MEASURES OF SOCIAL FUNCTIONING

APPLICABLE TO CHILDREN

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ABSTRACT

This thesis describes the development and preliminary assessment of social function measures applicable to noninstitutionalized children ranging from 2-14 years of age. The measures are to be used in a cohort comparison study to evaluate neonatal intensive care for under 1500 gram birth weight infants. A lack of earlier attempts to develop measures that focus specifically on the social health of children provided the motivation for creating the scales reported in this paper.

The three major divisions of the thesis include a discussion of measurement criteria applicable to new child health scales; a content analysis and evaluation of available measures of social functioning; and the analysis of results from a pilot study designed to assess a battery of instruments created for the neonatal intensive care project.

Emerging from this work are three social function scales. One of the scales assesses the quality of social relationships and applies to children from 2-14 years. Pilot study results suggest, however, that this scale may overlap excessively with measures of emotional function. The remaining social function scales are applicable to children from 4-14 years: they measure quantitative dimensions of social health which include friendships, interpersonal contacts and social activities.

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CHAPTER 1

Introduction

1.1 The Need for Child Health Indices

An important objective of medical care in developed countries
is to maintain and improve the health of children. Crucial to the
attainment of this goal is the adequate definition and measurement
of child-health. Comprehensive measures of children's health status
would allow policy makers and researchers: a) to assess the need for
health care services among diverse groups of children and b) to
evaluate the effectiveness of health programs and interventions
directed toward improving child health. Both of these activities -
the assessment of need and the evaluation of service - are prerequisites
for the rational distribution of limited health care resources
(Culyer 1978, Martini and McDowell 1977, Donabedian 1973).

1.2 Problems with Available Measures of Child Health

Available indices of child health, particularly those generated
from routinely gathered statistics, have serious limitations. Some
evidence exists to suggest that infant mortality, a common population
based indicator of child health, is more strongly related to social
and environmental influences than to the provision of medical care
(Martini and McDowell 1977). Morbidity indicators such as those
generated from hospital discharge abstracts and notifiable disease

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reports are often inaccurate. Sackett (1970) has described how the lack of standardization and incompleteness of such information results in substantial misclassification of patients and diseases. A negative orientation and insensitivity to change are additional problems common to both mortality and morbidity indicators. Measures that dichotomize health into two categories such as alive or dead, well or sick ignore a range of important health states that exist between extremes (Chen and Bryant 1975, Reynolds, Miles and Rushing 1974).

Biomedical measures of health such as those derived from laboratory tests and clinical assessments are also limited. In the first place, such measures are not applicable to large groups of free-living (noninstitutionalized) people because they are inconvenient - usually requiring access to medical facilities; and expensive - often involving costly professional services and equipment (Elinson 1974). Secondly, variations in the criteria for establishing the presence or absence of certain conditions lead to problems of reproducibility (Balinsky and Berger 1975, Sullivan 1966). Feinstein (1967) wrote, for example, that every clinician has his own criteria for clinical diagnosis of congenitive heart failure, nephrotic syndrome and hepatic decompensation but that no criteria have been standardized and that none are used uniformly. Finally, biomedical measures, when translated into diagnostic labels tell researchers and policy makers about the presence or absence of disease but very little about the functioning of individuals. In contrast, current approaches to measuring health are stressing behavioral criteria, specifically the ability of individuals to function in age appropriate ways (Siegmann and Elinson 1977).

1.3 The Costs and Outcomes Study

The need to develop and to assess indices of child health applicable to a noninstitutionalized population became necessary when a Costs and Outcomes Study was designed by the Department of Pediatrics at McMaster University. The study was intended to evaluate the effectiveness of modern neonatal intensive care (NIC) by comparing the costs and outcomes of treating under 1500 gram birth weight babies delivered liveborn in Hamilton between 1964-1969 and 1973-1977. The investigators decided that the World Health Organization (WHO 1948) definition of health "... as a state of complete physical, mental and social well being and not merely the absence of disease or infirmity", should provide the framework for measuring study outcomes; they proposed as well that children in the study be classified into mutually exclusive and exhaustive "health states" with respect to physical, social and emotional functioning. Measures of child health satisfying these criteria had not been reported in the literature. As project coordinator, one of my major tasks was to construct measures to achieve the above objectives.

1.4 The Remainder of the Thesis

The remainder of this thesis presents the development of social function measures applicable to a free-living population of children ranging in age from 2-14 years. Information available from a small pilot project used to pretest the Costs and Outcomes Study questionnaire will be used to report on a preliminary evaluation of the measures developed in this thesis. A small number of children (N=30)

were selected for the preliminary evaluation because of the constraints in time and resources faced by investigators. Children expected to have functional limitations were deliberately oversampled to increase the variation in response and hence, the opportunity of observing meaningful trends.

Information from the pilot study is meant to give substance and texture to the conceptual and methodological issues developed throughout the thesis. The main objective of the thesis is to present a model for developing new measures of social functioning applicable to children. The model draws considerably from principles of psychological measurement. Although much has been written about the issues and problems of measurement (Helmstadter 1964, Nunnally 1978) rarely, if ever, have any of the basic principles been observed when creating general indices of child health (Eisen et al 1979b).

The specific sections to follow include:
a) The conceptual issues involved in developing measures of social functioning for children.
b) Earlier attempts to create measures of social functioning for children.
c) The description of the social function measures developed for the Costs and Outcomes Study.
d) The purpose, design, and results of the pilot study used to evaluate measures constructed for the Costs and Outcomes Study.
e) A discussion of the usefulness, limitations and appropriate modifications to the social function measures.

CHAPTER 2

Conceptual Issues

2.1 Towards a Definition

No consensus exists on a specific definition of social
functioning for children: indeed, work pertaining to this health
component is sparse (Achenbach 1978). Definitions of concepts
analogous to social functioning, such as social competence and social
health, have been attempted. As an example, Goldberg (1977) wrote
that social competence among infants is characterized by adequacy of
functioning within a repertoire of age appropriate behaviors. The
effectiveness of the child in eliciting attention and appropriate
care from the parent is central to this definition. Among children
in day care or nursery school, Kohn and Rosman (1972a) focused on
interpersonal relations as a starting point for defining social
competence. The authors characterized children's interpersonal
behavior along several bipolar dimensions that included: active
versus passive, acceptable versus not acceptable and friendly versus
hostile. In developing a measure of social health, applicable to
children, Eisen et al (1979a) created a definition of functioning
which focused on the quality of the child"s interpersonal inter-
actions. In addition, the authors suggested that the home, school
and neighbourhood provided appropriate contexts for measuring the
quality of these interactions.

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Attempts to define and measure social functioning or similar phenomena in adults are more numerous (Donald et al 1978, Chambers et al 1977, Weissman 1975). Briefly, Greenblatt (1975) wrote that social health is the degree to which people function adequately as members of the community. Weissman (1975), in a review of techniques for assessing social adjustment, stressed the performance of appropriate roles: her definition emphasized a qualitative dimension of social functioning expressed as the adequacy of a person's role performance judged in relation to the norms of his or her referent group. In contrast, Donald et al (1978) emphasized a quantitative dimension of functioning; they defined social health as the frequency of occurence and level of individual social participation and inter-personal interactions in social groups to which a person belongs.

Although available definitions of social functioning are sometimes vague and incomplete, they do highlight some of the dimensions to be considered when measuring this component of health. Agreement exists that interpersonal relationships and social participation are central to the measurement of social functioning. Moreover, the most important contexts for measuring social functioning appear to be the family, neighbourhood and school. And finally, social functioning appears to have both quantitative and qualitative dimensions with the former referring to the number of interpersonal contacts and the latter to the adequacy of these contacts.

2.2 Social Functioning: A Separate Component of Child Health?

Recent attempts to develop comprehensive indices of adult health status have emphasized separate components, in particular, those of physical, mental and social well-being put forward by the World Health Organization (1948). One example of such an attempt comes from McMaster University (Sackett et al 1977) where investigators created three item pools hypothesized to measure physical, social and emotional function and then selected those items which best predicted global assessments of physical, social and emotional function made by a physician. A second example comes from the Health Insurance Study undertaken by the Rand Corporation (Donald et al 1978, Stewart et al 1978, Ware et al 1979). The Rand group carefully defined each health component then selected items conforming to their specific definitions. Studies in the future are expected to show empirically (i.e., by using the techniques of convergent and discriminant validation described by Campbell and Fiske 1959) that each component, as measured, contains unique or nonoverlapping information about health status.

Corresponding evidence that distinct components of health can be successfully measured in children is incomplete. Eisen et al (1979b) concluded that social functioning has rarely been considered a separate health component in children or measured independently of mental health or behavior problems. As an example, health status among very young children (i.e., 0-4 years) is commonly assessed using developmental schedules. Most developmental schedules are made up of a large item pool that appears to top a wide range of function; however, distinctions are rarely made

between or among items when scoring children as to their developmental level (Moxley 1971). The tendency to combine scores from conceptually distinct areas of function may reflect that in young children, psychosocial indicators of functioning, at least the ones developed so far, are indistinct from mental and motor development. Achenbach (1978) experienced this problem when attempting to develop a social function measure for use with children 4-16 years of age. Social function items of the type used in the Vineland Social Maturity Scale (Doll 1965) failed to describe any difference in function among children of normal intelligence.

A blurring of separate health components occurs as well among older children (i.e., 5-14 years of age). For a long time, clinical psychologists have looked upon psychosocial functioning as uni-dimensional. Concern with taxonomic problems in psychopathology (Achenbach and Edelbrock 1978) and screening for emotional disturbance (Langner et al 1976) has resulted in the neglect of empirical attempts to distinguish social and emotional components of health in groups of apparently normal children. Although the continuing focus on "child behavior disorders" represents a neglect of "normal" functioning, it should be mentioned that empirical approaches to classifying child psychopathology have led to the discovery of two broad bands or syndromes that roughly correspond to social and emotional components of child health. Achenbach and Edelbrock (1978) have called these: 1) Undercontrolled (aggressive, externalizing, acting out, conduct disorder) and 2) Overcontrolled (inhibited, internalizing, shy-anxious, personality disorder).

The only empirical attempt to show that separate components
of social and emotional functioning were measured in children comes
from the Rand group (Eisen et al 1979a). Correlations between their
measures of social and emotional functioning were all greater than
$r = 0.35$, leading the authors to conclude that their social relations
items might be assessing a positive aspect of mental health.

2.3 Measurement Criteria

The social function measures developed in this thesis are
to form part of a comprehensive measure of child health status to be
used in a comparison of two groups of under 1500 gram birth weight
infants now ranging in age from 2-14 years. The study groups come
largely from a free-living or noninstitutionalized population. In
order to be most useful for its intended purpose, the social function
measure should:

1. Be generally applicable and acceptable.

Sullivan (1966) indicated that measures developed for general
populations should be simple to apply, acceptable to respondents and
inexpensive to administer. Attainment of these objectives suggests
that such measurements should be based on responses to a questionnaire
administered by lay interviewers to the population of interest.
Measurements that demand prior access to, or use of, clinical,
laboratory or other health services do not meet the objectives
outlined by Sullivan and are considered inapplicable to free-living
populations (Sackett et al 1977).

2. Be balanced in orientation.

Many children coming from a noninstitutionalized population are expected to be free of apparent morbidity. Measures developed for such children should therefore go beyond the cataloguing of symptoms, illnesses and catastrophes and identify good or even excellent function when it exists (Chambers et al 1977). Attainment of this objective suggests that such measurements should include items that are either bipolar (i.e., have individual response sets that incorporate a range of function from positive to negative) or balanced (i.e., for each item that measures a negative aspect of functioning there is a corresponding item that measures a positive aspect of the same phenomenon).

3. Be amenable to index construction.

The Rand group (Donald et al 1978, Stewart et al 1977, Ware et al 1979) pointed out that general measures of health should include questionnaire items that reflect state of the art measurement strategies. One such strategy is to include items that permit rapid combination into appropriate indices (Sacket et al 1977). A second strategy is to include items that permit evaluation using multi-trait scaling techniques (Helmstadter 1964, Nunnally 1978). Attainment of these objectives suggest that open ended questions requiring special content analysis and interpretation should be avoided in favour of questions having structured response choices.

The prerequisites outlined above represent important yardsticks for the evaluation of general measures of health applicable to free-living (noninstitutionalized) populations. There are, in

addition, general criteria for assessing the usefulness of any new measure. In order to be acceptable as a measurement instrument the indices of social function should:

4. Have sufficient variability to describe different levels of functioning or to detect actual differences in health which would permit between group comparisons.

Nunnally (1978) has written that scientific issues are posed only to the extent that objects or people vary with respect to particular attributes. An instrument that identified only one level of an attribute would leave little room for hypotheses testing: in effect, differences would not exist; there would be nothing "to explain". The usefulness of a new measure depends in part on how sensitive it is to important differences in levels of the attribute of interest. Variability is a measure of score dispersion and hence an indicator of an instrument's potential sensitivity. Measures intended for general surveys should have scores with sufficient variation to test hypothesis about group differences.

5. Be reliable.

All attempts to measure phenomena are subject to different sources of error often divided into two components: errors that are systematic and those that are random (Selltiz et al 1976). Reliability is a measure of how much of the variation in scores is due to chance or random errors. Bennett and Richie (1975) indicated that there are basically two types of reliability: internal consistency which assesses the congruence of items intended to measure the same attribute by

examining how much variance they share in common; and repeatability which assesses the congruence of results obtained by the same measure administered in two or more occasions to the same subject in the same health state by the same or different observer.

The usefulness of any new measure whose purpose is the comparison of groups depends to a considerable extent on its reliability. Large sources of random error drastically reduce the precision of measurement which in turn means that large samples (i.e., groups of individuals) and/or repeated measurements are required in order to test hypotheses (Rogers et al 1979). Establishing that a measure is reliable is a necessary though insufficient condition for showing that it is valid.

6. Be valid.

Ultimately, an instrument is useful insofar as it truly or accurately describes a phenomenon. Validity is a measure of how much of the variation in scores is due to systematic error. Nunnally (1978) described three types of validity: predictive validity which assesses the correlation between the instrument and some external criterion; content validity which assesses how adequately the instrument has sampled items from the attribute of interest; and construct validity which assesses the functional relations between the instrument and other variables connected with the attribute of interest.

Although it is crucial to generate evidence that a new instrument is valid, the standards for doing so are often unclear. Investigators who developed the Index of Well-Being (Kaplan et al 1976)

for example, argued that measures of health status could not be validated by tests of predictive validity because no acceptable criterion exists. The McMaster group (Chambers et al 1977), on the other hand, argued that global assessments made by a physician represent adequate criterion measures of health status and used such assessments as the basis for selecting items to measure three health components: physical, social and emotional functioning. The debate is significant because acceptance of one position or the other has important implications for the approach one should take in developing and evaluating a new measure of health.

2.4 Social Functioning: Special Issues.

There are, in addition to the conceptual issues already described, a number of special problems associated with the development of a social function measure applicable to children. Three of these problems in descending order of importance are: child development, the differentiation of social and emotional functioning and the effect of using proxy respondents.

1. Child Development

The rapid changes in functioning that accompany normal growth and development in young children pose serious complications for general measures. One can overcome the problems posed by normal child development by choosing items or indicators of social function that are age specific. Unfortunately, the more age specific or unique these items, the less chance the measure has of being generally applicable and useful. Clearly, a general

measure of social functioning for children must work in two directions at once: to be credible, items must be specific to abilities that are bounded by age; to be useful, items must tap dimensions that are applicable across ages.

Major role performance such as attending school, or taking part in play is a simple example of a social function indicator that is both credible and useful; it is a useful indicator because it identifies a general dimension of social functioning that cuts across age levels; it is a credible indicator because age appropriate facets (i.e., school attendance from 6-16 years and play from 0-5 years) are readily identified.

2. The Differentiation of Social and Emotional Functioning

Individual health components, to be most useful, should contain unique information about health status. Earlier evidence that excessive overlap or redundance exists between measures of social and emotional functioning in children poses a serious threat to the potential usefulness of the social function measures developed here.

An intuitive response to this problem is to approach the definition and measurement of these components from conceptually distinct points of view. One tactic is to concentrate on behavior when measuring social function and psychological states or feelings when measuring emotional function.

3. The Role of Proxy Respondents

Eisen et al. (1979a) indicated that problems of response bias have been ignored in most general population health surveys and that

such bias may be noteworthy when parents respond for their children.
Three major response set biases have been described: 1) acquiescent
set or the tendency to agree with statements regardless of content;
2) opposition set or the tendency to disagree with statements
regardless of their content; and 3) socially desirable response set
or the tendency to respond to item meaning so as to make a favourable
impression (Ware et al 1976). Response bias may create serious
validity problems for a new measure of social functioning. There
are, fortunately, measurement approaches that help to reduce such
bias. The most common method is to use an item set that contains
both favourably and unfavourably worded questions (Ware et al 1976).

CHAPTER 3

Approaches to Measuring Social Functioning in Children

3.1 Background

The review to follow focuses on three different approaches to assessing children, which at face value appear to contain items that tap a social function component. The approaches include: 1) developmental screening tests designed to aid in the early detection of delayed development in young children; 2) measures of problem behavior in children intended to differentiate normal from disturbed behavior or to classify different syndromes of psycho-pathology; and 3) measures (i.e., single items and scales) designed to provide specific information about social functioning.

The principal objectives of the review are to further define variables that pertain to social functioning in children and to illustrate some of the conceptual and empirical problems in such measurement attempts. To obtain these objectives, the review is divided into two major components:

    a) an analysis of the social function content included in these three different approaches to assessing children; and

    b) a detailed methodological evaluation of those single items and scales designed specifically to measure social functioning in children.

