COPING WITH STRESSFUL MEDICAL SITUATIONS: ASSESSING CHILDREN'S STRATEGIES

by

Louise Michele Costello
B.A., University of Manitoba, 1971
M.Sc., University of Manitoba, 1974

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We accept this dissertation
as conforming to the required standard

[redacted]
Dr. Pam Duncan, Co-Supervisor (Department of Psychology)

[redacted]
Dr. Janet Beavin-Bavelas, Co-Supervisor (Department of Psychology)

[redacted]
Dr. Nancy Galambos, Departmental Member (Department of Psychology)

[redacted]
Dr. Roy Ferguson, Outside Member (School of Child and Youth Care)

[redacted]
Dr. Kenneth Craig, External Examiner (Department of Psychology)

University of Victoria

Supervisors: Dr. Pam Duncan
Dr. Janet Beavin-Bavelas

ABSTRACT

Research on how children cope in medical settings has been hampered by the lack of a validated measure of strategy use which is sensitive to coping as a process, as well as to personal appraisal of the coping situation. In the course of this research, such a measure was developed. The new instrument is a card sort task where possible strategies are depicted in simple captioned drawings, and children are asked for their appraisals of the situation in terms of fear, pain, and control expectations. The psychometric properties of the Coping Strategies Card Sort (CSCS) were examined in a school-based study involving 139 primary aged children, and a subsequent hospital study involving 10 children. The six subscales of the CSCS were shown to have adequate internal consistency, test-retest, and parallel forms reliabilities. Interesting patterns of relationship emerged among some of the subscales of the CSCS, as well as the Situational Appraisal Index, and measures of anxiety, health locus of control, and social desirability. Parental descriptions of children's strategy use did not match the children's own descriptions. In the hospital setting, the children's predictions and post-hoc descriptions of strategy use matched observed behaviours moderately well to very well for most of the participants.

EXAMINERS

[redacted]
Dr. Pam Duncan, Co-Supervisor (Department of Psychology)

[redacted]
Dr. Janet Beavin-Bavelas, Co-Supervisor (Department of Psychology)

[redacted]
Dr. Nancy Galambos, Departmental Member (Department of Psychology)

[redacted]
Dr. Roy Ferguson, Outside Member (School of Child and Youth Care)

[redacted]
Dr. Kenneth Craig, External Examiner (Department of Psychology)

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DEDICATION

THIS WORK IS DEDICATED

TO JOHN

FROM YOUR SISTER THE KEENER

I MISS YOU

AND TO MY CHILDREN

PATRICK, MARK, AND DANIEL

WITH LOVE

CHAPTER I

INTRODUCTION

A critical task currently facing the field of clinical developmental psychology is to achieve a better understanding of how children cope with stressful experiences (Wertlieb, Weigel, & Feldstein, 1987). This challenge is not new. In 1981 Rutter noted that it was time to undertake a more discriminating analysis of the various events that children consider stressful, and of the individual ways in which children respond to such stressful events. He concluded with the following musings and insightful questions that remain cogent a decade later.

> It is clear that there can be no one ... most successful coping strategy -- the mode which is most effective is likely to vary with the types of stress and with the circumstances. But it may also be the case that some strategies are better suited to one person whereas others are more appropriate to another person. Or, within a very broad range, does it not matter very much which coping mechanism is used so long as the obviously maladaptive and damaging ones are avoided? Or is it that the most important thing is to do something, to take a decision and act accordingly? Or, in the longer term, does successful coping depend on flexibility, adaptability, and an adequate range of strategies and tactics? (pp. 345-346)

Research in the subsequent decade has shown that coping is, to a significant degree, a temporally and situationally specific process (Brown, O'Keeffe, Sanders, & Baker, 1986; Folkman & Lazarus, 1980),

while at the same time being matter of individual style (Miller, 1980a; Miller & Mangan, 1983; Peterson, 1989a; Peterson & Toler, 1986). As in personality psychology generally (e.g., Mischel, 1979; Pervin, 1985), there is increasing recognition that these are not incompatible conclusions. There has been a shift in the presumed locus of behaviour control from either situations **or** traits to an **interactional** model: Research is showing that personality characteristics must be viewed as interacting with situational factors if these factors are to prove useful in predicting reactions to stressful events (Schultheis, Peterson, & Selby, 1987). Miller (in press) has proposed that there are actually three sets of variables that interact in determining coping outcomes: (a) situational variables, (b) dispositional coping styles such as monitoring or blunting, and (c) ongoing coping strategies, which are the individual's actual responses in a given situation.

Coping is now being examined as an **ongoing process**, a transaction between the person and the situation, that can vary from one stage of the stress encounter to another (Folkman, Lazarus, Dunkel-Schemer, DeLongis, & Gruen, 1986; Forsythe & Compas, 1987; Peterson, 1989b; Wong & Kaloupek, 1986). It is increasingly recognized that coping is a process wherein strategy use and effectiveness can change over time even within the same general context (e.g., Wong & Kaloupek, 1986). Context is seen to be defined as much by personal appraisals as by objective facts (Auerbach, 1989; Bush, Melamed, Sheras, & Greenbaum, 1986).

The study of coping as stable, personality-based emotional and behavioural modes of responding continues to make valuable theoretical and practical contributions to our knowledge, as it has in the study of

resilient children (Garmezy & Tellegen, 1984; Rutter, 1987). However, recent research in highly specific contexts is allowing for a closer study of context by strategy by person interactions (Schultheis et al., 1987), with respect to both strategy **usage** and strategy **effectiveness.**

A particularly active research arena at the present time is the study of the stress experienced by children facing threatening medical procedures. Until recently this literature was quite separate from the general literature on the stress process. Its orientation was applied and basically atheoretical (Melamed, Robbins, & Graves, 1982). This hospital based research was focused on devising the most effective strategies to help children cope, but progress was slow. All major reviews of the research (Anderson & Mazur, 1983; Auerbach, 1989; Melamed, Robbins, & Fernandez, 1982; Melamed, Robbins, & Graves, 1982) revealed many child by treatment interactions and left many conflicting findings unexplained. Melamed, Robbins, and Graves (1982), and more recently Auerbach (1989) and Peterson (1989a), argued that it was the general failure of researchers to relate their work to theory that has hampered progress in the field. Peterson (1989a) noted that "current empirical exploration lags far behind theoretical formulations of children's coping (and this) research lag inhibits theoretical as well as treatment advances" (p. 385).

The overall picture is currently changing, with more research questions arising from theoretical models of the stress process (Taylor, 1987). The most commonly selected of these models is the transactional cognitive appraisal model of Lazarus (Lazarus, 1966; Lazarus & Folkman, 1984). There is a growing consensus among a variety of researchers that

the coping process must be understood in terms of what determines the selection of coping strategies, and what factors influence adaptational outcomes **before** the issue of stress innoculation or prevention can be addressed (Auerbach, 1989; Garmezy & Tellegen, 1984; Jay, 1988).

A call has been issued for (a) investigations of the types of coping strategies individuals employ spontaneously and the functions these strategies serve, (b) studies of the relation between coping and situational appraisals, and (c) assessments of cross-situational consistency or variability (Auerbach, 1989; Branson & Craig, 1988; Compas, Malcarne, & Fondacaro, 1988; Miller, in press; Schultheis et al., 1987). Such investigations will serve the dual function of increasing our theoretical understanding of the stress process and aiding in specific clinical decisions in medical settings (e.g., Miller, in press).

A major stumbling block to progress in this area is the paucity of adequate measures (Peterson, 1989a). The kinds of research noted above require instruments that can track fluctuations in the coping process over the course of stressor exposure (Auerbach, 1989; Folkman & Lazarus, 1980; Lazarus, DeLongis, Folkman, & Gruen, 1985; Wong & Kaloupek, 1986). Validated measures designed for that purpose are in short supply when it comes to the study of the stress process in adults, and are virtually non-existent in the child literature (see Chapter III).

The purpose of this research, therefore, was to develop such an instrument -- one that could be used to measure coping strategies actually used by children as they face threatening medical procedures.

CHAPTER II

LITERATURE REVIEW

THEORY AND RESEARCH

Interactional Perspectives on Stress

When the term stress crossed over from the field of engineering, through the science of biology, to psychology and the other social sciences (Chandler, 1985), it did not come equipped with the level of precision usually associated with the hard sciences. This lack of precision has plagued the term, and has attacked, seemingly by contagion, the related terms of coping and adaptation. As psychological constructs these words are overused, confounded, and poorly understood.

The psychological approach to the study of stress has been broadly based. Early studies assessed the impact of strong emotions on physiological functioning (Cannon, 1932). Selye (1956) proposed a unified stress theory which popularized **adaptation** as the key to understanding the stress process. The relatively recent interactional perspectives on stress (Folkman, 1984; Menaghan, 1983; Rutter, 1981) allow for more specialized, or individualized, responses.

At the core of these latter theories of coping is the conceptualization of stress as arising from the interaction between the person and the situation (Chandler, 1985). But within this broad interactional perspective there can be distinguished several theoretical variants: the more organismic developmental perspectives, the more mechanistic life events models, and the more completely transactional approaches.

The first of these, the **organismic developmental perspective**, is exemplified by Erikson's (1959) theory which emphasizes the importance of maturationally determined points of crisis or particular vulnerablity. An individual may either achieve or fail to achieve a specific psychosocial task, and will thus proceed to the next task with a unique history of successes and failures.

Life events models focus on stressful life events or other related forms of stressors (e.g., hassles) as antecedent to the consequent physical or psychological outcome. Between this antecedent (cause) and consequent (outcome) will intervene a process (i.e., coping: Hultsch & Plemons, 1979) in which personality is commonly seen as a moderator (Dohrenwend & Shrout, 1985; Garmezy, 1983; Pearlin, Menaghan, Lieberman, & Mullan, 1981). Developmental life events models would include age or developmental stage as an equally important moderator. This developmental factor would influence the interpretations of life events of which an individual is cognitively capable (as would be the case, for example, when dealing with very young children), or toward which the individual is developmentally or maturationally primed (which assumes an underlying organismic perspective). The importance of these developmental considerations is explicitly recognized by those studying stress in childhood (Garmezy, 1983; Kagan, 1983; Maccoby, 1983; Rutter, 1981). Maccoby (1983), for example, has noted that younger children are more likely to find a greater number and variety of situations unfamiliar and, therefore, stressful.

The stressful life events research initially presented a view of life events as simple stressors or external features of the environment

that impinge upon the unprepared individual, creating change and requiring adaptation (e.g., life events a la Holmes and Raye, 1967, represented in the childhood literature by Coddington, 1972a, 1972b). There has been a major shift, however, to views that admit the perceptions of the individual as a major determining feature of the experience of stress: Behaviour is seen as discriminative and flexible.

Transactional theories of stress and coping focus on the individual's active organization of stimuli into a world that has specific personal meaning (Bandura, 1989; Pervin, 1985). From this perspective,

> stress lies not in the environmental input, but in the person's appraisal of the relationship between that input and its demands and the person's agendas (e.g., beliefs, commitments, goals) and capabilities to meet, mitigate, or alter these demands in the interests of well-being. (Lazarus, DeLongis, Folkman, & Gruen, 1985, p.770)

It is such a transactional and cognitive theory of stress and coping that has been selected as the theoretical framework for this research.

A Transactional Theory of the Coping Process: Lazarus's Theory

In Lazarus's theory (Lazarus, 1984; Lazarus et al., 1985; Lazarus & Launier, 1978; Folkman, 1984) two processes, cognitive appraisal and coping, are the critical mediators of stressful person-environment relations and their immediate and long-range outcomes (Folkman, Lazarus,

Dunkel-Shemer, Delongis, & Gruen, 1986). The stress experience involves a bidirectional transaction between an active (i.e., coping), interpreting (i.e., appraising) individual and the environment, both of which may change over time. The theory stresses the importance of **appraisals** that transcend the two separate sets of variables -- those relating to the person and those relating to the environment. How a situation is appraised depends on the balance of power between demands and resources, either of which may be intrinsic or extrinsic to the individual.

A major premise of Lazarus´s theory is that whatever happens is given meaning by more or less stable aspects of personality, two critical features of which are (a) patterns of commitments and (b) beliefs about the self and the world, most importantly **beliefs about control** (Lazarus & DeLongis, 1983). These are the major person factors affecting primary appraisal of a transaction as benign, harmful, threatening, or challenging. The key issue addressed in the primary appraisal process is, according to Folkman et al. (1986), "What is at stake here?".

Situational appraisals of controllability, which can take precedence over generalized beliefs in unambiguous situations, are a part of the secondary appraisal process. The principal question here is, according to Folkman et al., "What are the options?". The secondary appraisal process includes an appraisal of assets and resources and it leads to the selection of coping strategies. This process also contributes to the interpretation of the presence or absence of threat. In both the primary and secondary appraisal processes, the appraisals

are based on personal meanings, and the significance of particular actions cannot be gauged without insight into those meanings.

There is no suggestion of antecedent-consequent relationships in this theory -- situational and personological factors affect appraisals of threat, but so do availability of resources and strategies, and the application of these resources and strategies. There exists a recursive pattern of influence all the variables.

Definition of coping. Within this theory, coping is defined as "the person's constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the person's resources" (Folkman, et al., 1986, p.993). People are seen to be continuously seeking a way to comprehend what is happening to them, and this ongoing process of constructing reality is thought to be a constantly changing one (Lazarus, 1983).

Functions of coping. Coping is seen to serve two main **functions**: (a) an instrumental function, which is the management of the problem at hand, and (b) a palliative function, which involves the regulation of the attendant emotion (Lazarus et al., 1985; Menaghan, 1983). It also serves a longer range function of preservation of self-esteem (Menaghan, 1983; Taylor, 1983). These functions may be expedited in one or several of four different ways, i.e., through (a) information seeking, (b) direct action, (c) inhibition of action, or (d) intrapsychic processes such as reappraisal or denial. Further, each of the above strategies or **modes** may be oriented to, or **focused** on, the self or the environment.

Recommended research strategies. Lazarus's theory of the stress process demands that idiographic perceptions of normative events be sought; individualistic responses to known threats have thus been studied (Folkman & Lazarus, 1980; 1985; Folkman et al., 1986). Lazarus (1984) has recommended an ipsative-normative research approach, and Folkman et al. (1986) have noted the need for both intraindividual and interindividual research designs.

Criticism and Rebuttal

The phenomenological nature of this theory has attracted some criticism. The central role accorded to perceptions, according to Hobfoll (1989), results in a tautology: Perceived demand is that which is offset by coping capacity, while coping capacity is that which offsets appraised threat or demand. Similar arguments have been advanced by Dohrenwend and Shrout (1985) who have stressed the need for separate and objective measurement of events and social situations, perceptions, and personality variables in the study of the stress process. However, it is the essential failure of this latter approach to explain significant portions of the variance (in health outcomes, for example: Lazarus, 1984) in antecedent-consequent analysis of variance designs which led to the transactional model in the first place.

It may eventually transpire, as Hobfoll (1989) suggested, that Lazarus's theory will prove to be simply an heuristic tool during what is essentially a descriptive stage in research on stress and coping, and that a more adequate theory will then replace it. However, given that there is still much work to be done at the descriptive level in the field of childhood coping, Lazarus's theory remains, for this writer,

the most complete and intuitively attractive approach. It is complete in that it: (a) suggests a general approach -- a phenomenological one, (b) proposes specific variables -- for example, control beliefs, and (c) recommends a research method -- an ipsative-normative approach using longitudinal designs.

In choosing to work within this theoretical framework, though, one must accept what is essentially the bottom line: Stress is inherently an unclean variable (Lazarus et al., 1985).

Appraisal and Person-Environment Transactions

The number of constructs theoretically related to the construct of coping are many and varied. The selection of those few that should be used in the assessment of the validity of a new measure of coping was therefore a difficult task. The focus in this consideration was on those variables that have been identified as mediators of the stress experience. It was hypothesized that these variables might exert their influence on the stress process through their impact on or interaction with coping strategy selection (Folkman et al., 1986). They would, therefore, be related to coping (as measured in terms of strategy use) in important ways, but would not be identical to it.

Perhaps the two most broadly recognized and discussed sets of variables in the stress process are (a) personality variables, in the form of both traits and cognitive constructions of the self, and (b) life events.

These two sets of variables are common to all current conceptualizations of the stress process. Garmezy (1983), for example, proposed a diathesis-stress model of coping and adjustment where

personality factors are among either the vulnerability (diathesis) or protective factors, and the life events factors are the stress component.

Personality Factors

Beliefs about control. Specifically, Garmezy (1983) identified positive personality dispositions as being important insulators. Similarly, self-esteem (Chandler, 1985; Kendall, 1983; Murphy & Moriarty, 1976), sense of mastery (Asarnow, Carlson, & Guthrie, 1987; Garmezy, 1983; Harter, 1982; Kagan, 1983; Ross & Ross, 1985), and self-efficacy (Bandura, 1982; 1983) have all been associated with positive adjustment outcomes in a variety of situations.

Internal locus of control has also been associated with positive outcomes (O'Grady & Metz, 1987; Taylor, Lichtman, & Wood, 1984), although there are findings relating internal locus of control to increased anxiety in medical situations (George, Scott, Turner, & Gregg, 1980) and to other negative outcomes (Wallston & Wallston, 1978). These contradictory findings may be attributable to the complexity of control constructs (Levenson, 1981; Reid & Ware, 1973, 1974; Skinner & Chapman, 1988), the multiplicity of meanings of the term control (Folkman, 1984; Thompson, 1981), the variety of approaches to measurement (Wallston & Wallston, 1978), or the inherent controllability or uncontrollability of situations (George et al., 1980).

The difficult theoretical issues surrounding the locus of control construct go beyond the scope of concern of this research. The important point to be made here is that regardless of the specific

nature of their impact, beliefs about the self -- particularly **beliefs about control** -- are of critical importance to the stress process.

Other personological variables are also important. Some of these are cognitive factors, either in the sense of cognitive power (i.e., intelligence) or cognitive structure (i.e., cognitive developmental level). In the case of the former set of variables at least, the route of influence seems to be through such mechanisms as problem-solving ability, adaptability, and cognitive flexibility (Nagera, 1978; Rutter, 1981; Vagi & Lefcourt, 1988) or perhaps most basically, self-esteem (Rutter, 1981).

Coping style. A more trait-like personality construct, **coping style**, has also been identified as being of critical importance to the stress experience (Melamed, Robbins, & Graves, 1982; Menaghan, 1983). Schultheis, Peterson, and Selby (1987) have defined coping style as characteristic coping strategies that are used consistently across situations, although they clearly point out that preferred approaches are generally seen to interact with situational variables (e.g., Compas, Malcarne, & Fondacaro, 1988).

A major dimension of coping style that has received a great deal of attention in the medical stress literature is the concept of approach - avoidance (Burstein & Meichenbaum, 1981; Kaloupek, White, & Wong, 1984; Knight, Atkins, Eagle, Finkelstein, Fukushima, Katz, & Weiner, 1979; Thompson, 1981) or monitoring - blunting (Miller, 1981; 1987), which both define individual tendencies to approach (monitor) or avoid (blunt) situations or information.

Roth and Cohen's (1986) review of the approach/avoidance literature supported Lazarus's notion that coping is a dynamic process. These two basic orientations to threat (approach and avoidance) were shown to vary in primacy between individuals and across time for a given individual; both could even be present at any particular time, with some aspects of the threat being approached and others being avoided.

Temperament. This approach/avoidance coping dimension may have its roots in the temperamental dimension identified by Kagan in timid and bold children, who are typically very inhibited or outgoing in a variety of situations (Kagan & Snidman, 1991). Other aspects of **temperament** that may be related to coping include impulsivity (Garmezy, 1983) and emotionality (Rutter, 1981).

Impulsivity might conceivably be related to the number of different strategies employed during the coping process: An impulsive child might jump from strategy to strategy, while a less impulsive child might persevere in employing a more limited number of strategies. Emotionality might exert its influence on coping through its potential impact on appraisal: An emotionally reactive child might appraise a given situation as more threatening than a less reactive child.

Anxiety. The hypothesized importance of emotionality is supported by the research on the influence of anxiety on the stress process. From the time of the earliest research on adjustment outcomes in medical settings (e.g., Janis, 1958), **state anxiety** has been identified as a factor mediating outcomes (Brown, Wright, & McMurray, 1986; George et al., 1980). Weisenberg (1987) has suggested that anxiety might operate through its effect on a person's perceptions of the situation: The

highly anxious individual may not, for example, be able to discriminate the harmful from the innocuous.

This interpretation is entirely compatible with Lazarus's theory, wherein anxiety and the other temperament/personality variables outlined above are important because of the role they play in how individuals appraise, respond to, and subsequently recover from a stressful situation (Schultheis, Peterson, & Selby, 1987). It should be recalled that according to Lazarus's theory, appraisals transcend these separate person and environment variables: There is an ongoing transaction between an interpreting individual and the environment.

Life Events

Other critical factors in the stress process are life events and the related social support factor (Chandler, 1985; O'Grady & Metz, 1987; Pearlin et al., 1981; Rutter, 1975). Of course, according to Lazarus's theory, the impact of life events is mitigated by perceptions and appraisals.

Within the context of a specific situation, the process of secondary appraisal (i.e., the appraisal of assets and resources and of the controllability of the situation) will draw heavily on **specific prior experiences:** The individual will assess the balance of situational demands and personal resources in a particular context (Folkman, 1984). Prior experience in medical settings has frequently been identified as important in understanding a child's response to and adjustment following hospitalization (Cataldo, Jacobs, & Rogers, 1982; Rutter, 1981). Melamed, Robbins, and Fernandez (1982) have suggested

that previous experience leads to expectations about the controllability of the situation and one's ability to cope.

Transactional Theory and Medical Stress Research

While most medical stress research was, until very recently, conducted in a theoretical vacuum (Melamed, Robbins, & Graves, 1982), Schultheis et al. (1987) have noted that Lazarus's transactional theory has begun to establish itself as a sensible framework. In their review of the literature, Schultheis et al. found that medical stress research had shifted its "model of the presumed locus of behavior control from situations or personality traits to the interactional model (Lazarus & Launier, 1978), which takes into consideration the person x situation transaction" (p. 330).

The use of the interactional model is apparent in pain research. McGrath (1987) suggested that children perceive a noxious stimulus in relation to a certain **context** which is defined by "their frame of reference" (p. 255). This frame of reference includes, among other factors, the child's age, cognitive level, previous pain experiences, and perceived ability to control the pain. Similarly, Fernandez (1986) noted that evidence exists in the literature for the importance of anxiety, predictability, perceived controllability, attention, and personality attributes to the experience of pain.

The shift to the interactional approach is also apparent in research on personality traits per se (Pervin, 1985), and specifically in research on how traits such as anxiety, locus of control, and coping style affect adjustment outcomes. Using the research on coping styles as an example, there has been a progression from the examination of the

interaction between preferred style and characteristics of the medical procedure (e.g., Miller & Mangan, 1983), to (a) a consideration of the fit between specific coping efforts and situational appraisals (e.g., Forsythe & Compas, 1987) and (b) the explicit recognition that coping is a process that can vary from one stage of the stressful medical encounter to another (e.g., Kaloupek et al., 1984; Kaloupek & Stoupakis, 1985; Wong & Kaloupek, 1986).

Focus on children

Like the greatest part of the empirical work articulating Lazarus's theory (e.g., Folkman et al., 1986; Lazarus, 1984), the participants in the studies cited above were university students or adults. One exception to this is the research of Wertlieb, Weigel, and Feldstein (1987). They found that the categorization of coping processes in terms of focus, function, and mode, as suggested by Lazarus's theory, provided useful descriptions of children's coping. However, in order to expand our understanding of the process of children's coping, a reliable and valid measure of children's strategy use is greatly needed (Auerbach, 1989; Kuttner & LePage, 1989; Taylor, 1987).

Medical Experiences: What Do Children Find Stressful?

In order to develop and evaluate an instrument to assess children's coping strategies, it was necessary to identify a situation or situations that children would likely perceive as threatening. The review of the literature summarized below led to the selection of a venipuncture procedure as the primary medical stressor.

Separation from Mother

The experience of hospitalization, most specifically undergoing threatening medical procedures, provides an excellent arena for the study of the stress process. The earliest reports on the effects of childhood hospitalization appeared in the literature almost 50 years ago (e.g., Edelston, 1943). These were quite unanimous in their conclusion that hospitalization could have some serious negative effects on the young child including in-hospital physiological and behavioural signs of anxiety, and posthospitalization reactions such as sleep disturbances and regressive behaviour (King & Ziegler, 1981). This early work was done in the era of very brief daily or even weekly parental visits to hospitals, and the major etiological factor identified as responsible for the above-noted negative effects was, not surprisingly, deprivation of the security and reassurance that a child normally derives from being in the presence of the mother (Spitz, 1945). Subsequent research identified several other important etiological factors.

Age, Illness, and Duration of Hospitalization

Based on their review of the literature on the behavioural effects of hospitalization from the previous 25 years, King and Ziegler (1981) concluded that (a) hospitalization did tend to have negative effects which (b) appeared to be greatest for children from 7 months to 5 years of age, particularly when (c) the hospitalization period extended beyond one week. They also concluded that (d) illness itself appeared to be disturbing, but (e) many children emerged from the hospitalization experience unscathed (see also Dimock, 1959 and Solnit, 1960 for a discussion of positive aspects of the hospitalization experience).

The Institutional Environment and Painful Procedures

Cataldo et al. (1982) identified two specific categories of events in the hospital environment that affected the behavioural and biological status of patients. Firstly, the daily hospital routines, which create a fairly typical institutional environment, give rise to stresses that Cataldo et al. noted are comparable to those Goffman (1961) identified in asylums. The second important category of event present in hospital environments was identified as the dramatic and often painful medical and surgical procedures that are performed on the patient, and are observed by the patient as they are performed on others.

In adult ratings of sources of stress in hospital, procedures received higher stress ratings than most stresses related to the institutional character of hospitals. The only notable exception was the stress related to the uncertainty inherent in potentially serious illness (Volcier & Bohannon, 1975).

Melamed, Robbins, and Graves (1982), Kendall (1983), and Petersen and Mori (1988) all identified anxiety about painful medical procedures as a major source of stress for children in hospital. Injections and venipunctures were prominent as separate critical and stressful events for most of the children studied by Lewis (1978) during their hospital stays or clinical visits. In fact, Eland and Anderson (1977) and Poster (1983) found them to be the most fear-provoking event during hospitalization. All of these findings provide support for the study of the stress of medical procedures outside the context of hospitalization per se.

Unfamiliarity and Loss of Personal Control

Most recently, the focus of considerable research has been on cognitive aspects of the stress experience: specifically, perceptions and appraisals. Vernon, Foley, Sipowicz, and Schulman (1965), and more recently Melamed, Robbins, and Graves (1982) and Petersen and Mori (1988) included unfamiliarity of the setting as a major cause of emotional upset. The notion of unfamiliarity can be related conceptually to the work on the role of uncertainty of outcome and loss of personal control in current medical stress research with adults (e.g., George et al., 1980; Miller & Green, 1985). Indeed, Petersen and Mori (1988) listed lack of control over events as one of the major factors provoking anxiety in pediatric patients.

Kendall (1983) found that lack of information was the major source of perceived stress among hospital patients, and that the health care workers' perceptions of the "good patient" as compliant and accommodating (i.e., non-information-seeking) compounded this stress.

Perceived Undesirability

Thoits's (1983) analysis of what factors give meaning to and affect the impact of life events suggested an additional cogent reason why medical procedures are perceived as stressful. She found that undesirability was a more powerful predictor of adjustment outcome in adults than uncontrollability or even the magnitude of the event. Investigative medical procedures have few redeeming features, and they are quite universally perceived as undesirable, mostly because they give rise to the kinds of threats outlined by Cohen and Lazarus (1979). These include: (a) threats to life and fear of dying; (b) threats to

bodily integrity and comfort, including bodily injury and physical pain and discomfort; (c) threats to one's self-concept and future plans, including loss of autonomy and control; (d) threats to one's emotional equilibrium arising from the need to deal with feelings of anxiety, anger, and other emotions that come about as a result of the other stresses described; (e) threats to the fulfillment of customary social roles and activities, including the necessity to depend on others; and (f) threats involving the need to adjust to a new physical and social environment, including problems in understanding medical terminology and customs.

Thus even fairly benign or non-invasive treatments could be quite stressful if one or more of the above threats is perceived.

Conclusion

Clearly, a variety of medical procedures, whether performed inside or outside the hospital, can be perceived as threatening by adults and children alike. There is good evidence that venipuncture procedures are quite universally perceived as threatening, perhaps most particularly by children. The threat is likely to be enhanced if these procedures take place in a hospital setting.

Research on Children's Coping Strategies

Through a review of the literature, both specific strategies and more general dimensions or approaches were identified that should be represented in any instrument designed to assess coping strategies. An overview of these findings is presented in Table 1.

TABLE 1

COPING STRATEGIES: MODELS

BILLINGS AND MOOS (1986)
Three types of strategies:
- Problem Focused Strategies
  - Seeking information and support
  - Taking problem solving action
  - Identifying alternative rewards
- Emotion Focused Strategies
  - Affective regulation
  - Emotional discharge
  - Resigned acceptance
- Appraisal Focused Strategies
  - Logical analysis and mental preparation
  - Cognitive redefinition
  - Cognitive avoidance or denial

BROWN, O'KEEFFE, SANDERS AND BAKER (1986)
Coping vs. catastrophizing:
- Coping Strategies
  - Positive self-talk
  - Attention diversion
  - Thought stopping
  - Talking with someone else
  - Problem solving
  - Relaxation; deep breathing
  - Task orientation
- Catastrophizing
  - Focus on negative affect or fear
  - Self blame; self denigration
  - Worry/rumination
  - Escape/avoidance
  - Fear of unlikely consequence
  - Fear of response to dentist or vice versa
  - Anxious anticipation

CURRY AND RUSS (1985)
Nine coping strategies:
- Behavioural Strategies
  - Information seeking:
    - Questioning
    - Vigilant behaviour
    - Support seeking: Physical contact
      Verbal contact
  - Direct efforts to maintain control:
    - Active participation
    - Limit setting

Table 1 (Continued)

CURRY AND RUSS (Continued)
- Cognitive Strategies
  - Reality-oriented working through
  - Positive cognitive restructuring
  - Defensive reappraisal
  - Emotion regulating cognitions
  - Behaviour regulating cognitions
  - Diversionary thinking

LAZARUS, (1978, 1981)
Three independent dimensions:
- Coping Functions
  - Instrumental: problem solving
  - Palliative: regulation of emotions
- Coping Foci
  - Self
  - Environment
- Modes (Strategies)
  - Information seeking
  - Direct action
  - Inhibition of action
  - Intrapsychic

MURPHY AND MORIARTY (1976)
Two types of coping devices:
- Outward-directed
  - Active problem solving
- Inward-directed
  - Keeping comfortable and maintaining personal integrity

PEARLIN AND SCHOOLER (1978)
Three types of coping behaviours:
- Problem Focused
  - Changing the situation
- Emotion Focused
  - Controlling feelings of distress
- Appraisal Focused
  - Changing the meaning of the situaton

Murphy and Moriarty (1976), in their classic work on children's coping, found that there were two basic types of coping devices employed by children. The first kind, those directed outward to the environment, were characterized by active problem-solving. The second type were those directed inward; these were aimed at keeping comfortable and maintaining internal integration. Wertlieb et al. (1987) aptly pointed out the comparability of these dimensions to the conceptualization of the coping process proposed by Lazarus and his colleagues: the problem solving function identified by Lazarus is primarily outwardly focused, and the palliation function is basically focused inwardly.

It is not entirely clear that the inward/outward distinction of Murphy and Moriarty is identical to the emotion-focused/problem-solving distinction of Lazarus' theory, especially since Lazarus's theory provides for a separate consideration of focus (self vs. environment). Even so, Murphy and Moriarty's work provided an initial justification for developing an instrument within the framework of a theory developed primarily from research with adults. Further support was found in the work of Compas et al. (1988). They noted that self-generated coping alternatives proposed by 10- to 14-year-old children in response to an open-ended questonnaire were readily classified as either problem-focused or emotion-focused strategies.

The work of Curry and Russ (1985) provided strong evidence of the applicability of the coping **modes** proposed by Lazarus and his colleagues to work with children. Using a structured interview format with 8- to 10-year-old children, they found that cognitive (intrapsychic) and behavioural strategies were well represented among the spontaneously

generated responses, and that behavioural strategies included direct efforts to maintain control and seek out information. A more detailed description of all the different types of coping strategies used by children in Curry and Russ's study is given in Table 1. The presence of an information seeking disposition in the coping styles of children was confirmed by Peterson and Toler (1986) who interviewed 5- to 11-year-old children about how they coped in general and in a specific situation.

One type of response to a stressful encounter that is not explicitly represented in Lazarus's framework, but which was eventually included in the instrument developed in this research, is one identified by Brown and his colleagues in both adult (Chaves & Brown, 1987) and child (8 to 18 years of age; Brown, O'Keeffe, Sanders & Baker, 1986) samples. They found that their respondents could be classified as using either coping or catastrophizing strategies, specific examples of which are included in Table 1.

Brown and her colleagues suggested that catastrophizing is probably maladaptive: It was associated with higher trait anxiety (Brown, O'Keeffe, Sanders, & Baker, 1986) and higher stress (but interestingly, not pain, Chaves & Brown, 1987). While Brown O'Keeffe, Sanders, and Baker (1986) found that catastrophizing tended to focus on negative affect, and Chaves and Brown (1987) suggested that it may be more important to avoid catastrophizing than to engage in coping, Folkman et al. (1986) have pointed out that Lazarus's theory makes no a priori assumptions of what constitutes good and bad coping. If catastrophizing is a frequently reported strategy, it should be represented in measures of coping.

