, L. (1983). Facilitating patient understanding in the treatment of growth delay. Clinical Pediatrics, 22, 685-690.

Harter, S. (1982). The Perceived Competence Scale for Children. Child Development, 53, 87-97.

Harter, S. (1983). Supplementary Description of the Self-Perception Profile for Children: Revision of the Perceived Competence Scale for Children. Unpublished Manuscript. University of Denver.

Harter, S. (1985). Manual for the Self-Perception Profile for Children. University of Denver.

Harter, S. (1986). Processes underlying the construction, maintenance, and enhancement of self-concept in children. In J. Suls, & A. Greenwald (Eds.), Psychological Perspectives on the Self (137-188). Hillsdale, N.J.: Lawerence Erlbaum, Assoc.

Harter, S. (1988). Manual for the Self-Perception Profile for Adolescents. University of Denver.

Holmes, C. S., Hayford, J. T., & Thompson, R. G. (1982). Personality and behavior differences in groups of boys with short stature. Children's Health Care, 11, 61-64.

Holmes, C. S., Thompson, R. G., & Hayford, J. T. (1984). Factors related to grade retention in children with short stature. Child: Care, health, and development, 10, 199-210.

Hoelter, J., & Harper, L. (1987). Structural and interpersonal family influences on adolescent self-conception. Journal of Marriage and the Family, 49, 129-139.

Jaycox, L., & Repetti, R. (1993). Conflict in families and the psychological adjustment of preadolescent children. Journal of Family Psychology, 7, 344-355.

Judd, C. M., Mc Clelland, G. H., & Culhane, S. E. (1995). Data Analysis: Continuing issues in the everyday analysis of psychological data. Annual Review of Psychology, 46, 433-465.

Knapp, L., Stark, L., Kurkjian, J., & Spirito, A. (1991). Assessing coping in children and adolescents: Research and practice. Educational Psychology Review, 3, 309-334.

Kraemer, H. C., & Thiemann, S. (1988). How Many Subjects? Statistical Power Analysis in Research. Newbury Park, CA.: Sage Publications.

Kronenberger, W. G., & Thompson, R. J., Jr. (1990). Dimensions of family functioning in families with chronically ill children: A higher order factor analysis of the Family Environment Scale. Journal of Clinical Child Psychology, 19, 380-388.

Lazarus, R. & Folkman, S. (1984). Stress, appraisal, and coping. N.Y.: Springer.

Lewis, M.S., Johnson, S. B., Silverstein, J., & Knuth, K. A. (1986). The adjustment of growth hormone deficient children: Parent, teacher, peer, and self-perceptions. Paper presented at the annual meeting of the American Psychological Association, Washington, D.C.

Marin, G., & Marin, B. (1989). A comparison of three interviewing approaches for studying sensitive topics with Hispanics. Hispanic Journal of Behavioral Sciences, 11, 330-340.

Martel, L. F., & Biller, H. B. (1987). Stature and stigma: The biopsychosoical development of short males. Lexington, MA: Lexington Books.

McCabe, M., & Marwit, S. J. (1993). Depressive symptomatology, perceptions of attractiveness, and body image in children. Journal of Child Psychology and Psychiatry, 34, 1117-1124.

McGauley, G. (1989). Quality of life assessment before and after growth hormone treatment in adults with growth hormone deficiency. Acta Paediatrica Scandinavia, 356, 70-72.

Messer, B., & Harter, S. (1986). Manual for the Self-Perception Profile for Adults. University of Denver.

Miller, A., Gordon, R., Daniele, R., & Diller, L. (1992). Stress, appraisal, and coping in mothers of disabled and nondisabled children. Journal of Pediatric Psychology, 17, 587-605.

Minuchin, S., Rosman, B., & Baker, L. (1987). Psychosomatic families: Anorexia nervosa in context. Cambridge, MA: Harvard University Press.

Mitchell, C. M., Libber, S., Johanson, A. J., Plotnik, L., Joyce, S., Migeon, C. L., & Blizzard, R. M. (1986). Psychosocial impact of long-term growth hormone therapy. In B. Stabler & L. Underwood (Eds.), Slow grows the child (pp. 97-109). Hillsdale, N.J.: Lawrence Erlbaum Associates.

Moos, R. H., & Moos, B. S. (1986). Family Environment Scale manual. Palo Alto, CA: Consulting Psychologists Press.