3.2 Content Analysis

3.2.1 Developmental Screening Tests

Contained in most developmental schedules and preschool intelligence tests are items that tap different aspects of personal and social functioning. Moxley (1971) reviewed a number of these tests (Bayley Scales of Infant Development, Cattell Infant Intelligence Test, Denver Developmental Screening Test, Stanford Binet Intelligence Test, Gesell Developmental Schedules and Vineland Social Maturity Scale) and grouped items according to their manifest content. She created eight groupings under the general heading of psychosocial development; one grouping contained descriptors of general behavior; three groupings contained descriptors of social functioning;(i.e., play and leisure time activities, interpersonal relations, family relations) and four groupings contained descriptors of emotional functioning (i.e.,tension outlets, sleeping and dreams, fears and sexual concerns).

The Denver Developmental Screening Test (Frankenburg and Dodds 1967) and the Vineland Social Maturity Scale (Doll 1965) have sections devoted specifically to measuring personal/social function in young children. It is clear from an examination of these items that the performance of major roles (i.e., taking part in play and self care) and interactions with others dominate the content of these skills (Table 3.1).

Table 3.1

Content of Items Hypothesized to Measure Social Functioning in Young Children

CATEGORY	DENVER DEVELOPMENTAL SCREENING TEST - PERSONAL SOCIAL DEVELOPMENT		VINELAND SOCIAL MATURITY SCALE - SOCIALIZATION	
Play	Plays peek-a-boo	5.7^a	Plays with other children	18.0^b
	Plays pat-a-cake	9.1	Plays cooperatively at kindergarten level	39.4
	Plays ball with examiner	11.6	Plays competitive exercise games	61.6
	Plays, interactive games	24.0	Participates in pre-adolescent play	99.4
			Plays difficult games	147.6
			Engages in adolescent group activities	169.2
Social Interaction	Regards Face	0.0	Reaches for familiar persons	3.6
	Smiles responsively	0.0	Demands personal attention	8.4
	Smiles spontaneously	1.9	"Performs" for others	45.0
	Initially shy with strangers	9.5		
	Indicates wants	12.2		
	Separates from mother easily	36.0		
Self Care	Feeds self crackers	5.3		
	Drinks from a cup	11.7		
	Uses spoon, spilling little	14.4		
	Removes garment	15.8		
	Puts on clothing	22.3		
	Washes and dries hands	23.0		
	Dresses with supervision	31.0		
	Buttons up	36.0		
	Dresses without supervision	42.0		

[a] Age in months when 50% of children pass item; [b] Mean age in months that children pass item.

3.2.2 Measures of Problem Behavior in Children

A large and unwieldy literature surrounds attempts to measure problem behavior in childhood. Among preschool and primary school aged children, Walker (1973) was able to describe 143 socioemotional measures and Stringfield and Woodside (1976) an additional 62 measures. The review is limited in scope for the following reasons: a) instruments of the type covered here are hypothesized to measure "mental" health not social functioning; b) most of the instruments are negatively oriented, focusing on problems or difficulties the child may have and c) a considerable overlap exists among these instruments (i.e., there is a limited item pool - investigators tend to pick and choose items from one another to suit their orientation and purpose).

Table 3.2 summarizes the item content of three subscales which appear to measure social functioning from the point of view of behavior problems. Considerable overlap exists between the Anti-Social scale developed by Rutter et al (1970) to discriminate } children with neurotic or anti-social disorders and the scales empirically derived (ie., by factor analysis) by Behar (1977) and Goyette et al (1978). Clearly, many of the behaviors on these scales reflect disturbances in interpersonal relationships.

Items from three empirically derived subscales on a screening inventory developed by Langner et al (1976) are presented in Table 3.3. An inspection of individual items suggests that some (i.e., number 1, 3, 4, 5 on the Isolation Scale and number 3 on the Fighting Scale)

Table 3.2

Social Function Items From Subscales of Instruments Designed to Measure Problem Behavior in Children

PRESCHOOL BEHAVIOR QUESTIONNAIRE[a] Hostile-Aggressive (3-6 yrs)	PSYCHIATRIC DISORDER INDEX[b] Anti-Social (11-12 yrs)	CONNERS PARENT RATING SCALE[c] Conduct Problem (3-17 yrs)
Fights with other children		Fights constantly
Bullies other children	Bullies other children	Bullies others
Kicks, bites or hits other children		
Inconsiderate of others		
Does not share toys		
Destroys own or other's belongings	Often destroys own or other's belongings	Destructive
Blames others		Denies mistakes, blames others
	Is often disobedient	Sassy to grown-ups
	Often tells lies	
	Steals things	
		Basically unhappy
		Quarrelsome
		Carries a chip on shoulder

[a] Behar (1977)

[b] Rutter, Tizard and Whitemore (1970)

[c] Goyette, Connors and Ulrich (1978)

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Table 3.3

Social Function Items From Subscales in the Langner
35-Item Psychiatric Screening Instrument

SUBSCALE	ITEMS
Fighting	1. Thinks teachers and others are against him
	^{b}2. Often lies to protect self
	^{r}3. Gets along with other children at school poorly
	^{a}4. Unhappy at school
	^{b}5. Teases other children
Delinquency	^{b}1. Lies so much you can't believe him/her
	^{b}2. Often does rash things
	^{b}3. Comes home at promised time rarely or never
	^{b}4. Has been in trouble with police
	^{b}5. Runs away from home 4-5 times
Isolation	^{r}1. Often withdraws from others
	^{a}2. Rarely or never in a happy mood
	^{r}3. Spends too much time alone
	^{r}4. Has no close friends
	^{r}5. Doesn't keep friend for year or more

^{a} Item suggests a measure of affect or subjective state

^{b} Item suggests a measure of overt behavior

^{r} Item suggests a measure of social relationships

of them focus directly on the quality and quantity of interpersonal relations. Most of the other items describe tangible overt behaviors and a few refer to affective states that require the parent to make some inference about the child's psychological or subjective well being (Table 3.3).

3.2.3 Social Function Measures

Attempts to develop general measures of social functioning applicable to free-living (noninstitutionalized) groups of children are rare. Only four measures appeared in the literature, and one, the Social Competence Scale developed by Kohn (1977), has not been used outside of preschool settings.

3.2.3.1 The Social Competence Scale
(Kohn and Rosman 1972a, 1972b)

The Social Competence Scale developed by Kohn and Rosman (1972a, 1972b) was first used to assess the behavior of children enrolled in New York City public day care centres. The scale has 73 items selected to measure the degree of competence in the classroom from the point of view of the child's interpersonal relations. The authors stated that positive-active behavior represents competent functioning and that alternative types of low competent functioning includes: a) bossy, hostile, domineering behavior; b) passive defiant, withdrawn behavior and c) passive dependent behavior. All of the items appear to reflect a qualitative dimension of interpersonal interaction (Table 3.4). Descriptions of classroom behavior

Table 3.4

A Summary of the Content of Social Function Measures Applicable to Children

SCALE	NO. OF ITEMS	ITEM CONTENT	SCALING AND/OR SCORING METHOD	INVESTIGATOR
Interest-Participation vs Apathy-Withdrawal Factor I	36	Positive items indicate curiosity, outgoingness, and joy in interpersonal interactions; negative items suggest lack of interest in the environment, shyness and absence of interpersonal interaction	Item scores range from 1 (always) to 7 (never) then summed	Kohn and Rosman (1972a, 1972b)
Cooperation-Compliance vs Anger Defiance Factor II	37	Positive items show willingness to live within the classroom structure; negative items indicate disobedience of the teacher and hostile interactions with peers.	Item scores range from 1 (always) to 7 (never) then summed	Kohn and Rosman (1972a, 1972b)
Activities Scale	3	Items covering the amount and quality of the child's participation in (a) sports, (b) hobbies, activities, games and (c) jobs and chores	Weights assigned and summed	Achenbach (1978)
Social Scale	3	Items covering (a) the child's membership and participation in organizations; (b) number of friends and contact with them; and (c) behavior with others and alone	Weights assigned and summed	Achenbach (1978)
School Scale	4	Items covering (a) the average of the child's performance in academic subjects, (b) placement in a regular or special class; (c) being promoted regularly or held back; and (d) the presence or absence of school problems	Weights assigned and summed	Achenbach (1978)
Social Relations Scale	4	Items covering the quality of the child's interpersonal interactions in the home, school and neighbourhood, and level of concern about reported problems	Item scores range from 1 (very well, no problems) to 5 (not well at all, serious problems) then summed	Eisen et al (1979a)
Activities		Single items covering friendships, jobs or chores group memberships and time spent in various leisure activities	Item scores depend on different response categories which are summed and corrected to percentages	National Centre for Health Statistics (1971)

to be rated by teachers include statements that are balanced (i.e., an equal number of positively and negatively worded items). Arbitrary scores are assigned: they represent the number (revised, if necessary, to maintain consistency of direction) of each category in the standard response sets used for each item. The two scales appearing in Table 3.4 were derived by factor analysis.

3.2.3.2 The Social Competence Scale

(Achenbach 1978, Achenbach and Edelbrock 1979)

Achenbach (1978) developed three scales intended to measure social competence in children 4-16 years of age (Table 3.4). The Activities Scale measures the child's participation in various activities and has three item groupings: a) the number and level of participation in sports; b) the number and quality of participation in activities; and c) the number and quality of performance in jobs and chores. Content of the scale seems to be mixed between social activities (i.e.,items a and c above) and personal activities (i.e., item b above). Moreover, both quantitative and qualitative assessments are expected. Scores reflect frequency counts (i.e., 0 - none or one sport; 1 - two sports; 2 - three sports) or are norm referenced (i.e., 0 - below average, 1 - average, 2 - above average). A total score is obtained by summing across items.

The Social Scale focuses on social relationships and also has three item groupings: a) the number of close friends the child has and the times per week the child does things with these close friends;

b) how well the child gets along with others and alone; and c) the number and level of involvement the child has in organizations. Both quantitative (i.e., item a above) and qualitative (i.e., item b above) dimensions of interpersonal interactions as well as social participation (i.e., item c above) comprise the scale. Item and scale scores were assigned using the approach outlined for the Activities Scale.

The third scale developed by Achenbach (1978) to measure social competence is called the School Scale and is applicable to children aged 6-16 years. The four item groupings consist of: a) the average of the child's performance in academic subjects; b) placement in a regular or special class; c) being promoted regularly or held back; and d) the presence or absence of school problems (Table 3.4). All of the items appear to tap a single dimension, namely, school performance. Item scores for academic performance are: 0 - failing; 1 - below average; 2 - average; and 3 - above average. All other items are dichotomized (e.g., 0 - in a special class; 1 - not in a special class). A single scale score is obtained by summing across items.

3.2.3.3 The Social Relations Scale
(Eisen et al 1979a, 1979b)

Eisen et al (1979a, 1979b) developed a Social Relations Scale applicable to children 5-13 years to be used as an outcome indicator of social health in the Rand Corporation's Health Insurance Study.

Three items were selected to measure the quality of the child's interpersonal interactions; the items ask how well the child has gotten along with other children, the family and teacher and classmates (Table 3.4). Item scores derive from the standard response categories accompanying each question (i.e., 1 - very well, no problems; 2 - quite well, hardly any problems; 3 - pretty well, occasional problems; 4 - not too well, frequent problems; 5 - not well at all, serious problems). A scale score is obtained by reversing the direction of scoring and summing across all items.

3.2.3.4 National Health Survey Questions

(National Center for Health Statistics 1971, 1972)

The United States (U.S.) National Health Survey includes several items designed to elicit parents' ratings of the behavioral patterns of their six to eleven year old children. One set of items called Peer Relations is intended to assess the child's degree of social or other skill development. Items pertain to the number and age of their child's friends, willingness to make new friends and ability to get along with other children (Table 3.4). The frequency distributions of responses serve as scores. No attempt is made to combine items into a single scale.

Groups of items referred to as Organized Activity and Use of Time included in the American National Health Survey appear to measure children's social participation. Items in these categories pose questions about the child's attendance at special lessons or classes;

memberships in clubs or groups; and use of time when not eating, sleeping or attending school. Again, percentages are used to describe response patterns and no attempts are made to derive composite scales.

3.3 Content Analysis - a Summary

The review of different child assessment techniques suggests conceptually that some agreement exists as to the appropriate content of social function measures applicable to children. Content analysis of developmental screening tests reveal a wide variety of items that tap a social function component: most of these items cluster around play and the ability to interact with others. Some specific developmental tests such as the Denver Developmental Screening Test (Frankenburg and Dodds 1967) and the Vineland Social Maturity Scale (Doll 1965) have many items that focus on the child's ability to perform major roles (i.e., take part in play or look after his or her own self care).

Measures of problem behavior in children tend to have a narrower range of content with items suited, presumably, to fulfil specific purposes (i.e., to differentiate normal from disturbed behavior or to classify different syndromes of psychopathology). The items included in problem behavior inventories are usually indicative of social dysfunction. The two major components of dysfunction seem to be anti-social behavior as witnessed by various forms of aggression, hostility and acting out; and social withdrawal as witnessed by the child wanting to be alone and having little interest in others.

The single items and scales developed to measure social functioning in children tended to divide into one of three content groupings: a) social relationships; b) social participation and activities and c) role performance. Items in most of the scales described behavioral content. Quantitative measures of behavior focused on objective indicators of social function such as the child's number of friendships, organizational memberships and frequency of contact with others. Qualitative measures of behavior evaluated how well the child got along with others and performed certain activities.

3.4 Methodological Evaluation

The methodological evaluation developed in this section considers only those measures specifically designed to measure social functioning in children. The areas to be discussed are summarized in Table 3.5 and reflect the measurement criteria outlined in section 2.3 of Chapter 3. A methodological evaluation is not extended to developmental schedules and problem behavior checklists because such measures have special purposes. As an example, developmental schedules generally apply to children under six years of age; behavior checklists are used for screening or diagnostic purposes.

3.4.1 General Applicability and Acceptability

All of the social function measures examined, with the exception of the Social Competence Scale (Kohn and Rosman 1972a, 1972b), are generally applicable and acceptable. The Social Competence

Table 3.5

Measurement Issues Pertinent to a Methodological Assessment of Social
Function Items and Scales Applicable to Children

1. General Applicability and Acceptability

2. Balance in Orientation

3. Amenability to Index Construction

4. Variability

5. Reliability

6. Validity

7. Special Issues

Scale is inapplicable to general groups of free-living children
because many of the items are referenced to a nursery or preschool
setting. Other restrictions of the scale include its limited age
range (3-6 years) and large item pool (73 items).

3.4.2 Balance in Orientation

All of the instruments reviewed approach the measurement of
social function with a balanced orientation. Kohn and Rosman (1972a,
1972b) do this by including both positively and negatively worded
items; the other authors (Achenbach, 1978; Eisen et al 1979a, 1979b;
NCHS 1971, 1972) accomplish this by using bipolar items (i.e., response
categories for items that describe an entire spectrum of function from
positive to negative). An example of two items that appear to be
balanced comes from Kohn (1977): child manifests interest in many
and varied things; and child demonstrates little interest in things
and activities of his environment. A response category that describes
a spectrum of function comes from Eisen et al (1979a, 1979b) where the
response to questions about how well the child gets along with others
ranges from very well, no problems, to not well at all, serious problems.

3.4.3 Amenability to Index Construction

With the exception of items included in the U. S. National
Health Survey (NCHS 1971, 1972) all of the social function measures
reviewed are amenable to index construction. However, only the Rand
group (Eisen et al 1979a, 1979b) attempted a priori to generate
internal evidence that their index was measuring a single dimension

of function. These authors subjected their hypothesized item
groupings to multi-trait scaling procedures (Campbell and Fiske 1959)
which supported the unidimenionality of the original item groupings.
Kohn and Rosman (1979a, 1972b) used factor analysis to create scales.
Achenbach (1978) made no attempt to test the scaling assumptions of
his indices of social function, leaving in some doubt the appropriateness
of his item groupings.

3.4.4. Variability

Only two of the four studies reviewed here have presented score
distributions of items purporting to measure social functioning in
children (Table 3.6 and Table 3.7). Eisen et al (1979b) reported
frequency distributions, means and standard deviations for items in
their Social Relations Scale. The children (N = 1,473, age 5-13 years)
came from families randomly selected from three of four Health Insurance
sites: Seattle, Washington; Fitchburg/Franklin County, Massachusetts;
and Charleston/Georgetown County, South Carolina. Scores for each
item are skewed towards the positive end of the scale (i.e., most
children get along well with others) and children who do have problems
do not seem to be a major concern of parents (Table 3.6).