In support of this position, Kaloupek and Stoupakis (1985) found that the expression of distress may be part of a coping strategy that is associated with reduced physiological responding. Silver and Wortman (1980) suggested that the suppression of distress and negative feelings may use up energy that could be used more fruitfully otherwise.

Two final bodies of work from the adult literature that influenced the selection of coping strategies and the definition of the dimensions of coping in the current study were the writings of Billings and Moos (1981, 1984), and the earlier work of Pearlin and Schooler (1978). Pearlin and Schooler proposed that coping behaviours could be categorized into **three** major coping styles. The first two styles parallel the problem-solving emotion-focus distinction made above. These styles were defined by responses that (a) changed the situation, or (b) were aimed at controlling distressful feelings. The third caregory was new. It explicitly grouped together those responses that (c) changed the meaning or the appraisal of the stress.

Billings and Moos (1981) developed a similar formulation that divided coping skills into three domains according to their primary focus (see Table 1). The inclusion of the third appraisal-focused category, in addition to the problem- and emotion-focused coping categories of Lazarus, adds an important dimension to our understanding of the coping construct.

Of course, embedded within these three identified dimensions is another basic distinction discussed earlier as coping style (see Personality Factors, this chapter). The distinction of approach-avoidant coping styles is well supported by research wih both

adults (Billings & Moos, 1981; Endler & Parker, 1990; Miller, 1987) and children (Peterson, 1989a; Peterson & Toler, 1986).

Developmental Differences in Strategy Use

There is a considerable body of evidence suggesting developmental differences in both the number and types of strategies used within the period of childhood and adolescence. Total strategy use has been shown to increase with age, as has the proportionate use of information-seeking (i.e., approach) strategies, direct efforts to maintain control, and various types of cognitive strategies; the proportionate use of support-seeking and catastrophizing strategies, on the other hand, has been shown to decrease with age (Bennett-Branson & Craig, 1990; Branson & Craig, 1988; Brown, O'Keeffe, Sanders, & Baker, 1986; Compas et al., 1988; Curry & Russ, 1985; Peterson & Toler, 1986; Wertlieb et al., 1987; Worchel, Copeland, & Baker, 1987).

These differences may be attributable to the child's conceptual level (Melamed, Robbins, & Fernandez, 1982). Maccoby (1983) pointed out that younger children are more likely to find a greater number and variety of situations unfamiliar and therefore stressful. But at the same time she noted that younger children cannot be upset by events whose meaning or potential for harm they cannot understand. These are important considerations in selecting a stressful event for the purposes of research. In terms of this study, public health regulations dictate that children in our society are fairly universally exposed to venipuncture, and it has already been shown that even very young children understand the pain potential of a needle.

Furthermore, on the basis of age, it would be expected that most children in this study (aged 6 to 10 years) would be at approximately the same conceptual level (i.e., concrete operational in Piagetian terms). However, older children might still be expected to be more experienced and more practiced in the application of higher level **cognitive** strategies (Maccoby, 1983; Wertlieb et al., 1987), the use of which would increase their total repertoires in comparison to younger children.

Gender Differences in Strategy Use

In contrast to these developmental findings, there has been very limited evidence in the literature for gender differences in strategy usage, with many studies reporting null findings (Brown, O'Keeffe, Sanders, & Baker, 1986; Knight et al., 1979; Reissland, 1983; Robins, 1987).

The following differences have been noted in specific studies. Girls have been found to report more strategies overall than boys (Tessler, Wegler, Savedra, Gibbons, & Ward, 1981), and to report proportionately more support seeking than boys (Wertlieb et al., 1987). It has also been noted that boys report proportionately more distraction strategies than girls (Tessler et al., 1981), and may report more strategies related to a possible "macho" effect, such as failure to recognize threat, and direct efforts to maintain control (Ferguson, personal communication, 1990).

Conclusion

Overall, there is a great deal of evidence to support the assertion that children do engage in a conscious process of active coping and that

they employ specific strategies upon which, it will be argued in the next chapter, they might be expected to report.

CHAPTER III

LITERATURE REVIEW

METHODS AND MEASURES

Methods

Testing the Limits of Generalizability

Three Aspects of Reliability

Anastasi (1982) defined reliability as the consistency of scores obtained by the same persons when reexamined with the same test on different occasions (test-retest reliability), or with different sets of equivalent items (alternative forms reliability), or under other variable testing conditions. The goal of an assessment of reliability is thus, according to Anastasi, to establish the extent to which "individual differences in test scores are attributable to 'true' differences in the characteristics under consideration and the extent to which they are attributable to chance errors" (p. 102).

The consideration of reliability in this study will follow the structure suggested by Selltiz, Wrightsman, and Cook's (1976) treatment of the subject. They outlined and clearly defined the three broadly recognized aspects of reliability. The first of these is homogeneity, which addresses the issue of how well each of the various response items reflects the attribute in question. Measures of internal consistency such as Cronbach's alpha (1951) assess the homogeneity of measurement instruments.

The second aspect of reliability, according to Sellitz et al. (1976) is repeatability, or the degree to which the measure yields

similar scores at different times. Assessments of repeatability assume that the phenomenon being measured is stable across time.

The final aspect of reliability is equivalence, which Sellitz et al. defined as the degree of agreement between two or more measures administered concurrently. Anastasi (1982) has noted that these two or more measures should be obtained by, or should employ, maximally similar methods. Thus the equivalence of measures is distinguished from validity estimates, which should be obtained by maximally dissimilar methods (Campbell & Fiske, 1959).

Reliability and Validity as a Continuum

Campbell and Fiske (1959) have suggested that the distinction between reliability and validity lies in this above-noted requirement of a validation process to establish convergence of independent approaches to the measurement of a construct. They did admit, however, that "independence is...a matter of degree, and in this sense, reliability and validity can be seen as regions on a continuum" (p. 83).

Cronbach, Gleser, Handa, and Rayaratman (1972) expanded on this conceptualization of reliability and validity as existing on a continuum, one which they argued defines the limits of generalizability of a measure. Cronbach and his colleagues described the objective of the measurement process to be the achievement of a **representative** score, based on a whole series of scores that might have been obtained but were not. This series of scores would include responses to every conceivable relevant question, asked or observed in all possible ways, from all possible sources, at all possible times: the sampling of the response

domain is complete in that the total population of responses is obtained.

In reality, sampling is rarely complete, and assessments of reliability and validity are used to **estimate** how representative of or generalizable to the entire population of responses the obtained score is. When viewed in this way, the distinction between the concepts of validity and reliability in the measurement process becomes much less marked (Baltes, Reese, & Nesselroade, 1977).

Three Types of Validity

The term validity refers to "the appropriateness, meaningfulness, and usefulness of specific inferences made from test scores" (American Psychological Association [APA], 1985, p. 9). As evidence is accumulated in a variety of ways, inferences regarding specific uses of a test are validated (APA, 1985), and as the scope of accumulated evidence is broadened, so too is the scope of possible inferences.

Traditionally, three types of validity are distinguished: content-related, criterion-related, and construct-related validity (e.g., Anastasi, 1982; APA, 1985).

Content-related validation, which addresses the degree to which the sample of items on a test is representative of a defined domain (APA, 1985), is a critical aspect of the test construction stage.

Criterion-related validity assesses the effectiveness of a test in predicting an individual's behavior in specified situations (predictive validity: Anastasi, 1982), although a criterion measure can also be obtained at the same time as the test score (concurrent validity). Both

predictive and concurrent validity provide useful information about the meaningfulness and usefulness of a test.

Construct-related validation focuses on the test score as a measure of the psychological characteristic of interest: The process is greatly enhanced if the construct is embedded in a particular conceptual framework (APA, 1985). The "framework specifies the meaning of the construct, distinguishes it from other constructs, and indicates how measures of the construct should relate to other variables" (p. 10).

In this study, careful attention was paid to defining the domain of possible responses, and achieving a representative sample of those responses in the instrument development phase. The joint issues of predictive and concurrent validity were addressed in the hospital study. The main study was designed to assess the construct validity of the newly developed measure of coping strategies, within the conceptual framework of Lazarus's (e.g., 1984) theory of stress and coping.

The Multitrait Multimethod Model of Construct Validation

Campbell and Fiske (1959) offered an extremely serviceable research design for the process of construct validation in their multitrait multimethod matrix. This model elaborates the types of comparisons that should be built into a validation process and how the pattern of the results of these various comparisons should be interpreted.

A complete matrix would provide information on test-retest reliability, convergent validity with a number of other measures of the same construct (including at least one employing an alternative method of measurement), and discriminant validity based on comparisons with

other traits (measured in a manner both similar to and different from the test under investigation).

Using this model as a framework, the comparison measures for this study were designed or selected to form a continuum of similarity to the newly developed instrument, ranging from an alternate form of the measure, through administration of the same measure under differing conditions, to validated instruments measuring different but related constructs (see Table 6, Chapter V and Table 28, Chapter VII).

Measures

Instrument Design Issues

The Self-Report Approach

The theoretical framework adopted for this research (see Chapter II) defines coping as an active and purposeful process consisting of intentional cognitive and behavioural acts -- acts in which an individual deliberately engages, and upon which the individual should be able to report. This definition and the attendant assumptions raise a number of critical questions when children are the target population.

The use of the self-report approach to personality measurement clearly assumes that the respondents have the necessary self-knowledge to answer the questions (Selltiz et al., 1976). In the context of this research then, the primary question was whether children have achieved the cognitive sophistication required to understand and report on their coping behaviour. Available research seemed to indicate that they have. Interviews conducted by, for example, Curry and Russ (1985) with 8- to 10-year-old children, and Peterson and Toler (1986) with 5- to

11-year-old children, provided ample evidence that children do possess the requisite knowledge.

In spite of this encouraging evidence, designing an instrument that can elicit this information reliably from children still presented a dual challenge -- dealing with the problems inherent in self-report instruments and those always present in working with children.

Weaknesses of self-report. To turn first to the weaknesses of self-report, it cannot be denied that verbal descriptions of private events are open to what Skinner (1959) described as fictional distortion. Self-report instruments are subject to deliberate faking, and conscious or unconscious response tendencies such as positive self-presentation, acquiescence, and nay-saying (Anastasi, 1982).

Problems particular to working with children. These problems are likely compounded when dealing with children. Yarrow (1960) identified a number of characteristics of children that can compromise the reliability and validity of an interview, and most of these would also affect self-report instruments. Critical among these characteristics are the suggestibility of the young child, and, with increasing age, the problems of peer identification and the tendency to withhold information from adults.

Strengths of self-report. Even with its limitations self-report is a valuable technique. Kuttner and LePage (1989) noted that such instruments are being increasingly valued in pediatric research. They are equally valued in clinical psychology settings: while Verhulst, Althaus, and Berden (1987) found that information obtained from the child contributed little to overall clinical judgement in the diagnosis

of problems, they also noted that the unique contribution of the child interview was in the area of fears and anxiety.

Approaching the same question from the opposite perspective, Reich and Earls (1987) found that clinical diagnosis can be made from child reports alone. They noted that children as young as 6 years of age reported emotional problems of which the parents were unaware. Thus, the strength of the self-report approach is explicitly in its privileged access to the world of the child's perceptions and feelings (Beitchman & Corradini, 1988; Bierman & Schwartz, 1986; Verhulst et al., 1987). Furthermore, in their work on children's understanding of self-regulation, Mischel and Mischel (1983) have found that primary school children can convey important information about their cognitive coping strategies.

Even with respect to **behavioural** coping strategies, it should be noted that coping is essentially a complex internal phenomenon, and it is important to evaluate the meaning behind behavioural manifestations of coping (Peterson & Toler, 1986). It is possible that certain behaviours, which appear to be coping strategies, may not be reported as such by the child, while other behaviours, which adults might classify as distress behaviours, would be reported as coping by the child.

This constitutes a second important strength of the self-report approach for the purpose of this study: it involves a much lower level of inference than the observational technique (Yarrow, 1960). As Peterson (1989b) noted, "only a self-report measure can discriminate among ambiguous overt coping behaviors" (p.384).

Visual Analogue Scales

The review of the literature indicated that visual analogue scales have been used with considerable success with children in medical settings. It was therefore decided to use two different visual analogue scales in the Situational Appraisal Index which forms a part of the new instrument (see Chapter IV).

Walk (1956) introduced the initial visual analogue scale for fear, a fear **thermometer** where increasing levels of fear were indicated by increasing "temperatures" on the thermometer. Much later, LeBaron and Zeltzer (1984) and Elliot, Jay, and Woody (1987), among others, began using series of expressive **faces** to assess situational anxiety or fear. McGrath, deVeber, and Hearn (1985) used faces to assess what they called pain affect.

Thermometers. McGrath, Cummingham, Goodman and Unrah (1986) and Elliot and Jay (1987) provided evidence of the utility of pain and anxiety thermometers for school-aged children but advised caution in their use with children under the age of 7. However, Aradine, Beyer, and Tompkins (1988) reported that most preshoolers appeared to be able to use vertical visual analogue scales. Rape, Bush, and Saravia (1988) found that children as young as 3 years of age were able to respond meaningfully to a fear thermometer.

Fear thermometer scores have been shown to correlate moderately with behavioural measures of fear (Elliot et al., 1987; Kuttner, Bowman, & Teasdale, 1988; Rape et al., 1988), as well as physiological measures (Rape et al., 1988; Winer, 1982). However, it has also been well established that there exists considerable desynchrony among the

cognitive, behavioural, and physiological fear and pain response systems (Hodgson & Rachman, 1974), and that these relationships can change with age (Elliot & Jay, 1987; Katz, Kellerman & Siegel, 1980; LeBaron & Zeltzer, 1984), particularly in ambiguous situations (Rape et al., 1988), so that high correlations would not necessarily be expected.

Faces. While investigators employing observational scales have found it impossible to disentangle pain and fear in the behavioural responses of young children (Elliot et al., 1987; Katz, Kellerman & Siegel, 1981; Sacham & Daut, 1981), those using self-report measures have found that children can distinguish between the concepts of scared (fear) and hurt (pain) (Elliot et al., 1987; LeBaron & Zeltzer, 1984; Winer, 1982). McGrath et al. (1985) found that children above 5 years could use visual analogue scales (thermometers) to rate pain strength and faces scales to rate pain affect. Kuttner and LePage (1989) also found that children could discriminate and appropriately label anxiety and pain on faces scales.

A Review of Existing Measures of Coping

Although a variety of instruments has been developed to assess children's coping strategies, none of these was seen to be entirely satisfactory for the assessment of the coping **process** in **young children** facing medical procedures. Appendix A contains a brief description of existing self-report instruments that might reasonably be considered for such purposes. Each of these was deemed to have one or more serious shortcomings in view of the age range of interest or the selected theoretical framework. These shortcomings are also listed in Appendix A. Two instruments developed for use with adults are also included in

this table, one because of its direct relevance to medical settings (the Process Coping Measure: Wong & Kaloupek, 1986), and the other because of its importance to the field (the Ways of Coping Questionnaire: Aldwin, Folkman, Schaefer, Coyne, & Lazarus, 1980).

Generally speaking, the available measures were seen to be inadequate for the following reasons.

Inappropriate formats. The **open-ended** question format of many of the measures requires that the children generate their own responses. Cohen and Lazarus (1979) suggested that this may be an inappropriate strategy for studying coping in adults, and it would seem to be even more problematic with children who have much more limited exposure to the "coping" construct in everyday life. Additionally, since the new instrument is intended for use **during** the stressful experience, it might well be assumed that many of the children's cognitive resources would be otherwise engaged. The open-ended formats were therefore rejected (Cognitive Coping Interview: Curry & Russ, 1985; the Coping Strategies Interview: Siegel, 1981; the Coping Questionnaire: Brown, O'Keeffe, Sanders, & Baker, 1986; open-ended question: Tessler, Wegler, Savedra, Gibbons, & Ward, 1981; semi-structured interview: Compas, Malcarne, & Fondacaro, 1988).

Length and administration times. Many of the instruments listed in Appendix A were designed for either **before** (e.g., the Preoperative Mode of Coping Interview: LaMontagne, 1984) or **after** (e.g., the Cognitive Coping Interview: Curry & Russ, 1985) a stressful experience, and would take **too long** to administer, especially on a repeated basis, during the coping experience. Such post procedure measures might also be subject

to forgetting, or to confusion between stages of the procedure where they did attempt to incorporate a process approach (e.g., Coping Strategies Interview: Siegel, 1981). Long post procedure measures were therefore considered inappropriate to the study of the **process** of children's coping in medical settings.

Level of inference. Two of the existing measures are projective in nature (the Coping Strategies Test: Asarnow, Carlson, & Guthrie, 1987; the Roberts' Apperception Test for Children: McArthur & Roberts, 1982). Even if these measures possessed adequately demonstrated psychometric properties for this type of application (which they do not), the lack of face validity and direct relevance to the situation at hand might be upsetting or frustrating to respondents who are under stress. Other measures assessing strategy use in response to unrelated or more general situations (e.g., the Children's Stress Inventory: Wertlieb, Weigel, & Feldstein, 1987), or in hypothetical situations (e.g., the Coping Questionnaire: Brown, O'Keeffe, Sanders, & Baker, 1986) were deemed inappropriate for the same reason.

Limited dimensionalization of coping. Some of the instruments reviewed were designed to assess the single coping dimension of approach-avoidance (e.g., the Children's Behavioral Style Questionnaire: Miller, unpublished), problem-focus vs. emotion-focus (e.g., the semi-structured interview: Compas et al., 1988), or control-related strategies (e.g., the Control-Related Coping Stratgies Questionnaire: Worchel, Copeland, & Baker, 1987). Using the example of the various conceptualizations of "active" coping, Peterson (1989b) has demonstrated that a more complex dimensionalization of coping is required.

Importance of appraisal. With the exception of the Ways of Coping Questionnaire (Aldwin et al., 1980), and the Wertlieb et al. (1987) adaptation of this measure for children (see Appendix A), situational appraisals were not an integral part of the assessment of coping in the instruments reviewed. The selected theoretical framework dictates that appraisal is critical.

Inappropriate age range. Only three of the existing measures were designed for use with primary school children (the Children's Stress Inventory: Wertlieb et al., 1987; the Control-Related Coping Strategies Questionnaire: Worchel et al., 1987; and the Coping Strategies Interview: Siegel, 1981), and each of these was rejected for other reasons (see above and Appendix). In all of the other instruments, either the issues covered, the vocabulary level, or the formats (e.g., self-generated responses; the need to generalize from specific instances) were generally inappropriate for younger children.

Psychometric Properties of Selected Measures

Establishing instrument validity using the multi-trait multi-method model necessitated the selection of comparison measures. The literature concerning the **selection** of relevant constructs has already been reviewed (see Chapter II). The literature pertaining to the **psychometric properties** of existing comparison measures will be reviewed here; descriptions of other comparison measures, developed expressly for this study, can be found in Chapter V.

The Oucher

While virtually all other questions on the newly developed measure were original to this work, an existing instrument was used for the

situational appraisal of pain. The "Oucher" was developed by Beyer (1984) to assess children's perceptions of the intensity of their pain.

The Oucher has two scales side by side: a vertical numerical scale which ranges from 0 (no hurt) to 100 (the biggest hurt you could ever have), and a vertical visual analogue scale consisting of six photographs of a preschool child. These photographs depict levels of pain ranging again from "no hurt" to "the biggest hurt". Beyer (1984) has shown the two scales to be highly associated ($r = 0.82$, $p<.05$), and has suggested that children who are able to count to 100 use the numerical scale and those who cannot use the photographic scale. However, in this study, all children were given the choice of indicating a picture or a number.

The Oucher was selected because good evidence has been provided for its face and content validity (Beyer, 1984) as well as construct validity (Aradine et al., 1988) for children aged 6 to 10 years.

The Children's Health Locus of Control Scale

Parcel and Meyer (1978) developed an instrument designed to measure locus of control with respect to health issues in children from 7 to 12 years of age. This measure, the Children's Health Locus of Control Scale, consists of 20 questions to which children respond yes or no. It yields three subscale scores which describe, respectively, (a) an **internal** locus of control, where the child feels in control of health situations or outcomes, (b) an external locus of control in which **powerful others** are seen to be in control of outcomes, and (c) an external locus of control in which **chance** is seen to play the predominant role. These subscales have been shown to have moderately

high internal consistency (Kuder-Richardson coefficients of .72 -.75) and moderate test-retest reliability (r = .62), which is comparable to that of the Norwicki-Strickland Children's Locus of Control Scale (Parcel & Meyer, 1978).

The Children's Health Locus of Control Scale had significant but not high correlations with the Norwicki-Strickland scale and, like that scale, it yielded no significant differences in scores according to sex, but significant increases in internality (i.e., internal locus of control) with increasing age (Parcel & Meyer, 1978). Parcel and Meyer noted that the relatively high point biserial correlations gave evidence of the scale's ability to discriminate children holding different beliefs about the locus of control in health related issues. Factor analysis (Parcel & Meyer, 1978) yielded results similar to Levenson's (1981) adult scale, with the three major factors being described as internal control (6 items), powerful others (8 items), and chance (6 items).

What I Think and Feel: The Revised Children's Manifest Anxiety Scale

Reynolds and Richmond (1978) revised the Children's Manifest Anxiety Scale (Castenada, McCandless, & Palermo, 1956) to meet current psychometric standards. A 73-item draft revision was reduced to a 37-item scale by analysis of item-scale correlations and item difficulty indices. The resulting instrument was shown to have a test-retest reliability of .85 (Reynolds & Richmond, 1978).

The Revised Children's Manifest Anxiety Scale requires a simple yes or no answer to each question. It can be administered to children from kindergarten (Reynolds, Bradley, & Steele, 1980) to Grade 12 (Reynolds &

Richmond, 1978; Reynolds & Paget, 1981). Females have been shown to score significantly higher than males, and Grades 1 and 2 students significantly higher than all children except Grade 12 (Reynolds & Richmond, 1978).

Evidence for construct validity was based partly on the fact that the scale was derived from the Children's Manifest Anxiety Scale: Findings using the new scale tend to be consistent with findings using the original scale (e.g., gender differences, Reynolds & Richmond, 1978). Further support for the construct validity of the scale as a measure of chronic manifest anxiety was provided by Reynolds (1980) who found high correlations with the trait scale of the State-Trait Anxiety Index for Children (Spielberger, Edwards, Lushene, Monturi, & Platzek, 1973), but no significant correlation with the state scale.

Factor analyses of data obtained in an American standardization sample provided evidence of a first principal factor (general anxiety) and a clean and interpretable five-factor solution yielding two lie factors and three anxiety factors labelled physiological, worry/oversensitivity, and concentration (Reynolds & Richmond, 1979).

Social Desirability Scales

Social desirability scales are intended to assess a child's tendency to respond in a socially desirable manner. A commonly used scale is the Children's Social Desirability Scale (Crandall, Crandall & Katovsky, 1965). The L-scale of the Children's Form of the Manifest Anxiety Scale (Castaneda et al., 1956) can also be considered to be a measure of a form of socially desirable responding.

It is recognized, however, that such scales may not only tap a child's desire to be socially acceptable in a test-taking situation, but may also be either (a) indicative of a more generalized behavioural tendency, or (b) reflective of a desire to be or appear to be honest (Crandall et al., 1965). In spite of these conceptual difficulties, a social desirability scale was included in this research because it is common practice to attempt to assess the influence of such a response tendency.

An additional difficulty with the social desirability construct when dealing with children is the child's short memory span (Crandall et al., 1965). If a child is simply trying to respond honestly, responses may be very heavily influenced by the child's behaviour in the last day or two.

While psychometric data are available for these two scales, they are not being reported here since a very brief (8-item) composite of the two scales was utilized. Because so few of the questions from each scale were used and, in some cases, the wording was altered slightly, the psychometric data on the original scales were deemed to be irrelevant.

Child Temperament Survey

In concluding a review of 26 instruments designed to assess early temperament, Hubert, Wachs, Peters-Martin and Gandour (1982) noted that the construct of temperament was poorly defined and had no universally accepted and validated definition. Similarly, it has been noted that the term temperament might better be used to refer to a field of study than to a particular group of dimensions: The dimensions seemed to have

little in common "except some explanatory power for individual differences before other things that confuse the issue, like the self-concept and cognitive operations, arise" (Hinde, in a roundtable discussion of temperament: Goldsmith, Buss, Plomin, Rothbart, Thomas, Chess, Hinde, & McCall, 1987, p. 522).

Studies of the convergence between different temperament instruments supposedly assessing the same dimensions have yielded low correlations (Hubert et al., 1982), suggesting that item content and wording may be very important. Hubert et al. suggested that selection of portions of an instrument, tailored to one's research goals, may be warranted.

Since no single instrument clearly presented itself as the obvious choice for the measurement of temperament, this "tailoring" approach was used in this research. The dimensions of temperament identified as being of potential importance to the coping process included inhibition, impulsivity, and emotionality (see Personality Factors: Temperament; Chapter II). Subscales from three different versions of temperament surveys developed by Plomin and his colleagues (Buss & Plomin, 1975; Rowe & Plomin, 1977) were selected because they were designed assess these dimensions at approximately the appropriate age levels. Also, they are brief and clearly worded. However, while Buss and Plomin (1984) hold heritability as a criterion for the inclusion of an aspect of personality as a temperament, the issue of whether or not temperaments are hereditary dispositions was of no consequence to this research. Thus, while Buss and Plomin eliminated their original dimension "impulsivity" from their conceptualization of temperament

because the evidence for its heritability was weak, impulsivity was included in this research.

The activity, sociability, and impulsivity scales (five items each) were drawn from the EASI-I (Buss, Plomin, & Willerman; 1973), leaving only the emotionality scale from this instrument not used. The EASI-I is a 20-item 5-point rating scale asking parents to indicate the likeness of each item to their child. It was standardized on parents of children aged 1 to 9 years. Buss et al. (1973) reported test-retest reliabilities ranging from .75 (sociability) to .92 (emotionality), with the median being .82. A factor analysis provided support for the four original factors (Buss et al., 1973).

Because it was believed that emotionality in particular would be related to children's distress and perhaps strategy use, the expanded emotionality scale from the EASI-III (Buss & Plomin, 1975) was used. It consists of a total of 15 items, 5 each for general emotionality, fear, and anger. These latter two dimensions represent more instrumental behaviours than distress -- with fear involving withdrawal, and anger involving attack. While Buss and Plomin did not report test-retest reliability for the EASI-III, the five emotionality items of the EASI-I were drawn from the 15 EASI-III items, and, as reported above, they have shown high test-retest reliability. Internal consistency, within components of the scale, was at best moderate, ranging from .20 - .66 (Buss & Plomin, 1975).

The soothability scale from the Colorado Childhood Temperament Inventory (Rowe & Plomin, 1977) was also selected because of its apparent relevance to coping with medical stress. Rowe and Plomin

(1977) reported the test-retest reliability of the soothability scale at .43, which is low in comparison to the other subscales. Internal consistency of the soothability scale was .73 (Rowe & Plomin, 1977).

The Child History Form and The History of Coping Questionnaire

These two forms were developed by Peterson-Holmer (Peterson & Toler, 1986) to obtain from parents the following information concerning their children: basic demographic information, pertinent medical history, and an indication of how the child typically copes in medical/dental settings. The item content and format were appropriate, and so they were adapted for use in this study. No psychometric data were available for these instruments.

General Statement of Objectives

The first purpose of this research was to develop an instrument to measure the coping strategies actually used by children as they face threatening medical procedures. A careful study of the current status of research on children's coping in medical settings, and a critical review of available coping measures lead to the unequivocal conclusion that a more refined analysis of what children are actually doing and thinking as events unfold is needed in order to (a) improve our understanding of the coping process, and (b) develop appropriate, individualized interventions for children about to undergo procedures.

The instrument developed, the Coping Strategies Card Sort (CSCS), was designed to allow children to report on what they are actually doing or thinking at various points in time, and on how they perceive the situation in terms of fear, painfulness, and control. The instrument development phase of this research is described in Chapter IV.

The second purpose of this research was to assess the reliability and the convergent and discriminant validity of the new instrument. This work is reported in Chapters V and VI which describe the study conducted in elementary schools. Some preliminary work on the concurrent and predicitive validity of the CSCS in a hospital setting is reported in Chapter VII.

CHAPTER IV

INSTRUMENT DEVELOPMENT

The Coping Strategies Card Sort

Lazarus's theory, it will be recalled, distinguishes three dimensions of coping that can be used to describe an individual's strategies or efforts. These dimensions provided the basic structure for the generation of the list of strategies. To reiterate briefly, one dimension pertains to the two major **functions** of coping -- problem solving and regulation of emotions. The second dimension pertains to the **focus** of coping efforts which can be either the self or the environment. The third dimension concerns the four basic **modes** or types of strategies that a person may use -- information seeking, direct action, inhibition of action, and intrapsychic processes.

All of these general dimensions are represented in the final instrument, although the objective distinction of the two functions of coping proved to be somewhat problematic (see The Internal Structure of the Instrument).

While the broad structure of the instrument was determined in large part by the selected theoretical framework, at no time did this theory seem to constrain, limit, or require the rejection of any strategies or approaches suggested by other literature.

Generating a Strategy List

Generally speaking, the strategies depicted on the cards were selected on the basis of strategies described in the literature (e.g., Brown, O'Keeffe, Sanders, & Baker, 1986; Curry & Russ, 1985; Kaloupek &

Stoupakis, 1985; Compas, Malcarne, & Fondacaro, 1988; Murphy & Moriarty, 1976; Peterson & Toler, 1986).

Thus the first step in the drafting of the CSCS was to record all of the strategies noted in the studies reviewed. Where possible, these were recorded as children's actual statements, and not classes or types of statements (e.g., "I tried to only think good thoughts, like that I would get a prize"; "I said to myself God is with you, so don't worry": from Curry & Russ, 1985). In other instances, exemplars developed by others were noted (e.g., "I was trying to find out what was going to happen next": from Wong & Kaloupek, 1986). Other examples were developed by the researcher on the basis of types of strategies described in the literature (e.g., "I can do this. I can be brave.": positive self-talk, from Brown, O'Keeffe, Sanders, & Baker, 1986; "I thought: This is just like taking medicine. It will make me feel better": cognitive redefinition, from Moos & Schaefer, 1986).

During this period the researcher also conducted a series of open-ended interviews with children ranging in age from 5 to 10 years, and conducted preliminary observations of similarly aged children undergoing medical procedures. These interviews and observations served to provide an initial level of confidence in the strategy list generated on the basis of the literature review.

Testing the Strategies: Pilot Study 1

All of the strategies selected were developed by the researcher into simple first person declarative statements using informal English at a vocabulary level suitable to the youngest participants (e.g., I'll be fine; Gee, I hate this). A total of 74 such statements, each

representing a specific strategy, were printed on 3 1/2 by 5 inch white cards and presented to nine children aged 5 to 9 years. These volunteers, all acquaintances of the researcher, were asked to select strategies they thought they would use in a hypothetical hospital situation. All children were interviewed individually by the researcher: seven in the researcher's home, which was very familiar to all of them, and two children in their own home. The description of the hypothetical medical situation, as later revised and supported by the presentation of pictures or slides is found in Appendix B (I.V. Start "Let's Pretend" story).

The children had no problem understanding the task at hand, and they participated eagerly. From their spontaneous verbal comments it was clear that they readily identified with many of the strategies. While these interviews resulted in higher overall level of strategy endorsement than had been anticipated (ranging from 43 to 83% overall), it would appear that even within these high overall levels, individual differences were detectable (see Table 2).

The results of this small pilot study were sufficiently encouraging to support a decision to move ahead with the development of the instrument.

TABLE 2

EXPLORATORY STUDY RESULTS: LEVEL OF ENDORSEMENT IN PERCENT

Participant	A	B	C	D	E	F	G	H	I	J	TOTAL	RANGE
1	0	50	44	50	35	58	33	50	36	86	47	36-86
2	0	75	56	43	65	58	58	100	57	57	61	43-100
3	100	55	63	0	40	42	50	60	43	57	46	0-63
4	0	50	75	29	60	0	83	100	0	71	50	0-100
5	50	70	50	0	50	100	17	0	43	38	43	0-100
6	50	90	75	100	70	100	100	60	71	88	83	60-100
7	100	100	88	43	100	100	66	80	29	88	80	29-100
8	0	91	88	0	30	83	50	40	43	63	54	0-91
9	50	73	100	57	60	17	83	80	57	50	64	17-100
MEAN	40	74	71	36	57	62	60	62	41	67	59	36-74
RANGE	0-100	50-100	44-100	30-100	30-100	0-100	17-100	0-100	0-71	38-88	30-100	

LEGEND

A No Strategy
B Cognitive Avoidance
C Cognitive Appraisal: Positive
D Cognitive Appraisal: Negative
E Cognitive Appraisal: Fantasy/Restructuring
F Information Seeking: Questioning/Vigilance
G Information Seeking: Avoidance
H Support Seeking
I Emotional Release/Control
J Active Participation

The Internal Structure of the Instrument

Several attempts were made by the researcher to classify the strategies according to the various models presented in the literature, including Lazarus and Folkman (1984), Curry and Russ (1985), Billings and Moos (1981; 1984), and Wong and Kaloupek (1986).

The starting point for this work was the structure proposed by Lazarus and Folkman (1984). Broadly speaking, the selected strategies were easily classified into the **modes** proposed by Lazarus, although it was found to be advantageous to further differentiate and expand on the basic structure using categories suggested by one or another of the other models studied. The intrapsychic mode in particular was differentiated into such categories as cognitive avoidance, positive and negative appraisals, and situational restructuring. The behavioural modes were also expanded upon by, for example, the addition of an avoidance category and the separation of the direct action category into strategies that focused on the environment ("active participation") and those that focused on the self ("support seeking").