Morrow, J. (1984). Deviational salience: Application to short stature and relation to perception of adolescent boys. Perceptual and Motor Skills, 59, 623-633.

Mueller, C., & Parcel, T. (1981). Measures of Socioeconomic Status: Alternatives and Recommendations. Child Development, 52, 13-30.

Murch, R., & Cohen, L. (1989). Relationships among life stress, perceived family environment, and the psychological distress of spina bifida adolescents. Journal of Pediatric Psychology, 14, 193-214.

Peshkess, I. (1977). Similarities of pre-adolescent boys and their parents in the use of defense and coping mechanisms. Unpublished master's thesis, Michigan State University, E. Lansing, MI.

Pino, C., Simons, N., & Slawinowski, M. (1984). Manual for the Children's Version of the Family Environment Scale. N.Y.: Slosson Educational Publications, Inc.

Quinn, R. P., Gutek, B. A., & Walsh, J. T. (1980). Telephone interviewing: A reappraisal and a field experiment. Basic and Applied Social Psychology, 1, 127-153.

Ranke, M. (1987). A note on adults with growth hormone deficiency. Acata Paediatrica Scandinavia, 331, 80-82.

Reich, W., & Earls, F. (1990). Interviewing adolescents by telephone: Is it a useful methodological strategy? Comprehensive Psychiatry, 31 211-215.

Rogers, T. F. (1976). Interview by telephone and in person: Quality of response and field performance. Public Opinion Quarterly, 40, 51-65.

Roth, S., & Cohen, L. J. (1986). Approach, avoidance, and coping with stress. American Psychologist, 41, 813-819.

Rotnem, D., Cohen, D., Hintz, R., & Genel, M. (1980). Psychological sequelae of relative "treatment failure" for children receiving human growth hormone replacement. Annual Progress in Child Psychiatry and Child Development, 470-484.

Rotnem, D., Genel, M., Hintz, R. L., & Cohen, D. J. (1977). Personality development in children with growth hormone deficiency. Journal of the

Academy of Child Psychiatry, 16, 412-426.

Ryan, C., Johnston, S., Lee, P., & Foley, T. (1988, August). Cognitive deficits in short-statured adolescents with growth hormone deficiency. Paper presented at the Annual Convention of the American Psychological Association, Atlanta, GA.

Sandberg, D., Brook, A., & Campos, S. (1994). Short stature in middle childhood: A survey of psychosocial functioning in a clinic-referred sample. In B. Stabler & L. Underwood (Eds.), Growth, Stature, and Adaptation (pp. 19-33). Chapel Hill, N.C.: The University of North Carolina at Chapel Hill

Schumaker, A. (1982). On the significance of stature in human society. Journal of Human Evolution, 11, 697-701.

Slater, E., & Haber, J. (1984). Adolescent adjustment following divorce as a function of family conflict. Journal of Consulting and Clinical Psychology, 52, 920-921.

Shaver, J. P. (1993). What statistical significance testing is, and what it is not. Journal of Experimental Education, 61, 293-316.

Siegel, P. T. (1982). Academic achievement, intellectual functioning, and affective conditions of hypopituitary children. Unpublished doctoral dissertation, University of Michigan, Ann Arbor.

Siegel, P. T. (1990). Intellectual and academic functioning in children with growth delay. In C. Holmes (Ed.), Psychoneuroendocrinology (pp. 17-39). N.Y.: Springer-Verlag Publishers.

Siegel, P. T., Clopper, R. & Stabler, B. (1991). Psychological impact of significantly short stature. Acta Paediatrica Scandinavia, 377, 14-18.

Siegel, P. T., & Hopwood, N. J. (1986). The relationship of academic achievement and the intellectual functioning and affective conditions of hypopituitary children. In B. Stabler & L. Underwood (Eds.), Slow grows the child (pp. 57-71). Hillsdale, N.J.: Lawrence Erlbaum Associates.

Siegel, P. T., Koepke, T., Bedway, M., Postellon, D., Hopwood, N., & Clark, K. (1988, August). Growth hormone deficient children: A seven year follow-up of intellectual, behavioral, and academic functioning. Poster presentation at the American Psychological Association Annual Convention. Atlanta, GA.

Stabler, B., Tancer, M. E., Ranc, J., & Underwood, L. E. (1993, October).

Psychiatric symptomology in GHD adults. Paper presented at the Annual International Symposium on the Behavioral, Social, and Cognitive Aspects of Growth Delay, Chapel Hill, N.C.