The National Health Survey (NCHS 1971) reported percentages
of children ages 6 to 11 years (N = 7,417) rated by parents on social
function items. A selection of these items that appear to be a direct
measure of social functioning in children is presented in Table 3.7.
The Peer Relations questions (i.e., the first four items) indicate that

Table 3.6

Frequency Distributions for Social Function Items, the Social Relations Scale, Ages 5-13 Years

ITEM CONTENT			RESPONSE VALUES					MEAN (STANDARD DEVIATION)
Get along with Children	[a]	4	31	300	611	522		4.10 (0.81)
Get along with Family	[a]	2	21	357	661	427		4.01 (0.78)
Get along with Teacher	[a]	4	20	166	443	835		4.40 (0.77)
[b]Adult worry regarding Social Relations	[c]453	187	71	29	-			1.56 (0.82)

[a] Response choices: 1 - not well at all, serious problems
                             2 - not too well, frequent problems
                             3 - pretty well, occasional problems
                             4 - quite well, hardly any problems
                             5 - very well, no problems

[b] Not asked for parents with children reported to get along quite well or very well with others

[c] Response choices: 1 - not at all
                             2 - a little
                             3 - somewhat
                             4 - a great deal

Table 3.7

Frequency Distributions of Social Function Items From the National
Health Survey

ITEM CONTENT/RESPONSE CHOICES	OVERALL PERCENT
1. Number of Friends:	
None	0.0
Only a few	37.4
A good number	46.4
Many children, good friends	15.2
Unknown	1.1
2. Age of Friends:	
Older	7.5
About same age	84.3
Younger	3.4
Combination	4.1
Unknown	0.7
3. Willingness to Make New Friends:	
Somewhat shy	21.8
About average willingness	34.2
Very outgoing - makes friends easily	43.3
Unknown	0.7
4. Ability to get Along:	
No difficulty - well liked	45.9
Liked as well as most children	49.2
Has difficulty with many children	4.2
Unknown	0.6
5. Belongs to Organizations or Takes Special Lessons:	
1. One or more organizations (i.e., Scouts, Brownies)	21.9
2. One or more groups (i.e., art classes or activites)	14.2
3. One or more groups (i.e., Religious)	10.0
4. One or more groups (i.e., Athletics)	9.2
5. Other one or more groups	5.0
6. Time Spent per Day Playing with Friends:	
None	10.7
Less than 1/2 hour to 2 hours	28.9
2-3 hours	38.9
4 hours or more	19.4
Unknown	2.1

most parents perceive their children to be socially active, outgoing and well liked. A smaller percentage of children take part in organizations, clubs and teams.

3.4.5 Reliability

Three of four investigators reviewed in this section reported estimates of reliability. Table 3.8 summarizes available information. Kohn (1977) obtained interrater reliability correlations (Spearman-Brown corrected) between pairs of teachers of 0.77 and 0.80 for Factor I (Interest-Participation versus Apathy-Withdrawal) and Factor II (Cooperation-Compliance versus Anger-Defiance) of his Social Competence Scale. Achenbach (1978) and Achenbach and Edelbrock (1979) obtained both test-retest and interrater reliability estimates for their social competence scales. Test-retest coefficients using Pearson's r were reported to be between 0.72 and 0.97 for the social competence scales and problem checklist, although exact estimates were not published. Only parents of normal children were included in the retest and sample sizes were small, varying from N=8 to N=16 among the four age categories. The mean of the Pearson correlations between scores obtained from the mothers' and fathers' ratings in the social competence and narrow-band behavior problem scales was 0.74 for 6-11 year old boys (N=37); 0.79 for 12-16 year old boys (N=16); 0.63 for 6-11 year old girls (N=20); and 0.54 for 12-16 year old girls (N=24). The rather low level of interparent agreement raises questions about the potential validity of the scales. Moreover, the authors incorrectly used a measure of association to obtain estimates of reliability;

Table 3.8

Summary of Reliability Estimates for Social Function Measures Applicable to Children

SOCIAL FUNCTION MEASURE	NO. OF ITEMS	RELIABILITY COEFFICIENTS[a]			SCALING METHOD	SAMPLE CHARACTERSITICS	INVESTIGATOR(S)
		ICR	TRT	IRR			
Social Competence Scale							
Interest participation vs Apathy-Withdrawal	36			$.77^b$	Summated ratings	Pairs of teachers in New York day nursery schools N = not given	Kohn (1977)
Cooperation compliance vs Anger-Defiance	37			$.80^b$	Summated ratings		
Social Competence Scale^e							
Activities Scale	3		$.72^c$		Weights assigned arbitrarily and summed	Mothers of normal boys (N = 12 to 20)	Achenbach (1978)
Social Scale	3			$.58^c$			Achenbach and Edelbrock
School Scale	4			$.87^c$			(1979)
Social Relations Scale	4	$.81^d$			Summated ratings	Children from general population (N = 1473)	Eisen et al (1979a, 1979b)

[a] ICR = Internal-Consistency Reliability; TRT = Test-Retest Reliability; IRR = Interrater Reliability .

[b] Spearman-Brown correction

[c] Pearson correlation coefficient

[d] Cronbach's alpha coefficient

[e] Boys age 6-11 years only

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rather, they should have used a measure of agreement such as an intra-
class correlation coefficient (Ebel 1951). Eisen et al (1979a, 1979b)
did not obtain test-retest estimates of reliability for their Social
Relations Scale but did report an internal-consistency coefficient of
0.81 (Table 3.8).

3.4.6 Validity

Some doubt exists as to the content validity of three of the social
function measures examined. An important dimension of social functioning
appears to have been overlooked in Kohn's (1977) Social Competence Scale
and Eisen's et al (1979a) Social Relations Scale. The authors neglected
to include items which tap a quantitative aspect of social functioning
such as the child's number of friends, memberships and frequency of contacts
with others. The oversight could have important implications since objective
or quantitative indicators of social functioning may be the most useful
in distinguishing social from emotional functioning. Eisen et al (1979a)
reported, in fact, that their Social Relations Scale might be assessing
a positive aspect of mental health as indicated by substantial negative
correlations between their scale and scales intended to measure mental
health (i.e., anxiety and depression).

Although the content of the social competence scales developed by
Achenbach (1978) and Achenbach and Edelbrock (1979) are comprehensive,
some items appear to be inappropriately grouped. The Social Scale, for
example, combines items that measure both the quantity and quality of
social relationships. The Activities Scale contains items that are

social (i.e., participation in sports and games) as well as items that are personal hobbies (i.e., collecting stamps, reading, etc.). The School Scale appears to be less a measure of social functioning than intellectual ability with strong physical and emotional components potentially represented.

The survey questions included in the U.S. National Health Survey (NCHS 1971) seem to cover all of the important aspects of social functioning applicable to children. However, very few items are sampled from each aspect of function. Questions remain as to the reliability and validity of single items in the assessment of health.

Despite differences in terms, all of the investigators presented some information that pertained to the construct validity of their social function measures (Table 3.9). Supportive evidence existed when the measure in question performed as expected (i.e., met certain hypotheses concerning its relation to other instruments or variables related to the same health component).

Kohn and Rosman (1972a, 1972b) compared results from Factor I and Factor II of their Social Competence Scale with teacher ratings on Peterson's (1961) Problem Checklist and the Schaefer Classroom Behavior Inventory (Schaefer and Aaronson 1966) and reported significant correlations ranging from 0.18 to 0.58 for boys and girls separately analyzed. Significant and large correlations (i.e., $r = -0.75$ and $r = -0.79$) were found between Factors I and II of the Social Competence Scale and comparable factors on the Symptom Checklist (Table 3.9). Moreover, Factor I correlated significantly

Table 3.9

Summary of Construct Validity Evidence for Social Function Measures Applicable to Children

SOCIAL FUNCTION MEASURE	VALIDITY VARIABLES	MEASURES OF ASSOCIATION[a]			SAMPLE CHARACTERISTICS	INVESTIGATORS
		DIRECTION	STATISTICS	METHOD		
Associations with Socioemotional Measures						
Social Competence Scale I	Peterson Problem Checklist I	-	- .37**boys	r		
		-	- .18* girls	r		
	Schaefer Classroom Behavior Inventory I	+	.37**boys	r	Girls and boys ages 3-6 from	Kohn and
			.18* girls	r	day care and kindergarten	Rosman
Social Competence Scale II	Peterson Problem Checklist II	-	- .35**boys	r	(N = 312)	(1972a, 1972b)
		-	- .50**girls	r		
	Schaefer Classroom Behavior Inventory II	+	.28**boys	r		
			.31**girls	r		
Social Competence Scale I	Symptom Checklist I (Kohn)	-	- .75**	r	Girls and boys ages 3-6 from	Kohn and
					day and kindergarten	Rosman
Social Competence Scale II	Symptom Checklist II (Kohn)	-	- .79**	r	(N = 407)	(1972a, 1972b)
Associations with Emotional Function Measures						
Social Relations Scale	Anxiety	-	- .36*	gamma	Girls and boys ages 5-13	Eisen et al
	Depression	-	- .39*	gamma	(N = 1473)	(1979a, 1979b)
	Positive Well Being	+	.40*	gamma		
Getting Along with Others	Degree of Temper	-	9.0	x^2	Girls and boys ages 6-11	National Centre for Health
Getting Along with Others	Degree of Tension or Nervousness	-	not given	x^2	(N = 7119)	Statistics (1972)
Associations Among Social Function Measures						
Number of Friends	Willingness to make new Friends	+	20.7**	x^2		
	Getting along with Others	+	not given**	x^2		
Willingness to make new Friends	Getting along with Others	+	NS	x^2		National Centre for Health
Involvement in Different Types of Activities	Involvement in Art/Scouts	+	.19	r	Girls and boys ages 6-11 (N = 7119)	Statistics (1972)
	Involvement in Religious Group	+	.12	r		
Involvement in Art Activities	Involvement in Athletics	+	.10	r		
	Involvement in Scouting	+	14.0 girls	x^2		
			1.4 boys	x^2		
Associations with Other Health Variables						
Social Relations Scale	Current Health	+	.17*	gamma		Eisen et al
	Resistance/Susceptibility	+	.14*	gamma		(1979a, 1979b)
	Prior Health	+	.11*	gamma	Girls and boys ages 5-13	
	Health Worry/Pain	-	- .21*	gamma	(N = 1473)	
	Functional Limitations	-	- .19*	gamma		
	Chronic/Serious Illness	-	- .08	gamma		
	Acute Illness/Symptoms	-	- .14*	gamma		
Social Competence Scale I	Elementary School Academic Rating 1	+	.30**boys	r		
			.35**girls	r		
	Elementary School Academic Rating 2	+	.22**boys	r		
			.38**girls	r	Girls and boys ages 3-6	Kohn and
	Metropolitan Readiness Test	+	.41**boys	r	from day care and	Rosman
			.29**girls	r	kindergarten (N = 312)	(1972a, 1972b)
	Second Grade Word Knowledge Test	+	.27**boys	r		
			.27**girls	r		
	Second Grade Reading Test	+	.29**boys	r		
			.27**girls	r		
Group Difference						
Activities Scale	Normal vs Clinic Subjects	+	not given**	F	Girls and boys ages 6-11	Achenbach (1978)
Social Scale	Normal vs Clinic Subjects	+	not given**	F	from a normal (N=300) and clinic referred (N=300)	Achenbach and Edelbrock (1979)
School Scale	Normal vs Clinic Subjects	+	not given**	F	population	

[a] Guide to abbreviations used in these columns
r = Product moment correlation coefficient
x^2 = Chi-square statistic
gamma = Gamma coefficient
F = F statistic
NS = Not significant
* = Significant at p < 0.05
** = Significant at p < 0.01

with various school achievement measures taken 12-30 months later (Table 3.9)

Achenbach (1978) and Achenbach and Edelbrock (1979) provided information about differences in scores observed between a normal and clinic referred population of children on their three scales (i.e., Activities, Social and School). Analysis of variance studies showed that score differences were significant, in the hypothesized direction, and maintained for both sexes across different socioeconomic strata. Some of the differences could have been the result of a labelling effect (i.e., parents reinforced to see their child as abnormal after contact with the clinic). Moreover, it is unclear how comparable the groups were on features such as socio-economic status and colour.

Eisen et al (1979a, 1979b) put forward a whole set of hypotheses about the expected direction and level of association between their Social Relations Scale and other health measurements (Table 3.9). For example, associations between general health ratings and the Social Relations Scale (median gamma = 0.14) were about the same as the association between the Social Relations Scale and functional limitations (gamma = 0.19) but lower than the association with mental health (gamma = 0.39).

Finally, the National Health Survey (NCHS 1972) reported findings on correlations among some of their social function questions and between selected social function questions and items appearing to measure emotional function (Table 3.9). The number of friends, for example, was positively related to willingness to make new friends and the ability to get along with others.

3.4.7 Special Issues

Special Issues pertaining to measures of social functioning in children such as child development, the differentiation of social and emotional functioning and the potential biases of using proxy respondents have not been systematically investigated by any of the authors reviewed in this section. None of the available measures of social functioning apply to children under three years of age - the time at which child development is most rapid. It is likely that developing general measures of social functioning for this age group poses extraordinary conceptual and empirical problems. As an example, clinical psychologists responsible for the development of many problem behavior checklists rarely create instruments for the under three year old group (Achenbach and Edelbrock 1978). Moreover, pediatricians and developmental psychologists place very little emphasis on broad concepts such as personal-social development in screening tests designed for infants from birth to three years of age (Frankenburg and Dodds 1967).

Available evidence suggests that measures of social function among older children are not sensitive to age trends. For example, the gamma associations between the Social Relations Scale developed by Eisen et al (1979a) and age (i.e., five to 13 years) was only -0.03 and not significant. Moreover, Achenbach (1978) and Achenbach and Edelbrock (1979) reported no significant age differences for either boys or girls on the Activities or Social Scales with one exception: for boys in the 6-12 age range, 6-8 year olds had lower scores on the Social Scale than 9-12 year olds. Single questions posed by the U.S. National Health

Survey (NCHS 1971) showed marginal age trends. The proportion of children reported as having only a few friends decreased somewhat over the age span studied (i.e., six to 11 year olds), while the proportion with many good friends increased. Similarly, the proportion of children with mostly older friends decreased with age from about 10 percent at ages 6-7 to four percent among 11 year olds.

Although the measures reviewed in this section are purported to measure social functioning, little evidence exists to suggest that they are different from measures of emotional function. Correlation studies suggest that the Social Competence Scale (Kohn 1977) and the Social Relations Scale (Eisen et al 1979a, 1979b) are confounded with indicators of emotional function. Similar studies have not been reported for the scales developed by Achenbach (1978).

The amount of error involved in using proxy respondents has not been explored by any of the investigators reviewed in this chapter. Although correlations between interparent assessments on the Activities Scale developed by Achenbach (1978) appeared to be high (i.e., $r = 0.58$ for boys six to 11 years old), a considerable amount of the variance remained unexplained. It is unclear whether this unexplained variance is a product of random error or bias.

3.5 Methodological Evaluation - A Summary

None of the social function instruments applicable to children and available for review met all of the measurement criteria established in Chapter 2. Table 3.10 summarizes the individual performance of each

Table 3.10

An Evaluation of Existing Social Function Measures Against Established Measurement Criteria

CRITERIA[a]	FACTORS I AND II OF THE SOCIAL COMPETENCE SCALE	ACTIVITIES, SOCIAL AND SCHOOL SCALES	SOCIAL RELATIONS SCALE	NATIONAL CENTRE FOR HEALTH STATISTICS
General Applicable and Acceptable	-	✓	✓	✓
Balanced Orientation	✓	✓	✓	✓
Amenable to Index Construction Reflecting State-of-the-Art Measurement Techniques	✓	?	✓	-
Variable	✓	✓	✓	✓
Reliable a) Test Retest	?	?	-	-
b) Internal Consistency	-	?	✓	-
Valid a) Content	-	?	-	✓
b) Construct	?	?	?	?

[a] Guide to assessment
 ✓ = Criteria met
 ? = Uncertain that criteria met
 - = Criteria not met

measure and suggests that the Social Relations Scale developed by Eisen et al (1979a) and the Activities and Social Scales developed by Achenbach (1978) are the best available measures of social functioning applicable to children. However, the evidence pertaining to the reliability and validity of these scales is weak. None of the investigators took a systematic approach to the study of reliability. Kohn (1977) and Achenbach (1978) neglected to examine the internal consistency reliability of their scales, while Eisen et al (1979a) did not obtain test-retest estimates of reliability. Moreover, investigators reporting test-retest estimates of reliability incorrectly used measures of association rather than measures of agreement.

Evidence reported to show that the instruments were measuring what they were intended to measure - social functioning - is inconclusive. As mentioned earlier, most of the validation studies suggest that the scales developed to measure social functioning were instead measuring a positive dimension of emotional health.

3.6 Summary and Comment

The literature review presented in this chapter has covered three types of child assessment: a) developmental screening tests; b) measures of problem behavior in children; and c) measures of social functioning applicable to children. Only four published measures of social functioning applicable to children were found, and these were evaluated in some detail using the measurement criteria put forward in Chapter 2.

Inspite of the scarcity of studies, some conclusions can be drawn

from a review of the published work. At the conceptual level, social functioning seems best measured with reference to interpersonal skills rather than psychological states such as anxiety, happiness or positive well-being. Moreover, many of the items used to assess social functioning in children can be grouped under a limited number of headings such as the quality and quantity of interactions with significant others such as family and friends and the quantity of social activities. Objective measures of social functioning (e.g., the number of friends) seem to be more distinct from emotional functioning than subjective measures (e.g., inferences about the quality of relationships). Measures of performance such as school achievement have obvious social significance but at face value seem to be better used as indicators of cognitive function.

Because the available measures of social function were considered either inappropriate for the Costs and Outcomes Study or unsatisfactorily evaluated it was decided to create a new measure of social function for the present study. The new measures and their evaluation are presented in the following chapters.

CHAPTER 4

Measurement of Social Functioning in the Present Study

4.1 Criteria

Social functioning was measured in the present study by asking proxy respondents (i.e., the mother) to define the quantity and quality of the child's interpersonal contacts as well as his or her level of participation in social activities. Contexts for making these assessments included the family, peer group, school and community. The two instruments contributing most to the present measure were the Social Relations Scale developed by Eisen et al (1979a) and the Activities and Social Scales developed by Achenbach (Achenbach 1978, Achenbach and Edelbrock 1979).