While all of the behavioural strategies could in fact be classified quite readily according to their focus (self or environment), independently of their mode, the importance of making this distinction with respect to the cognitive strategies seemed dubious. In the case of most subscales such a distinction made the final subscales too small.

Finally, Lazarus's theory suggested that the coping strategies should be classified according to their function, but this distinction proved problematic. After several attempts to separate the strategies into problem focused and emotion focused coping efforts, it became clear

that such a classification required some degree of inference regarding the intentions of the coping individual. Furthermore, it seemed that the classification of function should not be made dichotomously, but should rather be made on a continuum. Miller (in press) has proposed that the notion of problem-focused coping may be overly broad. For example, she noted that the gathering of information is not necessarily linked to the performance of controlling actions in a stressful medical situation, although both of these are usually classified as problem-focused approaches. In the end, it was decided to design the CSCS to include strategies representative of both functions, but the subscale structure does not reflect these distinctions clearly.

The Original CSCS Subscale Structure

The subscale structure resulting from the above efforts is outlined in Table 3 and elaborated in Appendix C. In essence, it was decided that coping strategies could be classified into several types of either **cognitive** or **behavioural** approaches. Within both the cognitive and behavioural strategy types was embedded a basic approach-avoidance dimension, both poles of which were represented by a separate subscale. In addition, both active (acting on the environment or the self) and passive (dispassionate, passive, or submissive) strategies were represented. In the case of the behavioural subscales, these distinctions were represented by different subscales.

TABLE 3

COPING STRATEGIES CARD SORT ORIGINAL SUBSCALES:
DEFINITIONS

COGNITIVE AVOIDANCE
The child employs cognitive means to avoid confrontation with the stressor or its consequences, i.e., the child deliberately avoids thinking about the medical procedure.

COGNITIVE APPRAISAL: POSITIVE
The child is thinking about or imagining aspects of the procedure per se, or about his/her response to the procedure.

COGNITIVE APRRAISAL: FANTASY/RESTRUCTURING
The child's thinking has its roots in the reality of the situation (i.e., it is not diversionary thinking), but the child has mentally restructured the situation to make it seem benign or positive, or to make it fall into line with his/her wishes, or has constructed a fantasy that allows him/her to reinterprete the entire situation.

COGNITIVE APPRAISAL: NEGATIVE
The child's thinking is rooted in the reality of the situation, but it focuses on negative aspects, or exaggerates the negative aspects to unrealistic proportions.

INFORMATION SEEKING: QUESTIONING AND VIGILANCE
The child deliberately seeks out information about the procedure and its consequences. Information seeking may include questioning and vigilance.

INFORMATION SEEKING: AVOIDANCE
The child deliberately avoids information about the procedure and its consequences by actively blocking out the available information or engaging in behaviours that divert attention.

SUPPORT SEEKING
The child seeks out physical or emotional support.

EMOTIONAL RELEASE
The child displays some affective response which could serve as a means of stress reduction.

Table 3 (Continued)

EMOTIONAL CONTROL
The child takes some action to gain control of emotions.

LIMIT SETTING
The child takes some action to gain control of the situation.

ACTIVE PARTICIPATION
The child is actively involved in the procedure by his/her own special effort.

NO STRATEGY

Testing the Reliability of the Structure

The reliability of this structure was tested in a preliminary way by asking three independent judges (graduate students in developmental psychology) to classify the strategies. In the first instance they were asked to make their classifications according to the proposed subscale structure. They were then asked to classify the strategies in accordance with the assumed broader dimensions (cognitive-behavioural, active-passive, problem-emotion focus).

Subscale structure. With respect to the proposed subscale structure, the judges were instructed to assign each strategy item to one and only one subscale, using subscale definitions provided by the researcher (see Appendix C). The general level of coder agreement with the preconceived model was adequate at 77%, but a few clear weaknesses were uncovered. As a result, one subscale was dropped (Cognitive Regulation of Behaviour), and some of its items were redistributed to other subscales. Appendix C includes these items both in the original Cognitive Regulation subscale and as they were redistributed. A few

other items were also changed from one subscale to another when all three coders disagreed with the model but agreed amongst themselves, and these are represented in Appendix C in terms of their final assignment.

Not all items meeting this criterion of unanimous coder disagreement with the model were reassigned. In some cases it was expected that the eventual graphic illustration would clarify the strategy statement. In other cases, the reasons were more philosophical: strategies referring to God and prayer, for example, were not classified as fantasy or wishful thinking even though the judges rated them as such, because for those people who use these strategies, they are not fantasy. This practice of maintaining a balance between a rational and empirical approach to instrument development was maintained throughout the process, up to and including the development of the final scales.

Coder agreement with the **revised assignment** of items to subscales, based on the original data, was calculated at 86% overall, an improvement of 9% over the initial figure. As can be seen from Table 4, the percent agreement in 7 of the 10 subscales was higher than 86%, ranging from 88 to 100%. While there were two very weak subscales, they were retained because of their theoretical importance.

The underlying dimensions. Results of the classifications according to the perceived underlying dimensions were also supportive of the general model. Coders were asked to rate each item along all relevant dimensions. There was an agreement rate of 86% with the preconceived dimensional structure, when calculated on the basis of the number of endorsements of those categories predicted by the researcher's

model. However, almost one third of the coders' selections were made outside the model (164 of 540 selections). It should be noted that this figure probably overestimates the level of disagreement with the model in that these tended to be endorsements in addition to those predicted by the model (and not in contradiction to the model). In addition, 52% of them were single endorsements (i.e., only one of the three coders made that particular selection).

TABLE 4

CODER AGREEMENTS WITH ORIGINAL SUBSCALE STRUCTURE

Subscale	Percent Agreement*
Cognitive Avoidance	97%
Cognitive Appraisal:	
Positive	92%
Fantasy/Restructuring	63%
Negative	95%
Information Seeking:	
Questioning and Vigilance	100%
Avoidance	89%
Support Seeking	93%
Emotional Release or Control	63%
Active Participation or Limit Setting	88%
No Strategy	83%
Overall	86%

*Method of Calculation (Example)

-10-item subscale x 3 coders = 30 possible agreements with proposed subscale structure
-item by item comparison yields 24 actual agreements
-24/30 x 100 = 80% agreement

The above data do not include the problem/emotion focus dimension because, for reasons outlined previously, the researcher had been unable to develop a model. The three coders appeared to have the same difficulty. Seventy-one of the 74 items, or 96% were rated along this dimension by at least one of the coders; 47 items, or 64% were so rated by two or three coders. Thirty-three of these items were rated as both emotion and problem focused by one or another of the coders, and 21 items received both classifications from the same coder.

The Basic Format

If young children are to be expected to report about themselves and the coping strategies they use, the instrument employed must be comprehensible to them both in its language and in the procedure for its use. The language must be simply structured, using informal English at the vocabulary level understood by young children. In terms of procedure, the child must not be required to retain in memory too much information at one time.

In addition, the instrument must be brief so as not to tax the attentional resources of the very young. The possibility of repeated administrations in time-constrained circumstances, such as would be required in some process oriented research designs, also dictated that the instrument be of reasonable length.

Bearing these considerations in mind, it was decided that a card sort instrument using graphic illustrations would be appropriate. Such a format is well suited to the limited reading and writing abilities and expressive fluency of the child. In its final form, the CSCS consisted of a series of simple cartoon style drawings, supplemented by very brief

verbal descriptions of the strategies. In individual applications of the instrument, such as in medical settings, the administrator would read a full sentence description of the strategy to the child while showing the card with its abbreviated verbal and pictorial description of the strategy to the child. It was believed that the card sort format would help to ensure that the child's attention would be attracted by the novel cards and maintained by the succession of novel stimuli.

Furthermore, the card sort format also allowed for flexibility in future research. For example, only cognitive items might be selected for a certain study, while for another only items sensitive to situational differences might be presented. Using the forms of the CSCS developed here, each administration of the task took three to five minutes, but the instrument could be adapted for use in more restricted time frames.

The flexibility of the card sort format could also be used to advantage in disentangling some of the confusion among the issues of strategy usage, helpfulness, and effectiveness that exists in the literature (Menaghan, 1983). The child in hospital could be asked to indicate all strategies used, and then asked to select from amongst those the strategies that helped make him/her feel better. It should be noted that the third component, effectiveness, is not addressed by this instrument.

Finally, the intended use of this instrument as a process measure of coping dictated that the instructions be phrased in such a way as to suggest that responses should pertain to a very specific time. The

instructions introducing the instrument can be adapted to individual applications.

This conceptualization of coping as a process and the consequent expectation of change in coping in response to changes in the situation also made it important to build into the instrument some way to assess how situations are perceived. Thus, four questions were developed to assess the respondents' appraisals of the situation in terms of its painfulness and controllability, and their personal fear levels. These, together, are called the Situational Appraisal Index, and they will be discussed in a subsequent section of this chapter.

Developing the Cards

Because it was hoped that this instrument might eventually be used with preschool children, it was decided at an early stage of the planning that all verbally presented statements should be supported by appropriate graphic images. Realizing this objective proved to be a daunting task: developing 70 non-redundant images of many quite similar statements (of cognitions and non-verbal behaviours in particular) took many sessions, spread over several months, of brainstorming, drafting, miming, and hairsplitting on the part of the researcher and an artist.

The central figure of the cartoon-like drawings is a fairly androgenous child approximately 6 to 10 years of age who is dressed in a striped hospital gown. Other figures include a "mother" figure (the vast majority of children are accompanied to the hospital by their mothers according to the nurses at the local hospital), and both male and female "hospital people". The nurses are all female because the vast majority of pediatric nurses are in fact women.

At the suggestion of the artist, all the nurses are wearing caps. Before proceeding on this suggestion, six children aged 6 to 10 years were asked to draw a nurse for the researcher. All of these children had been inside a hospital, at least as visitors, and all of them drew caps on their nurses. Interestingly, a 10-year-old child who was very familiar with hospitals made the following comment as he put the finishing touches on his nurse's cap, "You know, nurses don't wear hats any more".

When all of the card sort pictures were complete, three small field studies were devised to test the ability of the pictures to evoke or at least support the appropriate verbal message. (Some sample cards are presented in Figure 1.) The first of the field trials involved a group of six adults -- three graduate students in developmental psychology and three parents of children in the target age range. These adults were asked to match the pictures to the appropriate verbal statements in nine separate sets of 8 pictures and 10 statements. This task was a very stringent test of the appropriateness of the pictures, but even at that, the rate of successful matches overall was 93%. This figure does not include the reponses of a foreign (Chinese) student who skipped many items and commented frequently throughout the task that he could not really relate to the pictures. This incidental finding, while not pursued in this research, demands further attention if this instrument is to be validated cross-culturally.

FIGURE 1

COPING STRATEGIES CARD SORT SAMPLE CARDS

The second field test of the pictures involved school-aged day care children in the identical task the adults had completed. The task was initially presented to 11 volunteers, aged 6 to 10 years, but none of the 6-year-olds completed all the forms. They simply found the task too difficult. Their major problem appeared to be their inability to reverse a decision: Even when they were heard to say to themselves that a match already made could not be correct because another was obviously right, their forms were turned in uncorrected, with the one early error multiplying into further forced errors. Data from the remaining 7 subjects, 5 of whom were girls, yielded a 71% rate of successful matching. The four 9- and 10-year-olds achieved an 81% success rate, while the three 7- and 8-year-olds had only a 59% success rate.

A slightly simpler, and perhaps more appropriate matching task was devised for the third field study of the pictures. Nineteen boys, aged 8 to 11 years were asked to match one of three pictures to a statement. Each boy was exposed to all of the pictures and one third of the statements. The rate of successful matching in this study was 77%.

As a result of these three field tests, seven very problematic picture-statement matches were identified. Six of these were revised (either the picture or the statement or both) for the reliability and validity study in the schools.

The Situational Appraisal Index

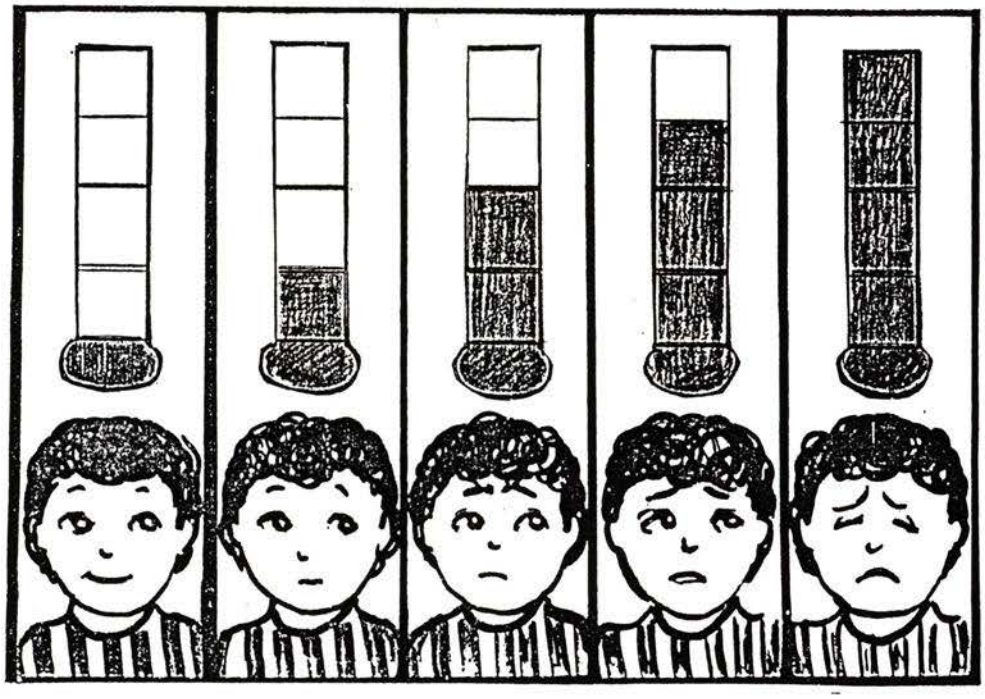
A series of four questions was used to assess children's perceptions or appraisals of the situation in terms of its inherent painfulness and controllability, and their personal fear levels. These four items are presented in Figure 2.

FIGURE 2

THE SITUATIONAL APPRAISAL INDEX

FEAR

How scared would you be?



PAIN

How much do you think the needle hurt?

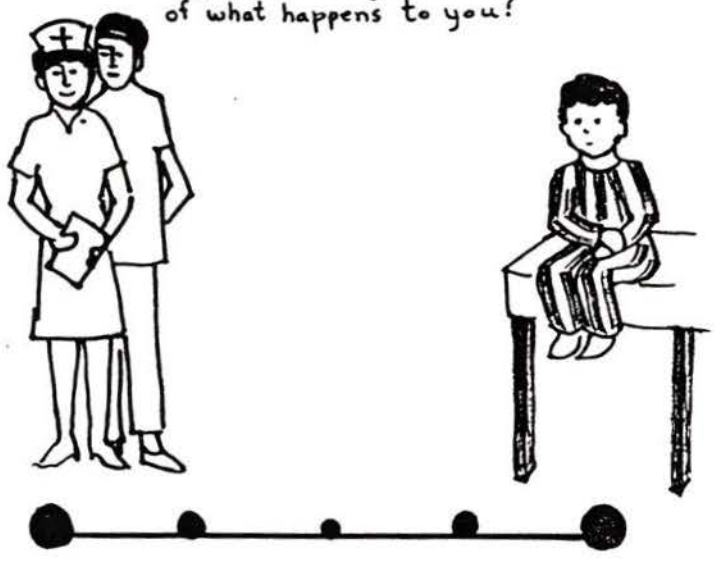
CONTROL 1:

For sure you would want everything to work out really well for this special test. Can you make things work out the way you want?

Yes Yes No No

CONTROL 2:

At the hospital, who do you think is in charge of what happens to you?



Situational Appraisal of Threat of Bodily Harm (Pain). The "Oucher", developed by Beyer (1984) to assess children's perceptions of the intensity of their pain, was selected as the situational appraisal of pain. This instrument was described in Chapter III, and it was administered as recommended by the developer, with the single exception that in this study all children were given the opportunity to respond using either the picture scale or the number scale to indicate the level of their pain.

The Situational Appraisal of Control. Two questions were developed by the researcher to assess children's perceptions of personal control in medical settings. In the first question, the children were asked directly if they could control the outcome of the test. The response options ranged from a big YES through a little yes and a little no to a big NO. The second question used a visual analogue scale anchored by pictures of hospital people and a child. The children were asked who was in charge of the situation.

The validity of these questions was assessed very briefly in the main study through the concurrent administration of a measure of health locus of control which included a powerful others subscale.

Situational Appraisal of Generalized Threat (Anxiety or Fear). Following LeBaron and Zeltzer (1984) and Elliot, Jay, and Woody (1987), an analogue scale of children's faces was used to assess situational anxiety or fear. This scale was combined with a fear thermometer (Walk, 1956): Each face was associated with a separate fear thermometer, appropriately calibrated, and presented in ascending order. The five faces used were based on faces from the affect scales of McGrath's

Children's Pain Inventory (McGrath, deVeber, & Hearne, 1985) although they were slightly modified to resemble the face of the child in the CSCS.

The children were asked to respond to the question "How scared do you think you would be?" (or "How scared are/were you?", depending on the situation). The validity of this measure was assessed in a preliminary way in the main study conducted in the schools by comparing these responses to the children's responses to the Revised Children's Manifest Anxiety Scale.

Testing the Procedure: Pilot Study 2

Group Administrations

Since the investigation of the reliability and validity of a new measure requires a large sample, **individual** administration of the instrument in medical settings was not a practical research strategy. Subject availability in the numbers required was a major problem, and the imposition on the hospital and its staff for the extended period of time that would have been required to gather an adequate sample was unacceptable to the local hospital.

It was therefore decided to ask **groups** of school children to imagine that they were undergoing certain medical procedures, and then to ask them what strategies they used, in their imagination of this experience. The group administration method was preferred by the schools because it was less disruptive of class routine, and it was accepted by the researcher because of its expediency.

In terms of instrument development, the decision to use simulation necessitated the development of (a) an answer format that was as similar as possible to the intended card sort format, but allowed for administration in classroom groups, and (b) two comparable "Let's Pretend" stories describing medical procedures.

The Response Format: The Booklets

The response format selected was an answer booklet in which four cards were reproduced on each 8 1/2 by 11 inch page, with a large yes and no beside each one. The children were instructed to follow along and complete the instrument with the researcher. While each full sentence description of the appropriate strategy was read, the attendant card was projected on a screen.

It is felt that this procedure maximized attention to each individual strategy card. One or two cards per page would have resulted in excessive page turning, an activity which can be highly distracting for children and could have resulted in more errors due to skipped pages. More items per page made the pictures less easy to decipher, and tended to diminish their uniqueness.

The order of item presentation was ramdomly determined, and was maintained for all group and individual administrations.

The Use of Hypothetical Situations

There are at least two assumptions that underlie the use of hypothetical situations in research. The first of these is that children are able to construct and use imaginary situations as a basis for decision making and action. The second assumption is that responses obtained to these hypothetical situations are predictive of or generally

comparable to responses that the child would emit in the actual situation.

Research on children's play clearly supports the notion that even toddlers are able to use their imaginations to transform simple materials into a variety of imaginary objects (e.g., a block can become a car, or a stick a gun; e.g., Corrigan, 1987). By age 5, children can "create and manage intricate roles and complex plots, indicating that they have developed a sophisticated understanding of object substitutions, role relationships, and story lines" (Berk, 1991, p. 222).

Evidence for the ability of children to use their imaginations to construct life-like situations and then explore their own responses to those situations comes from the success of a variety of cognitive behavioural therapies. For example, Graziano and Mooney (1980) used the substitution of positive imagery as part of a successful protocol for the treatment of nighttime fears in young children. Melamed, Robbins, and Fernandez (1982) noted that systematic desensitization has been used for a variety of fears in school aged children, including medical fears such as fear of injections (Taylor, Ferguson, & Wermuth, 1979), fear of dental treatment ((Gale & Ayer, 1969), and fear of intravenous procedures (Katz, 1974).

The use of hypothetical situations is common in a variety of research programs as well, and it appears to be the primary research method in the investigation of children's social goals and strategies. In such contexts it has been used successfully with pre-school (Ramsey, 1988), kindergarten (Spence, 1987), and school-aged (Oliva & LaGreca,

1988) children. In the above noted studies, the children were presented with up to five different hypothetical situations to which they were expected to respond.

The use of an imaginary experience to assess a situationally specific response has at least one precedent in the psychometric literature. Simulation was used in some of the work done on the State Trait Anxiety Index. Students were asked to imagine, for instance, how they believed they would feel just prior to a final exam (Spielberger, Gorsuch, & Lushene, 1970).

All of these studies lend support to the notion that children can use their imaginations effectively, but none of them addresses the second issue explicitly, that is whether or not responses to hypothetical situations are predictive of responses in real-life situations. In one interesting study of the efficacy of an intervention addressing 10- to 12-year old children's moral decision-making and behaviour, some differences were found between efficacy measures based on real versus hypothetical situations, for some groups (Haines, Jackson, & Davidson, 1983).

Thus the decision to use hypothetical situations, which was precipitated by the expediency of the approach, can be supported on the basis of our understanding of the developmental abilities of children, and on the basis of precedents in the literature. However, there is a paucity of work on the validity of the approach.

The "Let's Pretend" Stories

While it was assumed that children would draw on similar past experiences (e.g., visits to the doctor or dentist; immunization shots),

the hypothetical medical situations were deliberately chosen to be novel to most children, but not outside the realm of their imagination. Both of the situations selected for study, venipuncture (the insertion of an intravenous therapy needle) and an X-ray procedure, are hospital based and outside of the day to day course of medical care for the average child. Miller (in press) has noted that dispositional differences in coping style seem to become most apparent in highly stressful situations, and unfamiliarity is a well-recognized dimension of stress (e.g., Peterson & Mori, 1988).

The "Let's Pretend" stories (see Appendix B) were prepared with careful attention to the language and cognitive abilities of the youngest participants. A plausible but non-threatening reason was given for the doctor's decision to prescribe the investigative procedure. The child's endorsement of the doctor's decision was suggested in the text of the stories. The stories were then factually developed, based on actual procedures followed on the local pediatrics ward. The stories were supported by slides of this same ward, and of the radiology suite usually used for children at the hospital.

The **I.V. Start** story was informally tested on nine children in the first pilot study, without any supporting pictures. It was then revised, and tested again in this second pilot study ($\underline{N}$ = 48) using four pictures. Both the story and the pictures were found to be very effective in stimulating the children's imaginations: Their spontaneous comments and eager responses to the subsequent questions were testimony to this.

Minor revisions were made to the text of the story for the subsequent reliability and validity study in the schools, and the number of pictures used was increased to 12.

The **X-Ray** story (see Appendix B), developed for the main schools study, was modelled after the I.V. Start story. Variations between the two stories were dictated by the facts of the procedures.

Objectives

The purpose of the second pilot study was to (a) confirm that children could understand and perform the required task when it was presented in the group setting, (b) explore possible differences between individual and group administrations in the schools, (c) gain practice in both types of administrations, and (d) examine interitem correlations and the test-retest reliability of this preliminary instrument.

Method

This study was conducted in three elemementary schools in the Sooke School Division. All schools were located in either Colwood or Langford. These were formerly fairly rural areas but they have, more recently, expanded rapidly as working and middle class satellite communities of the city of Victoria.

Three classes of children (one each of Grades 1, 2, and 3) were invited to participate. Five additional Grade 2 children from a fourth class were also approached to help bolster the number of Grade 2 children participating. From approximately 75 letters sent home to parents, 50 positive responses and eight negative responses were received. The files of two children were later eliminated from the

analyses because of obvious acquiescence (one Grade 1 child) or nay-saying tendencies (one Grade 2 child). The final sample thus consisted of 16 Grade 1, 15 Grade 2, and 17 Grade 3 children. There were 24 boys and 24 girls overall.

Five children were randomly selected from each grade level to be interviewed individually by the researcher in a quiet room provided by the school. Due to a misunderstanding, only four Grade 2 children were available for individual interviews. The remaining children were seen as a group by the researcher in their classrooms. All children were seen on two occasions 14 to 15 days apart. On the second occasion, the children were advised that they were not expected to remember what they had answered the previous time, but that they were simply to respond to the questions again as they thought about them on this second occasion.

The general procedure for both group and individual sessions was essentially similar. The researcher introduced herself as someone interested in studying about kids who have to go to the hospital. The "Let's Pretend" **I.V. Start** story was then read, with the pictures (individual interviews) or slides (group sessions) being shown where indicated. In essence, the story asked the children to imagine that they were about to have an intravenous therapy needle given by a nurse at the local hospital.

The children were then asked two specific questions concerning their coping strategies. First of all, they were asked what they **thought about** while this needle was being given to them (in their imaginations). The 37 **cognitive** strategy cards were then shown, one by one, either directly to the individual child, or projected on a screen

for the group. The cards were placed in yes and no piles in the individual interviews. The children in the group settings responded by circling either the yes or the no beside the appropriate picture in the answer booklets. The children were next asked what they **did** in their imagination, while the needle was being given. The identical procedure was then followed with the 33 **behavioural** strategy cards.

Finally, all children completed the four questions of the Situational Appraisal Index.

A number of fairly standard steps (Anastasi, 1982) were taken to try to reduce the effects of response sets or response styles. The researcher adopted a friendly attitude toward the children, took pains to dispel any notions of "testing" (especially when this word had been used by the teacher), noted that the children's parents had given them permission to talk to her, and stressed the fact that they were helping her. In the course of the "Let's Pretend" story , it was emphasized several times that there were no right or wrong answers to the questions, that this was "just about you", and that "everyone is different".

Results

It should be noted that the results of the two-item No Strategy subscale of the CSCS were not included in many of the analyses. During the individual administrations, it was observed that the children had some difficulty with the negative wording of these items. These two items were included, however, in the calculation of the number of missed items, the total scale means, and the test-retest reliability.

Method of Administration

The CSCS. The pilot study clearly demonstrated that the CSCS could be administered to primary school children in groups. Even children who had no vested interest in the task (i.e., they were not scheduled for a hospital procedure) were highly motivated, interested, and attentive. For the total of 48 participants, across two administrations of the CSCS, only 16 out of 6720 items presented were missed, yielding an error rate of .2%. These missed items were attributable to 10 children (4 from Grade 1, 1 from Grade 2, and 5 from Grade 3 and they tended to be located at the tops of new pages.

There was a tendency for children who completed the tasks in individual interviews (n = 14) to select more strategies overall at both Time 1 (M = 39.2) and Time 2 (M = 40.4) than children who completed the forms in a group setting (n = 34: Time 1 M = 37.8; Time 2 M = 36.0). For these and other subgroup analyses n's were too small to justify statistical tests of trends. Low power made such tests vulnerable to Type II error. The raw data are presented in Appendix D.

The Situational Appraisal Index. The results on the Situational Appraisal Index across methods of administration appeared to be generally similar, although there may have been a tendency for children interviewed individually to admit to less fear than children receiving group administrations, particularly at Time 1 (see Appendix D).

Conclusion. The differences between the two method of administration groups did not appear to large enough to warrant separate analysis. Consequently, all of the children's scores were pooled for subsequent analyses.

Test-Retest Reliability

For the sample as a whole, all but one of the CSCS subscales were significantly correlated across time (see Table 5). The test-retest reliability of the total scale was .72 (N = 31, $p<.05$).

The Situational Appraisal Index questions concerning fear and pain were also correlated across time for the total sample, but the two questions concerning personal control were not significantly correlated (see Table 5).

TABLE 5

PILOT STUDY: COPING STRATEGIES CARD SORT AND SITUATIONAL APPRAISAL INDEX
MEANS, STANDARD DEVIATIONS, AND TEST-RETEST CORRELATIONS

CSCS SUBSCALES	TIME 1 MEAN	TIME 1 N	TIME 1 S.D.	TIME 2 MEAN	TIME 2 N	TIME 2 S.D.	TEST-RETEST CORRELATION r	TEST-RETEST CORRELATION N	TEST-RETEST CORRELATION p
COGNITIVE AVOIDANCE	6.12	43	2.25	6.59	39	2.38	.45	34	.01
COGNITIVE APPRAISAL									
POSITIVE	3.89	45	1.43	5.18	40	1.85	.38	36	.05
FANTASY/RESTRUCTURE	5.52	48	2.23	5.33	40	2.67	.70	39	.001
NEGATIVE	2.47	47	1.94	2.07	41	2.18	.65	39	.001
INFORMATION SEEKING									
QUESTION/VIGILANCE	4.00	48	1.98	3.42	41	2.05	.44	40	.01
AVOIDANCE	3.06	48	1.45	2.54	41	1.57	.27	40	n.s.
SUPPORT SEEKING	4.19	48	2.07	3.98	41	2.25	.59	40	.001
EMOTIONAL RELEASE	1.50	48	1.27	1.34	41	1.15	.45	40	.01
EMOTIONAL CONTROL	2.44	48	1.24	2.02	41	1.37	.52	40	.001
ACTIVE PARTICIPATION	2.25	48	0.81	2.00	41	1.00	.46	40	.01
LIMIT SETTING	1.98	48	1.48	1.71	41	1.33	.51	40	.001
NO STRATEGY	0.81	48	0.73	0.71	41	0.75	.32	40	.05
TOTAL CSCS	38.26	42	12.21	37.57	37	14.10	.72	31	.001
SITUATIONAL APPRAISAL INDEX									
SCARED	2.65	46	1.58	2.32	41	1.40	.48	39	.01
HURT	3.46	48	4.00	2.85	41	3.61	.56	40	.001
CONTROL 1	2.37	43	1.27	2.60	40	1.19	.14	35	n.s.
CONTROL 2	4.25	44	1.04	3.76	41	1.32	.30	37	n.s.

The Development of the Parallel Forms

The decision to develop parallel forms was taken at this point in the research, and it was influenced by two major factors. Firstly, the 70-item version of the instrument was clearly much too long to be administered quickly, within the kinds of time constraints envisioned for hospital based research and potential clinical use. While it was recognized from the outset that the instrument would have to be shortened, it became clear during the pilot study that approximately half the current length would be appropriate.

Secondly, both the statistical analyses and the children's responses to the items failed to reveal a large number of obviously weak items. There was, therefore, a sufficient pool of items to attempt to develop parallel forms of the instrument.

The availability of an alternate form of the instrument was seen to be advantageous to future research on the process of coping where frequent administrations of the instrument over short periods of time might be required.

These parallel forms were developed primarily on the basis of the highest interitem correlations found within given subscales, with these highly correlated pairs being split between forms. Where an item also had high correlations with another item or two in the subscale (which was usually the case), an attempt was made to place these subgroupings in the same form. Thus, both comparability between forms, and internal consistency of the final forms were considered in making item placements. There was also a certain amount of juggling of items done on the basis of logic, intuition, wording redundancies, and picture

similarities. In addition, for some items that did not have good correlations with any other item, or for particularly important or unique items, a reworded version of the item was developed. These new items were used with the same pictures as the original items, and were equally distributed between the two forms of the scale.

A small amount of item reshuffling between subscales was also done on the basis of the pilot data. A few items which correlated very poorly with their assigned subscales, but much better with others, were reassigned accordingly.

These parallel forms of the CSCS are presented in Appendix E.

CHAPTER V

TESTING THE LIMITS OF GENERALIZABILITY

THE SCHOOLS STUDY

METHOD

Objectives

The purpose of the schools study was to (a) establish the internal consistency and test-retest reliability of the CSCS and (b) examine its convergent and discriminant validity.

Reliability

All of the major aspects of reliability, as outlined by Selltiz, Wrightsman and Cook (1976), were addressed. Specifically, this study addressed the issues of:

(a) homogeneity, i.e., how well the different items of the subscales reflected the attribute, in this case the type of strategy, being assessed. Thus, the internal consistency of the subscales and of the total CSCS was assessed.

(b) equivalence, i.e., the degree of agreement between two or more similar measures administered concurrently. Parallel forms of the CSCS were therefore administered.

(c) repeatability, i.e., the degree to which the measure yielded similar scores at different times, given that the phenomenon being measured is stable across time. The test-retest reliability of the main form, the CSCS Form 1, was therefore also assessed.

Validity

The assessment of validity was accomplished by the concurrent administration of (a) other instruments designed to measure children's coping strategies and (b) instruments measuring different but, it was hypothesized, related constructs. An adapted version of Campbell and Fiske's (1959) multitrait multimethod approach (see Chapter III) provided the fundamental design structure. Within this model, coping strategies, the construct of interest, was designated as Trait 1, and the CSCS Form 1, the main instrument under development, was designated as Method 1 of the matrix. All other methods of assessing coping strategies were designated as methods 2 through 5 (see Table 6).

Within the monotrait, multimethod matrix thus created, the major components of the design relating to the establishment of **reliability** and **construct validity**, along with attendant sources of error, were identified.

Elaboration of the matrix to include the other constructs studied, as well as the various methods used yielded a complete view of tests of the discriminant validity of the CSCS. Because the design employed was not a complete multitrait multimethod design (the focus was on methods respecting one trait), a full matrix presentation would have yielded many blank cells. Table 6 thus depicts a reduced series of matrices which highlight the issues of interest.