Stabler, B. & Underwood, L. (Eds.). (1994). Growth, stature, and adaptation. Chapel Hill, N.C.: The University of North Carolina.

Stabler, B., & Underwood, L. (Eds.). (1986). Slow grows the child. Hillsdale, N.J.: Lawrence Erlbaum Associates.

Stabler, B., Whitt, J. K., Morfault, D. M., D'Ercole, A. J., & Underwood, L. E. (1980). Social judgments by children with short stature. Psychological Reports, 46, 743-746.

Staffieri, J. R. (1967). A study of social stereotypes of body image in children. Journal of Personality and Social Psychology, 7, 101-104.

Steinhausen, H. C., & Stahnke, N. (1977). Psychoneuroendocrinological studies in dwarfed children and adolescents. Archives of Diseases in Childhood, 51, 778-783.

Thomasgard, M., & Metz, W.P. (1995). The vulnerable child syndrome revisited. Journal of Developmental and Behavioral Pediatrics, 16, 45-53.

Thompson, B. (1993). The use of statistical significance tests in research: Bootstrap and other alternatives. Journal of Experimental Education, 61, 361-377.

Thompson, R. J., Jr., Gustafson, K. E., Hamlett, K. W., & Spock, A. (1992a). Stress, coping, and family functioning in the psychological adjustment of mothers of children and adolescents with cystic fibrosis. Journal of Pediatric Psychology, 17, 573-585.

Thompson, R. J., Jr., Gustafson, K. E., Hamlett, K. W., & Spock, A. (1992b). Psychological adjustment of children with cystic fibrosis: The role of child cognitiev processes and maternal adjustment. Journal of Pediatric Psychology, 17, 741-755.

Thompson, R. J., Jr., Kronenberger, W. G., Johnson, D. F., & Whiting, K. (1989). The role of the central nervous system functioning and family functioning in behavioral problems of children with myelodysplasia. Journal of Developmental and Behavioral Pediatrics, 10, 242-248.

Thompson, R. J., Jr., Lampron, L. B., Johnson, D. F., & Eckstein, T. L. (1990). Behavior problems in children with poor school performance. Journal of

Pediatric Psychology, 15, 3-20.

Underwood, L. E. (1991). The social costs of being short: Societal perceptions. Acta Paediatrica Scandinavia, 377, 3-8.

Voss, L. (1993, October). The short "normal" child in school: Self-esteem, beahviour, and attainment before puberty (The Wessex Growth Study). Paper presented at the International Symposium on the Behavioral, Social, and Cognitive Aspects of Growth Delay, Chapel Hill, NC.

Voss, L., Bailey, B., Mulligan, J., Wilkin, T., & Betts, P. (1991). Short stature and school performance-- the Wessex Growth Study. Acta Paediatrica Scandinavia, 377, 29-31.

Wallander, J., Varni, J., Babani, L., Banis, H., & Wilcox, K. (1989). Family resources as resistance factors for psychological maladjustment in chronically ill and handicapped children. Journal of Pediatric Psychology, 14, 157-173.

Walsh, J., & Wardle, J. (1993). Self-esteem, parental appraisal and body size in children. Journal of Child Psychiatry and Psychology, 34, 1125-1136.

Waring, E., & Russell, L. (1980). Family structure, marital adjustment, and intimacy in patients referred to a consultation/liason service. General Hospital Psychiatry, 3, 198-203.

Wells, K. B., Burnam, M. A., Leake, B., & Robins, L. N. (1988). Agreement between face-to-face and telephone-administered versions of the depression section of the NIMH Diagnostic Interview Schedule. Journal of Psychiatic Research, 22, 207-220.

Westbrook, L. E., Bauman, L. J., & Shinner, S. (1992). Applying stigma theory to epilepsy: A test of a conceptual model. Journal of Pediatric Psychology, 17, 633-649.

Wilson, P. R. (1968). Perceptual distortion of height as a function of ascribed academic status. Journal of Social Psychology, 74, 97-102.

Wysocki, T. (1993). Associations among teen-parent relationships, metabolic control, and adjustment to diabetes in adolescents. Journal of Pediatric Psychology, 18, 441-452.

Zimet, G., Cutler, M., Owens, R., Dahms, W., Litvene, M., & Cuttler, L. (1993, October). Adjustment of adults who were non-GHD as children. Paper presented at the Annual International Symposium on the Behavioral, Social,

Cognitive Aspects of Growth Delay, Chapel Hill, N.C.