Questionnaire items were chosen, adapted or constructed with the following criteria in mind:

(1) Each item must appear to be consistent with at least one aspect of the definition of social functioning developed above. In other words, the items should help define a quantitative or qualitative aspect of the child's interpersonal relationship or a quantitative aspect of the child's participation in social activities.

(2) Items must tap information available from respondents rather than data only available from providers of care or special services.

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(3) Items that appear to be confounded with other components of health (e.g., seem to be consistent with the definition of social functioning but at the same time seem to be measuring a physical, emotional or intellectual component of health) must be excluded.

(4) Items must be age appropriate and clear in their direction of scoring (e.g., whether the item taps good or poor functioning).

In addition to these criteria, other considerations entered into the selection of items. First, items adaptable to a similar number and kind of response category were given priority. Using similar response categories reduces, somewhat, problems associated with assigning weights to items before scale construction, although a danger exists of increasing respondent fatigue and disinterest. Second, items were given priority if they were brief, simply worded and behaviorally oriented - the purpose being to increase the questionnaire's objectivity and acceptability. Third, an attempt was made to include a number of balanced questions (i.e., items that tap the same aspect of social functioning but are worded favourably and unfavourably) to measure the quality of the child's social relationships. Balanced items provide responses that can be analyzed for the presence of acquiescent and opposition response sets. And finally, items that contain strong emotional content (e.g., is your child detestable?) were to be avoided in an attempt to reduce the tendency to give a socially desirable response.

4.2 Meeting the Criteria

The present author specified the items used to measure social

function by examining questions published in available instruments and by choosing items which appeared from their content to meet the criteria outlined in the previous section. An additional step was used to select questions for one of the social function measures (i.e., the Social Relationships Scale): the step was taken in an effort to reduce the amount of anticipated overlap between this category of social function and measures of emotional function. A list of items hypothesized to measure the quality of the child's social relationships along with items hypothesized to measure emotional functioning were given in random order to a convenience sample of six judges. The judges consisted of a pediatrician, a psychologist, an epidemiologist and three mothers of normal school aged children. The task for these judges was to rate each item with respect to direction of scoring (e.g., whether the item was positively or negatively oriented); content (e.g., whether the item measured emotional functioning as represented by depression or anxiety or social functioning as represented by the quality or quantity of interpersonal interaction or behavior problems); and age appropriateness (e.g., the upper and lower age for which the item might apply). Any item leading to one or more disagreements among the judges as to the direction of scoring was eliminated. Except for one instance (i.e., the item, argues a lot) any item leading to three or more disagreements among the judges as to content was elimina- ted. And finally, the mean upper and lower ages selected by the judges for each item provided a general not absolute guideline for determining whether the item would be used with a particular age group. A summary of the results from the survey appears in Table 4.1. Of the 24 items

Table 4.1

An Evaluation by Six Judges of 24 Items Hypothesized to Measure the Quality of a
Child's Social Relationships

| QUESTION NUMBER/ITEM | DIRECTION | | | CONTENT[a] | | | | | MEAN AGE IN YEARS |
	POS.	?	NEG.	DEP.	ANX.	QUAN.	QUAL.	BEH.	Lower Bound
1. Acts too young for his or her age			6	1			3	2	2.50
*2. Argues a lot			6	1				5	2.58
*3. Makes friends easily	6					1	5		3.40
6. Disobedient at home			6	1			3	2	2.00
7. Likes to be alone	2	4		1	1	3	1		2.33
8. Tells the truth	5		1	1			3	2	3.17
*9. Not liked by other children			6				6		3.75
15. Complains of loneliness		1	5	2		2	2		4.00
16. Runs away from home		1	5	3			2	1	4.50
17. Steals, at home			6	1			3	2	4.42
18. Steals, away from home			6	1			3	2	4.83
*20. Plays or works well with other children	6						6		2.92
21. Is easy to discipline or control	5	1		2	1		3		1.38
*23. Likes to be with others	6			1			5		0.83
25. Destroys own or others belongings			6		1		3	2	1.92
*26. Fights with other children			6				5	1	2.50
*27. Other parents complain about his/her behaviour			6			1	4	1	3.20
28. Teases, picks on or bullies other children			6				3	3	3.75
*29. Keeps friendships for a long time	6						6		4.25
*32. Considerate of others	6						6		2.83
*34. Enjoyable to be with	6			1			4	1	0.83
*35. Gets along with other children	6		1				6		2.17
*38. Gets along with family	6				1		5		2.67
*43. Doesn't get along in school with teacher/classmates			6				6		4.00

* Means item retained
a Abbreviations: Dep = Depression; Anx = Anxiety; Quan = Quantity of Social Relationships; Qual = Quality of Social Relationships;
Beh = Behavior; Pos = Positive; Neg = Negative; ? = Uncertain

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reviewed, 13 were retained to measure the quality of the child's social relations.

4.3 Description of the Social Function Measures

The social function measures covered three categories of functioning for children ranging in age from 2-14 years. The three categories were: (1) Friendships; (2) Social Relations; and (3) Social Activities (Table 4.2). Responses to questions took the form of counts (e.g., the number of friends or activities) and forced choices (e.g., everyday, several days a week, about once a week, 2-3 times a month, about once a month and less than once a month). Among forced choice questions, scores were coterminous with the response set, ranging from 1 to 6. Lower scores always indicated poor social functioning, and items were recoded, if necessary, to follow this convention (Table 4.2). Questions asking for simple counts took a maximum value of 6 in the Friendships Scale and 5 in the Social Activities Scale: maximum values were set on these questions to correspond in length with the response sets (e.g., everyday, several days a week, etc.) of forced choice items hypothesized to measure the same category of social function. Moreover, counts of 7 or more were hypothesized to represent only marginal increases in social functioning.

Table 4.2 also summarizes the age in years for which items apply, and the recall period. In brief, two age ranges were specified: 2-3 years and 4-14 years; and two time periods: the present and the past year. Questions pertaining to role and self care activity, hypo-

Table 4.2

Hypothesized Groupings of Age Specific Social Function Items Developed for the Costs and Outcomes
Study Pilot Project

CATEGORY MEASURED	AGE IN YEARS	RECALL PERIOD	QUESTION	RESPONSE[1] CATEGORY
Friendships	2-3	Past Year	In summer, during a one month period, about how often would - spend time with other children?	(a)
			In winter, during a one month period, about how often would - spend time with other children?	(a)
	4-14	Present	About how many children in your neighbourhood is - well enough acquainted with that s/he and they visit and play with one another?	b
			About how many playmates/close friends does - have?	b
			In summer, during a one month period, about how often would - do things with these playmates/close friends?	(a)
			In winter, during a one month period, about how often would - do things with these playmates/close friends?	(a)
Social Relations	2-14	Past Year	During the past 12 months how well has your child	
			: gotten along with other children?	(c)
			: gotten along with the family?	(c)
			: gotten along in school with teacher and classmates? (in school only)	(c)
			Below is a list of items that describe children.	
			Please read each item then circle one of the numbers on each line to indicate how often it describes your child during the past 12 months.	
			: considerate of others	d
			: enjoyable to be with	d
			: fights with other children	(d)
			: outgoing, likes to be with others	d
			: withdrawn, doesn't like to be with others	(d)
			: makes friends easily	d
			: has trouble making friends	(d)
			: keeps friendships	d
			: not liked by other children	(d)
			: argues a lot	(d)
			: other parents complain about his or her behavior	(d)
Social Activities	4-14	Present	Does - belong to any organizations, clubs or teams? What are they?	e
			During a one month period, about how often would - spend time doing things with (name)?	f
			Does - take part in any sports, not necessarily team sports? What are they?	e
			During a one month period, about how often would - take part in (name)?	f
			Does - have any favourite activities, games or hobbies? What are they?	e
			During a one month period, about how often would - take part in (name)?	f
			Does - have any jobs or household chores? What are they?	e
			During a one month period, about how often would - do (name)?	f

[1]Items with letters in parentheses scored in reverse to that shown:

a - ()1. everyday, ()2. several days a week, ()3. about once a week, ()4. two to three times a month, ()5. about once a month, ()6. less than once a month

b - counts from ()0. to a maximum of ()6.

c - ()1. very well, no problems, ()2. quite well, hardly any problems, ()3. pretty well, occasional problems, ()4. not too well, frequent problems, ()5. not well at all, very frequent problems.

d - ()6. always, ()5. very often, ()4. fairly often, ()3. sometimes, ()2. almost never, ()1. never.

e - counts from ()0. to a maximum of ()5.

f - ()2. everyday or several days week, ()1. about once a week or 2-3 times a month, ()0. once a month or less.

thesized at present to measure physical health in terms of functioning
are presented in Table 4.3.

Table 4.3

Self Care and Role Activity Questions Developed for the Costs and Outcomes Study Pilot Project

DIMENSION MEASURED	AGE IN YEARS	RECALL PERIOD	QUESTION	RESPONSE[1] CATEGORY
Self Care Activity	2-16	Present	At present, does - use special help with eating, dressing, bathing or using the toilet?	a
Role Activity	2-15	Present	At present, does - take part at all in play usual for a child his/her age?	a
			Is - limited in the kind or amount of play s/he takes part in, for example, does - take special rest periods, avoid active games or not play for long periods of time?	a
	6-16	Present	Does - attend school?	a
			At present, does - attend a special school, receive special education or require special teaching?	a
			During the past school year, how well has - done in school?	b

[1] Response Categories:

    a - ()1. yes, ()2. no; probe questions accompanying positive response(i.e., one that indicates a limitation) asks about length of time limitation present and whether health related

    b - ()1. an excellent student, ()2. a good student, ()3. an average student, ()4. a below average student, ()5. a poor student

CHAPTER 5

The Costs and Outcomes Study - Pilot Project

5.1 Purpose

Results obtained from a small pilot study provided the information to do a preliminary assessment of the social function measures described in this thesis. The general purpose of the pilot study was to evaluate the questionnaire proposed for use in the detailed follow up of children included in the main investigation. We hoped to answer the following questions:

(1) Are the measures generally applicable and acceptable?

(2) Do the measures meet scaling criteria necessary for the creation of indices?

(3) Do the measures describe a range of function (i.e., have variability)?

(4) Do the measures meet minimum standards of reliability?

(5) Are the measures valid indicators of the health component they were intended to describe?

5.2 The Pilot Study

In order to assess the child health questionnaire, it was administered by two interviewers to 30 parents. Twelve of these parents, drawn at random from two subsamples were retested 7-10

days after the initial administration. Retest assignments were randomly allocated with the constraint that half the retests be done by the original interviewer and half by the alternate interviewer. Parents selected for the pilot study had children who fell into three subsamples: these subsamples had distinct clinical features which are summarized in Table 5.1.

5.2.1 The Interviewers

The interviewers consisted of two women (a nurse and school teacher by training) hired by the Costs and Outcomes Study to work as research assistants. Both had interview experience from working on earlier studies.

Preparation included a general orientation and discussion, reading material and practice interviews. Adherence to standardized interviewing procedures and the importance of obtaining unbiased subject responses were stressed. Because the interviewers were involved in the development and early pretests of all study measures, they had intimate knowledge of the questionnaire and its content.

5.2.2 Subjects

Families participating in the pilot study included children ranging in age from 2-14 years. Children selected from three of the four sites - the Growth and Development Clinic at McMaster University, the Cerebral Palsy Clinic at Chedoke Hospital and Delcrest Children's Centre in Toronto - were chosen to cover a range of type and severity of physical and socioemotional dysfunction.

Table 5.1

Characteristics of Children Selected for the Cost and
Outcomes Pilot Study

Clinical Status

No Disability	Physically/Mentally Handicapped	Emotionally Disturbed
(Retested)	(Retested)	
12^a	12^b	6^c
(6)	(6)	

---

[a] From the Growth and Development Clinic, McMaster University Medical Centre and the Family Practice Unit, Henderson Hospital.

[b] From the Growth and Development Clinic, McMaster University Medical Centre and the Cerebral Palsy Clinic, Chedoke Hospital.

[c] From Delcrest Children's Centre, Toronto.

Approaches to enlisting families for the pilot project were not uniform. Physicians in charge of the Growth and Development Clinic at McMaster and the Cerebral Palsy Clinic at Chedoke provided family names to project staff and endorsed a letter which explained in general terms the nature of the study and request for help. At the Henderson Hospital, physician secretaries in the Family Practice Unit requested permission by phone from prospective candidates before providing names to the study. At Delcrest Children's Centre, therapists explained the study in person and obtained written consent from parents before forewarding any names to project staff. As much as possible, the explanation of the study shared with families was kept uniform: the study was described as an attempt to assess a questionnaire designed to learn about the growth and development of children.

5.2.3 Other Measures

In addition to the social function scales, measures of physical and emotional function were developed and included in the pilot study. Moreover, responses were collected on health perceptions, two week disability, medical problems, the utilization of health resources and socioeconomic indicators. Parents not included in the retest (N=18) were asked to complete the Child Behavior Checklist (Achenbach 1978, Achenbach and Edelbrock 1979) (Appendix I).

Project staff also approached physicians providing care to children of parents who had given informed and written consent (Appendix II). We asked physicians to rate their clinical assessment of each child's present physical, social and emotional functioning as

well as their level of confidence in these ratings (Appendix III).
Home-room teachers of children attending school were invited to complete
a self-administered questionnaire on each study child. The question-
naire (Appendix IV) included social and emotional function items that
were identical in form and content to questions completed by parents.
Other information included questions about the child's school atten-
dance, special educational needs and abilities.

5.2.4 Pilot Study Design

The families available for study were divided into geographic
areas. Depending on the place of residence for each child, the two
interviewers divided children equally from each clinical grouping (e.g.,
Table 5.1), contacted the parent by phone and made arrangements for a
home interview. With the exception of children coming from Delcrest in
Toronto, interviewers were naivé as to the clinical status of each
child.

The interview was repeated at a seven to 10 day interval with
12 families. The families were selected randomly; six from the no
disability group and six from the physically/mentally handicapped group
(Table 5.1). The interviewers received instructions from an envelope
at the end of each interview about the next request of parents (i.e.,
to repeat the interview or to fill out the Child Behavior Checklist).
Six of the retests were done by the same interviewer and six by the
alternate interviewer, with these assignments given at random.

After obtaining informed and written consent from the parents,
the interviewers mailed clinical assessment forms to physicians

providing care to study children and sent questionnaires to teachers of study children attending school. Physician and teacher assessments were scheduled to be completed within 14 days of the first home interview.

The methods used to gather information may have had important effects on responses. Table 5.2 summarizes important features that may influence results but have not been discussed in the text. Along with these features is a brief description of how the pilot project handled each issue.

5.2.5 Plan of the Analysis

The following material concentrates on the analysis used to evalute the social function measure; it is presented within the context of the five major questions posed for the pilot study at the beginning of this chapter.

5.2.5.1 General Applicability and Acceptability

Several criteria exist for determining whether a new instrument is generally acceptable and applicable. In brief, the measures should be simple, brief, inoffensive to respondents and inexpensive to administer. To determine whether the social function measures met these criteria, the interviewers were instructed to identify problem questions, in particular, those questions which led to requests for clarification and those questions which generated a refused or not known response. The interviewers also recorded the time taken to complete major sections of the questionnaire.

Table 5.2

Important Features of the Data Gathering Methods That May
Influence Interview Results in the Pilot Study

FEATURE	PARTICULARS OF PILOT STUDY
Context	Families identified by different health professionals as likely to co-operate in a pretest of a child health questionnaire.
Method of Administration	A structured face to face interview and self administered questionnaire conducted in the respondent's home.
Respondent Interest	Moderately high: pre-selected by health professionals as likely to co-operate.
Sensitivity of Questions	Social functioning is likely one of the more sensitive aspects of health status (i.e., most threatening).
Position of Questions	First half of the questionnaire, following questions on general health and physical functioning.
Form of Questions	Structured response choices.
Compensation	None
Recall Period	Present and past 12 months.
Procedures to Aid Recall	None
Instrument Complexity	Moderate: social function items were behaviourally oriented.
Use of Proxy Respondents	Always: parent or guardian was interviewed.
Data Preparation	Standardized coding.

5.2.5.2 Scaling Criteria and the Creation of Indices

The item groupings *hypothesized* to measure three categories of social function (i.e., Friendships, Social Relations and Social Activities) selected for the study were to be empirically verified by subjecting them to the criteria of multi-trait scaling. In multi-trait scaling, a matrix of item-scale correlations is analyzed to determine how well each item correlates with its hypothesized grouping (Ware et al 1976).

Scores for individual items followed the rules previously summarized in Chapter 4 (Table 4.2) and scale scores were obtained by using the simple algebraic sum for items hypothesized to be measuring the same trait. Each item was assessed using two criteria. The first criterion was based on the logic of Likert scaling, namely that each item should be substantially correlated with the sum of other items in the same hypothesized grouping (Likert 1932). All correlations between items and their hypothesized scale were corrected for overlap (i.e., the correlation was computed after the item was removed from its hypothesized scale). Although correlations of 0.30 and greater are considered substantial for the purpose of Likert scaling (Hemlstadter 1964), correlations of 0.20 and greater were specified in the pilot study. Correlations of 0.20 and greater were chosen so as to include a larger number of potentially useful items that might be further evaluated in a replication study.

The second criterion was based on the logic of discriminant validity, namely that item scale correlations had to be substantially higher for the scale the item was hypothesized to measure than for all

other scales in the matrix. A scaling error was considered definite whenever a correlation (corrected for overlap) between a social function item and its hypothesized category was equal to or less than a correlation between that item and another category. Items not sub- stantially correlated with their hypothesized scales or exhibiting "definite" scaling errors were to be examined in relation to the entire matrix of item scale correlations. New hypotheses as to appropriate item groupings would be empirically tested using the same multi-trait scaling criteria. Items still failing to meet scaling criteria were to be dropped from further analysis.