TABLE 6

THE MULTITRAIT MULTIMETHOD MODEL: THE SCHOOLS STUDY

TRAIT 1 (COPING) METHOD 1 (CSCS) COMPARED WITH TRAIT 1 ALTERNATE METHODS

Method 1 CSCS F1*	Method 2 CSCS F2*	Method 3 CSCS F1 Indiv.	Method 4 CSCS X-Ray	Method 5 C.S.Q.	Method 6 Parent Report
Test-Retest Reliability (e: time)*	Parallel Forms Reliability (e: item content)	Convergent Validity (e: method of admin.)	Convergent Validity (e: situations)	Convergent Validity (e: item type)	Convergent Validity (e:source of info)

* F1: Form 1
F2: Form 2
e: Source of error

TRAIT 1 METHOD 1 (CSCS) COMPARED WITH OTHER TRAITS ASSESSED BY ALTERMATE METHODS

	Method 1 Trait/ Style Scales	Method 2 Situational Appraisal Index	Method 3 Ideal Child CSCS
Trait 2 Control	Discriminant Validity (e:construct)	Sensitivity (e: appraisals)	
Trait 3 Anxiety/ Pain	Discriminant Validity (e: construct)	Sensitivity (e: appraisals)	
Trait 4 Social Desira-bility	Discriminant Validity (e: response tendency)		Discriminant Validity (e: response tendency)
Trait 5 Temper-ament	Discriminant Validity (e: source; construct)		

Assessing the Limits of Generalizabilty

Table 7 summarizes the issues addressed in the evaluation of the psychometric properties of the CSCS, from the perspective of assessing the limits of the generalizability of the instrument. This model provides the clearest view of the eventual data analysis, which proceeded from a consideration of internal consistency reliability, through other forms of reliability, to convergent and finally discriminant validity analyses. The other psychometric isssues noted in the table were also considered.

Hypotheses

With respect to **test-retest reliability**, it was hypothesized that responses to the CSCS would be stable over time, all other things being equal. Specifically it was hypothesized that:

1. Subscale scores of the CSCS, Form 1 **Time 1**, would be highly correlated with the subscale scores of the CSCS, Form 1 **Time 2**, when the same medical situation was described.

Convergent validity was addressed in a step-wise fashion, beginning at a level that might be considered to be content validity, and moving outwards on a continuum of dissimilarity to the target instrument. It was expected that correlations might decrease with this move outward, but would remain high.

Specifically it was hypothesized that:

2. Subscale scores of the CSCS, **Form 1** Time 1, would be highly correlated with the subscale scores of the CSCS, **Form 2** Time 1. (Differences between Forms 1 and 2 were in item content only; presentation and response formats were identical.)

TABLE 7

ASSESSING THE LIMITS OF GENERALIZABILITY
-- SUMMARY OF MAJOR ISSUES --

PSYCHOMETRIC ISSUE	NATURE OF THE COMPARISON	HYPOTHESIS	TABLES
Reliability: Internal Consistency	Within subscales and the total scale, Across ITEMS		13, 18
	Within the total scale, Across SUBSCALES		14, 19
Reliabilty: Test-Retest	Within subscales and the total scale, Across TIME	1	11, 16 20, 21
Reliability: Parallel Forms	Within subscales and the total scale, Across FORMS	2	11, 16 20, 21
Validity: Content	Domain of interest		
Validity: Convergent	Within subscales and the total scale, Across METHODS OF ADMINISTRATION	3	20, 21
	Within subscales and the total scale, Across QUESTION AND RESPONSE TYPE	4 9	20, 21 24
	Within subscales and the total scale, Across SITUATIONS	5a 6	
Validity: Discriminant	Across CONSTRUCTS	7 8	20, 21 27
Sensitivity	Within subscales and the total scale, Across INDIVIDUALS	5a	32 Fig. 5
	Within subscales and the total scale, Across SITUATIONS	5b 6	20, 21 26

3. Subscale scores on the CSCS would remain highly correlated across time even when the presentation and response formats were varied (i.e., individual vs. group administrations).

4. The subscale scores of the **CSCS**, Form 1 Time 2 would be correlated with the scores on the **Coping Strategies Questionnaire**, also administered at Time 2, at least for Grade 3 children (see Measures section, this chapter). (Variation in item content, and presentation and response format.)

The remaining tests of convergent validity were included in the hospital study (see Chapter VII).

The sensitivity of the measure to **individual differences** and to **situational variations** in responding were also investigated. It was hypothesized that:

5a. The subscale scores of the CSCS, Form 1 Time 2, **I.V. Start** story, would be correlated with the subscale scores of the CSCS Form 1 Time 2, **X-Ray** story, giving evidence of the instrument's ability to tap individual coping styles.

5b. However, this correlation was not expected to be as high as that between the subscale scores of CSCS Form 1 Time 1, I.V. Start story and CSCS Form 1 Time 2, I.V. Start story. This difference in correlations would be evidence of the instrument's sensitivity to situational differences.

This latter hypothesis was made so that it could be tested as a planned comparison. However, it must be noted that while children's coping styles have been shown to be responsive to **strong** situational cues (McMurray, Bell, Fusillo, Morgan, & Wright, 1986; Miller & Green,

1985; Murphy & Moriarty, 1976; Tessler, Wegler, Savedra, Gibbons, & Ward, 1981), or essentially **different** situations (e.g., academic vs. social: Compas, Malcarne, & Fondacaro, 1988), it was not clear that children would make distinctions between the two **essentially similar** situations (imagined medical procedures) used in this study. It should also be noted that there is evidence to suggest that children may display more cross-situational consistency in coping than do adolescents and adults (Compas et al., 1988).

The Situational Appraisal Index was used as a partial test of the success of the situational manipulation, and further evidence of the instrument's sensitivity to perceived, if not actual, situational differences was sought through the examination of the relationship between the Situational Appraisal Index and the CSCS. It was hypothesized that:

6. The CSCS autocorrelations (Time 1 - Time 2) would be higher for children reporting **similar situational appraisals** at both times of measurement than for children whose appraisals were **different** across time, regardless of the medical procedure described.

Measures of health locus of control and state anxiety were included in this study for the purpose of establishing the discriminant validity of the CSCS. These measures were selected because they assess constructs that are conceptually related to the construct of interest (coping), but, it was proposed, not identical to it (see Chapter II). Thus it was hypothesized that:

7. While children's scores on the **Children's Health Locus of Control Scale** and the **Revised Children's Manifest Anxiety Scale**

would be correlated with their scores on the **CSCS**, these correlations would not be as high as either the **CSCS** subscale correlations with the CSCS total, or the CSCS Form 1 - Form 2 subscale autocorrelations.

It was also recognized that children's responses are frequently influenced by their perceptions of what would be socially desirable. It was therefore hypothesized that:

8. While children's scores on the **Social Desirability Scale** and the **CSCS Ideal Child** would be correlated with their scores on the **CSCS**, these correlations would not be as high as the CSCS Form 1 - Form 2 subscale autocorrelations.

The measures of health locus of control and anxiety also served to provide preliminary evidence of the construct (convergent) validity of the Situational Appraisal Index questions relating to anxiety and control. It was hypothesized that:

9a. Children's scores on the situational appraisal question relating to **anxiety** would be correlated with their scores on the **Revised Children's Manifest Anxiety Scale**, and

9b. Children's scores on the two situational appraisal questions relating to **control** would be correlated with their scores on the **Children's Health Locus of Control Scale.**

Two parent measures of child coping and one of child temperament were also included in this study on an exploratory basis. It has already been noted that child and parent reports can differ substantially in the depiction of children's perceptions and emotions (see Strengths of Self Report, Chapter III). Therefore, no specific

hypotheses were made about the correlations between the child's CSCS scores and the parent measures.

Participants

Children from 15 Grades 1, 2, and 3 classrooms at five public schools in the Sooke School Division were asked to participate, along with their parents. None of the schools in the pilot study were included in this part of the project, but in all obvious respects (general location, size, nature of the catchment population), these schools appeared to be quite comparable to those initial schools.

Letters were sent home with about 420 children, and 172 response slips were returned to the schools. (A copy of this letter is included in Appendix H). Of the slips returned, 141 (82%) were positive. However, the overall participation rate, based on the number of letters sent home, was only 34%. This rate varied somewhat across grades, with 25% of the Grade 1, and 38% of both the Grade 2 and 3 children initially contacted actually participating in the study.

Two children were absent at both times of testing, so that only 139 children completed the interviews. Of these, 36 were in Grade 1 (11 boys and 25 girls), 47 were in Grade 2 (29 boys and 18 girls), and 56 were in Grade 3 (22 boys and 34 girls).

Neither the researcher nor the school principals could think of any special reasons for the unexpectedly low rate of participation. However, because all the non-rural schools in the Sooke School Division willing to do so were already taking part in this study (or had participated in the pilot study), it was not possible to increase the size of the sample. This unexpectedly low sample size resulted in some

last minute changes to the design, mainly the elimination of the counterbalanced presentations of the parallel forms and the elimination of individual administrations at two grade levels. The final design is presented in Table 8.

The parent measures were sent home with the child. Parents were asked to return the forms using the stamped self-addressed envelope provided. Of the 139 forms sent home, 117 were eventually mailed back, 11 of these after a second copy had been mailed out to the parents' home. An additional 17 forms were later completed by parents either over the telephone with the reseacher. As a result, parent data were obtained for 134 of the 139 children (96% of the sample).

Design and Procedure

The design of this study is presented in Table 8. All children were seen on two occasions, approximately two weeks apart. The basic procedures for the administration of the CSCS and the Situational Appraisal Index, both individually and in groups, were the same as in the pilot study.

TABLE 8
THE DESIGN OF THE SCHOOLS STUDY

TIME 1 MEASURES*	GROUP**	N	TIME 2 MEASURES*	GROUP**	N
CSCS F1 I.V. Ind.	1,2	19	CSCS F1 I.V.	1-8	79
CSCS F1 I.V.	3-16	120	CSCS F1 X-R	9-16	60
CSCS F2 I.V.	3-8 11-13 16	93	CSCS F1 Ideal	1,2 9-16	79
S.A.I	All	139	S.A.I.	All	139
Soc.Des.	All	139	C.S.Q.	3-8	60
			HLOC	2-8 14-16	105
			RCMAS	1,2 6-8 15,16	82

* MEASURES CODE:

CSCS: Coping Strategies Card Sort
F1: Form 1
F2: Form 2
I.V.: I.V. Start Story
X-R: X-Ray Story
Ind.: Individual Administration

S.A.I.: Situational Appraisal Index
Soc.Des.: Social Desirability
C.S.Q.: Coping Strategies Questionaire
HLOC: Health Locus of Control Scale
RCMAS: Revised Children's Manifest Anxiety Scale

** GROUPS CODE:

Group	Grade	School	N
1	3	3	7
2	3	4	12
3	1	2	5
4	1	5	5
5	2	2	9
6	1	4	11
7	2	1	14
8	3	2	16
9	1	3	6
10	1	1	4
11	1	1	5
12	2	5	7
13	3	5	5
14	2	4	11
15	2	3	6
16	3	1	16

Number of Participants: Total = 139
Grade 1 = 36 Grade 2 = 47 Grade 3 = 56

- Five children were eventually eliminated as a result of apparent response sets or an excessive number of missed items.
- Some children were missing at either Time 1 or Time 2, so that actual number of completed measures was always lower than n's reported here.

Individual Administrations. Because of limited sample size, only Grade 3 children were considered for individual administrations. All children in a given classroom were placed in the same testing group, i.e., either individual or group administrations, at Time 1. The decision regarding each classroom was made on the basis of the ability of the school and the willingness of the classroom teacher to accommodate individual administrations; 19 children from two schools were selected for individual interviews.

Unlike the pilot study where the children selected for individual interviews were seen individually on both occasions, the children selected for individual administrations in this study were seen in their classroom groups at the second time of testing. This was done so that the effect of method of administration could be tested within subjects.

Additional Measures and Manipulations. Other basic differences between the pilot study and this study included the administration of several additional measures for the purpose of establishing convergent and discriminant validity and the manipulation of the imagined medical procedure.

All of the additional measures included in this study are outlined in Table 8, in the order in which they were administered. All participants completed the Social Desirability Scale at Time 1 and either the Coping Strategies Questionnaire or the Ideal Child CSCS at Time 2. The Children's Health Locus of Control and the Revised Children's Manifest Anxiety Scale were administered at Time 2 if time permitted.

As can be seen from Table 8, all children were told the I.V. Start story at Time 1. Approximately two thirds of the children were given this same story at Time 2, while one third (from all grades, in five classrooms, in four schools) were told the X-Ray story (see Table 8). The purpose of this manipulation was to establish the possible impact of situational differences on test-retest reliability and on strategy choices.

Measures

Children's Measures

The following measures were completed by the children at school, either in their classrooms (group administrations) or in a private room (individual administrations), at either Time 1 or Time 2, or both, as described in the procedure section. The CSCS and the Situational Appraisal Index can be found in Appendix F. All other measures described below can be found in Appendix G.

The Coping Strategies Card Sort

This new measure, the focus of this research, is described extensively in Chapter IV.

The Situational Appraisal Index

This measure, also developed by the researcher as a component of the CSCS, is described in Chapter IV as well.

The Coping Strategies Questionnaire

The Coping Strategies Questionnaire was developed by the researcher to assess the same categories of coping strategies defined by the original subscales of the CSCS.

This questionnaire was designed to be as different as possible from the CSCS, within the confines of a self-report instrument. Thus, instead of a large number of specific strategies, the Coping Strategies Questionnaire presented the child with 11 broad categories of responses, each defined by one or two examples. These 11 questions were presented in a two-page questionnaire.

The response format was a Likert-type scale using circles ranging in size from small to large. The instructions requested that the children select one of the small circles if they did very little of what the question asked about, or a large circle if they did a lot of what the question asked about. After completing two sample questions, the children were further instructed to think about what it was like for them at the dentist when they were having their teeth cleaned or a cavity filled, or at the public health office when they were having an immunization shot. The 11 questions then pertained specifically to these remembered circumstances.

Thus the Coping Strategies Questionnaire was designed to be a more generalized or trait-like instrument than the CSCS at two levels: (a) the nature and wording of the questions themselves and (b) the stimulus situations evoked as a basis for responding. Previous research has indicated that dispositional differences do predict strategy use (Carver, Scheier, & Weitraub, 1989). It was therefore anticipated that this trait-like instrument would provide a useful comparison measure. Because of the more generalized nature of the questions, however, it was expected that the Grade 1 children in particular might have a difficult time completing this questionnaire: The cognitive demands of the task

might simply be too high. It was anticipated that the Grade 3 children would be able to handle the task with little difficulty, and that for them at least, as indicated in the Hypotheses section of this chapter, responses would correlate with the CSCS.

Social Desirability Scale

A series of eight simple questions requiring yes-no responses were used to assess the children's tendencies to respond in a socially desirable manner. These questions were selected and adapted from the Children's Social Desirability Scale (Crandall, Crandall & Katovsky, 1965) and the L-scale of the Children's Form of the Manifest Anxiety Scale (Castaneda, McCandless, and Palermo, 1956). Four of the items were positively keyed, and four were negatively keyed.

Because children's responding might be heavily influenced by their behaviour over the last day or two (Crandall et al., 1965; see Chapter III), the questions for this scale were deliberately selected to represent issues fairly prominent in a young child's life (saying please and thank you; washing hands before meals). It was hoped that these very basic issues would be significant enough in the children's routines to be foremost in memory, and part of well established repertoires.

In addition to this more common approach to the assessment of social desirability, approximately half the participants were asked to complete the CSCS as they thought an "ideal child", a child who always knew how to do things best, would complete it.

The Children's Health Locus of Control

Parcel and Meyer's (1978) scale, the psychometric properties of which are described in the Literature Review (Chapter III) was used to

assess the children's perceptions of personal control regarding health issues.

The Revised Children's Manifest Anxiety Scale

Reynolds and Richmond's (1978) revision of the Children's Manifest Anxiety Scale (Castenada et. al., 1956), also described in Chapter III, was used to assess children's trait anxiety.

Parent Measures

The following measures were completed at home by one parent of participating children. Copies of the parent measures can be found in Appendix H.

The Child's Coping History

This questionnaire provided information on the child's coping history and coping style.

The first portion of the questionnaire was adapted from Peterson-Holmer's History of Coping Questionnaire (Peterson & Toler, 1986) which is described briefly in Chapter III.

The second series of questions was developed by the researcher to tap all of the areas covered by the subscales of the CSCS. In this portion of the questionnaire there were 23 statements to which the parent was asked to respond using a 5-point Likert scale ranging from very unusual for my child to highly typical of my child. The parents were asked to describe what they thought was characteristic behaviour for their child in medical settings.

The Child Temperament Survey

As described in Chapter III, the temperament survey consisted of subscales drawm from three different temperament measures. It consisted of 35 items to which the parents responded using the same 5-point Likert scale outlined above.

CHAPTER VI

TESTING THE LIMITS OF GENERALIZABILITY: THE SCHOOLS STUDY

RESULTS

Preliminary Analyses

Response Sets

Preliminary analyses were conducted to establish the possible influence of response sets. Patterns of yes and no responding were examined for all bivariate response instruments (e.g., the CSCS) and tendency to extreme responding was examined in all instruments employing multi-response scales (e.g., the Situational Appraisal Index).

As a result of this pre-screening of the data, the file of one child (a Grade 2 boy who endorsed 40 of the 44 CSCS items) was eliminated from the data set.

In addition, the file of any child who missed (failed to repond to) more than 10% of the CSCS items on any administration of the instrument was eliminated from the sample. Application of this criterion resulted in the exclusion of four additional children: one Grade 1 girl, two Grade 2 girls, and one Grade 2 boy. The final sample thus consisted of 35 Grade 1 (11 boys, 24 girls), 43 Grade 2 (27 boys, 16 girls), and 56 Grade 3 (22 boys, 34 girls) children.

The Original Coping Strategies Card Sort

Scoring

The CSCS yielded simple dichotomous scores for each of the 44 items (yes = 1, no = 0), which were then added together in the appropriate

combinations to yield the subscale scores. Each item appeared in only one subscale, so that the addition of all the subscale scores yielded a score for the total number of strategies endorsed. Because of the differences in subscale size, it was decided to translate each subscale score into a percentage, using the following formula:

$$\frac{\text{number of yes responses to subscale items}}{\text{number of items in the subscale}} \times 100.$$

A similar percentage score was calculated for the total CSCS.

Three different sets of CSCS scores are reported in the results that follow: Form 1 administered at Time 1, Form 1 administered at Time 2, and the parallel form, Form 2, which was administered at Time 2 only. In the initial descriptive statistics, results of the three sets of scores will be reported primarily as a form of replication data. In subsequent sections, comparisons between these sets of scores will be used to establish reliability over time and across items.

Means and Variances

As can be seen from Table 9, the children, on average, endorsed between 50 and 60% of the **total** of 44 strategies presented to them. The mean endorsement levels of the various **subscales** differed greatly, indicating that some subscales (i.e., some types of strategies), were considerably more popular than others. For example, for Form 1 Time 1, the endorsement levels ranged from an average 35% for Emotional Release to an average of 88% for Active Participation.

The ranges and patterns of the means were comparable across forms and times. Four types of strategies appeared consistently within the five most frequently endorsed types of strategies.

TABLE 9

COPING STRATEGIES CARD SORT: ORIGINAL SUBSCALES
MEANS (%) AND STANDARD DEVIATIONS, ALL ADMINISTRATIONS

CSCS SUBSCALES (No. of Items)	FORM 1 TIME 1 MEAN	N	S.D.	FORM 1 TIME 2 MEAN	N	S.D.	FORM 2 TIME 1 MEAN	N	S.D.
COGNITIVE AVOIDANCE (7)	72.0	125	23.9	69.2	127	26.2	60.0	84	26.5
COGNITIVE APPRAISAL									
POSITIVE (4)	67.8	128	27.6	59.8	128	26.7	59.2	87	30.0
FANTASY/RESTRUCTURE (5)	53.8	128	28.5	57.7	128	27.0	58.4	85	24.1
NEGATIVE (4)	37.4	129	29.8	32.2	129	31.6	36.9	86	32.7
INFORMATION SEEKING									
QUESTION/VIGILANCE (4)	66.8	128	30.6	57.8	129	31.1	60.2	86	33.5
AVOIDANCE (4)	58.6	128	23.7	69.2	126	32.6	52.0	83	23.8
SUPPORT SEEKING (4)	66.7	127	31.5	56.5	127	34.4	61.9	86	31.3
EMOTIONAL RELEASE (3)	36.4	130	33.1	26.7	130	29.2	34.9	87	30.9
EMOTIONAL CONTROL (3)	55.5	128	28.8	52.6	130	31.6	59.5	84	31.1
ACTIVE PARTICIPATION (2)	87.5	132	27.9	81.4	129	31.3	75.9	87	33.1
LIMIT SETTING (2)	53.1	129	35.8	45.4	130	37.6	50.6	84	41.4
TOTAL CSCS (44)	58.8	113	16.4	55.4	119	17.3	54.4	73	18.5

These were Active Participation, Cognitive Avoidance, Cognitive Appraisal - Positive, and Information Seeking - Questioning and Vigilance. The three types of strategies consistently selected the least frequently were Limit Setting, Cognitive Appraisal - Negative, and Emotional Release.

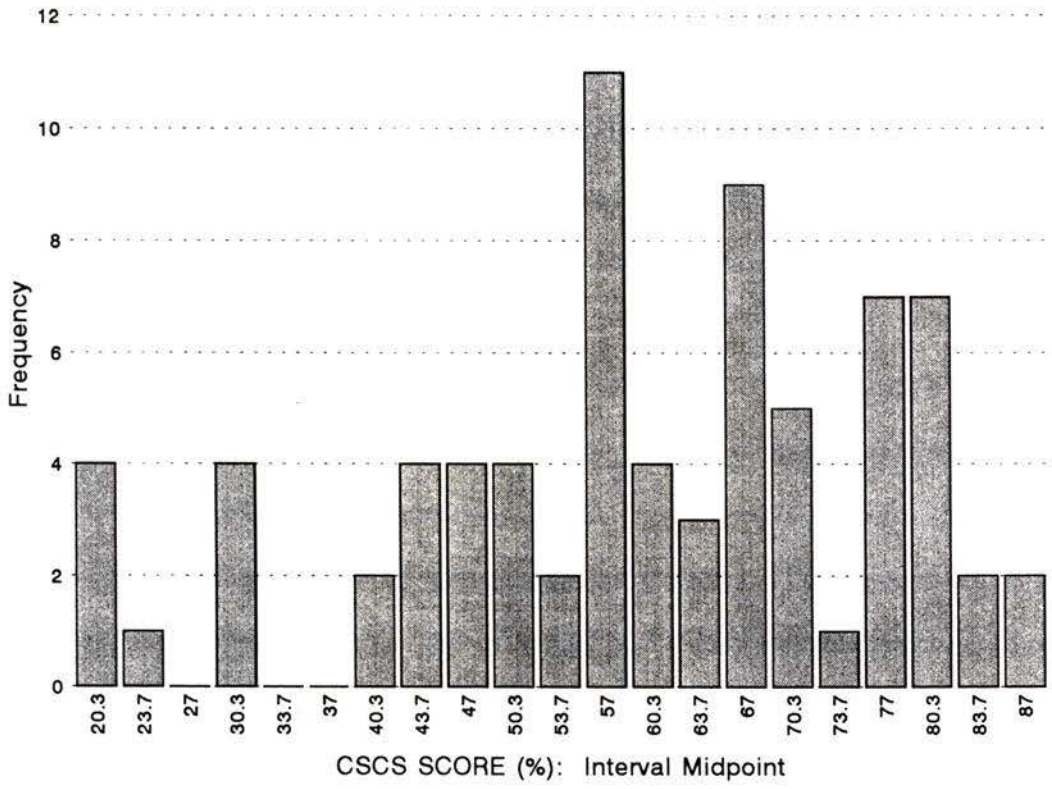
Within the context of these broad similarities, the average patterns of response did suggest, however, the possible existence of both form (e.g., Cognitive Avoidance) and practice (e.g., Cognitive Appraisal - Positive) effects.

The standard deviations of the CSCS scores indicated that there was an acceptable degree of variability in both the total and the subscale scores (see Table 9). Ranging overall from 23.3 to 41.2 for the subscales, the standard deviations suggested that the various subscales had a sufficient range of scores to capture potential individual and group differences.

The findings for the CSCS total scores, based on the addition of all the subscale scores, supported this finding of sufficient variability. The distribution of the CSCS total scores was fairly normal, although somewhat negatively skewed ($\underline{M}$ = 59.37; Median = 60.98; S.E. Skew = .276: see Figure 3). This was not surprising since the goal in the development of this instrument was to represent children's most probable or most common strategy choices within the context of as brief an instrument as possible.

FIGURE 3

Distribution of CSCS Total Scores



The similarity of the variances across time and forms also provides initial evidence of the stability of Form 1 over time, and the equivalence of Forms 1 and 2 (Nunnally, 1978). These issues will be dealt with in greater depth later. At the same time, the slight drop in mean endorsement level overall between Time 1 and Time 2, along with the slight increase in standard deviations may indicate that the CSCS should be introduced to respondents on a practice basis initially, so that they can be more selective in their choices. In this way, the instrument might be even more sensitive to individual differences.

Gender and Grade Level Differences

A visual examination of the Form 1 Time 1 CSCS results for boys and girls (see Figure 4 A) showed response patterns to be broadly similar for the two groups. Comparison of the three grade levels (see Figure 4 B) also showed patterns of endorsement to be similar across this narrow age range, although there was an apparent trend to decreasing levels of endorsement with increasing age/grade level. In spite of this possible difference, the same five types of strategies were endorsed most frequently by all gender and grade groups, who were also consistent in their least preferred types of strategies.

This study was not designed to examine gender and age differences, and indeed the *n*'s for these subgroups made statistical analysis of possible differences tenuous at best. The above observations are offered only in support of the position that the same measure, the CSCS, can be used to assess the coping strategies of both boys and girls of this age level.

FIGURE 4

CSCS ORIGINAL SUBSCALES

Mean Endorsement Levels by Gender and Grade

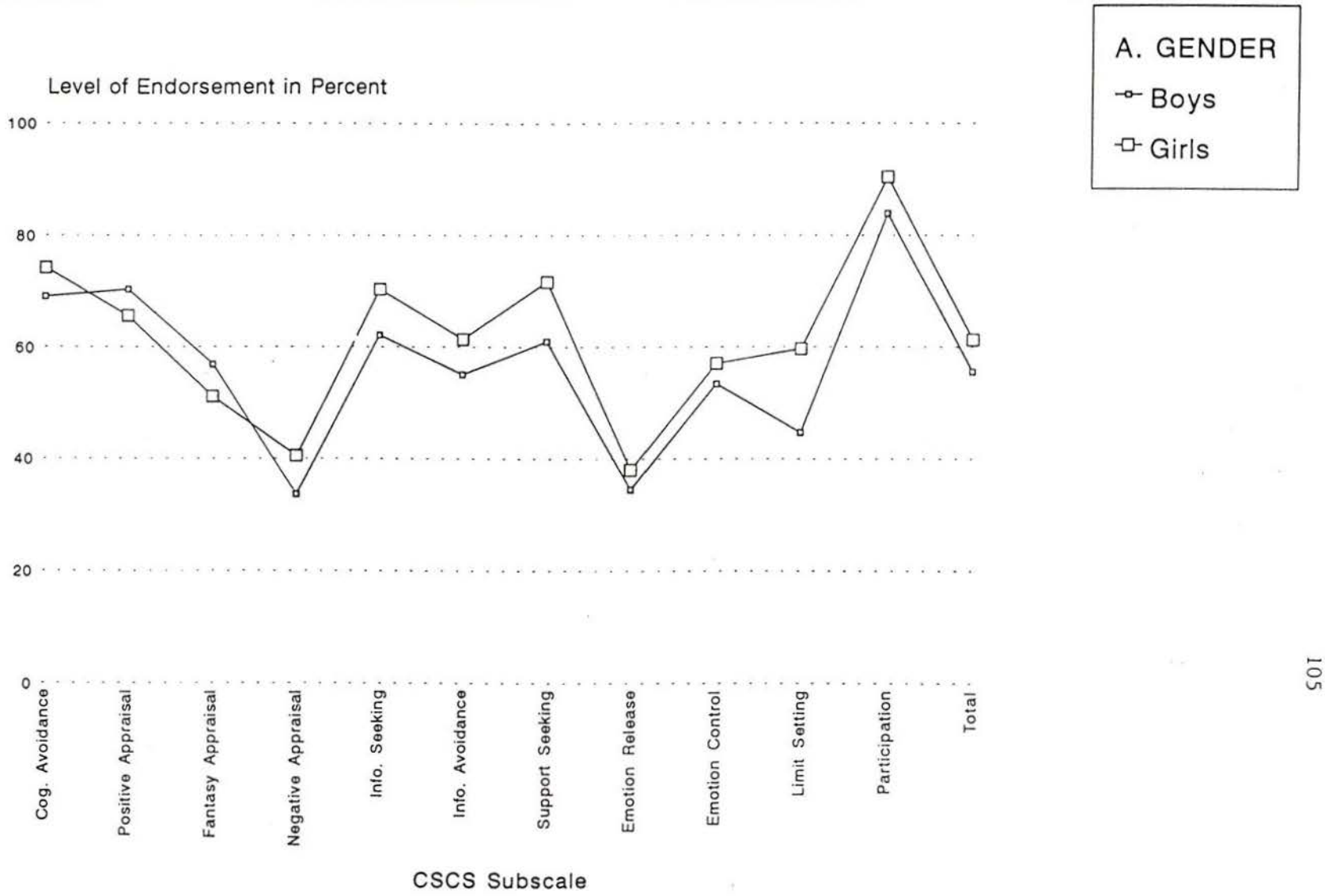
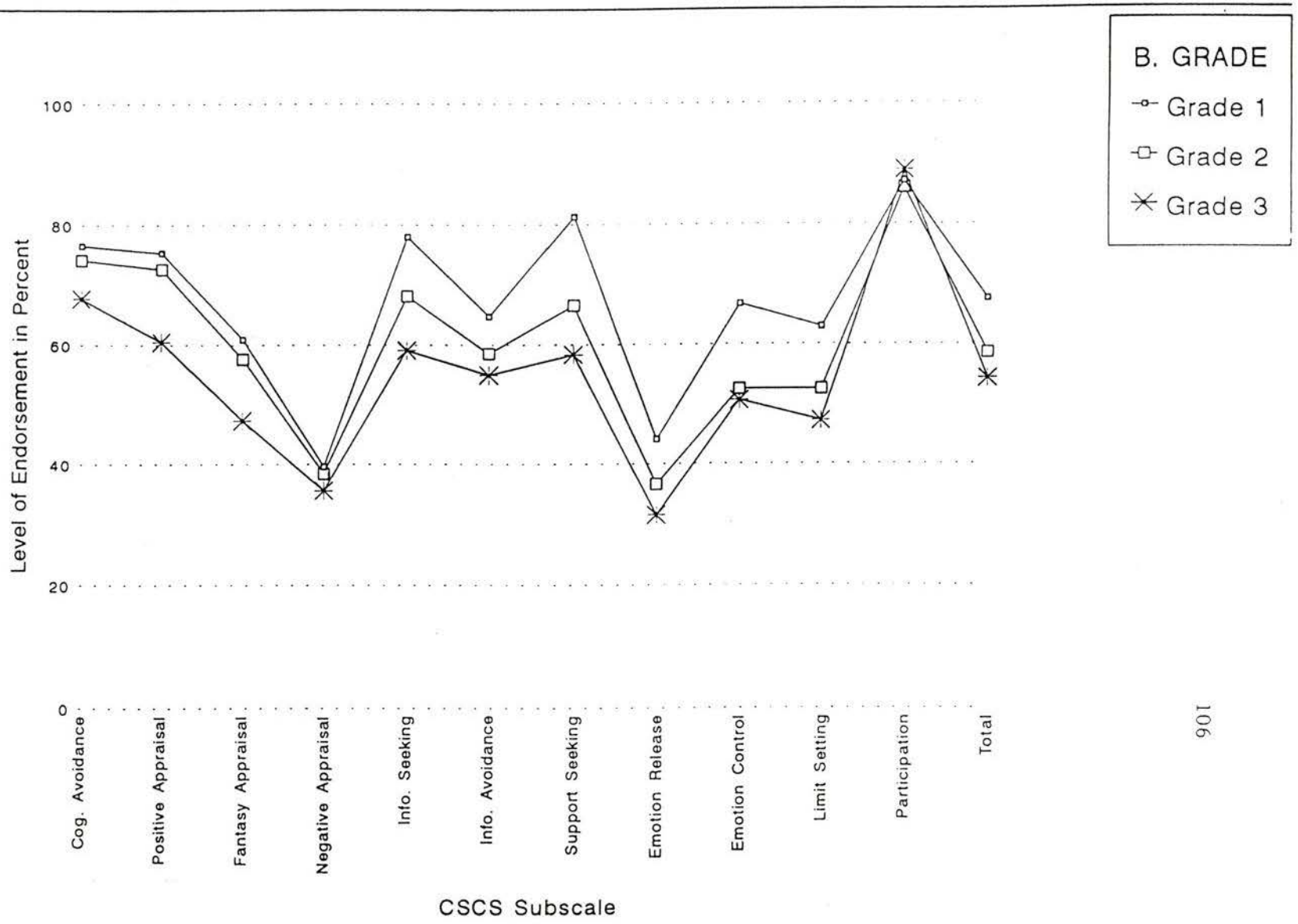


Figure 4 (Continued)



Internal Consistency Considerations

Mean interitem correlations. Within assigned subscales mean interitem correlations ranged from an unacceptably low .01 to a very good .31 (plus a very high .44 for a two-item scale) for Form 1 Time 1. Using McNemar's (1969) formula for averaging correlations, the grand mean of the 11 subscale means was .21. The general pattern of correlations was replicated for Form 1 Time 2 and for Form 2 (see Table 10). The internally weak subscales, based on the criterion of interitem correlations, appeared to be Emotional Control and Information Avoidance on Form 1, and these same two plus Fantasy/Restructuring on Form 2.