5.2.5.3 Variability

The optimal distribution of scores for social function measures applicable to children was difficult to specify because there have been too few earlier attempts to standardize compariable measures on a general population. A range of scores from the highest (best) to the lowest (worst) was desirable, especially since groups of children with quite different clinical features had been selected for the pilot study. Items without any variation (i.e., items that generate uniform responses from all parents) were dropped. Simple frequency distributions provided the information necessary to make these assessments.

5.2.5.4 Reliability

The final item groupings were evaluated by computing reliability coefficients. A reliability coefficient gives an estimate of the pro-

portion of total variance which is true variance as expressed in the following formula

$$\text{Reliability} = 1 - \frac{Ve}{Vt}$$

where

Ve = error variance and Vt = total variance .

Both internal consistency (i.e., coefficient of equivalence) and test-retest (i.e., coefficient of stability) reliability coefficients were calculated. Internal consistency reliability was computed using Cronbach's Alpha (Cronbach 1951). Cronbach's Alpha gives the average split half correlation for all possible ways of dividing a scale into two parts and takes the form

$$\alpha = \frac{n}{n-1} \left(1 - \frac{\sum_i Vi}{Vt}\right)$$

where

    n = number of items,

    Vi = the variance of item scores after weighting, and

    Vt = the variance of the test score.

Unlike estimates of scale homogeneity (i.e., average inter-item correlations) internal consistency coefficients are affected by the number of items in the scale and tend to increase as the number of items increase (Nunnally 1978). Internal reliability coefficients of

α = 0.50 or more were accepted as evidence that a scale was sufficiently reliable for group comparisons, a recommended minimum standard for that purpose (Helmstadter 1964).

Test-retest reliability coefficients were computed for each scale using ρ, the intra-class correlation coefficient (Ebel 1951) which takes the general form -

$$\rho = \frac{\sigma_s^2}{\sigma_s^2 + \sigma_e^2}$$

where

σ_s^2 is the variance due to subject variation, and

σ_e^2 is the variance due to random variation.

ρ expresses the proportion of the total variance due to subject variation, with a theoretical lower bound of zero and upper bound of one when the random variation term is zero.

An interval of one week was chosen in an attempt to reduce effects of recall spuriously inflating test-retest reliability estimates. Major changes in social functioning were not anticipated within one week. A minimum estimate of ρ = 0.50 or more, the standard suggested by Helmstadter (1964) was chosen for deciding whether a scale was sufficiently reliable for group comparisons.

5.2.5.5 Validity

5.2.5.5.1 Face and Content Validity

In the absence of a criterion against which to judge the

validity of the social function measures, two indirect methods were used to examine evidence pertaining to this issue. The first method was subjective and involved a careful examination of the items used to define each aspect of social functioning; this examination took place in two steps. I first considered how well each item seemed to describe the category of social functioning it was intended to measure. Often referred to as an assessment of face validity, this approach entails making a judgement about the *congruence* between the items selected and the operational definition created for each category. Second, I considered the extent to which the sum of the items appeared *representative of all items* which might be used to define each category of social function. Often referred to as an assessment of content validity, this approach entails making a judgement as to whether important items consistent with the operational definition of each category of social functioning have been overlooked.

The reasons for creating the social function measures were kept in mind when evaluating the face validity and content validity of the items chosen for study. Scales were to be generally applicable to children ranging in age from 2-14 years but not to be in conflict with contemporary knowledge of child development. Items might appear to define a certain dimension of social function but not apply to a certain age group (e.g., 2-3 year old children are thought to have playmates rather than close friends, a distinction based presumably on the level of intimacy that exists between two people), and therefore be invalid, at least for that age group. Moreover, the social function scales were intended to complement measures of physical and

emotional functioning and were not intended to represent all aspects

of social functioning put forward in earlier work. Because a signifi-

cant goal of measurement was to develop scales that defined separate

categories of health, the assessment of face validity and content

validity was restricted to those categories of social functioning

originally selected for measurement.

5.2.5.5.2 Construct Validity

The second method used to evaluate the validity of the social

function scales was to test hypotheses about their relationship with

other health indicators. Construct validation (Nunnally 1978, Kaplan

et al 1976)·represents an attempt to gather statistical evidence to

support the claim that a measure has meaning. The approach described

here focuses on "external" evidence or associations between the social

function scales and existing or external indicators. Associations

among items within the individual scales or "internal" evidence was

examined previously in the discussion about scale construction.

An important issue in construct validation is the direction

and level of association expected between the existing (external)

indicators and the proposed measure. Observed correlations should be

consistent with hypotheses drawn from theory and knowledge of both the

new measure and existing indicators. I decided on three slightly

different ways to examine the validity of the social function scales.

(1) The first approach emphasized associations between the

social function scales and five other measures of health obtained

during the pilot interviews. Table 5.3 defines the health indicators

Table 5.3

Definition of Health Measures Obtained During Pilot Interviews and Their
Hypothesized Relationship with Favourable
Social Functioning

MEASURE/VARIABLE	DEFINITION	HYPOTHESIZED RELATIONSHIP
Physical Functioning	A measure of physical health defined as functional limitations in five areas: physical activity, mobility, self-care activity and role activity	−
Emotional Functioning	A measure of emotional health sub-divided into two scales: happiness-depression and calmness-anxiety; and one composite scale: emotional well being	+
General Health Rating	A measure of general health made up of 3 items focusing on general health, pain/distress to the child and worry to the parents	+
Chronic Medical Problems	Presence or absence of any continuous or recurring medical problems that have lasted for more than 3 months	−
Achenbach Measures	Measures of socioemotional function-ing for children 4-16 years of age divided into two components: (1) Social Competence Scales (2) Problem Checklist	+ −

studied and presents specific hypotheses regarding their association
with favourable social functioning. In brief, correlations (direction
specified in Table 5.3) were expected between the social function
scales and Achenbach's Social Competence Scales and Problem Behavior
Checklist (Achenbach 1978, Achenbach and Edelbrock 1979). Children
rated favourably by their parents with respect to emotional functioning
and general health were expected to receive positive ratings on social
functioning. And finally, positive social functioning was expected to
be higher among children free of physical disability and chronic medical
problems than among those with such problems.

(2) The second approach consisted of assessing correlations
between the proposed social function scales and independent ratings of
social health. Independent ratings came from two sources: clinical
assessments of the physical, social and emotional functioning of study
children having family physicians or pediatricians (Appendix III) and
teacher assessments of social functioning for children attending
school (Appendix IV). Physician assessments were derived from recall
and an examination of the medical record and represented ratings of
social functioning on a five point scale from ( )1 good to ( )5 poor. Teacher
assessments were more specific, including items identical in content
and form with those on the parent questionnaire. The hypothesized
direction of association expected between the social function scales
and independent assessments are presented in Table 5.4.

Because the social function scales and health variables used to
establish construct validity represented ordinal level of measurement
estimates of association were established using Spearman rank order

Table 5.4

Definition of Health Measures Obtained From Independent Assessments and
Their Hypothesized Relationship with Favorable Social Functioning

MEASURE/VARIABLE	DEFINITION	HYPOTHESIZED RELATIONSHIP
Physician Global Assessment of Functioning		
General Health	Rating of general health as excellent, good, fair or poor	-
Physical Functioning	Rating of ability to move around, see, hear and talk	-
Social Functioning	Rating of ability to play or to go to school and get along with others	-
Emotional Functioning	Rating of ability to remain in good spirits most of the time and to be usually happy	-
Teacher Assessments		
Number of Friends	Rating which includes: none, only a few, a good number, very many	+
Social Relationships	Measures of social relations identical to one given parents	+
Activity Restrictions	Measure of activity limitations	-
School Attendance - Past Year	(Number of days present plus number of days absent) divided by number of days absent	+

correlation coefficients (Siegel 1956). The same test of association
was used in all cases to facilitate comparisons of numeric results.

(3) The final approach used to assess construct validity was
to examine the ability of the social function scales to discriminate
groups of children drawn from clinically meaningful categories
(Table 5.1). I hypothesized that the normal group would receive more
favourable scale scores than the emotionally disturbed group, with
scores for children having physical or mental handicaps falling some-
where between the other groups. The Kruskal-Wallis one way analysis
of variance by ranks was used to determine whether any of the observed
differences were statistically significant (Siegel 1956).

CHAPTER 6

Results

6.1 Characteristics of Participating Families

Selected aspects of families participating in the pilot study
are summarized in Table 6.1. With the exception of one clinical
assessment and teacher assessments from the North York Board of
Education in Toronto, all interviews and evaluations were completed as
planned. Among facilities pre-screening families (i.e., obtaining
consent before forewarding names to project staff - Delcrest Children's
Centre, N = 6; and the Henderson Hospital, N = 6) it is not known how
many families refused to have their name forewarded.

Notable differences existed between clinical groups. Children
in the physically/mentally handicapped sample were an average of three
years younger than children reported to be emotionally disturbed.
Moreover, parents of emotionally disturbed children had an average of
three to four years less education than parents from the other two
samples.

6.2 General Applicability and Acceptability

The social function questions chosen for the pilot study
presented respondents with very few problems. Of 708 responses, only
5 (less than one percent) elicited unknown or missing responses, all

Table 6.1

Selected Characteristics of Families Included in the Pilot Study

	NO DISABILITY (N=12)	PHYSICALLY/MENTALLY HANDICAPPED (N=12)	EMOTIONALLY DISTURBED (N= 6)
COMPLETION RATES			
First Interview	12	12	6
Retest	6	6	
Child Behavior Checklist	6	5[a]	6
Clinical Assessment	11[b]	12	6
Teacher Assessment	7	6	c
CHILD CHARACTERISTICS			
Mean Age (months)	96	69	108
Male	7	7	4
Only Child	2	3	1
FAMILY CHARACTERISTICS			
Intact Families	12/12	11/12	4/6
Education,Mother(years)	10.3	9.2	6.7
Education,Father(years)	10.5	10.5	4.6

[a] One child too young

[b] Insufficient information on the medical record of one child

[c] North York Board of Education would not co-operate.

of which were from the Social Relations Scale. The parent of a 28 month old boy accounted for three of the missing responses; she reported that she had trouble making judgements about the quality of her child's friendships. The average time to complete the battery of social function questions was 9.42 minutes.

6.3 Variability: I - The Social Function Items

Table 6.2 presents means, standard deviations, and the number of respondents who had missing information on each item. Questions pertaining to friendships for children 2-3 years of age have been excluded because only six children fell into that particular age grouping.

Responses to items on the Friendships and Social Relations Scales were skewed towards good functioning: item means invariably fell on the positive side of the midpoint. Responses to items on the Social Activities Scale were skewed in the opposite direction, with means usually falling below the midpoint. Although only a few questions (i.e., 4/26 (18%)) elicited responses in all possible categories, many (i.e., 12/26 (46%)) had only one response category unrepresented. None of the items generated uniform responses.

6.4 Scaling Analysis

Matrices of correlations between the 26 social function items were used to perform multi-trait scaling studies of hypothesized scales. Correlations between items and their hypothesized scales were

Table 6.2

Means, Standard Deviations and Response Frequencies for Social Function Items, Children 2-14 (N=30)

HYPOTHESIZED SCALE ITEM CONTENT[a]	MEAN(S.D.)[b]	MISSING	0	1	2	3	4	5	6	>6
FRIENDSHIPS[c]										
12-A Neighbourhood Acquaintances	4.29(2.40)		5			1	3	2	4	9
12-B Playmates, Friends	3.08(2.23)		3	4	5	3		3		6
(12-D) Contact in Winter	4.25(2.09)		3	1	1	1	2	8	8	
(12-C) Contact in Summer	4.63(2.06)		3		1	1	1	6	12	
SOCIAL RELATIONS										
(17-1) Get along with Children	4.00(0.95)			1		7	12	10		
(17.2) Get along with Family	3.87(1.07)			1	1	10	7	11		
(17-3) Get along with Teacher/Classmates	4.39(0.78)[d]				1	1	9	12		
18-U Considerate of Others	4.23(1.28)				2	6	6	13	3	
18-S Enjoyable to be with	5.20(0.91)				2		1	16	11	
(18-I) Fights with Other Children	4.17(1.24)			1	4		11	12	2	
(18-G) Argues a Lot	3.63(1.45)			3	.5	3	10	7	2	
(18-O) Parents Complain about Behavior	5.60(0.62)						2	8	20	
18-M Outgoing, Likes to be with Others	5.20(1.03)					3	4	7	16	
(18-T) Withdrawn, Doesn't like to be with Others	4.73(1.64)			2	3	1	3	7	14	
18-P Makes Friends Easily	4.83(1.44)			1	1	4	5	4	15	
(18-C) Has Trouble Making Friends	5.14(0.99)	1				1	9	4	15	
18-A Keeps Friendships	4.96(1.26)	3		1		2	5	7	12	
(18-J) Not Liked by other Children	4.97(1.21)	1			2	1	6	7	13	
SOCIAL ACTIVITIES[c]										
12-G Organizations, Clubs or Teams	0.92(1.61)		14	5	2	2				1
Level of Participation	1.08(2.19)		15	3	2	3				1
12-F Sports	1.58(1.69)		8	5	5	4	1			1
Level of Participation	2.21(2.54)		9	2	4	3	3		2	1
12-E Favorite Activities, Games, Hobbies	2.08(0.97)		3	1	11	9				
Level of Participation	3.38(1.81)		3		4	4	8	1	4	
12-H Household Jobs or Chores	2.08(1.61)		4	5	8	3		4		
Level of Participation	3.63(3.05)		5		4	4	6		1	4

[a] Brackets indicate that the direction of scoring has been reversed so that high scores are consistent with good functioning

[b] Standard Deviation

[c] Children 4-14 years of age, N = 24

[d] Children in school, N = 23

expected to be substantial (e.g., $r \geq 0.20$) and greater than correlations between the same item and other scales in the matrix. All correlations between items and their hypothesized scales were corrected for overlap (i.e., the correlation coefficient was computed after the item was removed from the scale) to insure fair comparisons. Items failing either or both criteria were dropped from the scale and new hypotheses concerning appropriate item groupings were tested. Scaling studies were performed on items applicable to children 4-14 years of age because only one social function scale was created for the young age group.

Table 6.3 presents the matrix of correlations used on the first round of scaling studies. Correlations between items and their hypothesized scales are indicated by asterisks. All items hypothesized to measure Friendships and Social Activities met both scaling criteria. Three items hypothesized to measure Social Relations - considerate of others, makes friends easily and keeps friendships - failed one or both criteria.

Hypotheses about appropriate item groupings were revised. Based on the correlation analysis, the two items - makes friends easily and keeps friendships - were hypothesized to measure Friendships instead of Social Relations and the item - considerate of others - was dropped from the analyses. Table 6.4 presents the revised correlation matrix. One item hypothesized to measure Social Relations - outgoing, likes to be with others - failed both scaling criteria and was dropped from the analysis. Table 6.5 presents the correlation matrix using the final

Table 6.3

Correlation Matrix, Social Function Questions and Hypothesized Scales,
Children 4-14 (N=24)

		HYPOTHESIZED SCALES		
QUESTION NUMBER/[a] ITEM CONTENT		FRIENDSHIPS	SOCIAL RELATIONS	SOCIAL ACTIVITIES
	FRIENDSHIPS			
12-A	Neighbourhood Acquaintances	53*	27	16
12-8	Playmates, Friends	66*	46	09
(12-D)	Contact in Winter	72*	24	-13
(12-C)	Contact in Summer	85*	31	-08
	SOCIAL RELATIONS			
(17-1)	Get along with Children	-06	38*	-12
(17-2)	Get along with Family	-02	39*	-32
(17-3)	Get along with Teacher/Classmates	02	50*	05
18-U	Considerate of Others	49	22*	32
18-S	Enjoyable to be with	13	42*	-18
(18-I)	Fights with Other Children	-02	39*	11
(18-G)	Argues a Lot	19	22*	-05
(18-O)	Parents Complain about Behaviour	-18	38*	-27
18-N	Outgoing, Likes to be with Others	18	21*	05
(18-T)	Withdrawn, Doesn't like to be with Others	16	25*	-11
18-P	Makes Friends Easily	50*	35*	-07
(18-C)	Has Trouble Making Friends	10	59*	-20
18-A	Keeps Friendships	47	19*	-04
(18-J)	Not Liked by Other Children	07	40*	-12
	SOCIAL ACTIVITIES			
12-G	Organizations, Clubs or Teams	-20	-16	68*
	Level of Participation	-29	-18	63*
12-F	Sports	19	13	75*
	Level of Participation	21	23	68*
12-E	Favorite Activities, Games, Hobbies	-24	-30	44*
	Level of Participation	-19	-12	26*
12-H	Household Jobs, Chores	19	-52	82*
	Level of Participation	20	-19	78*

[a] Bracket indicates that the direction of scoring has been reversed so that high scores are consistent with good functioning
Hypothesized scales and correlations corrected for overlap.

Table 6.4

Correlation Matrix. Social Function Questions and Revised Scales
Children 4-14 (N=26)

| | | REVISED SCALES | | |
QUESTION NUMBER/[a] ITEM CONTENT		FRIENDSHIPS	SOCIAL RELATIONS	SOCIAL ACTIVITIES
	FRIENDSHIPS			
12-A	Neighbourhood Acquaintances	52*	05	16
12-B	Playmates, Friends	63*	30	09
(12-D)	Contact in Winter	74*	02	-13
(12-C)	Contact in Summer	86*	06	-08
18-P	Makes Friends Easily	57*	16	-07
18-A	Keeps Friendships	55*	-06	-04
	SOCIAL RELATIONS			
(17-1)	Get along with Children	00	26*	-12
(17-2)	Get along with Family	12	35*	05
(17-3)	Get along with Teacher/Classmates	-05	59*	-32
18-S	Enjoyable to be with	11	47*	-18
(18-I)	Fights with Other Children	-03	47*	11
(18-G)	Argues a Lot	08	42*	-05
(18-O)	Parents Complain about Behaviour	-13	42*	-27
18-N	Outgoing, Likes to be with Others	16	16*	05
(18-T)	Withdrawn, Doesn't Like to be with Others	09	40*	-11
(18-C)	Has Trouble Making Friends	20	52*	-20
(18-J)	Not liked by Other Children	12	40*	-12
	SOCIAL ACTIVITIES			
12-E	Organizations, Clubs or Teams	-15	-21	68*
	Level of Participation	-27	-21	63*
12-F	Sports	19	04	75*
	Level of Participation	22	14	68*
12-E	Favorite Activities, Games, Hobbies	-28	-24	44*
	Level of Participation	-21	-07	26*
12-F	Household Jobs, Chores	12	-29	82*
	Level of Participation	14	-27	78*

[a] Bracket indicates that the direction of scoring has been reversed so that high scores are consistent with good functioning

* Revised scales and correlations corrected for overlap

Table 6.5

Correlation Matrix, Social Function Questions and Final Scales
Children 4-14 (N=24)

QUESTION NUMBER/[a] ITEM CONTENT	FINAL SCALES		
	FRIENDSHIPS	SOCIAL RELATIONS	SOCIAL ACTIVITIES
FRIENDSHIPS			
12-A Neighbourhood Acquaintances	52*	00	16
12-B Playmates, Friends	63*	27	09
(12-D) Contact in Winter	74*	03	-13
(12-C) Contact in Summer	86*	06	-08
18-P Makes Friends Easily	57*	14	-07
18-A Keeps Friendships	55*	-05	-04
SOCIAL RELATIONS			
(17-1) Get along with Children	00	25*	-12
(17-2) Get along with Family	12	64*	05
(17-3) Get along with Teacher/Classmates	-05	33*	-32
18-S Enjoyable to be with	11	49*	-18
(18-I) Fights with Other Children	-03	50*	11
(18-G) Argues a Lot	08	45*	-05
(18-O) Parents Complain about Behaviour	-13	43*	-27
(18-T) Withdrawn, Doesn't Like to be with Others	09	37*	-11
(18-C) Has Trouble Making Friends	20	49*	-20
(18-J) Not Liked by Other Children	12	38*	-12
SOCIAL ACTIVITIES			
12-G Organizations, Clubs or Teams	-15	-21	68*
Level of Participation	-27	-19	63*
12-F Sports	19	03	75*
Level of Participation	22	13	68*
12-E Favourite Activities, Games, Hobbies	-28	-25	44*
Level of Participation	-21	-07	26*
12-H Household Jobs, Chores	12	-31	82*
Level of Participation	14	-30	75*

[a] Bracket indicates that the direction of scoring has been reversed so that high scores are consistent with good functioning
* Final scales and correlations corrected for overlap

scales. Item scale correlations are substantial, greater than r = 0.30 in all but two instances. Of the original 26 social function items, 24/26 or 92% were retained for further analysis. A summary of the discriminant validity results are presented in Table 6.6.

6.5 Variability: II - The Social Function Scales

Table 6.7 presents a summary of the descriptive statistics, including means and standard deviations, generated by the final social function scales. Scores were obtained by using the simple algebraic sum (e.g., see Table 6.2) for items included in the final scales. As indicated in Table 6.7 scale scores were skewed in the direction of good health among the Friendships and Social Relations Scales with means appearing on the favourible side of the midpoint. The mean score on the Social Activities Scale fell below the midpoint. Observed score ranges were generally satisfactory extending through most of the possible range. None of the standard deviations were smaller than one-seventh of each scale range, a criterion used to indicate whether sufficient variation exists to test hypotheses about group comparisons (Eisen et al 1979b).

6. 6 Reliability

Table 6.8 summarizes information pertaining to the reliability of the social function scales. Internal consistency and test-retest reliability estimates varied from 0.61 (e.g., the Social Relations Scale) to 0.89 (e.g., the Friendships Scale). As well as comparing

Table 6.6

Summary of Discriminant Validity Results, Social Function Items and Scales
Children 4-14 (N=24)

SCALE	HYPOTHESIZED SCALES			REVISED SCALES			FINAL SCALES		
	NUMBER OF ITEMS	NUMBER OF TESTS[a]	ERRORS[b]	NUMBER OF ITEMS	NUMBER OF TESTS	ERRORS	NUMBER OF ITEMS	NUMBER OF TESTS	ERRORS
Friendships	4	8	0	6	12	0	6	12	0
Social Relations	14	28	3	11	22	1	10	20	0
Social Activities	8	16	0	8	16	0	8	16	0
Total	26	52	3	25	50	1	24	48	0

[a] Number of tests for each age specific scale equals the number of items in that scale times one less than the number of scales; number of scales = 3

[b] Error is counted when an item correlates equally or higher with a scale measuring a different dimension of social functioning

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<u>Table 6.7</u>

Means and Standard Deviations for Final Social Function Scales
Children 2-14 (N=30)

SCALE	POSSIBLE SCORES LOW	HIGH	OBSERVED SCORES LOW	HIGH	SCALE MIDPOINT	MEAN	STANDARD DEVIATION
Friendships[a]	2	36	2	35	18.5	26.0	8.85
Social Relations[b]	10	57	27	55	33.5	45.6	6.87
Social Activities[a]	0	60	3	44	30.0	16.8	11.08

[a] Applicable to children 4-14 years, N = 24
[b] Modal scale value assigned to item - get along with teacher/classmates - for children not in school

Table 6.8

Test Retest, Internal Consistency Reliability Coefficients and Average Inter-Item Correlation Coeffients for Social Function Scales, Children 4-14 (N=24)

	NUMBER OF ITEMS	TEST-RETEST COEFFICIENTS[a]	INTERNAL CONSISTENCY COEFFICIENTS[b]	AVERAGE INTER-ITEM CORRELATIONS
Friendships	6	89	85	50
Social Relations	10	61	75	26
Social Activities	8	74	85	45

[a] Intra-class correlation coefficient ρ

[b] Cronbach's Alpha α

very favourably with levels of agreement reached by physicians examining patients (Koran 1975a, 1975b), all estimates of reliability exceeded the 0.50 standard recommended for group comparisons (Helmstadtler 1964). Average inter-item correlations or estimates of scale homogeneity were greater than 0.30 for the Friendships and Social Activities Scales but fell to 0.26 on the Social Relations Scale applicable to children 4-14 years of age.

6.7 Validity

The validity of the social function scales was considered in the light of: 1) the face validity of individual items or how congruent each item appeared with the category of function it was suppose to describe; 2) the content validity of individual items or how well the items represented all items that might be used to describe each category of function; and 3) the construct validity of each scale or how well the categories conformed to hypotheses about their relationship with each other and with other health indicators.

6.7.1 Face Validity and Content Validity

With a few exceptions, the items retained for the final scales appeared congruent with the category of function they were intended to describe. The questions pertaining to favorite activities, games, hobbies and level of participation on the Social Activities Scale seemed to describe individual rather than social persuits, raising doubts about their face validity. In the Social Relations Scale, two of the items - argues a lot and parents complain about his/her

behaviour - may be more indicative of behavior problems than social relationships.

The items making up the scales seemed in general to adequately represent all items that might be included in each category. However, the Friendship Scale might be more complete if a question pertaining to contacts with brothers and sisters was added. Moreover, greater balance might be achieved on the Social Relations Scale by adding a few positively worded items.

6.7.2 Construct Validity

Summaries of the results of all tests used to examine the construct validity of the social function scales appear on Table 6.9 through Table 6.11. Hypotheses pertinent to the study of construct validity appeared in the previous chapter. In brief, health variables with similar directions of scoring (e.g., definitions of health which are both positive or negative) were expected to be positively related; health variables with different directions of scoring (e.g., contrasting definitions of health) were expected to be negatively related. Moreover, correlations were expected to be larger between health variables purporting to measure the same or a similar phenomena than between health variables purporting to measure dissimilar phenomena.

6.7.2.1 Associations Between the Social Function Scales and Other Health Status Measures

Spearman rank order correlation coefficients did not uniformly confirm earlier hypotheses (e.g., Table 5.3 in Chapter 5) about associations between the social function scales and other health status

Table 6.9

Summary of Construct Validity Coefficients: Correlations[a] Between Social Function Scales and Associated Health Measures

SOCIAL FUNCTION SCALES

HEALTH MEASURES	DIRECTION OF SCORING	FRIENDSHIPS[b]	SOCIAL RELATIONS[c]	SOCIAL ACTIVITIES[b]
Physical Functioning				
Physical Activities Scale	-	-07	22*	-21
Mobility Scale	-	-05	18*	-38
Self Care Activities Scale	-	-13	11*	-22
Role Activities Scale	-	-48	-24	-27
Emotional Functioning				
Emotional Well-Being	+	54	73	23
Happiness-Depression Scale	+	49	48	-11*
Calm-Anxious Scale	+	56	70	38
Social Functioning				
Friendships	+		38	22
Social Relations	+			-12*
Social Activities	+			
General Health Rating Scale	+	10	07	-16*
Chronic Medical Problems	-	-21	23*	-36*
Social Competence Scales[d]				
Activities Scale	+	26	26	66
Social Scale	+	61	34	69
Child Behavior Checklist[e]				
Internalizing Scale	-	-25	-53	-13
Externalizing Scale	-	-45	-48	-23
Aggression Scale	-	-49	-67	-34

[a] Spearman rank order correlation coefficients

[b] Children aged 4-14 years (N=24)

[c] Children aged 2-14 years (N=30)

[d] Achenbach (1978); (N=18)

* Correlation opposite to that hypothesized

Table 6.10

Summary of Construct Validity Coefficients: Correlations^a Between
Social Function Scales and Independent Health Assessments

HEALTH ASSESSMENTS	DIRECTION OF SCORING	FRIENDSHIPS^b	SOCIAL RELATIONS^c	SOCIAL ACTIVITIES^b
		+	+	+
Physcian Assessments^d				
General Health	–	-57	-25	-08
Physical Functioning	–	-42	16*	-48
Social Functioning	–	-55	-33	-56
Emotional Functioning	–	-60	-44	-50
Teacher Assessments^e				
Number of Friends	+	45	38	48
Social Relations	+	-02*	19	42
Activity Restrictions	–	05*	-11	-40
School Attendance in the Past Year	+	41	38	22

a Spearman rank order correlations
b Children aged 4-14 years (N=24)
c Children aged 2-14 years (N=30)
d Children aged 2-14 years (N=29)
e Children attending school (N=13)
* Correlation opposite to that hypothesized

Table 6.11

Mean Rank Scores[a] for No Disability, Physically/Mentally Handicapped and Emotionally Disturbed Children on Social Function Scales

CLINICAL OUTPATIENT STATUS

SCALE	TEST STATISTIC[b] x^2	Sig	NO DISABILITY	PHYSICALLY/MENTALLY HANDICAPPED	EMOTIONALLY DISTURBED
Friendships	3.68	N.S.	14.45 (N=10)	13.28 (N= 9)	7.20 (N= 5)
Social Relations	10.22	.01	17.92 (N=12)	18.21 (N=12)	5.25 (N= 6)
Social Activities	2.32	N.S.	15.10 (N=10)	10.67 (N= 9)	10.60 (N= 5)

[a] Krushkal Wallis one way analysis of variance

[b] Guide to abbreviations: x^2 = Chi-square; Sig = level of significance

measures included in the pilot study (Table 6.9). Although the
direction of association was confirmed in 84% (38/45) of the tests,
results opposite to those hypothesized were observed for the Social
Relations Scale (4/15 or 27%) and the Social Activities Scale (3/15
or 20%). Unexpected results (indicated by asterisk in Table 6.9)
occurred most often when the Social Relations Scale was correlated with
measures of physical functioning.

An examination of the strength of association indicates that
correlations between the social function scales (particularly the
Friendships and Social Relations Scales) and measures of emotional
functioning were very high, ranging from 0.48 to 0.73. As shown in
Table 6.9 the strength of association between categories of social
and emotional function were much higher than correlations between
categories of social and physical function. And finally, associations
between the social function scales and corresponding measures developed
by Achenbach (i.e., the Friendships Scale - vs - the Social Scale and
the Social Activities Scale - vs - the Activities Scale) were higher
than associations between the same social function scales and Achenbach's
Child Behavior Checklist.

6.7 2.2 Associations Between the Social Function Scales and Independent Health Ratings

Hypotheses (e.g., Table 5.4 in Chapter 5) concerning the
direction of association between the social function scales and in-
dependent health assessments were confirmed on 88% (21/24) of the cases
(Table 6.10). Unexpected results (indicated by asterisk in Table 6.10)
tended to parallel those reported in the previous section. Children

who received poorer ratings in physical functioning tended to have better scores on the Social Relations Scale. In addition, teacher ratings of social relations and activity restrictions did not correlate as hypothesized with scores observed on the Friendships and Social Relations Scales respectively.

An examination of the strength of associations indicates that all correlations between the social function scales and global assessments of social and emotional functioning made by physicians were substantial (e.g., r > 0.30); however, the magnitude of the correlations were roughly the same for both types of global assessment. Although teacher evaluations of the number of friends and reports on attendance for each child correlated very strongly with the social function scales, associations between teacher assessments of social relationships and the social function scales tended to be low (Table 6.10).

6.7.2.3 Comparisons Between Clinical Groupings

Comparisons between children from each clinical group are presented in Table 6.11. Rankings for the Friendships and Social Activities Scale confirmed earlier hypotheses, namely that children classified as normal would have higher scores than children labelled emotionally disturbed with the physically and/or mentally handicapped falling inbetween. On the Social Relations Scale, children in the physically/mentally handicapped group had higher mean rankings than normal children, and both groups were much higher than children who were emotionally disturbed.

6.8 Socio-economic Correlates of Social Functioning

Associations between the social function scales and three demographic indicators: sex of the child, age of the child and education of the mother are presented in Table 6.12. Correlations between the three demographic variables measured and the Social Activities Scale all exceeded 0.20. Associations ranged from -0.26 to 0.30 among the demographic variables and remaining social function scales.

Table 6.12

Spearman (RHO) Rank Order Correlations Between Social Function Scales
and Selected Demographic Indicators

DEMOGRAPHIC   INDICATOR

SCALE	SEX OF CHILD[c]	AGE OF CHILD	EDUCATION OF MOTHER[d]
Friendships[a]	02	-26	30
Social Relations[b]	04	-22	23
Social Activities[a]	24	40	58

[a] Children aged 4-14 years (N=24)

[b] Children aged 2-14 years (N=30)

[c] Sex was scored: 1 = male; 2 = female

[d] Measured according to last grade level completed

CHAPTER 7

Discussion

7.1 Study Limitations

The social function scales satisfied many of the conditions necessary in order for them to serve as outcome measures in attempts to assess health care interventions or as descriptive measures in attempts to assess health status among diverse groups of children. In light of several design limitations, however, the results must. be interpreted cautiously.

7.1.1 A Sample of Convenience

The method of choosing a sample has important implications for the generalizability of findings. One of the basic assumptions of making statistical inferences is that random samples are selected (Kleinbaum and Kupper 1978). The pilot study clearly violated this assumption. Children included in the study were not randomly selected from a general, noninstitutionalized population; indeed, children with different types and ranges of dysfunction, likely to be observed in the main study, were deliberately oversampled. Even within clinical groupings, the representativess of participant children was doubtful: all of them were selected on the basis of convenience. As a result, the two principal categories of statistical inference - estimation and hypothesis testing - could not be performed.

7.1.2 A Small Sample

Because of limited resources, only 30 children participated in
the study - too few, in many instances, to obtain statistically
significant findings. If children could be randomly selected from a
general, noninstitutionalized population, sample size would be an
important consideration. Large samples would be required to test
hypotheses as to associations between the social function scales and
other health indicators. With an α specified at 0.05 (one-tailed)
and β at 0.10, Pearson correlations of $r > 0.20$ ($\delta \approx 0.20$) could be
detected with N = 200 children (Cohen 1969). Allowing that a Spearman
rank order correltation is the appropriate test and has a power
efficiency of 91% in relation to Pearson's r, a sample of about 220
children would be required (Siegel 1954). A smaller sample would be
required to obtain estimates of test-retest reliability. With an α
specified at 0.05, β at 0.05, and δ of 0.80, 42 children would be
needed to insure a statistically significant result when testing for a
time effect using an intra-class correlation coefficient (Cohen 1969).

7.1.3 Additional Problems

In addition to the sampling limitations, there are several
problems built into the pilot study design which deserve comment.
In the first place, some of the health measures, used to establish
the validity of the social function scales, were intercorrelated.
As an example, physicians providing "independent" assessments of physical,
social and emotional functioning knew each child's clinical status and,
in some instances, conferred with parents before providing health status
ratings. Moreover, the identification and treatment of child dysfunction,

even in clinical outpatient settings, may sharpen parental diagnostic abilities and hence alter their responses to the questionnaire in a way likely to confirm clinical assessments. In other words, the pilot study design may have incorporated a systematic bias which would tend to increase the strength of association between parental responses on the social function scales and "independent" clinical ratings.