The mean interitem correlation for all 44 items taken together (i.e., for the total CSCS) was low (.21). This finding is to be expected since the CSCS is a constructed from a heterogeneous variety of subscales.

Alpha Coefficients. The calculation of alpha coefficients for each of the subscales revealed a similar pattern of very weak to moderately acceptable levels of internal consistency. The range of subscale alphas was .04 to .66 for Form 1 Time 1, and somewhat better for other administrations (see Table 10). Considering as a whole the results for both times of measurement and both forms, it would appear that the most internally consistent subscales were Cognitive Avoidance and Support Seeking, with the results for Cognitive Appraisal - Positive, Cognitive Appraisal - Negative, and Information Seeking being mixed but encouraging.

TABLE 10

COPING STRATEGIES CARD SORT: ORIGINAL SUBSCALES
MEAN INTERITEM CORRELATIONS AND ALPHA COEFFICIENTS

CSCS SUBSCALES (No. of Items)	FORM 1 TIME 1 MEAN r (i-item)	ALPHA	N	FORM 1 TIME 2 MEAN r (i-item)	ALPHA	N	FORM 2 TIME 1 MEAN r (i-item)	ALPHA	N
COGNITIVE AVOIDANCE (7)	.19	.61	125	.22	.67	127	.20	.64	84
COGNITIVE APPRAISAL POSITIVE (4)	.17	.46	128	.12	.34	128	.20	.49	87
FANTASY/RESTRUCTURE (5)	.18	.52	128	.15	.46	128	.07	.26	85
NEGATIVE (4)	.18	.48	129	.28	.62	129	.28	.61	86
INFORMATION SEEKING QUESTION/VIGILANCE (4)	.24	.55	128	.20	.50	129	.32	.65	86
AVOIDANCE (4)	.07	.26	128	.11	.40	126	.03	.15	83
SUPPORT SEEKING (4)	.31	.66	127	.33	.66	127	.28	.60	86
EMOTIONAL RELEASE (3)	.21	.44	130	.19	.37	130	.13	.30	87
EMOTIONAL CONTROL (3)	.01	.04	128	.10	.25	130	.11	.28	84
ACTIVE PARTICIPATION (2)	.21	.35	129	.28	.44	130	.37	.54	84
LIMIT SETTING (2)	.44	.60	132	.30	.46	129	.21	.34	87
TOTAL CSCS (44)	.11	.84	113	.12	.85	119	.13	.87	73

While none of the subscales achieved the .70 level recommended by Nunnally (1978) and Kline (1986) as the desirable alpha level for a 30-item scale (probably at least in part because of scale length), the alpha coefficients for the total CSCS were very good (.85 for Form 1 Time 1; .88 for Form 1 Time 2; .88 for Form 2 Time 1). Thus, although some subscales were weak, the items as a whole did seem to coalesce around a central theme.

Subscale intercorrelations. This finding is supported by the pattern of subscale intercorrelations. At both Time 1 and Time 2, more than half of the subscales were moderately intercorrelated in the .20 to .45 range. The two subscales which fell below the .20 correlational level most consistently were Cognitive Appraisal - Negative, and Emotional Release. These two subscales were highly intercorrelated between themselves and also well correlated with the CSCS total scores (see Table 11).

Tracking Down Subscale Weaknesses

Because it was clear at this point in the analysis that the 11 subscales initially devised did not constitute the optimal organization of the coping strategy items selected for inclusion in the CSCS, the items were reorganized on the basis of the internal consistency data discussed above. The success of this reorganization was measured in terms of improvements in reliability and validity.

TABLE 11

SHARED VARIANCE:* CSCS ORIGINAL SUBSCALES (Form 1)

Time 1 (N = 113-129)

Time 2 (N = 119-130)

SUBSCALE	A	B	C	D	E	F	G	H	I	J	K	TOTAL
A		**0.25**	**0.23**	**0.04**	**0.25**	**0.12**	**0.30**	**0.03**	**0.21**	**0.14**	**0.14**	**0.62**
		0.50	0.48	0.20	0.50	0.34	0.55	0.17	0.46	0.37	0.37	0.79
B	**0.31**		**0.14**	**0.01**	**0.25**	**0.04**	**0.18**	**0.05**	**0.08**	**0.03**	**0.10**	**0.41**
	0.56		0.38	0.10	0.50	0.20	0.42	0.22	0.29	0.18	0.31	0.64
C	**0.28**	**0.15**		**0.00**	**0.19**	**0.07**	**0.18**	**0.03**	**0.09**	**0.08**	**0.04**	**0.38**
	0.53	0.39		0.00	0.44	0.26	0.43	0.16	0.30	0.28	0.19	0.62
D	**0.00**	**0.00**	**0.04**		**0.05**	**0.00**	**0.03**	**0.24**	**0.03**	**0.18**	**0.00**	**0.14**
	0.05	0.05	0.19		0.23	0.07	0.17	0.49	0.17	0.42	-0.06	0.37
E	**0.22**	**0.23**	**0.23**	**0.03**		**0.08**	**0.30**	**0.02**	**0.16**	**0.08**	**0.10**	**0.52**
	0.47	0.48	0.48	0.16		0.29	0.55	0.14	0.40	0.29	0.32	0.72
F	**0.12**	**0.05**	**0.08**	**0.03**	**0.08**		**0.07**	**0.03**	**0.06**	**0.03**	**0.18**	**0.24**
	0.35	0.23	0.29	0.16	0.29		0.27	0.16	0.25	0.17	0.43	0.49
G	**0.11**	**0.09**	**0.11**	**0.20**	**0.12**	**0.14**		**0.05**	**0.08**	**0.16**	**0.08**	**0.53**
	0.33	0.30	0.33	0.45	0.35	0.37		0.22	0.28	0.40	0.28	0.73
H	**0.00**	**0.00**	**0.02**	**0.22**	**0.01**	**0.03**	**0.06**		**0.69**	**0.17**	**0.02**	**0.21**
	0.00	0.03	0.13	0.47	0.09	0.18	0.25		0.83	0.41	-0.15	0.46
I	**0.08**	**0.11**	**0.12**	**0.08**	**0.09**	**0.03**	**0.17**	**0.06**		**0.08**	**0.05**	**0.29**
	0.28	0.33	0.35	0.29	0.30	0.34	0.41	0.24		0.28	0.23	0.54
J	**0.07**	**0.04**	**0.07**	**0.27**	**0.06**	**0.08**	**0.26**	**0.06**	**0.10**		**0.00**	**0.27**
	0.26	0.20	0.26	0.52	0.25	0.29	0.51	0.24	0.31		0.02	0.52
K	**0.21**	**0.15**	**0.02**	**0.00**	**0.12**	**0.05**	**0.07**	**0.00**	**0.04**	**0.01**		**0.15**
	0.46	0.39	0.16	0.00	0.34	0.23	0.26	0.07	0.20	0.09		0.39
TOTAL	**0.48**	**0.34**	**0.41**	**0.25**	**0.45**	**0.34**	**0.49**	**0.14**	**0.36**	**0.31**	**0.20**	
	0.69	0.58	0.64	0.50	0.67	0.58	0.70	0.37	0.60	0.56	0.45	

LEGEND

A Cognitive Avoidance
B Cognitive Appraisal: Positive
C Cognitive Appraisal: Fantasy/Restructuring
D Cognitive Appraisal: Negative
E Information Seeking: Questioning/Vigilance
F Information Seeking: Avoidance
G Support Seeking
H Emotional Release
I Emotional Control
J Limit Setting
K Active Participation
TOTAL Total CSCS

* Shared Variance: **BOLD FACE** Subscale Intercorrelation: PLAIN FACE

A combined rational and empirical approach was taken in the task of tracking down and correcting subscale weaknesses. Items that had low corrected item-subscale correlations with, or negatively affected the alpha coefficients for, their assigned subscales were flagged for further consideration, as were items whose endorsement levels fell outside the 20 to 80% range. These criteria were adopted from the recommendations of Nunnally (1978).

Extreme endorsement levels. The possible deletion of items with extreme endorsement levels was considered first. All five of the identified items were at the extreme high end of the continuum, with endorsement levels ranging from 82 to 90% at Time 1. It was decided that all of these represented important coping strategies whose absence would be noted in a valid assessment of strategy use. They were, therefore, all retained in the final scales.

Correlational patterns. The next step was to identify items with low item-subscale correlations or negative impacts on the alpha coefficient for their assigned subscale and then consider their correlations with other subscales. This was done with a view to possible reassignment of these items. The correlational patterns of all items in weak subscales (from an internal consistency perspective) were also carefully examined, paying special attention to other subscales with which the weak subscale as a whole might be correlated (see Table 11). This was done with a view to a possible collapsing of the subscales, or at least portions of them.

Finally, there were some subscales that were so highly intercorrelated as to suggest that they should be combined or otherwise

restructured (see Table 11). The items in all subscales intercorrelating at a .45 level or higher were examined, again with a view to a possible collapsing of the subscales or portions thereof.

Rational criteria. The final decision respecting the compatibility of items and thus the final organization of the subscales was, however, a rational decision. The items had to relate to some type of general coping strategy that could be identified and defined by examination of the items. The general strategy types had to make sense in the context of the theoretical framework of the research.

The Revised Coping Strategies Card Sort

Two major revisions of the CSCS resulted from the above analyses. The first yielded significant improvements in internal consistency overall, but several items remained troublesome in that they either correlated very highly with more than one subscale, or they did not correlate well with any. With respect to the first problem (high item correlations with two subscales), it was decided that the most logical solution was to allow these three items to form part of two subscales each.

At the same time, the three items without any strong subscale correlations were eliminated from the final version of the CSCS. One item from Form 2 was added to Form 1 to replace the discarded parallel item because that strategy was believed to be too important to ignore. Thus, "I tried very hard not to cry" from Form 2 replaced "I held back my tears" on Form 1.

The final version of the CSCS Form 1 is presented in Table 12. It consists of 41 items organized into six subscales ranging in length from 4 to 10 items. Three of the items appear in two different subscales.

The most clearly identifiable and pervasive difference between the initial (see Appendix B) and final (Table 12) versions of the CSCS is the elimination of the cognitive - behavioural distinction. Thus, for example, the Cognitive Avoidance subscale and its behavioural counterpart the Information Avoidance subscale were collapsed into one, as were the Cognitive Appraisal - Positive (reality-based items) and the Information Seeking - Questioning and Vigilance subscales.

Furthermore, all items that might be perceived as negative or distress-based were combined into one category. This was not meant to imply, however, that these were not coping strategies, and potentially effective ones at that: A child might scream and cry to "make my feelings drop out of me", as one child described it to the researcher.

The final major difference between the initial and final versions of the CSCS concerns the conceptually new Self Focus subscale. The strategies in this subscale share an inward focus at an affective level (i.e., they are not primarily cognitive) that is more neutral than explicitly positive (Fantasy/Restructuring) or negative (Negative/Distress). This new subscale also contains behavioural strategies that apparently serve to maintain this balanced inner state (e.g., external support seeking and attempts at internal control).

TABLE 12

THE REVISED COPING STRATEGIES CARD SORT (FORM 1)
SUBSCALE DEFINITIONS AND ITEM CHARACTERISTICS

DEFINITIONS

MONITOR SUBSCALE

Cognitive Aspect

The child is thinking about or imagining aspects of the procedure per se, or about his/her response to the procedure. This includes reality-based appraisals (concrete, fact-based appraisals).

Behavioural Aspect

The child deliberately seeks out information about the procedure and its consequences through either direct questioning or vigilance.

AVOIDANCE/DISTRACTION SUBSCALE

Cognitive Aspect

The child employs cognitive means to avoid confrontation with the stressor or its consequences, i.e., the child deliberately avoids thinking about the medical procedure. The means employed may include diversion (deliberately thinking about other things) or wishful thinking.

Behavioural Aspect

The child deliberately avoids information about the procedure and its consequences by actively blocking out the available information or engaging in behaviours that divert his/her attention.

FANTASY/RESTRUCTURING SUBSCALE

This is a cognitive strategy in which the child is thinking about or imagining aspects of the procedure per se, or about his/her response to the procedure. The child's thinking has its roots in the reality of the situation (i.e., it is not diversionary thinking), but the child has mentally restructured the situation to make it seem benign or positive, or to make it fall into line with his/her wishes, or has constructed a fantasy that allows him/her to reinterprete the entire situation.

Table 12 (Continued)

COOPERATION SUBSCALE

Cognitive/Behavioural Aspect
The child steels him/herself for the procedure.

Behavioural Aspect
The child is actively involved in the procedure by his/her own special effort. (This may be a form of secondary control.)

SELF-FOCUS SUBSCALE

Cognitive Aspect
The child is either thinking about or trying to avoid thinking about how the procedure will feel.

Behavioural Aspect
The child seeks out physical or emotional support, or takes some action to gain control of self (emotions).

NEGATIVE/DISTRESS BEHAVIOURS SUBSCALE

Cognitive Aspect
The child is thinking about or imagining aspects of the procedure per se, or about his/her response to the procedure, focusing on the negative aspects, or exaggerating the negative aspects to unrealistic proportions.

Behavioural Aspect
The child displays some affective response which could serve as a means of stress reduction, or could be an attempt to stop the procedure.

Table 12 (Continued)

ITEMS	ENDORSEMENT (%) TOTAL	MALE	FEMALE	CORRELATION WITH SUBSCALE TOTAL	
MONITOR SUBSCALE					
I thought about everything that was happening.	48.5	53.3	44.4	.38	.33
I thought about how it made me feel.	59.1	60.0	58.3	.53	.53
I thought about how much it hurt.	40.6	40.0	41.1	.33	.00
I tried to find out what was going to happen next.	64.9	55.9	72.2	.30	.31
I asked questions about how it would feel.	62.3	56.7	67.1	.42	.53
I got the hospital people to explain everything as they did it.	75.8	70.0	80.6	.55	.66
I looked carefully at all the medical things in the room.	62.9	66.7	59.7	.28	.14
TOTAL SUBSCALE (7 ITEMS) MEAN INTERITEM CORR. .24	SUBSCALE MEAN 59.2	57.6	60.5	ALPHA .69	
AVOIDANCE/DISTRACTION SUBSCALE					
I tried hard not to think about what was happening.	64.6	62.1	66.7	.37	.38
I kept my mind busy with games -- like counting in my head or looking for patterns in the ceiling tiles.	73.7	70.0	76.7	.46	.48
I thought about the happiest things I possibly could.	82.4	76.7	87.3	.52	.53
I just wished I could be somewhere else.	61.2	55.4	65.8	.15	.00
I thought about the treat I was promised for after.	91.5	89.7	93.1	.31	.39
I thought about what my friends or family might be doing.	72.7	70.0	75.0	.64	.60
I talked about all sorts of things, but not about what was happening.	72.5	71.7	73.2	.22	.16
I kept my mind off things by looking at a book or something.	77.3	78.3	76.4	.48	.49
I ignored all the medical equipment in the room. I didn't even see it.	58.8	54.2	62.5	.25	.22
TOTAL SUBSCALE (9 ITEMS) MEAN INTERITEM CORR. .21	SUBSCALE MEAN 72.6	69.8	74.8	ALPHA .69	

Table 12 (Continued)

ITEMS	ENDORSEMENT (%) TOTAL	MALE	FEMALE	CORRELATION WITH SUBSCALE	TOTAL
FANTASY/RESTRUCTURING SUBSCALE					
I pretended that it wasn't really happening to me. It was sort of happening to someone else. I pretended I was just watching.	51.1	55.9	47.2	.54	.47
I thought about how I would pay these guys back some day.	35.4	33.3	37.1	.19	.07
I thought lots of kids have this done, so it can't be that bad.	75.0	73.3	76.4	.30	.67
I thought of good reasons for having this done -- like it would help me get better.	55.3	62.7	49.3	.20	.05
I pretended my heart was pounding because I had just run a big race or something like that -- not because I was afraid.	51.9	56.7	47.9	.40	.27
I thought: it will all be over soon.	78.6	79.7	77.8	.33	.46
I made jokes about what was happening -- about me or the hospital people or the equipment.	41.2	45.0	38.0	.30	.23
TOTAL SUBSCALE (7 ITEMS) MEAN INTERITEM CORR. .18	SUBSCALE MEAN 55.0	57.4	53.1	ALPHA .60	
COOPERATION SUBSCALE					
I did whatever I was told.	90.9	91.5	90.4	.40	.09
I did whatever I could to help things along.	84.2	76.7	90.4	.59	.44
I tried hard not to cry.	72.4			.43	.22
I thought: I can take this. I can be brave.	84.5	86.7	82.6	.40	-.01
TOTAL SUBSCALE (4 ITEMS) MEAN INTERITEM CORR. .34	SUBSCALE MEAN 81.7	76.5	85.4	ALPHA .67	

Table 12 (Continued)

ITEMS	ENDORSEMENT (%) TOTAL	MALE	FEMALE	CORRELATION WITH SUBSCALE	TOTAL
SELF-FOCUS SUBSCALE					
I tried hard not to think about how I was feeling.	59.5	61.0	58.3	.29	.30
I thought about how it made me feel.	59.1	60.0	58.3	.42	.53
I asked questions about how it would feel.	62.3	56.7	67.1	.53	.53
I asked Mom to stay right with me.	88.0	80.0	94.5	.30	.40
I asked God to take care of me.	66.9	58.3	74.5	.47	.49
I asked someone to hold me or to hold my hand.	64.3	56.7	71.0	.56	.54
I told them I needed help.	46.2	49.2	43.7	.54	.69
I took big deep breaths.	62.1	60.0	63.9	.40	.42
I tried very hard to make my heart stop pounding.	44.3	40.0	47.9	.37	.33
I told them whenever it hurt.	73.1	62.1	81.9	.49	.49
TOTAL SUBSCALE (10 ITEMS) MEAN INTERITEM CORR. .25	SUBSCALE MEAN 63.2	59.1	66.8	ALPHA .77	
NEGATIVE/DISTRESS BEHAVIOURS SUBSCALE					
I thought the whole time: Gee I hate this. I really, really hate this.	38.5	34.5	41.7	.29	.10
I thought about how much it hurt.	40.6	40.0	41.1	.46	.00
I thought about how scared I was.	46.2	41.7	50.0	.39	.24
I thought: Something is going wrong. Something will go wrong.	24.4	20.0	28.2	.22	-.03
I cried.	33.3	28.3	37.5	.45	.23
I screamed when it hurt.	35.6	32.2	38.4	.57	.22
I told the nurse to stop, to wait.	34.1	28.8	38.4	.40	.25
TOTAL SUBSCALE (7 ITEMS) MEAN INTERITEM CORR. .24	SUBSCALE MEAN 35.3	30.1	39.4	ALPHA .69	
TOTAL CSCS (41 ITEMS) .12	59.4	54.7	62.6	.85	

Form 2. An independent analysis of Form 2, following the steps described above, yielded results so similar to the work on Form 1 that it was possible to reorganize Form 2 into the same six new subscales. A total of four items were eliminated from Form 2, and none added, so that the total number of items is 40. All subscales have the same number of items as Form 1 because four (as opposed to three) items appear on two subscales. A table of item-subscale correlations and the final version of Form 2 are presented in Appendix J.

Means and Variances

Table 13 provides a summary of the descriptive statistics for the final subscales. As with the original scales, the children endorsed an average of between 50 and 60% of the total strategies presented to them. A similar range of mean subscale scores was also present, indicating, once again, that some types of strategies were considerably more popular than others. For example, for Form 1 Time 1, the endorsement levels ranged from an average 34% for Negative/Distress Behaviours to an average 82% for Cooperation.

The ranges and patterns of means were again similar across forms and time. Cooperation and Avoidance/Distraction were consistently the most frequently selected types of strategies, and Negative/Distress Behaviours were consistently the least commonly selected strategies. However, as with the original scales, the patterns of responses continued to be suggestive of possible form (e.g., Avoidance/Distract) and practice (e.g., Cooperation) effects.

TABLE 13

COPING STRATEGIES CARD SORT: REVISED SUBSCALES
MEANS (%) AND STANDARD DEVIATIONS, ALL ADMINISTRATIONS

CSCS SUBSCALES (No. of Items)	FORM 1 TIME 1 MEAN	N	S.D.	FORM 1 TIME 2 MEAN	N	S.D.	FORM 2 TIME 1 MEAN	N	S.D.
AVOIDANCE/ DISTRACTION (9)	72.6	125	23.4	68.7	126	25.5	59.3	81	25.3
MONITORING (7)	59.2	128	28.4	49.3	128	26.8	52.9	85	29.1
FANTASY/ RESTRUCTURE (7)	55.0	127	26.0	56.8	128	24.0	58.3	84	26.4
NEGATIVE/ DISTRESS (7)	35.3	127	28.0	28.7	129	28.7	37.2	84	29.4
COOPERATION (4)	81.7	82	27.2	75.0	79	28.6	75.0	87	31.0
SELF FOCUS (10)	63.3	125	26.9	54.3	127	26.7	55.9	83	26.7
TOTAL (41)	59.4	76	17.4	55.9	73	19.7	55.6	79	20.3

The standard deviations of the revised CSCS scores indicated that there is probably sufficient variability in both the total and subscale scores to reflect potential individual and group differences adequately (see Table 13).

Gender and Grade Level Differences

Table 14 contains the raw data (means and standard deviations) by gender and grade. As with the original scales, the percentage of items endorsed overall (i.e., the CSCS total) dropped with grade level from 63 to 56%, as did the endorsement levels of all but one of the revised subscales (Cooperation; see Table 14). The variability in scores at the Grade 1 level appeared to be lower than for the other grades.

The differences between boys and girls were even less uniform and less robust than the differences across grades. There was a tendency for girls ($\underline{M}$ = 63%) to endorse a higher percentage of items than boys ($\underline{M}$ = 55%), again within the context of lower variability.

In spite of these minor differences, the patterns of subscale endorsement were highly similar across both gender and grade (see Figure 5). A ranking of the subscales in order of preference yielded identical rankings for all age and gender groups with the single exception of the switching of Avoidance/Distraction and Cooperation for the Grade 1 children. Overall, the children's endorsement patterns indicated the following order of preferred usage, from most to least preferred: Cooperation ($\underline{M}$ = 82%), Avoidance/Distraction (72%), Self Focus (62%), Monitor (58%), Fantasy/Restructuring (54%), and Negative/Distress Behaviours (34%).

TABLE 14

COPING STRATEGIES CARD SORT: REVISED SUBSCALES FORM 1
MEANS (%) AND STANDARD DEVIATIONS BY GENDER AND GRADE

GENDER:

CSCS SUBSCALES (No. of Items)	BOYS MEAN	BOYS N	BOYS S.D.	GIRLS MEAN	GIRLS N	GIRLS S.D.
AVOIDANCE/ DISTRACTION (9)	69.8	54	25.6	74.8	71	21.5
MONITORING (7)	57.6	59	29.2	60.5	69	27.8
FANTASY/ RESTRUCTURE (7)	57.4	57	25.1	53.1	70	26.7
NEGATIVE/ DISTRESS (7)	30.1	56	26.5	39.4	71	28.7
COOPERATION (4)	76.5	34	26.8	85.4	48	27.2
SELF FOCUS (10)	59.1	57	30.3	66.8	68	23.0
TOTAL (41)	54.7	31	19.3	62.6	45	15.4

Table 14 (Continued)

GRADE:

CSCS SUBSCALES (No. of Items)	GRADE 1 MEAN	N	S.D.	GRADE 2 MEAN	N	S.D.	GRADE 3 MEAN	N	S.D.
AVOIDANCE/ DISTRACTION (9)	78.8	34	19.2	72.4	37	24.5	68.9	54	24.6
MONITORING (7)	68.4	33	24.4	62.9	40	30.0	50.9	55	27.7
FANTASY/ RESTRUCTURE (7)	61.6	32	23.6	56.4	40	26.9	50.1	55	26.1
NEGATIVE/ DISTRESS (7)	41.6	34	30.7	34.8	39	28.0	31.7	54	26.1
COOPERATION (4)	76.1	22	29.4	85.0	25	23.9	82.9	35	28.3
SELF FOCUS (10)	75.3	32	24.0	64.3	40	27.3	55.3	53	25.9
TOTAL (41)	63.4	20	10.8	60.0	23	19.3	56.5	33	19.1

FIGURE 5

CSCS REVISED SUBSCALES

Mean Endorsement Levels by Gender and Grade

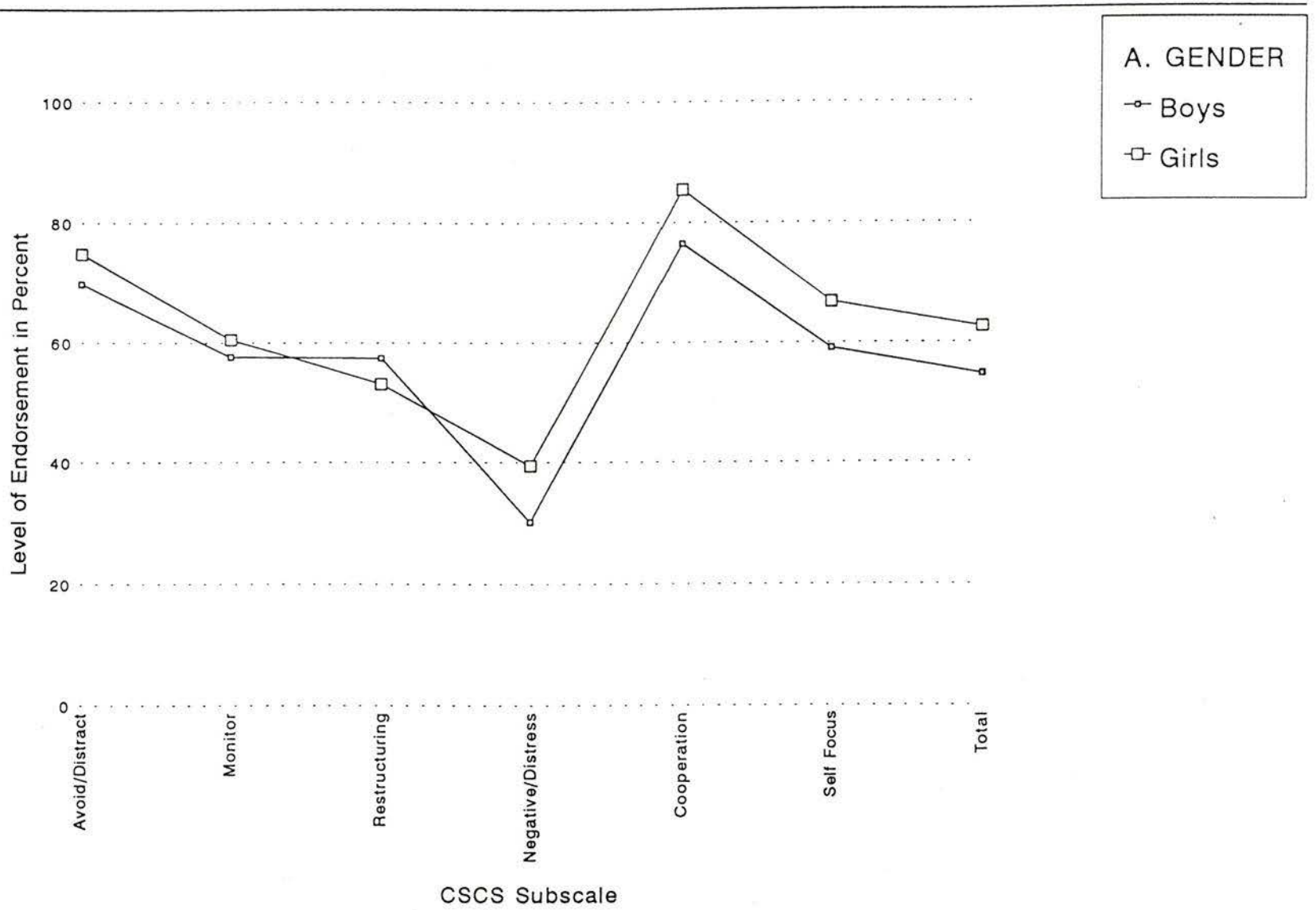
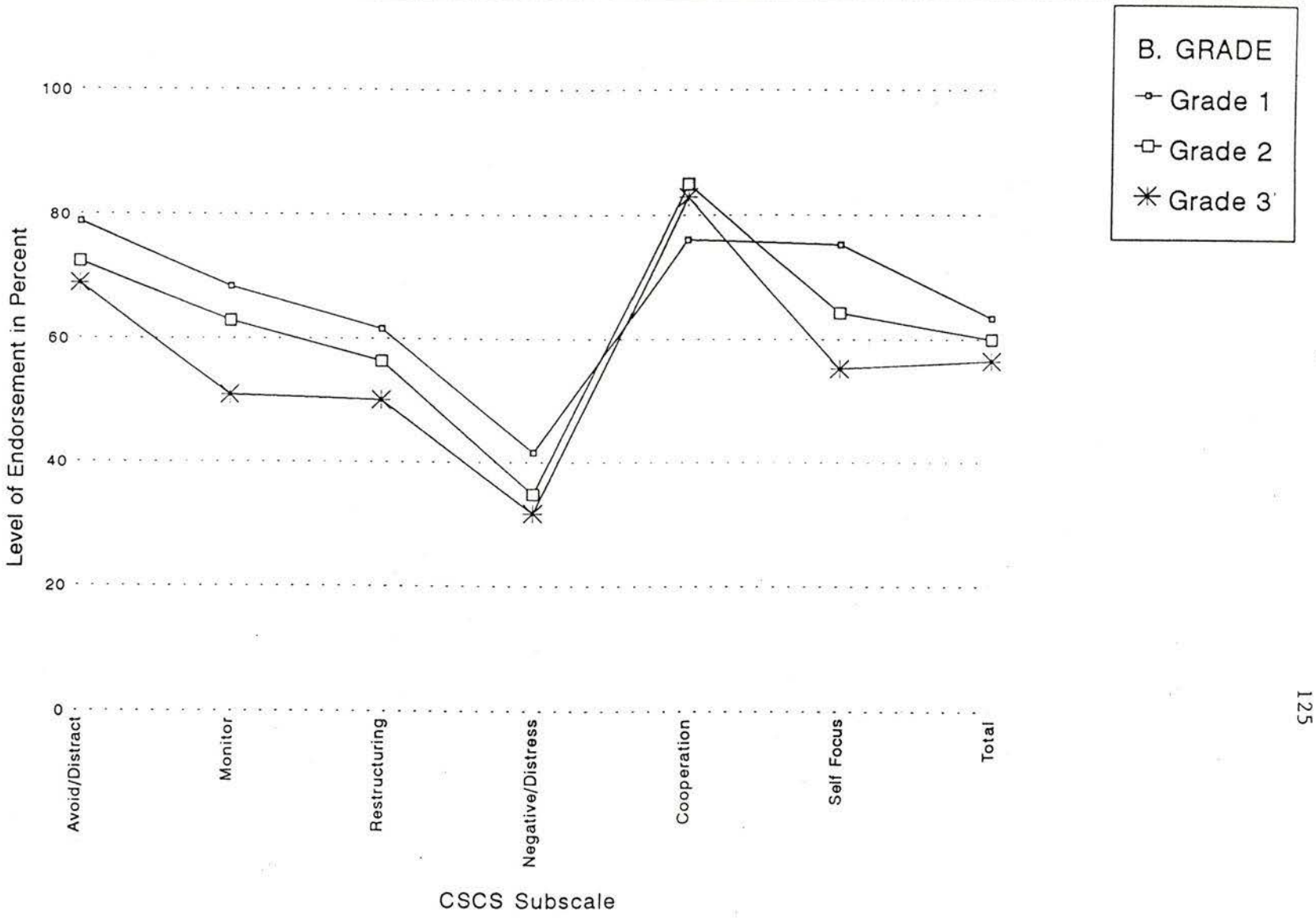


Figure 5 (Continued)



Because there were so few differences in level or patterns of strategy endorsement, or in terms of variance estimates, the bulk of the reliability analyses were conducted on the total sample. However, it is necessary to recall that this study was not designed to assess gender and age differences. Because the rate of participation was lower than expected, no reliable estimates of possible group differences can be offered. All that is being stated here is that gender and grade level groups were **broadly similar** in their patterns of response.

The data for gender and grade subgroups for Time 2 and Form 2 are included in Appendix K.

Internal Consistency Considerations

Mean interitem correlations. Within assigned subscales, mean interitem correlations ranged from .18 (N = 127, $p<.05$) for Fantasy/Restructuring to .34 (N = 82, $p<.01$) for Cooperation on Form 1 Time 1, with the grand mean of these correlations across subscales being .24 (N = 82-128, $p<.05$). The general pattern of correlations was replicated in the results for Form 1 Time 2 (see Table 15A).

The mean interitem correlation for all the items taken together (i.e., for the total CSCS) was lower than the mean inter-item correlations for the subscales (see Table 15A). As with the original CSCS, this finding is probably due to the hetereogeneity of the items included in the distinctly different subscales.

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TABLE 15
COPING STRATEGIES CARD SORT: REVISED SUBSCALES
MEAN INTERITEM CORRELATIONS AND ALPHA COEFFICIENTS

A.