Secondly, the numeric results, particularly estimates of reliability, are probably inflated because of the sampling scheme. Children with health problems were deliberately oversampled in order to increase the opportunity of observing meaningful trends. While the numeric results support the presence of meaningful trends, it should be acknowledged that part of these results are attributable to increases in the variance of the social function scales. These increases are the result of sampling decisions originally intended to increase the efficiency of the pilot study design.

A final limitation of the pilot study design is the heterogenous composition of the second clinical grouping: Physically/Mentally Handicapped. A homogenous group of children with physical as opposed to cognitive disabilities would have helped to assess the ability of the social function scales to discriminate groups of children from clinically meaningful categories. Anecdotal evidence from teachers and nurses suggest that it is very difficult to rate the social functioning of children experiencing more severe forms of mental retardation.

7.2 The Social Function Scales: An Assessment

Given that the pilot study has major limitations, the social function scales performed well in light of the criteria developed to

assess available instruments. Table 7.1 summarizes an assessment of the social function scales using the findings observed in the pilot study. First, all of the scales appear to satisfy important prerequisites of measurement. They are generally applicable and acceptable, balanced in orientation and amenable to index construction reflecting state-of-the-art measurement techniques. Second, all of the scales satisfied the measurement criteria used to assess variability and reliability. Finally, although the scales did not fully satisfy the criteria used to assess validity, they did show promise that with certain modifications, some of the criteria, particularly those relating to content validity, might be satisfied. As an example, the content validity of the Friendships Scale might be enhanced by adding a question about contact with siblings. Moreover, questions pertaining to activities, games and hobbies included in the Social Activities Scale might be dropped on the grounds that such items represent individual rather than social phenomena. In addition, several of the items included in the Social Relations Scale such as argues a lot and other parents complain about his or her behavior may be indicative of emotional disturbance rather than social functioning.

Only further studies can determine whether the social function scales meet criteria pertaining to construct validity. Current studies indicate the presence of two potential problems. The first problem has to do with the amount of overlap between the social function scales and measures of emotional function. Correlations between the Social Relations Scale and emotional function ranged from $r = 0.48$ to $r = 0.73$ (Table 6.9) while correlations between the Friendships Scale and three

Table 7.1

An Evaluation of the Proposed Social Function Scales Against Established Measurement Criteria

CRITERIA[a]	SCALES		
	FRIENDSHIPS	SOCIAL RELATIONS	SOCIAL ACTIVITIES
Generally applicable and acceptable	✓	✓	✓
Balanced Orientation	✓	✓	✓
Amenable to Index Construction reflecting State-of-the Act Measurement Techniques	✓	✓	✓
Variable	✓	✓	✓
Reliable			
a) Test-retest	✓	✓	✓
b) Internal Consistency	✓	✓	✓
Valid			
a) Content	?	?	?
b) Construct	?	?	?

[a] Guide to assessment; ✓ = Meets criteria; ? = Uncertain that criteria met; − = Criteria not met

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measures of emotional function ranged from r = 0.49 to r = 0.56.
Moreover, the social function scales tended to have stronger correlations
with physician assessments of emotional rather than social functioning (Table
6.10) suggesting an insensitivity either among the physicians or among
the scales developed in this thesis.

Although a conceptual basis exists for distinguishing social
and emotional functioning in children, statistical support is difficult·
to obtain. The results of the pilot study are consistent with .other
researchers (Eisen et al 1979b) who have reported strong correlations
between measures of social and emotional health. It is conceivable that
parents have only a general perception of their child's well-being which
colours all of their assessments. It is conceivable as well that social
and emotional functioning are basically undifferentiated in children
coming from a general, noninstitutionalized population and need not .
be measured separately. Whatever the explanation, the most efficient
way of measuring social and emotional functioning needs to be decided.

The second problem has to do with the level of association
between the social function scales and sociodemographic indicators.
The correlation between the the Social Activities Scale and the age
of the child reached r = 0.40 while correlations between the Friendships
and Social Relations Scales and the age of the child were r = -0.26
r = -0.22 (Table 6.12). Because the social functioning scales are meant
to be generally applicable and acceptable, it is hoped that further
studies will show a reduction in the levels of association observed in
the pilot study. Should such correlation persist, the scales would
need to be age adjusted or modified so that the functioning of children

at different ages can be compared.

A similar problem exists with respect to the level of association between the social function scales and maternal education, where correlations ranged from $r = 0.23$ (Social Relations Scale) to $r = 0.58$ (Social Activities Scale). It is possible, of course, that a true relationship exists between the social function scales and maternal education. Another explanation focuses on the problem of social desirability and would take the position that mothers with higher education tended to bias their responses to make their child seem healthy. Yet another explanation would argue that the social function scales and maternal education are correlated through an intervening or confounding variable such as clinical status. Again, further study and instrument development is needed to resolve this problem.

7.3 The Social Function Scales: Applicability and Advantages

The social function scales were developed originally to help classify children into a limited number of mutually exclusive and exhaustive health states. Here, a health state refers to a point in time assessment of performance derived from the child's level of functioning in each health category (i.e., Friendships, Social Relations, Social Activities) across all health components (i.e., physical, social, emotional). By examining and deciding on cut points for individual items, each of the social function scales were reduced to a dichotomous measure indicating the presence/absence of a functional limitation.

Table 7.2 presents a summary of the cut points assigned each item. In choosing cut points, an attempt was made to anticipate the social preference or utility a parent might assign to the item based

Table 7.2

Reduction of the Social Function Scales into Dichotomous Measures
Indicating the Presence/Absence of a Functional Limitation

SCALE/ ITEM CONTENT	NO. OF ITEMS	RESPONSE VALUES
FRIENDSHIPS		
Number of friends/playmates	2	(0 1 2) 3 4 5 6 [a]
Frequency of Contact in winter*/Summer*	2	(1 2 3 4) 5 6 [b]
Makes friends easily/ keeps friendships	2	(1 2 3 4) 5 6 [c]
SOCIAL RELATIONS		
Gets along with children*/ family*/teachers*	3	(1 2 3) 4 5 [d]
Enjoyable/fights*/argues*/ parents complain*/withdrawn*/ trouble making friends*/ not liked*	7	(1 2 3 4) 5 6 [c]
SOCIAL ACTIVITIES		
Number of sports/organizations/ activities/jobs	4	(0 1) 2 3 4 5 [a]
Level of participation	4 x 5	(0 1) 2 [e]

* Indicates that response values are reversed to obtain scale scores

[a] Response categories were counts

[b] Response categories were: 1 - everyday; 2 - several days a week; 3 - about once a week; 4 - two or three times a month; 5 - about once a month; 6 - less than once a month

[c] Response categories were: 1 - never; 2 - almost never; 3 - sometimes; 4 - fairly often; 5 - very often; 6 - always

[d] Response categories were: 1 - very well, no problems; 2 - quite well, hardly any problems; 3 - pretty well, occasional problems; 4 - not too well, frequent problems; 5 - not well at all, very frequent problems

[e] Response categories were: 0 - less than 2-3 times/month; 1 - about once a week; 2 - more than several days a week

on the numeric value or wording of the response set. As an example, having fewer than three friends or playmates and contact with other children (outside of school) only once a week or less is hypothesized to represent a functional limitation on the Friendships Scale. Similarly, children who have problems getting along with others more than some of the time are hypothesized to have a functional limitation on the Social Relations Scale. Using the values below the cutpoints (indicated by brackets in Table 7.2) and then summing across items suggests that scores equal to or less than 20 on the Friendships Scale; 37 on the Social Relations Scale; and 8 on the Social Activities Scale represent functional limitations.

Using the above criteria, the number of children in the pilot study with "functional" limitations are presented in Table 7.3. As indicated, functional limitations in friendships and social activities were evenly distributed across the three groupings while children labelled emotionally disturbed accounted for all of the functional limitations observed on the Social Relations Scale.

Although the social function scales were developed for use in a Costs and Outcomes Study of newborn intensive care, they could be used to evaluate the outcomes of other types of health care interventions. General measures of social functioning are needed to evaluate programs designed to increase the quality of life for children experiencing catastrophic events such as extensive burns, serious accidents or disorders such as leukemia or cystic fibrosis. The social function scales might also be used to assess specific groups of children with a view to determining future service requirements.

Table 7.3

Number of Children with Limitations in Social Functioning by Clinical
Group

CLINICAL GROUPING	SCALE		
	FRIENDSHIPS[a]	SOCIAL RELATIONS[b]	SOCIAL ACTIVITIES[a]
	NUMBER WITH LIMITATIONS		
No Disability	2 (N=10)	none (N=12)	1 (N=10)
Physically/Mentally Handicapped	1 (N= 9)	none (N=12)	2 (N= 9)
Emotionally Disturbed	1 (N=5)	3 (N= 6)	1 (N= 5)

[a] Children aged 4-14 years
[b] Children aged 2-14 years

At present, the social function scales offer several advantages
over other available measures. First, a preliminary evaluation indicates
that the social function scales come closer to statisfying basic measure-
ment standards than all other available and comparable instruments. It
is anticipated that problems associated with the content and construct
validity of the scales will be overcome with specific modifications.

Second, the social function scales were created to complement
measures of physical and emotional functioning. Only one other group
of investigators have attempted to take this approach (Eisen et al 1979b).
The principal advantage in developing instruments which complement one
another is measurement efficiency. A second advantage is increased
usefulness: comprehensive programs designed to improve physical,
social and emotional functioning require comprehensive outcome measures
which measure, without redundancy, those particular health components.

Finally, the social function scales were developed according
to a prespecified model. The use of a model helps to create a rational
basis for the development and evaluation of an instrument. With the
exception of Eisen et al (1979b) most investigators do not appear to
rely on models. The model itself has a broad application and can be used
again and again to develop and/or assess new measures.

7.4 Additional Issues

The findings presented in this thesis represent preliminary
attempts to assess the social function scales. Many issues and questions
pertaining to the validity and usefulness of these measures should be
examined in future studies.

7.4.1 Proxy Assessments

At the outset, concern was expressed about the ability of
parents or guardians to accurately assess their child's health status.
No apparent reason exists why children over seven years could not
rate their own health more validly than proxy respondents. Children
over seven are routinely asked in the classroom to answer questions
more complex than those asked of parents about health (Eisen et al
1979b). A study designed to compare responses of both parents and
children to the same health questions might help to resolve concern
about using proxy assessments in child health studies.

7.4.2 Response Bias

The issues and problems associated with response bias in
general population surveys beg to be investigated. Current health
status of the parent may influence the ratings assigned to their
children's health - a possibility suggested in the Rand Corporation's
Health Insurance Study (Eisen et al 1979b). Parental attitudes
towards their children may systematically raise or lower their health
assessments, depending on whether the attitude is favourable or
unfavourable. Bias due to acquiescent and opposition response sets
(tendencies to endorse or negate items regardless of content,
respectively) and tendencies to respond in a socially desirable way
also may be operating.

An issue closely related to the problem of response bias is
the selection of response categories. A tendency exists to use
standard (e.g., ( )1. all of the time; ( )2. most of the time;
( )3. a good bit of the time; etc.) response sets because they are

easily combined into summated rating scales. Clearly, a standard
response set eliminates the problem of weighting particularly if
the measures of central tendency and variation within each item of
the scale are about equal. Standard response sets also seem to
generate high internal reliability estimates, evidence used to
demonstrate that a particular scale is measuring a single trait.
A problem exists that the response categories rather than question
content may be responsible for the statistical properties of any
new scale. Studies need to be done to examine the effects on scale
properties of systematically altering the number and wording of
response categories, using the same item. At issue is the question
of content validity (how well the items and their responses represent
all of the items that might be used to describe a particular trait)
versus unidimensionality (how well the items and their responses
measure a single trait). Simply stated, a conflict exists between
these aspects of measurement and it needs to be examined in detail
before constructing valid health scales.

7.4.3 Sensitivity to Change

In order for any measure to be useful, it must be able to
detect change when it occurs. The limitations of the pilot study
precluded an examination of this issue but it is clearly one that
deserves attention. Additional questions that deserve consideration
in future work include the following: Do the social function scales
predict future health status? What constitutes an important effect
size for the purpose of hypotheses testing? Answers to these questions
will broaden the applicability and usefulness of the social function scales.

CHAPTER 8

Summary

The purpose of this thesis was to describe the development
and preliminary assessment of three scales intended to measure the
social functioning of children from 2-14 years of age. A content
analysis·and evaluation of available measures of social functioning
applicable to children was done to help determine appropriate content
for the present measures. The design of a small pilot study developed
to assess the Costs and Outcomes Study health measures was described
and an evaluation of the social function scales against established
measurement criteria was reported.

The social function scales covered three categories of social
health: friendships, the quality of social relations and the number
of social activities. A preliminary assessment suggests that the
social function scales performed well, easily satisfying all measurement
criteria with the exception of those pertaining to validity. It is
anticipated that recommended changes to the scales will strengthen
their ability to satisfy validation criteria.

At present, the social function scales, in modified form
(Appendix V), are being used in the Costs and Outcomes Study.
Similarities of design between the pilot study and the Costs and Out-
comes Study will permit the replication of pilot study results with a
larger sample. It is anticipated that future studies will enhance
the usefulness and applicability of the social function scales.

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Appendix I

Child Behavior Profile by Achenbach

Appendix II

Consent Form Developed for the Costs
and Outcomes Pilot Study

McMASTER UNIVERSITY
Department of Pediatrics

1200 Main Street West, Hamilton, Ontario, Canada, L8S 4J9
Telephone: 525-9140

CONSENT TO PARTICIPATE IN A STUDY OF

THE GROWTH AND DEVELOPMENT OF CHILDREN

I, _____ of _____
      (relation)   (child)
consent to participate in a study of the growth and
development of children. The purpose of this study is to
assess a questionnaire developed to find out about the
health of children from 2-16 years of age.

The form that I am signing limits my participation in the
study to a personal interview and grants consent for the
study personnel to obtain information from my above named
child's school and family physician.

I understand that all information collected will be kept
strictly confidential and that my name and the name of my
child will not be associated in any way with the findings
from this research. In addition, I realize that I may
withdraw from this study at any time, even after this form
has been signed.

I understand that Sargent P. Horwood M.D. of the Department
of Pediatrics of McMaster University is the Director of
this study and that the study and consent form has been
explained to me by _____
                            (name and title)

Date: _____

Signed: _____   _____
       (Parent or Guardian)   Name (print)

Signed: _____
      (Witnessing Health Professional)

Appendix III

Health Professional's Clinical Assessment

Form

McMASTER UNIVERSITY
Department of Pediatrics

1200 Main Street West, Hamilton, Ontario, Canada, L8S 4J9
Telephone: 525-9140

I am writing to enlist your help in a study of
the costs and outcomes of very low birth weight infants.
The study is funded by the Ontario Ministry of Health and
is an attempt to evaluate Neonatal Intensive Care of children
with birth weights under 1500 grams born in Hamilton between
1964-69 and 1973-77.

Among the very low birth weight survivors meeting
our study criteria is:

_____

whose family named you as his/her physician. The family is
participating in the study and has given us written consent
to ask for your and/or your nurse's CLINICAL IMPRESSION of
this child (copy of consent attached).

I ask only that you use the enclosed form to
rate the physical, social and emotional functioning of this
child. Any additional comments you wish to include about
this child's health would be greatly appreciated. A stamped,
self-addressed envelope accompanies this letter for your
convenience.

Please be assured that your responses will be
kept anonymous and strictly confidential. Moreover, the
information that you provide is most important to our study.
Should you have any questions, please call me at 525-9140, Ext. 2609.
Thank you for your time and anticipated help.

Yours sincerely,

Sargent P. Horwood, M.D.,F.R.C.P.(C),
Assistant Professor of Pediatrics.

/dh
Encl.

Neonatal Follow-up Study
Hamilton, Ontario
6/6/79

HEALTH PROFESSIONAL'S CLINICAL
ASSESSMENT FORM

Name of Child _____ Birth Date_____

Family Name _____

Address   _____

             _____

1-6

Your responses to the following items should be based upon your CLINICAL
IMPRESSION of this patient. Please feel free to use the margin to write
in any COMMENTS you think appropriate.

1. Does this child have any of the following problems: COMMENTS

        a. chronic physical problem
             ( )1. yes ( )2. no ( )9. don't know

        b. chronic social problem
             ( )1. yes ( )2. no ( )9. don't know

      · c. chronic emotional problem
             ( )1. yes ( )2. no ( )9. don't know

2. In general, would you say this child's health is

        ( )1. excellent
        ( )2. good
        ( )3. fair
        ( )4. poor
        ( )9. don't know

3. How would you describe the physical functioning of
    this child (ability to move around, see, hear, and talk)?

        ( )1. good
        ( )2. good to fair
        ( )3. fair
        ( )4. fair to poor
        ( )5. poor
        ( )6. don't know

9

10

11

12

13

-over-

4. How would you describe the social functioning of
   this child (ability to play or go to school, and
   to get along with others)?

    ( )1. good
    ( )2. good to fair
    ( )3. fair
    ( )4. fair to poor
    ( )5. poor
    ( )9. don't know

<div style="text-align:right">/14</div>

5. How would you describe the emotional functioning
   of this child (ability to remain in good spirits
   most of the time, and to be usually happy)?