CSCS SUBSCALES (No. of Items)	FORM 1 TIME 1 MEAN r (i-item)	ALPHA	N	FORM 1 TIME 2 MEAN r (i-item)	ALPHA	N	FORM 2 TIME 1 MEAN r (i-item)	ALPHA	N
AVOIDANCE/ DISTRACTION (9)	.21	.69	125	.23	.72	126	.19	.68	81
MONITORING (7)	.24	.69	128	.19	.62	128	.25	.70	85
FANTASY/ RESTRUCTURE (7)	.18	.60	127	.13	.52	128	.19	.62	84
NEGATIVE/ DISTRESS (7)	.24	.69	127	.31	.76	128	.27	.72	84
COOPERATION (4)	.34	.69	82	.24	.56	79	.35	.68	87
SELF FOCUS (10)	.25	.77	125	.22	.73	127	.23	.74	83
TOTAL (41)	.12	.85	76	.15	.88	73	.16	.88	79

Table 15 (Continued)

B.

	ALPHA COEFFICIENTS BY GENDER AND GRADE (n)				
	BOYS	GIRLS	GRADE 1	GRADE 2	GRADE 3
AVOIDANCE/ DISTRACTION (9)	.73 (54)	.63 (71)	.62 (34)	.74 (37)	.69 (54)
MONITORING (7)	.69 (59)	.68 (69)	.61 (33)	.74 (40)	.64 (55)
FANTASY/ RESTRUCTURE (7)	.57 (57)	.63 (70)	.53 (32)	.64 (40)	.60 (55)
NEGATIVE/ DISTRESS (7)	.67 (56)	.69 (71)	.73 (34)	.69 (39)	.65 (54)
COOPERATION (4)	.51 (34)	.78 (48)	.66 (22)	.58 (25)	.74 (35)
SELF FOCUS (10)	.82 ((57)	.70 (68)	.76 (32)	.79 (40)	.73 (53)

Alpha coefficients. The internal reliability (alpha) coefficients for all subscales of the revised CSCS, Form 1 Time 1, approached or achieved the .70 level recommended by Nunnally (1978) for 30-item scales. The alphas ranged from .60 (N = 127, $p<.001$) for the 7-item Fantasy/Restructuring subscale to .77 (N = 125, $p<.001$) for the Self Focus subscale. The alpha coefficient for the total 41-item scale was .85 (N = 86, $p<.001$). The statistics were comparable for Form 1 Time 2 and Form 2 (see Table 15B). The general patterns were thus replicated across time and forms and, overall, the internal reliability of the revised subscales and the CSCS as a whole appeared to be acceptable.

There were few notable differences between grade and gender groups in the levels of alpha coefficients. The internal consistency of three subscales was somewhat different by gender, with boys achieving somewhat higher internal consistency than girls on two subscales (Avoidance/Distraction and Self Focus) and girls achieving higher consistency than boys on one subscale (Cooperation). No real pattern emerged across grades (see Table 15B).

Subscale intercorrelations. Finally, the pattern of subscale intercorrelations was interesting (see Table 16). While some subscales were more highly intercorrelated overall, no subscale correlated highly with all the other subscales, and no subscale was without some strong correlations.

TABLE 16

SHARED VARIANCE*
CSCS Revised Subscales (Form 1)

Time 1 (N = 76-125)

Time 2 (N = 73-127)

SUBSCALE	AVOIDANCE/ DISTRACTION	MONITOR	FANTASY/ RESTRUCTURE	NEGATIVE/ DISTRESS	COOPERATION	SELF FOCUS	TOTAL
AVOIDANCE		**0.23**	**0.30**	**0.01**	**0.17**	**0.37**	**0.59**
		0.48	0.55	0.12	0.41	0.61	0.77
MONITOR	**0.23**		**0.16**	**0.17**	**0.01**	**0.52**	**0.35**
	0.48		0.40	0.41	0.12	0.72	0.76
FANTASY	**0.36**	**0.22**		**0.00**	**0.05**	**0.22**	**0.44**
	0.60	0.47		0.00	0.22	0.47	0.66
NEGATIVE	**0.02**	**0.18**	**0.02**		**0.07**	**0.11**	**0.12**
	0.13	0.42	0.13		-0.27	0.33	0.34
COOPERATION	**0.23**	**0.09**	**0.04**	**0.00**		**0.04**	**0.12**
	0.48	0.30	0.21	-0.03		0.20	0.34
SELF FOCUS	**0.34**	**0.45**	**0.22**	**0.26**	**0.08**		**0.76**
	0.58	0.67	0.47	0.61	0.28		0.87
TOTAL	**0.69**	**0.64**	**0.50**	**0.25**	**0.16**	**0.81**	
	0.83	0.80	0.71	0.50	0.40	0.90	

* Shared Variance: **BOLD FACE**
Subscale Intercorrelation: PLAIN FACE

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Evaluation. Overall it would appear that the reorganization of the items yielded improvements in the internal consistency of the CSCS. Both the mean interitem correlations and the alpha coefficients were substantially improved, and the pattern of subscale intercorrelations suggests that each subscale, while contributing to the whole, has its unique contribution to make to the assesment of coping strategies of children.

Reliability and Validity of the Coping Strategies Card Sort: Child Measures

Table 17 provides an overview of the major analyses conducted to test the limits of generalizability (i.e., assess reliability and validity: Cronbach, Gleser, Handa, & Rayaratman, 1972) of the original CSCS, and Table 18 provides these same results and more for the revised CSCS. These results will be discussed in the order in which they are presented in these two tables.

Test-Retest Reliability: Hypothesis 1

The original CSCS. The test-retest reliabilities of the original 11 subscale version of the CSCS ranged from poor (Emotional Control: r = .17, N = 83, $p>.05$) to moderately acceptable (Cognitive Appraisal - Fantasy/Restructuring: r = .61, N = 81, $p<.001$) at the subscale level, with the average correlation of the 11 subscales being .45 (N = 81-85, $p<.001$) and the test-retest reliability of the total scale being .66 (N = 72, $p<.001$).

TABLE 17

CORRELATIONS RESPECTING THE RELIABILITY AND VALIDITY OF THE CSCS - ORIGINAL SUBSCALES

CORRELATION (n)	A	B	C	D	E	F	G	H	I	J	K	TOTAL
INTERNAL CONSISTENCY	**0.61 ****	**0.46 ****	**0.52 ****	**0.48 ****	**0.55 ****	**0.26 ****	**0.66 ****	**0.44 ****	**0.09 ns**	**0.35 ****	**0.60 ****	**0.84 ****
(Form 1 Time 1)	125	128	128	129	128	128	127	130	130	129	132	113
TEST RETEST	**0.55 ****	**0.36 ****	**0.61 ****	**0.46 ****	**0.47 ****	**0.46 ****	**0.37 ****	**0.29 ***	**0.17 ns**	**0.40 ****	**0.40 ****	**0.66 ****
	81	82	81	84	83	83	83	83	83	84	85	72
PARALLEL FORMS	**0.50 ****	**0.35 ****	**0.40 ****	**0.45 ****	**0.57 ****	**0.42 ****	**0.48 ****	**0.57 ****	**0.15 ns**	**0.35 ****	**0.62 ****	**0.76 ****
	81	83	84	83	83	82	81	84	82	82	86	64

LEGEND

A Cognitive Avoidance
B Cognitive Appraisal: Positive
C Cognitive Appraisal: Fantasy/Restructuring
D Cognitive Appraisal: Negative
E Information Seeking: Questioning/Vigilance
F Information Seeking: Avoidance
G Support Seeking
H Emotional Release
I Emotional Control
J Limit Setting
K Active Participation
TOTAL Total CSCS

* Shared Variance: **BOLD FACE** Subscale Intercorrelation: PLAIN FACE

** p<0.001
* p<0.01
- p<0.05
ns p>0.05

TABLE 17 (Continued)

VARIATIONS

	A	B	C	D	E	F	G	H	I	J	K	TOTAL
Admin + Response Format:												
Same at Test + Retest	**0.53 ****	**0.40 ****	**0.60 ****	**0.31 ***	**0.50 ****	**0.44 ****	**0.35**	**0.30 ***	**0.12 ns**	**0.36 ****	**0.37 ****	**0.64 ****
	62	63	62	65	64	64	64	64	64	65	66	53
Different: Test - Retest	**0.72 ****	**0.26 ns**	**0.60 ***	**0.92 ****	**0.36 ns**	**0.54 ***	**0.55 ***	**0.22 ns**	**0.36 ns**	**0.56 ***	**0.52 ***	**0.81 ****
	19	19	19	19	19	19	19	19	19	19	19	19
Question + Response Format:												
Different Coping Measure	**0.27 ***	**0.35 ****	**0.38 ****	**0.40 ****	**0.21**	**0.23**	**0.42 ****	**0.16 ns**	**0.12 ns**	**0.24**	**0.50 ****	**0.45 ****
(Time 2)	70	70	69	71	70	70	70	71	71	71	71	66
Medical Situation Described:												
Same at Test + Retest	**0.55 ****	**0.36 ****	**0.61 ****	**0.46 ****	**0.47 ****	**0.46 ****	**0.37 ****	**0.29 ***	**0.17 ns**	**0.40 ****	**0.40 ****	**0.66 ****
(=Test - Retest)	81	82	81	84	83	83	83	83	83	84	85	72
Different: Test - Retest	**0.58 ****	**0.49 ****	**0.29**	**0.31**	**0.51 ****	**0.52 ****	**0.69 ****	**0.52 ****	**0.41 ***	**0.35 ***	**0.58 ****	**0.70 ****
	35	35	36	36	35	33	33	38	36	37	37	28

LEGEND

A Cognitive Avoidance
B Cognitive Appraisal: Positive
C Cognitive Appraisal: Fantasy/Restructuring
D Cognitive Appraisal: Negative
E Information Seeking: Questioning/Vigilance
F Information Seeking: Avoidance
G Support Seeking
H Emotional Release
I Emotional Control
J Limit Setting
K Active Participation
TOTAL Total CSCS

* Shared Variance: **BOLD FACE**
Subscale Intercorrelation: PLAIN FACE

TABLE 17 (Continued)

GENDER DIFFERENCES

	A	B	C	D	E	F	G	H	I	J	K	TOTAL
Test Retest												
Boys	**0.72 ****	**0.40 ***	**0.66 ****	**0.56 ****	**0.66 ****	**0.59 ****	**0.58 ****	**0.12 ns**	**0.36**	**0.47 ****	**0.47 ****	**0.88 ****
	38	40	40	39	39	40	40	39	40	39	39	35
Girls	**0.32**	**0.32**	**0.56 ****	**0.39 ***	**0.27**	**0.32**	**0.10 ns**	**0.41 ***	**0.03 ns**	**0.30**	**0.19 ns**	**0.23 ns**
	43	42	41	45	44	43	43	44	43	45	46	37
Parallel Forms												
Boys	**0.59 ****	**0.53 ****	**0.42 ***	**0.41 ***	**0.74 ****	**0.53 ****	**0.60 ****	**0.63 ****	**0.31**	**0.26 ns**	**0.69 ****	**0.25 ****
	33	35	35	34	35	33	34	34	34	34	34	28
Girls	**0.41 ***	**0.26**	**0.43 ****	**0.47 ****	**0.39 ***	**0.28**	**0.27**	**0.52 ****	**0.01 ns**	**0.40 ***	**0.53 ****	**0.59 ****
	48	48	49	49	48	49	47	50	48	48	52	36

LEGEND

A Cognitive Avoidance
B Cognitive Appraisal: Positive
C Cognitive Appraisal: Fantasy/Restructuring
D Cognitive Appraisal: Negative
E Information Seeking: Questioning/Vigilance
F Information Seeking: Avoidance
G Support Seeking
H Emotional Release
I Emotional Control
J Limit Setting
K Active Participation
TOTAL Total CSCS

* Shared Variance: **BOLD FACE** Subscale Intercorrelation: PLAIN FACE

TABLE 18

CORRELATIONS RESPECTING THE RELIABILITY AND VALIDITY OF THE CSCS - REVISED SUBSCALES

CORRELATION (n)	Cooperation	Avoidance/ Distraction	Self Focus	Monitor	Fantasy/ Restructuring	Negative/Distress Behaviours	Total CSCS
INTERNAL CONSISTENCY	**0.67 ****	**0.69 ****	**0.77 ****	**0.69 ****	**0.60 ****	**0.69 ****	**0.85 ****
	82	125	125	128	127	127	76
TEST RETEST	**0.56 ****	**0.60 ****	**0.48 ****	**0.64 ****	**0.62 ****	**0.54 ****	**0.66 ****
	82	79	79	83	83	80	71
PARALLEL FORMS	**0.78 ****	**0.64 ****	**0.53 ****	**0.68 ****	**0.55 ****	**0.70 ****	**0.80 ****
	82	79	79	83	83	80	71
VARIATIONS							
Admin + Response Format:							
Same at Test + Retest	**0.56 ****	**0.57 ****	**0.46 ****	**0.65 ****	**0.61 ****	**0.44 ****	**0.66 ****
	61	61	63	64	62	64	54
Different at Test + Retest	**na**	**0.75 ****	**0.65 ****	**0.62 ***	**0.64 ***	**0.90 ****	**na**
	0	19	19	19	19	19 **	0 **
Medical Situations Described:							
Same at Test + Retest	**0.56 ****	**0.60 ****	**0.48 ****	**0.64 ****	**0.62 ****	**0.54 ****	**0.66 ****
	61	80	82	83	81	83	54
Different at Test + Retest	**0.79 ****	**0.72 ****	**0.59 ****	**0.55 ****	**0.39 ***	**0.59 ****	**0.85 ****
	13	35	33	34	35	35	10
Situational Appraisals:							
Similar: Test - Retest	**0.69 ****	**0.62 ****	**0.52 ****	**0.56 ****	**0.53 ****	**0.60 ****	**0.69 ****
	41	55	59	57	58	58	37
Different: Test - Retest	**0.70**	**0.69 ****	**0.61 ***	**0.71 ****	**0.61 ***	**0.56 ***	**0.39 ns**
	8	16	15	16	16	17	6

TABLE 18 (Continued)

	Cooperation	Avoidance/ Distraction	Self Focus	Monitor	Fantasy/ Restructuring	Negative/Distress Behaviours	Total CSCS
RESPONSE TENDENCIES							
Social Desirability (time 1)	0.27 **	0.30 **	0.16	0.25 *	0.15	0.04 ns	0.21
	82	125	125	128	127	127	76
Ideal Child (Time 2)	0.11 ns	0.42 **	0.29	0.41 **	0.38 *	0.63 **	-0.18 ns
	12	54	55	55	57	56	9
RELATED CONSTRUCTS							
Health Locus of Control (Time 2) (n)	67	62	96	96	96	97	63 **
Internality	0.24	0.01 ns	0.15 ns	0.05 ns	0.12 ns	0.09 ns	0.15 ns
Powerful Others	0.35 *	0.43	0.32	0.31	0.46	0.07	0.52 **
Chance	-0.05 ns	0.17	0.22	0.20	0.27	0.19	0.27
Anxiety (Time 2) (n)	49	74	74	74	74	75	45
Total	0.05 ns	0.01 ns	0.27 *	0.28 *	0.12 ns	0.36 **	0.22 ns
Physiological Concern	-0.14 ns	0.06 ns	0.18 ns	0.11 ns	0.20	0.13 ns	0.17 ns
Worry	0.11 ns	0.01 ns	0.25	0.33 *	0.06 ns	0.41 **	0.20 ns
Social Concern	0.07 ns	-0.07 ns	0.16 ns	0.21	0.02 ns	0.32 *	0.11 ns

LEGEND

** $p<0.001$

* $p<0.01$

- $p<0.05$

ns $p>0.05$

na Due to a post hoc change in the Cooperation Subscale data, on this subscale (and, consequently, the total) the figures were either unavailable or available for only a very limited number of cases.

The revised CSCS. The test-retest reliabilities of the 6 subscales of the revised CSCS were all moderately acceptable, ranging from .48 (N = 79, $p<.001$) for the Self Focus subscale to .64 (N = 83, $p<.001$) for the Monitor subscale. The average test-retest correlation of the 6 subscales was .59 (N = 79-83, $p<.001$), for all 6 subscales, and the reliability of the total CSCS was unchanged from the original analysis, at .66 (N = 71, $p<.001$). Thus, the reorganization of the CSCS subscales did result in increased levels of correlations across time. This, of course is not an unexpected finding since it is known that low internal consistency will impact negatively on other aspects of reliability, just as low levels of reliability will attenuate tests of validity (Nunnally, 1970).

Gender and Grade Differences

There was a tendency for the test-retest reliabilities of boys to be higher than those of girls, with the difference being quite marked for the total CSCS (see Table 19). There was also a clear tendency for Grade 2 children to achieve higher test-retest reliability coefficients than either Grade 1 or 3 children (see Table 19).

The results were highly comparable for the original and revised versions of the instrument, but for the sake of brevity, only the results for the revised CSCS are presented in Table 19. The results for the original version are available in Appendix L.

TABLE 19

TEST-RETEST AND PARALLEL FORMS RELIABILITIES
BY GENDER AND GRADE: REVISED SUBSCALES

TEST-RETEST RELIABILITY

CSCS SUBSCALES (No. of Items)	BOYS		GIRLS		GRADE 1		GRADE 2		GRADE 3	
	r	n	r	n	r	n	r	n	r	n
AVOIDANCE/ DISTRACTION (9)	.73	38	.40	42	.22	16	.81	19	.65	45
MONITORING (7)	.77	39	.45	44	.66	16	.86	22	.52	45
FANTASY/ RESTRUCTURE (7)	.77	40	.49	41	-.01	15	.75	22	.66	44
NEGATIVE/ DISTRESS (7)	.71	38	.44	45	.71	17	.55	20	.50	46
COOPERATION (4)	.46	27	.38	34	.40	15	.82	20	.43	26
SELF FOCUS (10)	.69	39	.13	43	.18	16	.87	21	.46	45
TOTAL (41)	.90	24	.27	30	.44	14	.96	18	.57	22

Table 19 (Continued)

PARALLEL FORMS RELIABILITIES

CSCS SUBSCALES (No. of Items)	BOYS		GIRLS		GRADE 1		GRADE 2		GRADE 3	
	r	n	r	n	r	n	r	n	r	n
AVOIDANCE/ DISTRACTION (9)	.80	32	.48	47	.50	22	.75	23	.68	34
MONITORING (7)	.80	35	.56	48	.61	22	.84	25	.51	36
FANTASY/ RESTRUCTURE (7)	.56	35	.59	48	.59	23	.56	24	.55	36
NEGATIVE/ DISTRESS (7)	.69	33	.70	47	.75	23	.83	23	.54	34
COOPERATION (4)	.77	34	.79	48	.82	22	.81	25	.77	35
SELF FOCUS (10)	.60	33	.42	46	.07	21	.64	24	.67	34
TOTAL (41)	.87	32	.68	42	.56	18	.90	22	.81	31

Parallel Forms Reliability: Hypothesis 2

The original CSCS. The subscale correlations across the two parallel forms for the original CSCS ranged from a nonsignificant .15, once again for the Emotional Control subscale (N = 82) to a moderately high .62 (N = 86, $p<.001$) for the Active Participation subscale (see Table 17). The average level of correlation for all 11 subscales was .45 (N = 81-86, $p<.001$), and the correlation of the two forms of the CSCS overall was .76 (N = 64, $p<.001$).

The revised CSCS. The reorganization of the CSCS into six subscales again resulted in a large improvement to the estimates of the reliability of the parallel forms. The correlations between the two forms for the revised subscales ranged from .53 (N = 79, $p<.001$) for the Self Focus subscale to .78 (N = 82, $p<.001$) for the Cooperation subscale (see Table 18). The average level of correlation across all six subscales was .66 (N = 79-83, $p<.001$), and the correlation of the two forms of the CSCS overall was .80 (N = 71, $p<.001$).

The Cooperation subscale: A special note. It should be recalled that the revised Cooperation subscale (Form 1) contains one item from Form 2 which was inserted, post hoc, into the scale (see The Revised CSCS, Chapter VI). This item was included in the calculation of the reliability estimates of the revised CSCS, thereby artificially inflating the test-retest correlations for the Cooperation subscale and possibly also the CSCS total. Eliminating this item from the analyses yielded a test-retest correlation of .15 (N = 82, $p<.05$) and a parallel forms correlation of .32 (N = 82, $p<.01$) for this subscale. The total

scale statistics were .69 (N = 71, $p<.000$) for test-retest and .79 (N= 71, $p<.001$) for parallel forms.

Thus, this one duplicate item between Form 1 and Form 2 did not appear to inflate the **overall** findings significantly, although there may be a problem with the data for the Cooperation subscale itself.

Gender and Grade Level Differences

There was a tendency for boys and Grade 2 children to achieve higher parallel forms reliability coefficients than girls or children from either Grades 1 or 3 (see Table 19). This is similar to the pattern found in the test-retest reliabilities.

These differences are intriguing and bear further investigation, but they cannot be interpreted on the basis of the data available from this research. The sample size was quite small at the gender and grade subgroup level, and there were differences in the gender distribution across grades. Specifically, there were many more boys than girls in the Grade 2 sample, but the reverse was true for the Grades 1 and 3 samples.

Stability Across Methods of Measurement

Individual vs. Group Administrations: Hypothesis 3

As described in the design section, the CSCS was administered to some children in individual settings initially and then in a group setting at Time 2. The question presentation and response formats were different in these two settings. To examine the impact of these variations on the stability of endorsement patterns, the Time 1 - Time 2 correlations of these children were compared to those of children who received both presentations in group settings.

The original CSCS. For the original version of the CSCS, the test-retest correlations for the children under the **same** method of administration at both times of measurement ranged from .12 (n = 64, p>.05) for Emotional Control to .60 (n= 62, p<.001) for Fantasy/Restructuring (see Table 17). The average test-retest correlation across all subscales was .40 (n = 62-66, p<.001) and the correlation for the total CSCS was .64 (N = 53, p<.001).

The test-retest correlations for children receiving **different** methods of administration Time 1 vs Time 2 ranged from .22 (n = 19, p>.05) for Emotional Release to .92 (n = 119, p<.001) for Cognitive Appraisal - Negative. The average correlation across all subscales was .55 (n = 19, p<.01) and the Time 1 - Time 2 correlation of the total CSCS was .81 (N = 19, p<.001).

A subscale by subscale analysis using Ostle's (1988) test for the significance of differences between correlations revealed only one subscale where there was a significant difference in level of correlation between these two groups of children. Contrary to expectation, this difference, in the Cognitive Appraisal - Negative subscale, favoured the children who had **different** types of administration. That is to say, their scores were significantly more correlated Time 1 - Time 2 than the scores of children who had group presentations both times (χ^2[1, n = 19, 65], = 20.46, p<.001). The means of the subscale correlations were not significantly different between administration groups (χ^2[1, n = 19, 64-66] = 0.48, p>.05), nor were the correlations of the total scores (χ^2[1, n = 119, 53] = 1.65,

$p>.05$), suggesting that the CSCS scores were not strongly influenced by method of administration.

The revised CSCS. The general pattern of findings was similar for the revised version of the CSCS (see Table 18). Not surprisingly, the one subscale where the levels of correlation were significantly different for the two groups of children was the Negative/Distress Behaviours subscale, where four of seven items derive from the original Negative subscale ($\chi^2[1, n = 19, 64] = 12.68$, $p<.001$). Once again, the mean subscale correlations (minus the Cooperation subscale since the children interviewed individually did not receive Form 2 and therefore had no response for that item) were not significantly different ($\chi^2[1, n = 19, 61\text{-}64] = 1.39$, $p>.05$). (Total CSCS scores were not available for the children interviewed individually due to the lack of a Cooperation subscale.)

Variations in Question and Answer Format: Hypothesis 4

A second approach to the assessment of the effects of method of measurement in this research involved the administration of an independent self-report measure of coping strategies. It was hypothesized that scores on this measure would correlate with CSCS scores.

The original CSCS. The correlations of the original subscales of the CSCS (Time 2) with the corresponding questions from the Coping Strategies Questionnaire, which was also administered at Time 2, ranged from .12 ($N = 71$, $p>.05$) for Emotional Control to .50 ($N = 71$, $p<.001$) for Active Participation. As can be seen in Table 17, six of the subscale correlations were significant. The mean correlation across all

subscales was .30 (N = 69-71, $p<.01$), and the correlation of the total CSCS Time 2 with the Coping Strategies Questionnaire was .45 (N = 66, $p<.001$).

These CSCS (Time 2) - Coping Strategies Questionnaire correlations tended to be lower than the correlations between the parallel forms of the CSCS, but only two of these differences in correlations were significantly different (Information-Seeking - Questioning and Vigilance: χ^2 [1, N = 70, 83] = 6.88, $p<.01$; Emotional Release: χ^2 [1, N = 71, 84] = 8.74, $p<.01$), and the average correlations were not significantly different (χ^2 [1, N = 69-71, 81-86] = 1.12, $p>.05$). The CSCS total scale correlations were, however, significantly different (χ^2 [1, N = 66, 64] = 8.11, $p<.01$).

It would appear, therefore, that scores on at least a few of the CSCS subscales were to some degree affected by method of measurement.

The revised CSCS. The correlations between the revised subscales of the CSCS and the Coping Strategies Questionnaire could not be computed since the latter questionnaire was designed to dovetail with the 11 subscales of the original CSCS: The items could not be aligned appropriately with the revised subscales.

Narrowing the Focus

With the single exception of the above section where the analysis of the revised subscales was not possible, all of the analyses of the CSCS in the original and revised formats resulted in highly comparable findings in this assessment of the convergent validity of the instrument. The same trend was apparent in the examination of the discriminant validity, which will be reported later. Therefore, for the

sake of simplicity and brevity, the remainder of this presentation of results pertaining to the validity of the CSCS will make specific reference only to the revised subscales. The parallel results pertaining to the original subscales can be found in Appendix L.

Stability across Situations

The Effect of Situational Variations: Hypothesis 5

In order to investigate the sensitivity of the CSCS to situational variations, approximately one-third of the participants were asked to imagine a different hospital procedure at Time 2, while the remaining children imagined the same procedure as they did on the first occasion.

As can be seen from Table 18, Time 1 - Time 2 correlations remained high, ranging from .39 (n = 35, $p<.01$) for Fantasy/Restructuring to .71 (n = 35, $p<.001$) for Avoidance/Distraction, in spite of a change in the hypothetical situation described. (The correlation of .79 for the Cooperation subscale is being discounted here because of a very low n of 13.) Using Ostle's (1988) test for the significance of differences between corelations, no significant differences were found in the levels of these correlations (i.e., when comparing same situation to different situation groups: see Table 20).

TABLE 20

THE EFFECT OF SITUATIONAL VARIATIONS
THE SIGNIFICANCE OF DIFFERENCES BETWEEN LEVELS OF CORRELATION

SUBSCALE AUTOCORRELATION	SITUATIONAL VARIATION: METHOD OF ADMINISTRATION Same vs. Different χ^2	p	HYPOTHETICAL SITUATION Same vs. Different χ^2	p	CHILD'S APPRAISAL Same vs. Different χ^2	p
AVOIDANCE/ DISTRACTION (9)	1.33	n.s.	1.04	n.s.	0.16	n.s.
MONITORING (7)	0.03	n.s.	0.44	n.s.	0.68	n.s.
FANTASY/ RESTRUCTURE (7)	0.03	n.s.	2.23	n.s.	0.15	n.s.
NEGATIVE/ DISTRESS (7)	12.68	.001	0.12	n.s.	0.04	n.s.
COOPERATION (4)	n.a.	--	1.45	n.s.	low n	--
SELF FOCUS (10)	0.98	n.s.	0.52	n.s.	0.15	n.s.
TOTAL (41)	n.a.	--	1.32	n.s.	low n	--

* n.a. Due to the inclusion of a Form 2 item on the Revised Form 1 Cooperation subscale, this data is not available.

The Impact of Situational Appraisals

Because it was believed that coping would depend more on the individual's **appraisals** of the situation than on objective differences between two situations, these same comparisons were made on the basis of situational appraisals.

Before discussing the relationship of the Situational Appraisal Index (S.A.I.) to the scores on the CSCS, the validity of the S.A.I. should be addressed.

The validity of the S.A.I.. The S.A.I. purports to assess children's personal appraisals of fear, pain, and control in the hypothetical situations presented. While this study was not designed to include an exhaustive assessment of the validity of the S.A.I., the subscales of the Revised Children's Manifest Anxiety Scale and the Children's Health Locus of Control Scale did provide interesting comparison measures. As can be seen from Table 21, the relationship of the S.A.I. questions to the subscales of these intruments were entirely logical, and could be taken as an indication of the validity of the S.A.I.

The S.A.I. question concerning **fear** correlated with the total score on the anxiety scale and specifically with the worry subscale, but with no other anxiety subscales. The question concerning **pain expectations** correlated with the total anxiety score again and also specifically with the physiological concerns subscale, but with no others.

TABLE 21

VALIDITY OF THE SITUATIONAL APPRAISAL INDEX:
CORRELATIONS WITH RELATED MEASURES

OTHER MEASURES	FEAR			PAIN			CONTROL 1			CONTROL 2		
	r	N	p	r	N	p	r	N	p	r	N	p
ANXIETY												
TOTAL	.30	76	<.01	.28	76	<.01	-.36	74	<.001	.10	75	n.s.
Physiological	.07	76	n.s.	.32	76	<.001	-.25	74	<.01	.01	75	n.s.
Worry	.37	76	<.001	.22	76	n.s.	-.36	74	<.01	.13	75	n.s.
Social Concern	.24	76	n.s.	.15	76	n.s.	-.26	74	<.01	.10	75	n.s.
Lie	-.14	76	n.s.	-.11	76	n.s.	-.09	74	n.s.	.22	75	n.s.
HEALTH LOCUS OF CONTROL												
Internal	.25	98	<.01	.14	98	n.s.	.38	96	<.001	.03	94	n.s.
Powerful Others	-.00	98	n.s.	-.15	98	n.s.	.04	96	n.s.	.30	94	<.01
Chance	.04	98	n.s.	-.14	96	n.s.	-.15	94	n.s.	.02	98	n.s.
SOCIAL DESIRABILITY	-.06	132	n.s.	.08	132	n.s.	.04	132	n.s.	.18	132	n.s.

The first **control** question, which asked if the child could make things work out the way he or she wanted, correlated positively with the internality subscale of the locus of control scale and also negatively with the total anxiety score and all the anxiety subscales scores. Finally, responses to the second control question, which asked if hospital personnel or the child were in charge of what happened at the hospital, correlated with the powerful others subscale of the locus of control measure, and nothing else.

None of the S.A.I. questions correlated at a significant level with either the Social Desirability scale or the lie scale of the Revised Children's Manifest Anxiety Scale.

The only finding not consistent with this logical pattern of correlations was that high levels of fear on the S.A.I. correlated positively with the internality subscale of the locus of control scale. This correlation appears to contradict the negative correlation reported above between the S.A.I. control question and scores on the Revised Children's Manifest Anxiety Scale. What may be in evidence here is a controllability issue. Rotter (1966) and Zeigler and Reid (1983), among others, have proposed that there is a curvilinear relationship between locus of control and adjustment, where, generally speaking, the healthiest ground is the middle ground.

The context or situation plays an important role: High internality may be associated with lower anxiety in relatively controllable situations (e.g., Miller, 1980b), but individuals accustomed to or desiring control may become anxious when faced with a relatively uncontrollable situation (George, Scott, Turner, & Gregg, 1980; Janis &

Rodin, 1979). Nunn (1988) found a strong significant correlation between the Norwicki-Strickland Locus of Control Scale and the State-Trait Anxiety Inventory for Children in Grades 5 to 8 children: "As (the) children's expectations of controlling outcomes decreased, their perceived anxiety increased" (p.438). Similarly, Compas et al. (1988) found that the children in their study generated more problem-solving as opposed to emotion-focused strategies in response to a situation they perceived as controllable as opposed to uncontrollable.

Indeed the data in this study tended to support such an interpretation. First, internality as measured by the Children's Health Locus of Control Scale was not correlated with any subscale of the Revised Children's Manifest Anxiety Scale. Thus, there was no simple relationship in these data between locus of control and adjustment, measured here in terms of trait anxiety.

Second, the hypothetical situations described to the children in this research were perceived by them to be more uncontrollable than controllable: The means for both control questions tended to be higher than the midpoints of their respective 1 to 4 and 1 to 5 point scales (Question 1: Time 1 $\underline{M}$ = 2.5; Time 2 $\underline{M}$ = 2.3; Question 2: Time 1 $\underline{M}$ = 2.3; Time 2 $\underline{M}$ = 3.5). Thus the relationship found between internality and situational anxiety might be attributable to the perceived uncontrollability of the situations.

Table 22 outlines the relationship of the S.A.I. questions to the CSCS. It summarizes those S.A.I. - CSCS subscale correlations that were replicated either over time or across forms, with at least one of these correlations being significant at the .01 level. While such data do not address directly the convergent or discriminant validity of the CSCS, the patterns of correlations were intuitively logical, and bear consideration.

Fear appraisals were positively correlated with the children's predictions of Negative/Distress behaviours in the hypothetical situation at both times of measurement and on both forms. Pain appraisals were also positively correlated with the Negative/Distress subscale, as well as with the Monitoring and Self Focus subscales, again at both times of measurement and on both forms.

The correlations of strategy types with the control questions were intriguing. A belief that others were in control of the situation correlated with high endorsement of cooperation strategies, while a belief that one was able to "make things work out" correlated with cognitive restructuring strategies. Recalling that children tended to rate the hypothetical medical situations as relatively uncontrollable, these correlations make sense.