    ( )1. good
    ( )2. good to fair
    ( )3. fair
    ( )4. fair to poor
    ( )5. poor
    ( )6. don't know

<div style="text-align:right">15</div>

6. When was the last time you saw this child?

    ( )1. 0-6 months ago
    ( )2. 6-12 months ago
    ( )3. 1-2 years ago
    ( )4. more than 2 years ago

<div style="text-align:right">16</div>

7. These assessments were based mostly on the following
   sources (please check all that apply)

    ( )1. memory
    ( )2. referring to written records or charts
    ( )3. other:

    _____

    _____

<div style="text-align:right">17</div>

Date of assessment _____ _____ _____

                     day   month   year

<div style="text-align:right">18-23</div>

Signed _____

Appendix IV

Teacher Assessment Form

McMASTER UNIVERSITY
Department of Pediatrics

1200 Main Street West, Hamilton, Ontario, Canada, L8S 4J9
Telephone: 525-9140

The student whose name appears on the enclosed form
is one of a group of children participating in a follow-up
study being undertaken by the Department of Pediatrics at
McMaster University. The study, which is sponsored by the
Ontario Ministry of Health, focuses on the health of
children born in Hamilton between 1964-1974.

This student's parent or guardian has given us
written authorization to obtain information from the school
and a copy of this consent is enclosed for your files.
We would be very grateful if this child's teacher would
complete the enclosed form on the basis of school records
and information that he/she may have. A pre-addressed
envelope requiring no postage is furnished for your
convenience in returning this form.

The questionnaire will provide the study with
important information about the health of participating
children. It is a basic principle of this type of research
that all answers will be kept anonymous. The information
is strictly confidential and will not be used or released
except in statistical reports.

If you have any questions about the study, please
feel free to call our project coordinator, Mr. Michael Boyle
at 1-416-525-9140 Ext. 2649; we would welcome your call.

Thank you for your anticipated help.

Yours sincerely,

Sargent P. Horwood, M.D.,F.R.C.P.(C),
Assistant Professor of Pediatrics.

/dh
Encl.

Neonatal Follow-up Study
Hamilton, Ontario
30/4/79

CHILD HEALTH FORM

(SUPPLEMENTAL INFORMATION FROM SCHOOL)

Name of Child _____

Birth Date _____

Home Address _____

INSTRUCTIONS

Please read each question carefully and choose the response that best
expresses what you know about this child. For most of the questions you
need only place a (✓) check in the category which best describes the
child; for a few questions you are asked to write in the answer. Please
disregard the boxes on the right hand side of the page (they are for
office use only).

1. Is this child's school progress (grade/level placement)

    ( )1. accelerated——GO TO Q.2
    ( )2. average————GO TO Q.2
    ( )3. below average—— PLEASE ANSWER Q.1a

            1a. What is the main reason for this child's school
                progress being below average?

                    ( )1. excessive absenteeism
                    ( )2. truancy (unlawful absenteeism)
                    ( )3. excessive school transfers out of school
                          district
                    ( )4. low academic potential
                    ( )5. social immaturity
                    ( )6. other (please explain)

                    _____

                    _____

                    _____

2. How much schooling did this student miss for any reason during the
   past school year (ie. since September 1978 to June 1979)?

        number of days present _____

        number of days absent _____

-2-

2a. How much schooling has this student missed for any reason in previous school years. (If this information is not available to you or the question does not apply because the child is too young, please put a check in the appropriate bracket).

	number of days present	number of days absent	not available	not applicable
1977-78	_____,	_____,	( )	( )
1976-77	_____,	_____,	( )	( )
1975-76	_____,	_____,	( )	( )
1974-75	_____,	_____,	( )	( )
1973-74	_____,	_____,	( )	( )
1972-73	_____,	_____,	( )	( )
1971-72	_____,	_____,	( )	( )
1970-71	_____,	_____,	( )	( )

18-41

3. Is this student presently limited in the kind or amount of school activities s/he does such as participating in school athletics, normal recess activities, extra curricular activities or any other school related activities?

( ) 1. yes —— 3a. Please specify activity and reasons for not taking part?

_____

_____

_____

( ) 2. no

3b. By whose authority does s/he not take part?

( )1. parent
( )2. teacher
( )3. doctor
( )4. other(please specify)

_____

42

43

44

4. Are special resources needed or currently being used for this student?

( )1. yes──── 4a. Please put a check in the appropriate bracket
( )2. no   for the special resources needed or currently
                being used by this child.

	RESOURCE NEEDED	
	BEING USED	NOT BEING USED
1. For the gifted	( )	( )
2. For the mentally retarded	( )	( )
3. For "slow learners" not classed as mentally retarded	( )	( )
4. For emotionally disturbed	( )	( )
5. For orthopedically handicapped	( )	( )
6. Special facilities for the "hard of hearing"	( )	( )
7. Special facilities for the visually handicapped	( )	( )
8. Speech therapy	( )	( )
9. Remedial reading	( )	( )
10. English for students from non-english environments	( )	( )
11. Remedial training in special subject area(s)	( )	( )
12. Special help for the perceptually handicapped	( )	( )
13. Other resources needed (specify)	( )	( )

45

46
47
48
49
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51
52
53
54
55
56
57
58

-4-

5. Has this student ever been referred for help with a social, emotional, behavioral or learning problem?

> ( )1. yes———5a To whom was this child referred?
> ( )2. no
>
>   ( )1. school counselor
>   ( )2. psychologist or social worker
>   ( )3. psychiatrist
>   ( )4. doctor
>   ( )5. special education
>   ( )6. other (please specify)
>
>   _____
>
> 5b. Please describe the problem.
>
>   _____
>
>   _____
>
> 5c. In which school year was this child referred?
>
>   _____
>
>   _____

□ 59

□ 60

□ 61

☐☐ 62-63

6. In general would you say that this student's health is

    ( )1. excellent
    ( )2. good
    ( )3. fair, or
    ( )4. poor.

□ 64

7. During the past school year (ie. since September 1978), how well has this child done in school? would you say that s/he is

    ( )1. an excellent student
    ( )2. a good student
    ( )3. an average student
    ( )4. a below average student, or
    ( )5. a poor student.

□ 65

8. The next few questions are about how this child has been feeling during the past school year (ie. since September 1978). Please put a check in the category which comes closest to the way you think this child has been feeling.

    a. During the past school year, how much of the time did this child seem to be cheerful and lighthearted?

    ( )1. all of the time
    ( )2. most of the time
    ( )3. a good bit of the time
    ( )4. some of the time
    ( )5. a little of the time
    ( )6. none of the time

□ 66

b. How much of the time did this child seem to be bothered by nervousness or "nerves" during the past school year?

( )1. all of the time
( )2. most of the time
( )3. a good bit of the time
( )4. some of the time
( )5. a little of the time
( )6. none of the time

67

c. How much of the time did this child seem to feel lonely during the past school year?

( )1. all of the time
( )2. most of the time
( )3. a good bit of the time
( )4. some of the time
( )5. a little of the time
( )6. none of the time

68

d. During the past school year, how much of the time did this child seem to have trouble concentrating or paying attention?

( )1. all of the time
( )2. most of the time
( )3. a good bit of the time
( )4. some of the time
( )5. a little of the time
( )6. none of the time

69

e. How much of the time during the past school year did this child seem to be able to relax without difficulty?

( )1. all of the time
( )2. most of the time
( )3. a good bit of the time
( )4. some of the time
( )5. a little of the time
( )6. none of the time

70

f. During the past school year, how much of the time did this child seem to be moody or to brood about things?

( )1. all of the time
( )2. most of the time
( )3. a good bit of the time
( )4. some of the time
( )5. a little of the time
( )6. none of the time

71

g. How much of the time did this child seem to enjoy the
   things that he or she did during the past school year?

    ( )1. all of the time
    ( )2. most of the time
    ( )3. a good bit of the time
    ( )4. some of the time
    ( )5. a little of the time
    ( )6. none of the time

□
72

h. During the past school year, how much of the time did this child
   seem to be anxious or worried?

    ( )1. all of the time
    ( )2. most of the time
    ( )3. a good bit of the time
    ( )4. some of the time
    ( )5. a little of the time
    ( )6. none of the time

□
73

i. How much of the time during the past school year did this child
   seem to be depressed (downhearted or blue)?

    ( )1. all of the time
    ( )2. most of the time
    ( )3. a good bit of the time
    ( )4. some of the time
    ( )5. a little of the time
    ( )6. none of the time

□
74

j. How much of the time did this child seem to be relaxed and
   free of tension during the past school year?

    ( )1. all of the time
    ( )2. most of the time
    ( )3. a good bit of the time
    ( )4. some of the time
    ( )5. a little of the time
    ( )6. none of the time

□
75

k. How much of the time did this child seem to be in good spirits
   during the past school year?

    ( )1. all of the time
    ( )2. most of the time
    ( )3. a good bit of the time
    ( )4. some of the time
    ( )5. a little of the time
    ( )6. none of the time

□
76

9. About how many friends does this child have at school?

( )1. none
( )2. only a few
( )3. a good number
( )4. very many other children who are good friends

□
77

10. How well does this child get along with other children?

( )1. very well, no problems
( )2. quite well, hardly any problems
( )3. pretty well, occasional problems
( )4. not too well, frequent problems
( )5. not well at all, very frequent problems

□
78

□□□□□□
4 2
1-8

11. How well does this child get along with his or her teacher and classmates?

( )1. very well, no problems
( )2. quite well, hardly any problems
( )3. pretty well, occasional problems
( )4. not too well, frequent problems
( )5. not well at all, very frequent problems

□
9

12. Below is a list of items that describe children. Please read each item then circle one of the numbers on each line to indicate how often it describes this child during the past school year.

If the child always behaved that way, circle 6.
If the child very often behaved that way, circle 5.
If the child fairly often behaved that was, circle 4.
If the child sometimes behaved that way, circle 3.
If the child almost never behaved that way, circle 2.
If the child never behaved that way, circle 1.

	ALWAYS	VERY OFTEN	FAIRLY OFTEN	SOME-TIMES	ALMOST NEVER	NEVER	
a. Keeps friendships	6	5	4	3	2	1	□ 10
b. Acts overly fearful or cautious	6	5	4	3	2	1	□ 11
c. Plays or works well alone	6	5	4	3	2	1	□ 12
d. Looks sad or downcast	6	5	4	3	2	1	□ 13
e. Has trouble making friends	6	5	4	3	2	1	□ 14

	ALWAYS	VERY OFTEN	FAIRLY OFTEN	SOME-TIMES	ALMOST NEVER	NEVER	
f. Shows interest in many and varied types of things	6	5	4	3	2	1	□ 15
g. Argues a lot	6	5	4	3	2	1	□ 16
h. Laughs readily	6	5	4	3	2	1	□ 17
i. Fights with other children	6	5	4	3	2	1	□ 18
j. Not liked by other children	6	5	4	3	2	1	□ 19
k. Likes to take part in different activities	6	5	4	3	2	1	□ 20
l. Has a happy bright expression	6	5	4	3	2	1	□ 21
m. Is tense or jittery in everyday situations or activities	6	5	4	3	2	1	□ 22
n. Outgoing, likes to be with others	6	5	4	3	2	1	□ 23
o. Other parents complain about his or her behavior	6	5	4	3	2	1	□ 24
p. Makes friends easily	6	5	4	3	2	1	□ 25
q. Is restless, fidgety or can't sit still	6	5	4	3	2	1	□ 26
r. Has little interest in the things around him or her	6	5	4	3	2	1	□ 27
s. Enjoyable to be with	6	5	4	3	2	1	□ 28

-9-

	ALWAYS	VERY OFTEN	FAIRLY OFTEN	SOME-TIMES	ALMOST NEVER	NEVER	
t. Withdrawn, doesn't get involved with others	6	5	4	3	2	1	☐ 29
u. Considerate of others	6	5	4	3	2	1	☐ 30

13. Are there any special problems in the health or education of this child that have not been covered in this questionnaire?

( )1. yes——→   Please describe them   ☐ 31
( )2. no
                 _____
                                                      ☐ 32
                 _____

                 _____

                 _____

14. How long have you (the person providing the above information) known this child?

( )1. less than one month
( )2. more than one month but less than six months
( )3. more than six months but less than one year   ☐ 33
( )4. more than one year

15. In what capacity have you known this child?

( )1. teacher in classroom
( )2. teacher in special area (specify) _____
( )3. school principal or assistant   ☐ 34
( )4. other (specify) _____

16. Name of respondent providing information on this child

_____

_____
                    (school)

     Date completed _____

                                        ☐☐☐☐☐☐
                                        35-40

                                        ☐☐☐☐
                                        41-44

                                        ☐☐
                                        45 46

Appendix V

Social Function Scales: Questions Used in

the Costs and Outcomes Study

77. About how many children in the neighbourhood does
    _____ know well enough that they visit and play
    with each other?

    _____ children   ( )88. N/A
                            ( )99. DK

78. About how many close friends or regular playmates
    does _____ have?

        ( ) NONE ── CODE Q. 79 AND   ( )88. N/A
                    Q. 80 ZERO AND   ( )99. DK
                    GO TO Q. 81

         _____ children

79. In summer, about how many days a week would _____
    do things with these close friends or regular playmates?

    _____ days a week   ( )8. N/A
                              ( )9. DK

80. In winter, about how many days a week would _____
    do things with these close friends or regular playmates?
    (not including school)?

    _____ days a week   ( )8. N/A
                              ( )9. DK

81. Does _____ have any brothers or sisters that he/she
    plays with regularly?

    ( )1. YES
    ( )2. NO ── CODE Q. 82 N/A AND GO TO Q. 83
    ( )8. N/A
    ( )9. DK

82. About how many days a week would _____ do things with his/her
    brothers or sisters?

    _____ days   ( )8. N/A
                      ( )9. DK

83. Over a year's time, about how often does _____ spend time
    with other children either playing, going out together or
    visiting, (HAND CARD # 2) would you say

    ( )1. everyday
    ( )2. several days a week
    ( )3. about once a week
    ( )4. 2 or 3 times a month
    ( )5. about once a month
    ( )6. 5 to 10 times a year?
    ( )8. N/A
    ( )9. DK

36

```
┌─────────────────────────────────────────────────────┐
│                     INSTRUCTIONS                      │
│      IF CHILD 48 MONTHS OLD OR LESS GO TO Q. 87       │
│            AFTER CODING Q. 84 TO Q. 86 N/A            │
└─────────────────────────────────────────────────────┘
```

84. Does _____ take part in any sports, not necessarily team sports?

( )2. NO   ( )8. N/A   ( )9. DK

( )1. YES

84a. What are they? (LIST BELOW TO 5)
84b. Compared to other children of the same age about how much time does _____ spend in each, would you say? (CODE BELOW UNDER AMOUNT)
( )0. less than average   ( )8. N/A
( )1. average   ( )9. DK
( )2. more than average

SPORT   AMOUNT

1. _____   _____

2. _____   _____

3. _____   _____

4. _____   _____

5. _____   _____

85. Does _____ belong to any organizations, clubs, teams or groups?

( )2. NO   ( )8. N/A   ( )9. D/K

( )1. YES

85a. What are they? (LIST BELOW TO 5)
85b. Compared to other children of the same age about how active is _____ in each, would you say? (CODE BELOW UNDER ACTIVITY)
( )0. less active   ( )8. N/A
( )1. average   ( )9. DK
( )2. more active

ORGANIZATION   ACTIVITY

1. _____   _____

2. _____   _____

3. _____   _____

4. _____   _____

5. _____   _____

86. Does _____ have any jobs or chores?

( )2. NO   ( )8. N/A   ( )9. DK

( )1. YES

85a. What are they? (LIST BELOW TO 5)

1. _____

2. _____

3. _____

4. _____

5: _____

87. The next couple of questions are about how _____ has been getting along with others during the past 12 months. (HAND CARD # 3). Here are the responses: very well, no problems; quite well, hardly any problems; pretty well, occasional problems; not too well, frequent problems; and not well at all, very frequent problems. For each question, please tell me the number of the response which best describes _____.

A. During the past 12 months, how well has _____ gotten along with other children?

( )1. Very well, no problems
( )2. Quite well, hardly any problems
( )3. Pretty well, occasional problems
( )4. Not too well, frequent problems
( )5. Not well at all, very frequent problems.
( )8. N/A
( )9. DK

B. During the past 12 months how well has _____ gotten along with the family?

( )1. Very well, no problems
( )2. Quite well, hardly any problems
( )3. Pretty well, occasional problems
( )4. Not too well, frequent problems
( )5. Not well at all, very frequent problems
( )8. N/A
( )9. DK

INSTRUCTIONS
IF CHILD NOT IN SCHOOL, CODE Q. 87C N/A AND OMIT

C. During the past 12 months, how well has _____ gotten along in school with his/her teacher and classmates?

( )1. Very well, no problems
( )2. Quite well, hardly any problems
( )3. Pretty well, occasional problems
( )4. Not too well, frequent problems
( )5. Not well at all, very frequent problems.
( )8. N/A
( )9. DK

89. Next is a list of items that describe how children sometimes behave (HAND CARD # 5). These are the responses: always, very often, fairly often, sometimes, almost never, and never. For each statement please tell me the number of the response which best describes _____ during the past 12 months?

		ALWAYS	VERY OFTEN	FAIRLY OFTEN	SOME-TIMES	ALMOST NEVER	NEVER DK
A.	Keeps friendships	6	5	4	3	2	1
B.							
C.	Plays or works well alone						
D.							
E.	Has trouble making friends	6	5	4	3	2	1
F.							
G.	Argues a lot	6	5	4	3	2	1
H.							
I.	Fights with other children	6	5	4	3	2	1
J.	Not liked by other children	6	5	4	3	2	1
K.							
L.							
M.							
N.							
O.	Other parents complain about his or her behavior	6	5	4	3	2	1
P.	Makes friends easily	6	5	4	3	2	1
Q.							
R.							
S.	Enjoyable to be with	6	5	4	3	2	1
T.	Withdrawn, doesn't get involved with others	6	5	4	3	2	1
U.							