TABLE 22

CORRELATIONS AMONG THE CSCS AND SITUATIONAL APPRAISAL INDEX SUBSCALES REPLICATED AT THE .05 LEVEL OF SIGNIFICANCE OR BETTER

CSCS SUBSCALE	FEAR r	FEAR N	FEAR p	PAIN r	PAIN N	PAIN p	CONTROL 1 r	CONTROL 1 N	CONTROL 1 p	CONTROL 2 r	CONTROL 2 N	CONTROL 2 p
AVOIDANCE/ DISTRACTION	-	-	-	-	-	-	-	-	-	-	-	-
MONITOR	-	-	-	T1: .25	127	<.01	-	-	-	-	-	-
				T2: .28	128	<.001						
				F2: .22	84	<.05						
FANTASY/ RESTRUCTURING	-	-	-	-	-	-	T2: .32	125	<.001	-	-	-
							F2: .22	83	<.001			
NEGATIVE/ DISTRESS	T1: .34	126	<.001	.30	126	<.001	-	-	-	-	-	-
	T2: .42	129	<.001	.44	129	<.001						
	F2: .21	83	<.05	.34	83	<.001						
COOPERATION	-	-	-	-	-	-	-	-	-	T2: .41	75	<.001
										F2: .21	86	<.05
SELF FOCUS	-	-	-	T1: .21	124	<.01	-	-	-	-	-	-
				T2: .29	127	<.001						
				F2: .33	82	<.001						
TOTAL	-	-	-	T1: .34	75	<.01	-	-	-	-	-	-
				T2: .30	73	<.01						
				F2: .37	78	<.001						

KEY: T1 = Time 1 (Form 1) T2 = Time 2 (Form 1) F2 = Form 2 (Time 1)

The impact of situational appraisal on the stability of the CSCS: Hypothesis 6. The impact of situational appraisal on the stability of the CSCS scores over time was examined by comparing extreme scoring groups on the combined total of the S.A.I. questions assessing fear and pain. The highest possible score for these two questions, indicating a highly negative appraisal, was 15. Appraisals of 9 or higher were labelled negative, and scores of 4 or lower were labelled neutral.

Time 1 - Time 2 correlations of two groups of children were compared. The first group consisted of children whose appraisals were similarly negative or neutral at both times; the second group included those children whose appraisals shifted from neutral to negative, or vice versa, from Time 1 to Time 2. The levels of correlation for the two groups (see Table 18: Appraisals Similar; Appraisals Different) were not significantly different, again using Ostle's (1988) test for the significance of differences between correlations (see Table 20).

Combining this finding with the failure to find correlational differences across situations, one is left to conclude that either the instrument is not sensitive to situational differences, either objective or perceived, or the situational manipulation was inadequate to acheive a sufficient range of situational appraisals.

To test this latter possibility, the S.A.I. ratings of the two different medical situations presented at Time 2 were compared by a series of independent t-tests. None of these differences were significant (see Table 23). It is thus likely that a sufficient range of situational diversity (to measure sensitivity to appraised

situational differences) was not achieved through the use of these two particular imagined medical procedures.

TABLE 23

COMPARISON OF THE CHILDREN'S APPRAISALS

OF THE TWO HYPOTHETICAL SITUATIONS

SITUATIONAL APPRAISAL INDEX	SITUATION	MEAN RATING	N	STANDARD DEVIATION	t	p
FEAR	I.V.Start	2.30	88	1.39	-0.23	>.05
	X-Ray	2.38	42	1.53		
PAIN	I.V.Start	2.35	88	3.12	0.86	>.05
	X-Ray	1.83	42	3.47		
CONTROL 1	I.V.Start	2.24	86	1.15	-0.98	>.05
	X-Ray	2.46	41	1.25		
CONTROL 2	I.V.Start	3.35	84	1.33	-1.68	>.05
	X-Ray	3.78	41	1.41		

This apparent failure to achieve sufficient situational diversity does not preclude two alternative hypotheses: (a) that the CSCS is more of a dispositional or style measure than process measure, and (b) that children tend to be fairly consistent across situations. These issues will be taken up in the final chapter.

Discriminant Validity

Broadly speaking, the correlations amongst all the above described administrations of the CSCS in its variety of forms (i.e., the tests of convergent validity) were higher than the correlations between the CSCS and other related constructs (i.e., the tests of discriminant validity).

The Revised Children's Manifest Anxiety Scale: Hypothesis 7

There were six separate significant correlations amongst the subscales of the Revised Children's Manifest Anxiety Scale and those of the CSCS (see Table 18). This was not an unexpected finding since anxiety was hypothesized to be related to coping. However, in support of the discriminant validity of the CSCS, all but one of these correlations were significantly lower than the relevant CSCS autocorrelation (see Table 24).

The Children's Health Locus of Control Scale: Hypothesis 7

There were also many significant correlations between the subscales of the CSCS and the externality subscales of the locus of control measure -- particularly the Powerful Others subscale (see Table 18). Of these seven separate correlations, four were significantly lower than the relevant CSCS autocorrelation (see Table 24), but three were not. A belief in the power of others to control the outcomes in health situations thus appeared to be related to predictions concerning coping in a health care setting. As was the case with anxiety, it was felt that the nature and magnitiude of these correlations generally supported the predicted relationship between health locus of control and coping: The two constructs are related, but not interchangeable.

TABLE 24
DISCRIMINANT VALIDITY
SIGNIFICANCE OF DIFFERENCES BETWEEN LEVELS OF CORRELATION*

CORRELATION OF CSCS FORM 1 SUBSCALE	WITH (r 1) MEASURE	r	N	AS COMPARED WITH (r 2) CSCS FORM 2 SUBSCALE	r	N	OF DIFFERENCE BETWEEN r 1 & r 2	p
Self Focus	RCMAS Total	.27	74	Total	.62	75	7.18	.01
Monitor	RCMAS Total	.28	74	Total	.63	77	7.46	.01
Negative/Distress	RCMAS Total	.36	75	Total	.33	76	0.42	n.s.
Monitor	RCMAS Worry	.33	74	Monitor	.68	83	8.90	.01
Negative/Distress	RCMAS Worry	.41	75	Neg./Distress	.70	80	6.93	.01
Negative/Distress	RCMAS Social Concern	.32	75	Neg./Distress	.70	80	10.68	.001
Cooperation	HLOC Others	.35	67	Cooperation	.78	82	16.35	.001
Avoid/Distract	HLOC Others	.43	95	Avoid/Distract	.64	79	3.26	n.s.
Self Focus	HLOC Others	.32	96	Self Focus	.53	79	2.79	n.s.
Monitor	HLOC Others	.31	96	Monitor	.68	83	11.12	.001
Fantasy/Restruc.	HLOC Others	.46	96	Fantasy/Restr.	.55	83	0.63	n.s.
Total	HLOC Others	.52	63	Total	.80	71	8.69	.01
Fantasy/Restruc.	HLOC Chance	.27	96	Fantasy/Restr.	.55	83	5.16	.05

* All correlations of the CSCS with other measures significant at the .01 level or better are included in this table.
The reported correlations are those of the CSCS:
1) Form 1 Time 2 with all the other measures administered at Time 2, and
2) Form 1 Time 1 with the CSCS Form 2, which was also administered at Time 1.
These correlations were selected to eliminate the time factor.

TABLE 24 (Continued)

CORRELATION OF CSCS FORM 1 SUBSCALE	WITH (r 1) MEASURE	r	N	AS COMPARED WITH (r 2) CSCS FORM 2 SUBSCALE	r	N	χ^2 OF DIFFERENCE BETWEEN r 1 & r 2 χ^2	p
Cooperation	Social Desir.	.27	82	Cooperation	.78	82	23.33	.001
Avoid/Distract	Social Desir.	.30	125	Avoid/Distract	.64	79	9.43	.01
Monitor	Social Desir.	.25	128	Monitor	.68	83	16.06	.001
Avoid/Distract	Ideal Child Avoid/Distr.	.42	54	Avoid/Distract	.64	79	2.94	n.s.
Monitor	Ideal Child Monitor	.41	55	Monitor	.68	83	0.03	n.s.
Fantasy/Restruc.	Ideal Child Fantasy/Restr.	.38	83	Fantasy/Restr.	.55	57	1.54	n.s.
Negative/Distress	Ideal Child	.63	56	Neg./Distress	.70	80	0.50	n.s.

Key: RCMAS: Revised Children's Manifest Anxiety Scale
HLOC: Health Locus of Control
Social Desir.: Social Desirability
Ideal Child: Ideal Child CSCS

Social Desirability: Hypothesis 8

The Social Desirability Scale. While three subscales of the CSCS (Avoidance/Distraction, Monitor, Cooperation) correlated with the Social Desirability Scale at a .01 level of significance or better, the total scale scores were not significantly correlated (see Table 18). For all subscales the relevant CSCS autocorrelations were significantly higher than the correlations of the CSCS with social desirability scores (see Table 24).

Ideal Child. When the children's CSCS responses pertaining to their own predicted behaviour in the hypothetical situations were compared to those they predicted for an "ideal child" (CSCS Ideal), four out of five subscales were significantly correlated (see Table 18). Unlike the comparisons to other related constructs, there were no significant differences in the levels of correlation when CSCS autocorrelations were compared with these self-ideal child correlations (see Table 24). It would seem then, that the CSCS is, to some extent, influenced by a form of social desirability: The children were not clearly able to distinguish their own behaviour from that of an ideal child. These correlational findings of no significant differences were corroborated by the results of a series of paired t-tests on the self vs. ideal child CSCS scores. There were no significant differences in the scores of any subscale (see Table 24).

The Impact of Experience

It is possible that the validity of the CSCS, when used in a predictive fashion as it was in this research, may be dependent on the child's previous exposure to comparable experiences. Specifically, the

CSCS may be a valid measure of coping behaviours for children who have had the opportunity to develop specific expectancies about their own behaviour in a given situation. The test-retest and parallel forms reliabilities of children with and without experience were compared to test this possibility.

Children with no hospital experiences, according to parental report on the Medical History Questionnaire, were labelled the **no experience** group. Children with two or more medical experiences in a hospital setting (e.g., emergency room visit, special investigative procedure, day surgery) were labelled the **experienced** group.

As can be seen from Table 25, the children's level of experience had no impact on the stability of their scores across time or forms. Furthermore, children with and without experience in the hospital setting appraised the hypothetical situation similarly with respect to fear, pain expectations, and controllability.

TABLE 25
THE IMPACT OF EXPERIENCE ON APPRAISALS OF THE SITUATION
AND ON THE RELIABILITY OF THE CSCS

A. CSCS RELIABILITY

SUBSCALE Group	FORM 1 TIME 1 MEAN	N	S.D.	TEST - TETEST RELIABILITY r	n	p	of the difference	p	PARALLEL FORMS RELIABILITY r	n	p	of the difference	p
COOPERATION													
Experienced*	82.0	25	26.54	.72	21	.001	0.23	n.s.	.71	25	.001	3.17	n.s.
No Experience*	77.6	19	32.16	.63	18	.01			.90	19	.001		
AVOID/DISTRACT													
Experienced	73.7	38	21.21	.55	34	.001	1.34	n.s.	.48	22	.01	1.37	n.s.
No Experience	65.3	25	27.84	.74	23	.001			.72	21	.001		
SELF FOCUS													
Experienced	59.5	39	27.81	.43	36	.01	0.48	n.s.	.56	24	.01	0.01	n.s.
No Experience	62.1	24	25.02	.58	21	.01			.58	19	.01		
MONITOR													
Expereinced	56.4	41	30.30	.61	37	.001	0.00	n.s.	.66	25	.001	0.05	n.s.
No Experience	58.3	25	26.06	.62	22	.001			.70	20	.001		
FANTASY/RESTR.													
Experienced	31.9	39	29.58	.48	36	.01	0.51	n.s.	.36	24	.05	0.63	n.s.
No Experience	56.0	26	22.83	.62	23	.001			.56	21	.01		
NEG./DISTRESS													
Experienced	31.9	39	29.58	.56	36	.001	0.49	n.s.	.85	24	.001	1.18	n.s.
No Experience	37.4	26	27.43	.68	24	.001			.72	21	.001		
TOTAL													
Experienced	58.6	22	18.55	.51	18	.05	2.75	n.s.	.74	21	.001	0.35	n.s.
No Experience	57.3	18	16.12	.84	14	.001			.82	18	.001		

TABLE 25 (Continued)

B. APPRAISALS OF THE SITUATION

SITUATIONAL APPRAISAL INDEX QUESTION	FORM 1 TIME 1			TEST OF THE SIGNIFICANCE OF THE DIFFERENCE	
Group	MEAN	N	S.D.	t	p
FEAR					
Experienced	2.2	41	1.57	-0.24	n.s.
No Experience	2.3	26	1.32		
PAIN					
Experienced	4.0	41	3.90	1.07	n.s.
No Experience	3.0	27	3.60		
CONTROL 1					
Experienced	2.6	41	1.45	0.93	n.s.
No Experience	2.3	27	1.20		
CONTROL 2					
Experienced	3.6	41	1.20	0.06	n.s.
No Experience	3.6	26	1.47		

* Experienced: Children with two or more medical experiences in a hospital setting.
No Experience: Children with no medical experiences in a hospital setting.

Comparisons of Parent and Child Measures: A Further Assessment of Convergent Validity

The Child's Coping History

The Peterson-Holmer Questionnaire

The questions taken from Peterson-Holmer's History of Coping Questionnaire (Peterson & Toler, 1986) comprised three indices. Referring to the questionnaire, which is included in Appendix H, the first question of Section A (what does the parent tell a child prior to a procedure) constituted the Tell Index and the last question of the section (how much information does the child seek) was the Child Information Index. The Child Reaction Index was a composite of the child's reaction (level of distress) to two medical situations, injections and hospitals, as rated by the parents in the middle question of Section A.

Correlations with the CSCS. Because of the large number of correlations performed without specific a priori hypotheses, only correlations that were replicated across time or forms, with at least one of these being at the .01 level were considered to be significant.

Applying these criteria, only one correlation between the parents' Tell Index and the children's CSCS scores was significant: Children whose parents reported a low level of disclosure to the child reported a high level of Fantasy/Restructuring strategies (Time 1 CSCS r = .21, N = 123, $p<.01$; Time 2 CSCS r = .16, N = 124, $p<.05$).

There were no significant replicated correlations between the parents' Child Information Index or Child Reaction Index and the children's CSCS scores.

The importance of experience. It must be considered, however, that when asking parents to make predictions about their children's behaviour in a hypothetical situation, the children's actual experiences in related situations could be important. It was therefore decided to examine the compatibility of parent-child predictions on the basis of the level of the child's experiences in the hospital setting. Using the same experience - no experience definitions described previously, the above parent child correlational analyses were repeated.

For the **no experience** group, none of the correlations met the criteria of replication with at least one correlation at the .01 level of significance. It should be noted, however, that group size for the various subscale analyses was low, ranging from 19 to 25.

Two correlations between the Peterson-Holmer indices and the CSCS were supported when only **experienced** children (n= 21-41 per cell) were considered. While there were no significant correlations between the children's CSCS and the parents' Tell Index, the CSCS Monitor subscale and the Child Reaction Index were significantly correlated (Time 2 r = .33, n = 40, $p<.05$; Form 2 r = .56, n = 25, $p<.01$), and the CSCS Cooperation subscale and the parent reported Child Reaction Index approached criteria (Time 1 r = .33, n = 25, p= .055; Time 2 r = .54, n = 22, $p<.01$). It would appear that being with their children during a previous hospital experience improved the correspondence between parents' and children's predictions of the children's behaviour.

Parent Report Child Coping Scale

The second portion of the Child's Coping History consisted of 22 questions (see Appendix H) designed to tap the same dimensions of coping

as the original subscales of the CSCS. Because these questions were worded differently from those of the Coping Strategies Questionnaire (the child's self-report questionnaire reported previously), it was possible to realign the items on this measure to match the revised subscales of the CSCS. Table 26 lists the items selected for this scale.

Scale descriptives. SPSSX Procedure Reliability was used to confirm the assignment on the Parent Report Child Coping Scale to subscales parallel to the CSCS. On the basis of very low or negative interitem correlations, and large negative impacts on alpha levels, two items were removed from their originally assigned subscales. Table 26 outlines the subscale means, variances, and alpha levels.

Correlations with the CSCS. Interestingly, the only correlation between this parent-report measure and the child-report CSCS that was replicated over time or across forms was the least behavioural (i.e., the most exclusively cognitive) of all the strategy types -- Fantasy/Restructuring (Time 1 CSCS r = .25, N = 122, $p<.01$; Time 2 CSCS r = .16, N = 123, $p<.05$).

The impact of experience. When only children in the experienced or no experience groups were considered, there were no subscale autocorrelations between parent and child measures that replicated over time or across forms. It should be recalled, however, that both these groups were small, with the number of cases in each correlational analysis ranging from 19 to 41.

TABLE 26

THE PARENT REPORT CHILD COPING SCALE

SUBSCALE Items	M	S.D.	ALPHA/ with item deleted
AVOIDANCE/DISTRACTION (3 items/15 points)	7.4	2.6	.66 (N = 132)
Distracts by thinking of other things.	2.6	1.1	/.41
Ignores what is going on all around.	1.9	1.1	/.49
Distracts by looking at things, talking.	2.9	1.2	/.43
MONITOR (4 items/20 points)	16.5	3.0	.72 (N = 133)
Asks questions: What is happening?	4.3	1.0	/.62
*Asks questions: What will it feel like?	4.2	1.1	/.56
Mentally assesses what is going on.	3.9	1.1	/.65
Watches and listens carefully.	4.2	0.9	/.75
FANTASY/RESTRUCTURING (2 items/10 points)	6.0	2.1	.68 (N = 133)
Uses imagination to change meaning.	2.8	1.2	/--
*Says positive things to self.	3.2	1.2	/--
NEGATIVE/DISTRESS BEHAVIOURS (4 itms/20pts)	10.8	3.6	.61 (N = 132)
Releases emotions: Crying and screaming.	2.6	1.5	/.49
Asserts self.	2.8	1.3	/.58
Fearful thoughts.	3.1	1.3	/.41
Becomes upset if you talk about procedure.	2.3	1.2	/.64
COOPERATION (4 items/20 Points)	13.1	3.5	.67 (N = 132)
Cooperates with all instructions.	3.9	1.2	/.45
Approaches situation as a challenge.	3.1	1.3	/.39
*Keeps emotions in check.	3.0	1.3	/.43
*Says positive things to self.	3.2	1.2	/.50
SELF FOCUS (5 items/25 points)	16.6	3.2	.41 (N = 133)
*Asks questions: What will it feel like.	4.2	1.1	/.45
Seeks out contact or closeness.	4.0	1.2	/.36
Focuses on bodily sensations.	3.4	1.2	/.25
Turns inward.	2.2	1.3	/.35
*Keeps emotions in check.	2.8	1.2	/.33

* Duplicate items.

Discrepancies in Parent and Child Reports

While this paucity of significant correlations may cast doubt on the validity of the CSCS, it should be recalled that it is not uncommon for parent-report and child-report measures to differ (Kendall, Cantwell, & Kazdin, 1989), especially in areas that are observable only to the child (i.e., cognitions, not behaviours: Beitchman & Corradini, 1988; Bierman & Schwartz, 1986; Verhulst, Althaus, & Berden, 1987).

An alternative explanation for this lack of correlations might be that that Parent Report Child Coping Scale is itself invalid. Since it was developed for the purpose of this research and not pre-tested, this is a plausible hypothesis. The only test of this hypothesis available within this data set was a comparison of this questionnaire to the Peterson-Holmer indices.

Prior to conducting the analysis, several predictions were made concerning subscale correlations. It was predicted that parents who scored high on the Tell Index would also score their children high on the Monitor subscale, but low on the Avoidance/Distraction subscale. It was further predicted that parents who rated their children as information seekers on the Child Information Index would rate them comparably on the Monitor subscale, and negatively on the Avoidance/Distraction subscale. Finally it was predicted that parents who rated their children as strong negative reactors on the Child Reaction Index would also rate them highly on the Negative/Distress Behaviours subscale and the Self Focus subscale, and poorly (negatively) on the Cooperation subscale. As can be seen from the results presented in Table 27, these predictions were substantially supported.

TABLE 27

THE EFFECT OF SITUATIONAL VARIATIONS
THE SIGNIFICANCE OF DIFFERENCES BETWEEN LEVELS OF CORRELATION

PARENT REPORT CHILD COPING SCALE	TELL INDEX Predic-tion	r	Actual n	p	CHILD INFORMATION INDEX Predic-tion	r	Actual n	p	CHILD REACTION INDEX Predic-tion	r	Actual n	p
AVOIDANCE/ DISTRACTION	Neg.	-.17	132	<.05	Neg.	-.22	132	<.01	None			n.s.
MONITORING	Pos.	+.11	133	n.s.	Pos.	+.38	133	<.001	None	-.18	131	<.05
FANTASY/ RESTRUCTURE	None			n.s.	None			n.s.	None	-.15	131	<.05
NEGATIVE/ DISTRESS	None			n.s.	None			n.s.	Pos.	+.40	131	<.001
COOPERATION	None			n.s.	None			n.s.	Neg.	-.17	130	<.05
SELF FOCUS	None			n.s.	None			n.s.	Pos.	+.35	131	<.001

Thus, while parent reports may not coincide with child reports, parents at least seem to be consistent in their own perceptions and predictions of their child's behaviour across methods of measurement.

The Child Temperament Survey

Correlations with the CSCS. As a matter of interest, the relationship between the Child Temperament Survey and the subscales of the CSCS was explored. As was the case with the parent report instruments described above, there were very few significant correlations between this temperament questionnaire and the children's CSCS. The only correlation that was replicated across time or forms was a negative relationship between the temperamental dimension child activity level and the children's Cooperation subscale (Time 1 CSCS r = -.20, N = 69, $p<.05$; Time 2 CSCS r = -.36, N = 64, $p<.01$). Another correlation came close to meeting criteria: There was a positive relationship between the sociability dimension of temperament and the Avoidance/Distraction subscale (Time 2 CSCS r = .16, N = 104, $p<.05$; Form 2 CSCS r = .26, N = 66, $p<.05$). Children whose parents rated them as highly active thus tended to see themselves as less cooperative in medical settings. Children rated as highly sociable by their parents saw themselves as employing Avoidance/Distraction strategies, many of which involved interpersonal behaviours. These logical correlations add to the evidence for the validity of the CSCS.

Correlations with the Parent Report Child Coping Scale. The correspondence between parental measures of temperament and coping were also investigated, and a number of interesting correlations emerged. The temperamental dimensions concerning emotionality correlated with the

parents' Self Focus subscale (General Emotionality: $r = .23$, $N = 133$, $p<.01$; Fear: $r = .21$, $N = 133$, $p<.01$) and with the Negative/Distress Behaviours subscale (Fear: $r = .20$, $N = 132$, $p<.01$). This latter subscale was also correlated with the temperamental dimension labelled impulsivity ($r = .21$, $N = 132$, $p<.01$).

The combined results of these analyses of the relationship between temperament and both parent and child measures of coping would seem to suggest that while temperament may be related to some types of coping strategies, coping is not completely predictable from temperament. As with anxiety and locus of control, the constructs are related but distinguishable.

CHAPTER VII

TESTING THE LIMITS OF GENERALIZABILITY

THE HOSPITAL STUDY

To be useful in research and clinical applications, the CSCS should both validly **predict** strategy preferences and accurately **reflect** strategies actually used in medical settings. A preliminary investigation of these properties of predictive and concurrent validity was conducted using the CSCS in an exploratory study of children undergoing a stressful medical procedure in a hospital setting.

Literature Review

The literature on children's coping strategies was reviewed to locate appropriate comparison measures for the assessment of the predictive and concurrent validity of the CSCS. Although the measures selected were considered to be only partial reflections of children's coping strategies, they provided what were considered to be the best comparative measures.

The Cognitive Coping Interview and the Behavioral Coping Observation Scale

Curry and Russ (1985) developed these instruments to assess the spontaneous coping strategies used by 8- to 10-year-old children undergoing stressful dental treatment. Although the present research involved a medical rather than a dental procedure, Curry and Russ (1985) suggested that their assessment method could be used with children in other similar stressful conditions.

The Cognitive Coping Interview is a semi-structured interview that assesses cognitions in the form of thoughts, self-statements, and

wishes. It was designed to be used with the Behavioral Coping Observation Scale, an observation schedule for observable coping behaviours.

Curry and Russ (1985) developed six coping categories for the scoring of the Cognitive Coping Interview, and three for the companion Behavioral Coping Observation Scale. The cognitive strategies were: reality-oriented working through, positive cognitive restructuring, defensive reappraisal, emotion-regulating cognitions, behaviour-regulating cognitions, and diversionary thinking. The behavioural strategies were information seeking, support seeking, and direct efforts to maintain control.

In research conducted by Curry and Russ (1985), intercorrelations between subscales were found to be low, but all of the subscales were highly correlated with the full scale. The authors suggested that this pattern served to indicate that relatively distinct forms of coping had been identified. Good interobserver reliability was achieved for the observation scale, and all nine categories of coping, from both instruments, were represented in their sample of 30 children. Every child utilized at least two cognitive coping responses and one behavioural response.

The Revised Observation Scale of Behavior Distress

This observation instrument was developed and refined by Jay and Elliott (1986) based on Katz, Kellerman, and Siegel's (1980) Procedure Behavior Rating Scale. It was described by its authors as "an objective measure of behavioral distress in children" (Jay and Elliott, 1986, p. 1). It was designed for use with children ranging in age from 4 to 14

years who were undergoing specific painful medical procedures associated with cancer treatment. Jay and Elliott (1986) suggested, however, that it could be readily modified for use with other medical procedures.

The scale consists of eight operationally defined behaviours indicative of pain and/or anxiety in children. These behaviours are rated in intensity: for example, screaming and flailing are perceived to be more intense indicators of distress than crying or verbal resistance. The behaviours are continuously recorded in 15-second intervals.

The original Observation Scale of Behavior Distress consisted of 11 items, but item analysis indicated that two items (nervous behaviour and muscular rigidity) were negatively correlated with the remainder of the scale, and another (verbal fear) occurred in only 5% of the children studied, and never in children over the age of 6 (Jay & Elliott, 1986; Elliott, Jay, & Woody, 1987). The authors of the scale therefore eliminated these items from their instrument, leaving the following eight behaviours: information seeking, crying, screaming, restraint, verbal resistance, seeking emotional support, verbal pain, and flailing.

The internal consistency of the eight item scale, calculated using Cronbach's Alpha procedure, was reported to be .72 (Elliot et al., 1987).

The Hospital Procedures Questionnaire

The Hospital Procedures Questionnaire was developed by Peterson-Holmer (Peterson & Toler, 1986) to gather information from children in medical settings concerning their knowledge and understanding of an up-coming procedure. The content of the

questionnaire and the language level used seemed appropriate to this study.

Objectives and Hypotheses

The objective of this study was to extend the investigation of the validity of the CSCS into the areas of predictive and concurrent validity. Building on to the multitrait multimethod design model upon which this study was based (see Table 6, Chapter V), the specific objectives of the hospital study are depicted in Table 28.

Predictive Validity

Behavioural strategies. It was hypothesized that the behavioural strategies reported on the CSCS administered to children prior to their admission would correspond to behavioural strategies (a) observed during the procedure at the hospital, and (b) reported by the children on the postprocedure CSCS.

Cognitive strategies. It was hypothesized that the cognitive strategies reported on the CSCS administered to children preadmission would correspond to cognitive strategies these children reported (a) during a semistructured postprocedure interview, and (b) on the postprocedure CSCS.

Concurrent Validity

It was predicted that strategies reported on the CSCS immediately after a procedure would correspond to (a) behavioural strategies observed during the procedure and (b) cognitive strategies reported during a semistructured postprocedure interview.

TABLE 28

THE MULTITRAIT MULTIMETHOD MODEL:
THE HOSPITAL STUDY

TRAIT: COPING

METHODS

	METHOD 1 CSCS: PRE-ADMISSION	METHOD 2 CSCS: SETTLING-IN	METHOD 3 CSCS: POST-PROCEDURE	METHOD 4 OBSERVATION: PROCEDURE	METHOD 5 INTERVIEW: POST-PROC.	METHOD 6 OBSERVATION: PREPARATION
METHOD 1			Predictive Validity	Predictive Validity		
METHOD 2			Discriminant Validity: Situational Sensitivity			
METHOD 3				Concurrent Validity	Concurrent Validity	Discriminant Validity: Situational Sensitivity
METHOD 4						
METHOD 5						
METHOD 6						

Sensitivity of the Instrument

It was also hypothesized that there would be evidence of different patterns of responding to the CSCS over the course of the medical experience, in particular in response to aspects of the situation that were either objectively or subjectively different. Kaloupek (e.g., Kaloupek, White, & Wong, 1984; Kaloupek & Stoupakis, 1985; Wong & Kaloupek, 1985) and Lazarus (e.g., Cohen & Lazarus, 1973; Folkman & Lazarus, 1985) have demonstrated that coping strategy usage changes over the course of stressful events. These changes, at least in part, have been explicitly related to the controllability of the situations (e.g., Compas, Malcarne, & Fondacaro, 1988; Kaloupek et al., 1984; Parkes, 1984; Tessler, Wegler, Savedra, Gibbons, & Ward, 1981).

Specifically, it was predicted that patterns of responding to the CSCS during the anticipatory (settling-in) period would differ, for each individual child, from response patterns found during the actual procedure. This would hold true most particularly if a child appraised the two situations differently, as measured by the S.A.I.

Method

Participants

Beginning in May of 1990, all consecutive bookings for an intravenous procedure (I.V. Start) for the purposes of a C.A.T. scan at the children's ward of a local hospital were considered eligible for this study if the child were between the ages of 6 and 10 years and not known to be seriously ill.

The researcher was contacted by the hospital's medical procedures booking desk concerning 18 eligible children between May and September of 1990. Two of these children were not invited to participate because they lived more than 100 kilometers away from the major research area. During initial telephone contacts 3 of the remaining 16 children were excluded from the study because they did not speak English. Of the remaining 13 families, 1 declined the invitation to participate, and 12 others agreed to take part. Two of these participants failed to complete the study: one because the hospital procedure was cancelled, and one because the I.V. was started without the researcher's knowledge in the Medical Imaging Department of the hospital rather than on the Pediatric Day Care Unit.

Thus 10 children, 5 boys and 5 girls, took part in this exploratory study. Three of these children were 6 years of age, three were 7, and four were 8 years old. There were no 9- or 10-year-olds in the sample.

The 10 children varied with respect to hospital experience, and overall the sample was probably reasonably representative of the population at large. All but two of the children had visited friends or relatives in the hospital. Most of these visits were to see mother and a new sibling. In addition, all of the children had made at least a hospital emergency room visit for the purposes of receiving medical attention, although for one child there had been no such visits since her infancy. Two of the children had been admitted overnight for observation, but no further medical treatment. Two children had had adnoidectomies, one as a day patient and the other had been admitted overnight. Finally, two children had more extensive experience. One

child had spent seven nights in the hospital after a skin grafting procedure, and another had had three admissions, two overnights (ear operation and observation for possible concussion), and one day surgery (hernia repair).

Measures

In addition to the measures used in the schools study which were described in the Measures section of Chapter V, the following instruments were used in the hospital study.

The Observational Scale of Coping Behaviours

A combination of the behaviours found on the Behavioral Coping Observation Scale (Curry & Russ, 1985) and the Revised Observation Scale of Behavior Distress (Jay, Ozolins, Elliott, & Caldwell, 1984) was used to assess behavioural coping in this study. These two instruments were described in the Literature Review section above.

Coding Issues. Decisions concerning the behavioural categories and their definitions were made by the researcher after viewing taped observations of children undergoing a variety of medical procedures (including venipunctures), or information/preparation sessions. The combination of the two scales mentioned above quite adequately reflected the kinds of coping behaviours observed. A copy of this newly constructed instrument, including category definitions, is included in Appendix M.

Practice with the instrument led to the adoption of 30-second event sampling intervals. Jay and Elliott (1984) had found with their observation schedule that the introduction of 15-second scoring

intervals (compared to simple event recording) yielded only marginal improvements in instrument sensitivity. Since 15-second intervals increased the difficulty of on-the-spot recording in this study (observations were not taped), an intermediate level of 30-second intervals was thought to be an appropriate compromise.

Because the observations could not be video recorded, it was decided to focus on-the-spot coding efforts exclusively on physical behaviour categories. Verbalizations were simply coded as such, and they were later transcribed and coded from audio recordings.

All observations were later collapsed into the six subscales of the CSCS for comparison to the children's self-reported behaviour.

Training Issues. In order to train for the actual hospital observations, the researcher enlisted the aid of a colleague who reviewed the behaviour coding categories while viewing the medical procedures tapes mentioned above with the reseacher. Subsequently, both individuals independently coded new tapes of children undergoing medical procedures. The researcher recorded her first observation, and then set this aside. She then continued to view the tape, recording on a separate sheet the subsequent observations, until she was satisfied that all behaviours present on the tape had been properly recorded. The researcher's colleague simply undertook the second task, i.e., repeatedly viewing the tapes until she was satisfied all behaviours had been recorded and appropriately coded.

The two sets of repeated observations were compared, and the few disagreements were resolved by discussion. The agreed upon coding key was then compared to the researcher's initial observation of the tape.

The tape was nine minutes long and contained filmed observations of two different children. There were 48 agreed upon codable behaviours on the tape. The researcher had correctly coded 44, or 92% of these at first viewing. This was considered to be an adequate level of reliability. The researcher failed to record 4 behaviours, one of which was agreed to have been a borderline example of the behaviour category in question. The researcher also coded two behaviours which were later deemed not to be examples of the coding categories in question.

Cognitive Coping Interview

The Cognitive Coping Interview, as developed by Curry and Russ (1985), was also selected as a comparison measure for the CSCS. This interview was conducted in a semistructured manner, as recommended by the authors, to probe for the child's thoughts, self-statements, and wishes.

The children's self-generated responses were later coded using the subscale categories of the CSCS so that the results of the two measures could be compared. This task presented no difficulties: It should be recalled that the development of the CSCS subscale definitions was heavily influenced by the response categories developed for the Cognitive Coping Interview, especially as this was presented in Curry's (1985) unpublished work.

The interview guide can also be found in Appendix M.

Procedure

The parents of children whose names were received from the hospital's medical procedures booking desk were contacted to request their participation. Children who could not speak English were screened

out at this time. Appointments were made to see all participating children, with at least one parent, in their homes, between two and six days prior to the hospital procedure. (Three or four days prior was preferred, but this was not always possible.)

The children were subsequently observed and interviewed at the hospital during the settling in period, the preparation for the procedure, the actual procedure, and at two points following the procedure.

Preadmission

In the preadmission interview, the parents' consent was obtained (see Appendix M), and the children were also asked if they were willing to take part. No child declined, but one child was too ill to complete all the forms during this interview. Because it was occasionally found that the parents actually had very little information on the scheduled procedure, the phone number of the Pediatric Day Surgery Unit was provided to interested parents so that they could obtain further medical information should they wish.

Following these preliminaries, the parents were asked to complete a number of forms while the child interview was conducted, but only information from an adapted version of Peterson-Holmer's Child History form (demographic and medical data) will be used in the consideration of the data that follows.

All parents chose to remain in the same general area of the house as their child during the entire interview, but there were no significant interruptions of the interview process. Although the younger children in particular occasionally looked to their parents for

answers, the parents were very helpful in encouraging their children to respond on their own.

While the parents were completing their forms, the researcher completed the following forms and questionnaires with the child, using a semistructured approach. With the exception of the first measure, which is described above, all of these measures are described in the Existing Measures section of the Literature Review (Chapter III) or the Measures section of Chapter V (The Schools Study: Method). The measures used were:

(a) the Hospital Procedures Questionnaire,

(b) the CSCS and the S.A.I., using the I.V. Start story and pictures, and asking the children to imagine that their scheduled procedure were taking place right now,

(c) the Social Desirability Scale,

(d) the Children's Health Locus of Control Scale, and

(e) the Revised Children's Manifest Anxiety Scale.

The first portion of the interview was audio taped, to allow the children to become comfortable with the idea of being recorded prior to the hospital experience.

At the Hospital: Settling In

An attempt was made to observe all children for the first three to five minutes after their arrival on the Pediatric Day Surgery Unit. The nursing staff had agreed to greet all research children, weigh and measure them immediately, and then allow them to play, so that the situation would be standard for all observations. However, the agreed upon procedure was rarely followed due to the legitimate work demands on

the ward. Furthermore, many of the children greeted the researcher and tried to engage her in their conversation and play. The observations from this period therefore included some quite variable situations.

Following this brief settling-in period, the researcher administered the CSCS and the S.A.I. to each child in a quiet corner of the ward, asking what coping strategies the child was employing at that time.

At the Hospital: Preparation

After the child had had about ten minutes to settle in on the ward, the Child Life Specialist accompanied the child and parent to the treatment room where she explained the C.A.T. scan procedure and demonstrated the I.V. Start on a large puppet. Observations were made of the child's behaviour during this preparation period using the Observational Scale of Coping Behaviours described above in the Measures section. Observations commenced as soon as the Child Life Specialist had begun the information session, and they terminated when the I.V. needle was in place in the puppet's arm, and the puppet's arm was wrapped. These sessions typically lasted between 7 and 10 minutes.

Due to time constraints, only the S.A.I. was administered following this information session.

At the Hospital: Procedure

The nurse usually arrived in the treatment room just a few minutes after the completion of the information session. Recording of the child's behaviour commenced as soon as the nurse greeted the child, and ended when the I.V. was in place. This procedure typically lasted about

seven to eight minutes, but two exceptionally difficult procedures lasted 15 and 22 minutes respectively, and involved multiple punctures.

Immediately following the procedure, while still in the treatment room, the researcher administered the CSCS and the S.A.I. to the child once again, asking the child what strategies he or she employed during the procedure.

At the Hospital: Postprocedure

After the child returned from the Medical Imaging Unit, and the I.V. needle was removed, the researcher conducted the Cognitive Coping Interview, and then the child was free to go home.

Results

Assessment of the validity of the CSCS involved comparisons of the child's self-reported strategies on those CSCS subscales with behavioural components (i.e., not Fantasy/Restructuring) to behaviours observed and recorded using the Observational Scale of Coping Behaviours described above, and comparison of those with cognitive components (i.e., all the subscales) to the cognitive strategies reported by the child during the Cognitive Coping Interview.

Scoring

All scoring was done in terms of the CSCS subscales rather than the coping categories associated with the other scales employed. However, it has already been noted that all these subscale definitions were highly compatible, and therefore the only task invol

For all measures subscale scores were calculated on the basis of percentages, i.e.,

$$\frac{\text{number of responses in a given subscale category}}{\text{total number of responses coded}} \times 100$$

Data Analysis

This study was designed as an exploratory study, using a repeated single subject design. Because of the small number of participants and the numerous unique problems encountered during data collection at the hospital, data analysis consisted primarily of a visual perusal of the data for each individual subject, and an attempt to find patterns across subjects, again primarily through visual comparisons. The results must be interpreted with caution.

Predictive Validity

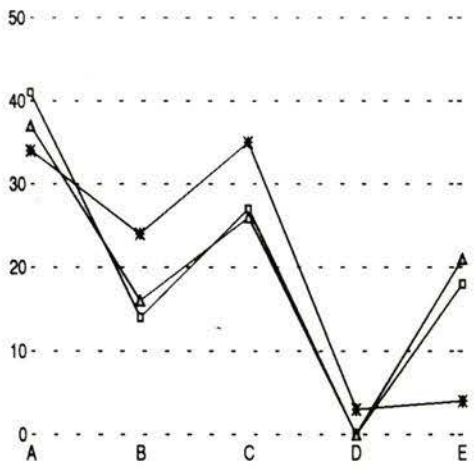
The predictive validity of the **behavioural component** of the CSCS was examined by comparing scores on the preadmission administration of the instrument to the behaviours observed by the researcher. Half the children made fairly accurate predictions of their behaviour (see Figure 6).

Because of the basic consistency in responding to the CSCS across time, and the limited number of responses made during the Cognitive Coping Interview, the predictive validity of the **cognitive component** of the CSCS will not be reported separately. See the Concurrent Validity section below for information on the correspondence between that interview and CSCS responses.

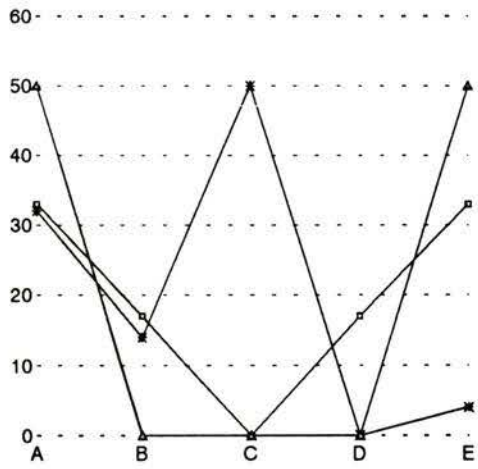
FIGURE 6

Observed vs. Reported Behaviour Hospital Study

Participant No. 203

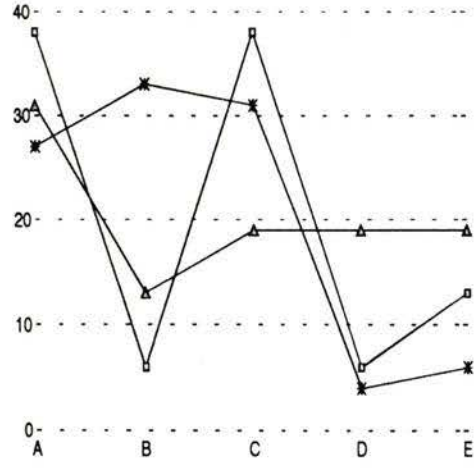


Participant No. 204

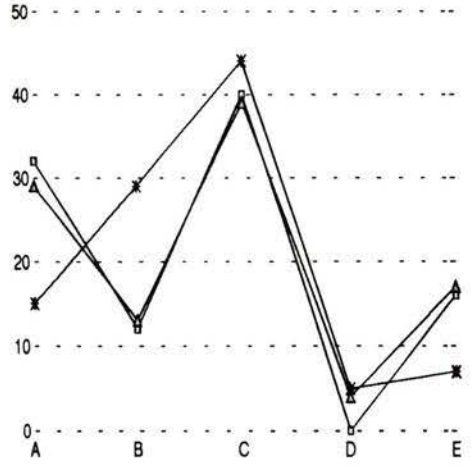


X AXIS: CSCS SUBSCALES * Y AXIS: LEVEL OF ENDORSEMENT IN PERCENT

Participant No. 205



Participant No. 206



*

A. Avoidance/Distraction B. Self Focus

C. Monitor D. Negative/Distress

E. Cooperation

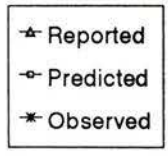
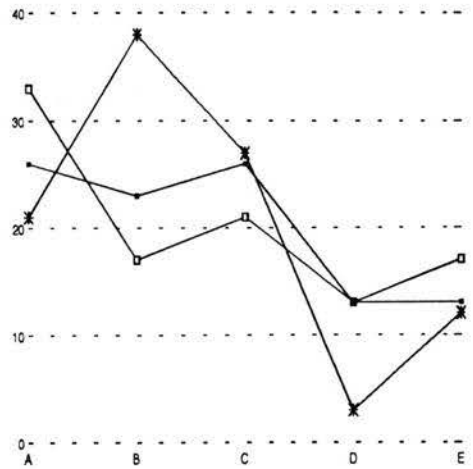
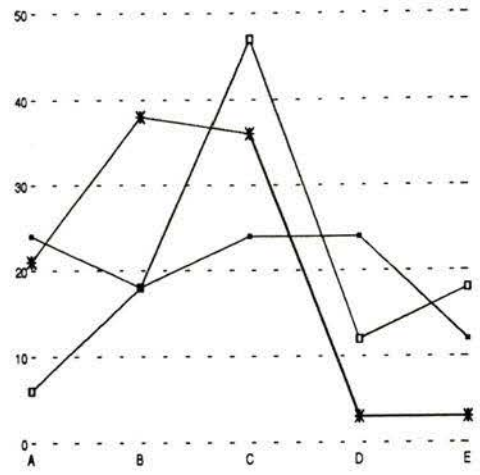


Figure 6 (Continued)

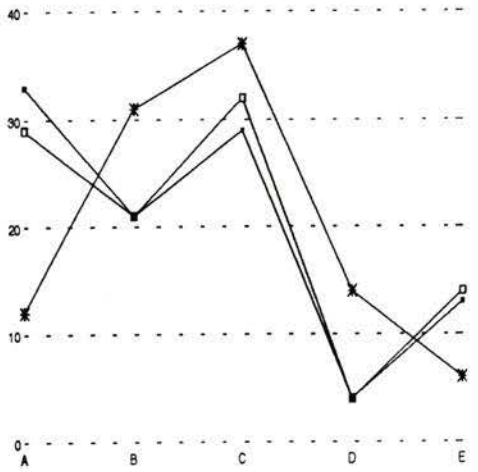
Participant No. 207



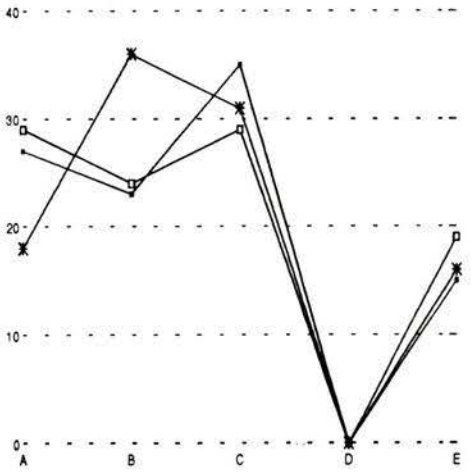
Participant No. 208



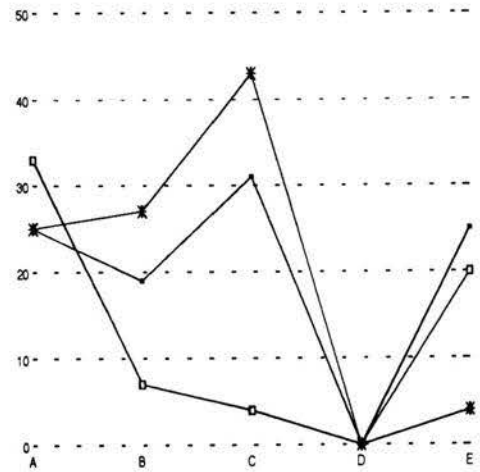
Participant No. 209



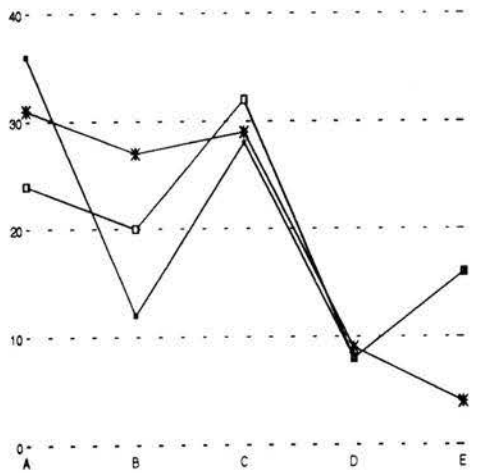
Participant No. 210



Participant No. 211



Participant No. 212



Concurrent Validity

The concurrent validity of the CSCS was examined first by comparing observed **behaviours**, as recorded on the Observational Scale of Coping Behaviours, to the postprocedure administration the the CSCS. The average number of codable behaviours and verbalizations recorded on the Observational Scale of Coping Behaviours was 41.2 (range 24 to 64) during the preparation period and 64.2 (range 41 to 109) during the actual procedure. The correspondence between these observations and the self-report measures (the CSCS) was very good for four children (Ss 203, 207, 210, 211), and moderately good for another three (Ss 205, 206, 212: see Figure 6).

The validity of the cognitive component of the CSCS was assessed by a comparison of the cognitive strategies endorsed on the CSCS to cognitive strategies mentioned in the postprocedure administration of the Cognitive Coping Interview (Curry & Russ, 1985). All but one (i.e., 96%) of the strategy statements made during the interview were represented on the CSCS, indicating good content validity for the CSCS.

During these interviews, the children made an average of 2.4 strategy statements (range: 0-5), representing an average of 2 CSCS subscales (range: 0-5). The most frequently mentioned types of strategies were Avoidance/Distraction, and then Monitoring. Only one child mentioned a Cooperation strategy.

In contrast, CSCS endorsements showed Cooperation to be the most popular strategy, with Avoidance/Distraction coming second, and Monitoring well down on the list. The differences between the two methods of measurement bear further investigation, but the suggestion is

offered here that children have a very limited conceptualization of coping, and that the number and variety of strategies they employ can be more broadly assessed by using an instrument such as the CSCS rather than a method requiring self-generated responses. Furthermore, some of these strategies, such as cooperation with perceived "powerful others", may be forms of participatory (Reid, 1984) or secondary control (Rothbaum, Weisz, & Snyder, 1982) -- conscious decisions to hand over control in order to reduce the probability of unfavourable outcomes (Miller, 1980b). Viewed in this way, these strategies may be seen as valuable additions to the children's coping arsenals.

The Role of Expectations in Predictive and Concurrent Validity

Children with good versus poor matches between self-reported and observed behaviours were not distinguishable on the basis of age or gender. There was a tendency for children with good matches to score higher on the internality subscale of the Children's Health Locus of Control Scale, and somewhat higher on the anxiety measure.

Most notably, however, expectations appeared to have been a factor. Social learning or social cognitive theory (Bandura, 1982, 1989; Phares, 1976; Rotter, 1966) predicts that this should be the case, and other research on how children cope with medical stress (George, Scott, Turner, & Gregg, 1980; Melamed, Robbins, & Fernandez, 1982) lends support to this interpretation. In this study, four children experienced procedures that were objectively more difficult than the norm (Ss 203, 204, 209, 210): They took longer and involved multiple skin punctures. Two of the four children (Ss 203 and 210) rated their procedures essentially the same on the "Oucher" (the S.A.I. pain scales)

administered pre and postprocedure. Interestingly, their self-reported strategy use, both predictively and concurrently, matched observed strategy use very well. A third child who experienced a very difficult procedure indicated on the "Oucher" that the procedure hurt much more than anticipated (S 209). The matches between her CSCS scores and the behaviour observed were very poor.

The last of the four children who experienced difficult procedures reported so few strategies on the CSCS (S 204: 5 - 17% for the six subscales) that the results were probably not valid, although his mother did describe him as a very stoic child. In any event, the predictive and concurrent matches between self-report and observation for this child were also very poor.

There was one other child whose observed behaviour matched very poorly with self-reported strategy use. This child had anticipated a painful procedure, but found that the procedure hurt much less than expected (S 208). Thus expectations clearly appear to be playing some role.

Sensitivity to Individual and Situational Differences

Reviewing the CSCS and S.A.I. scores for the postprocedure administration of these measures (see Table 29), it is clear that, just as in the school study, there was variability in the endorsement levels and patterns across children: Their individual profiles differed (see also Figure 6 for a graphic presentation of these results, and Appendix N for the raw data relating to the other times of measurement).

TABLE 29

POSTPROCEDURE SCORES ON THE CSCS (%) AND THE S.A.I.

CSCS SUBSCALE	PARTICIPANT NUMBER 203	204	205	206	207	208	209	210	211	212
AVOIDANCE/ DISTRACTION	78	11	56	78	89	44	89	78	44	100
MONITORING	43	0	29	43	100	43	71	86	43	43
FANTASY/ RESTRUCTURING	57	0	86	43	100	43	71	86	43	71
NEGATIVE/ DISTRESS	0	0	43	14	57	57	14	0	0	29
COOPERATION	100	25	75	100	100	50	75	100	100	100
SELF FOCUS	50	0	30	90	80	40	70	90	100	70
TOTAL	56	5	54	66	93	49	71	78	46	73
S.A.I. QUESTION										
SCARED	1	2	1	0	2	2	4	1	3	2
HURT	2	1	2	1	0	1	10	2	6	2
CONTROL 1	2	4	4	3	1	1	4	3	2	4
CONTROL 2	3	3	5	4	5	3	5	3	2	5

While the CSCS may be sensitive to individual differences, it is less clear whether it is sensitive to situational variations. Five of the 10 children (Ss 203, 204, 209, 210, 212) proved to be quite consistent in their strategy selections on the CSCS across the three times of administration, based on a count of the actual number of disagreements across times of measurement. The mean number of disagreements across the three times ranged from 2 to 4.33 for these children. Only three children (Ss 205, 207, 208) showed a notable level

of change across time: The mean number of disagreements ranged from 12 to 18.67 for these children. While the first administration was meant to be predictive of the last, even eliminating these data from the comparisons and focusing on the settling in - postprocedure comparison, 3 of the 10 children (Ss 203, 209, 212) were quite consistent in their strategy selections, each having only two or three disagreements between the two administrations of the measure. The remaining children had between 6 and 21 disagreements across time, with the mean number of disagreements for these children being 11. The consistent children were not distinguishable from the others on the basis of age or gender.

Comparing mean subscale scores for the 10 children across situations revealed that the ranking of preferred strategies for the settling in period was Cooperation (85%), Fantasy/Restructuring (67%), Avoidance/Distraction (65%), Self Focus (57%), Monitor (46%), and Negative/Distress (12%), while for the immediate postprocedure administration it was Cooperation (83%), Avoidance/Distraction (67%), Self Focus (62%), Fantasy/Restructuring (60%), Monitor (50%), and Negative/Distress (21%). Except for the most and least popular strategies, endorsement levels were fairly similar in the two situations. The largest shifts were in Fantasy/Restructuring (higher in the settling in period) and Negative/Distress (higher during the procedure.

Possible explanations of this consistency in strategy selections across time may be, as mentioned in the results of the schools study, that the CSCS is more of a style or trait measure than a process measure, or that children are quite consistent across situations.

There are no data available in this study to address this issue directly, but the alternative explanation offered in the schools study can be examined here. Just as the hypothetical situations in the schools study did not differ sufficiently to tap situational variability, the two times of measurement in the hospital may also have been perceived by the children as essentially the same.

Comparing the S.A.I. scores from the settling in period to the immediately pre and postprocedure measures, there is a subtle shift upwards in mean pain ratings from the settling in period (1.5) to the postpreparation period (2.1). Both of these were ratings of pain **expectations.** The final measure was a rating of pain actually **experienced:** It was taken postprocedure, and the mean was 2.7. Given that this was a 10-point scale, these changes are relatively small.

The shifts in the fear ratings were somewhat larger, given that the fear scale was a 5-point scale. Average fear ratings during the settling in period were 1.6, rising to 2.2 immediately preprocedure (i.e., postpreparation), and dropping again to 1.8 postprocedure. These were all actual fear ratings ("How scared are you right now?").

In terms of controllability, there was again a modest shift in one of the two ratings, in the direction of increasing uncontrollability (the "hospital people" were seen to be in charge), with the mean scores, on a 5-point scale, being 3.6 at the settling in period, rising to 4.1 immediately preprocedure, and returning to 3.8 postprocedure. The scores on the other control question ("Can you make things work out?) were relatively stable and tending in the direction of uncontrollability (2.6, 2.7, 2.8 across times of measurement, on a 4-point scale).

There is, therefore, some evidence of different situational perceptions in this hospital study, but it is weak. More dramatically different situations will be required to test the sensitivity of the CSCS.

Conclusion

The data provided some evidence for the predictive and concurrent validity of the CSCS, as well as for its sensitivity to individual differences. At the very least they suggest that the measure warrants more complete investigation in this regard.

CHAPTER VIII

DISCUSSION AND CONCLUSION

This attempt to develop a reliable and valid process measure of the coping strategies employed by children facing stressful medical procedures was moderately successful. The psychometric data compare favourably to those that have been reported for other measures. At the very least, the framework of an approach, format, and subscale structure has been laid out.

It is believed that much of the work presented here will stand up to future investigations which should include larger samples of children undergoing a variety of procedures in hospital settings. Intraindividual designs would provide the richest data. Also interesting would be factor analytic studies of the proposed subscale structure.

Even before this work is undertaken, it can still be said that the CSCS (with the Situational Appraisal Index) is currently the only children's self-report measure of coping for use in medical settings (or any specific situation for that matter) that has been subjected to the standard of psychometric analysis undertaken in this research.

The approach taken to instrument development here is different from that which has been typical in the assessment of coping in previous research, so that direct comparisons with the psychometric properties of other measures will be few. Most typically, other researchers have used factor analysis to construct and assess the validity of their scales (e.g., Endler & Parker, 1990; Folkman & Lazarus, 1988; Worchel,

Copeland, & Barker, 1987). The correlational matrix approach adopted here has been used by others in the field, but the two preeminent examples involved the validation of the existence of particular coping strategies (Compas, Malcarne, & Fondacaro, 1988) or styles (Peterson & Toler, 1986) rather than the validation of an instrument per se. Nevertheless, whenever sensible comparisons to psychometric evaluations of other measures can be made, they will be.

The discussion will focus on the CSCS in its final form (i.e., the revised subscales). Because it is recognized that a large amount of data was presented in Chapters VI and VII, a summary table of the findings is presented here (see Table 30). Following the discussion of the results summarized in the table, the possible effects of gender, age (grade), experience in medical situations, and exposure to the instrument will be discussed.

Subscale Descriptives

With mean endorsement levels ranging from 35 to 82% for the six subscales, it is clear that the types of strategies presented in the CSCS are amongst those children say they use. Standard deviations were large enough to suggest that the subscales are sufficiently sensitive to admit individual differences, and the distributions of CSCS total scores approached normality.

TABLE 30

ASSESSING THE LIMITS OF GENERALIZABILITY
-- SUMMARY OF RESULTS --

PSYCHOMETRIC ISSUE	NATURE OF THE COMPARISON (HYPOTHESIS)	RESULTS SUBSCALES (RANGE)	RESULTS TOTAL
Reliability: Internal Consistency	Within subscales and the total scale, Across ITEMS	Alphas .60 - .77	Alpha .85
	Within the total scale, Across SUBSCALES	Inter-subscale Correlation -.27 - .72	Subscale-Total Corr. .34 - .87
Reliabilty: Test-Retest	Within subscales and the total scale, Across TIME (1)	Correlation Coefficients .48 - .64	.66
Reliability: Parallel Forms	Within subscales and the total scale, Across FORMS (2)	.53 - .80	.80
Validity: Convergent	Within subscales and the total scale, Across METHODS OF ADMINISTRATION (3)	.62 - .90 (different methods)	n.a.
	Within subscales and the total scale, Across QUESTION AND RESPONSE TYPE (4, 9)	Not available for Revised Subscales	
	Within subscales and the total scale, Across SITUATIONS (5a,6)	.39 - .79 (different situations) .56 - .71 (different appraisals)	.85 .39
Validity: Discriminant	Across CONSTRUCTS (7, 8)		
	Anxiety	.01 - .36	.22
	Locus of Control		
	Internal	.01 - .24	.15
	Powerful Others	.07 - .46	.52
	Social Desirability Scale	.04 - .30	.21
	Ideal Child CSCS	.29 - .63	n.a.
Sensitivity	Within subscales and the total scale, Across INDIVIDUALS (5a)	Endorsement patterns differ across individuals	
	Within subscales and the total scale, Across SITUATIONS (5b, 6)	No * differences in levels test-retest correlation across situations. MANOVA effects for situation not significant.	

Assessing the Limits of Generalizability

Internal Consistency

The revised subscales were derived from the schools study data using criteria for scale construction adopted from Nunnally (1978) and Kline (1986). The internal consistency of the subscales thus still needs to be confirmed with a new sample. The results of an independent analysis of the internal consistency of Form 2, however, were promising.

To summarize the findings for Form 1, 95% of the items correlated at a .20 level or better with their assigned subscale, 82% at a .30 level or better. Mean interitem correlations for five of the six subscales achieved the .20 level recommended by Nunnally (1978), with the range being .18 to .34. Internal consistency coefficients approached or surpassed the .7 level recommended by Kline (1986) for 20- to 30-item scales, although the CSCS subscales were only 4 to 10 items in length. The range of alpha coefficients was .60 to .77.

These data compare favourably with the internal consistency data available on the major adult measures of coping reviewed by Endler and Parker (1990) and with what little information there is on children's measures of coping and related constructs. This information is presented in Appendix O. With respect to mean interitem correlations, the CSCS also compares favourably to Endler and Parker's newly developed adult measure, for which mean interitem correlations of .20 to .36 were reported.

Test-Retest Reliability

Test-retest reliability has rarely been examined in the research on coping measures. It may be argued that it is inappropriate to expect

stability in the measurement of a construct assessing cognitions and behaviours that are part of an everchanging and recursive process of appraisal and action. Indeed, this instrument was designed to be administered repeatedly during the stress-coping process, and in such a way as to be sensitive to change during the process. There is, however, evidence for the existence of coping styles in children (Peterson & Toler, 1986; Miller, in press). It therefore seemed appropriate to expect some degree of stability, on average, in groups of children for whom, presumably, nothing had changed, when these children were presented with identical situations in an identical manner two weeks apart.

The achieved test-retest reliabilities, ranging from .48 to .64 for the various subscales, compared moderately well with the limited data available on other coping measures. Compas et al. (1988), for example, reported nine-month test-retest reliabilities of .17 to .26 for 10- to 14-year-old children. Bush and Holmbeck (1987) reported two week test-retest reliabilities on three scales ranging from .70 to .76 for an age range encompassing adolescents (i.e., 5- to 18-year-old children) on a related type of measure (the Children's Health Attitudes Questionnaire).

Parallel Forms Reliability

The parallel forms reliabilities for the six subscales were all highly significant (i.e., at the .001 level), ranging as they did from .53 to .78. These results suggest, of course, that the **types** of strategies represented in the six subscales have some degree of validity beyond the **specific items** included in the CSCS Form 1. There are no

comparable data available on other coping measures. The CSCS is unique in offering a parallel form.

Content Validity

Apart from the extensive literature review and interviews with children undertaken to generate the most comprehensive list of strategies possible, there was only one test of content validity in this research. In the course of the hospital study, the children were observed and interviewed at several points in time. All of these data were subsequently coded into the six subscale categories represented on the CSCS. There were no observed behaviours that could not be coded appropriately, and only one cognitive strategy that fell outside the coding scheme. This strategy was essentially a "no strategy" response, a category of response that was dropped very early in the instrument development phase because of very low endorsement levels and apparent confusion over its meaning. Children who endorsed this "no strategy" response in early work with the instrument also tended to endorse a large number of other strategies.

The fact remains, however, that this spontaneously elicited "no strategy" response was given by one of the ten children in the hospital study during the postprocedure interview. The CSCS should be sensitive to this kind of response, and it would appear that it is. The child in question endorsed very few strategies on the CSCS, thereby indicating his perception of himself as employing no particular coping strategies. Ironically, this same child was observed to employ a higher than average number of codable behavioural and verbal responses during the course of both the preparation and the procedure. The procedure this child

experienced, however, was rated, on an objective basis, as more difficult than the norm. (The importance of expectations will be discussed in a later section.)

Construct Validity

Theoretical considerations. The strategies depicted in the CSCS clearly represent cognitive or behavioural efforts to manage the demands of situations regarding which the children's appraisals were obtained. However, Lazarus's dimension describing the functions of coping, i.e., problem-solving and palliation (Lazarus, DeLongis, Folkman, & Gruen, 1985) did not map perfectly onto the subscale structure. The reasons for and implications of this will be discussed here.

Recall that the purpose of this research was to combine a theoretical basis with clinical utility in the development of a meaningful measure of children's coping. From the outset, subscale categories were selected with the latter criterion in mind: Subscale titles were descriptive of strategy types that hospital personnel would likely find informative for the purposes of preparation for procedures. The dimensions proposed by Lazarus were seen as theoretically important, and they are represented in the CSCS, but they are embedded within the various subscales.

In most research with the Ways of Coping Checklist (e.g., Aldwin, Folkman, Schaefer, Coyne, & Lazarus, 1980), the Ways of Coping Questionnaire (e.g., Folkman & Lazarus, 1985), or with other coping measures based on Lazarus's theory (e.g., Endler & Parker, 1990), the subscales have been devised to broadly fit the problem-focus/ emotion-focus distinction. Working within factor analytic designs,

these researchers found items that loaded on one or the other factor, but unless items that loaded heavily on both factors were carefully excluded (as in Endler & Parker, 1990), subscale intercorrelations across the problem-focus emotion-focus distinction were high (e.g., Aldwin et al., 1980; Vitaliano, Russo, Carr, Mauiro, & Becker, 1985).

In the development of the CSCS, this issue of cross-loadings was encountered in the instrument development stage when the researcher and three colleagues were unable to code the CSCS strategies unequivocally into problem-focused versus emotion-focused categories (see The Internal Structure of the Instrument: The underlying dimensions, Chapter IV). The items could be coded but frequently appeared on both dimensions.

The major functions of coping, as they are quite broadly conceptualized in the literature, are well-represented in the problem-solving/emotion-focused strategy distinction. But perhaps there has been a mistaken assumption on the part of researchers in this area that a given strategy must address one or the other of these functions. Our behaviour is rarely determined by a single antecedent cause or intention, nor is it unidimensional in its impact -- especially if one is working within a transactional perspective. A single strategy can serve both an instrumental and a palliative function at the same time.

It is clear from work in the instrument development phase that both problem-focused and emotion-focused strategies are well represented on the CSCS, and it is believed that a factor analysis on a new, larger sample would show this to be the case. However, in the end it must be recognized that while the problem-solving/emotion focus distinction is a very useful way to look at coping, there are others. In the present

research, it was decided that other distinctions, for example the approach/avoidance distinction, had more immediate clinical utility.

Lazarus's theory is much more than the description of the functions of coping under discussion here. This theory has made its major contribution to our understanding of stress and coping through its description of coping as a **process** in which **appraisals** are critically important. From this perspective, the CSCS represents a valid attempt to operationalize the theory.

The inclusion of distress. While five of the six subscales of the CSCS depict strategies that would elicit little controversy as to the appropriateness of their inclusion in a measure of coping, The Negative/Distress Behaviours subscale is perhaps somewhat more controversial.

The initial decision to include such strategies was based on the theoretical position that coping strategies cannot be classified as inherently good or bad (Folkman, Dunkel-Schemer, DeLongis, & Gruen, 1986), and also on clear evidence that distress behaviours are exhibited in threatening medical situations (Brown, O'Keeffe, Sanders, & Baker, 1986; Hubert, Jay, Saltoun, & Hayes, 1988). Hubert et al. (1988) suggested that such distress behaviours represent a dimension of coping, but Peterson (1989a) contends that such an approach will lead to "confusion between independent and dependent variables or between the process and outcome of coping" (p. 384). This divergence of opinion harkens back to the discourse in the literature between Pearlin and Schooler (1978) and Hobfoll (1989), for example, and Lazarus and his colleagues (e.g., Lazarus & DeLongis, 1983). Since the transactional

framework of the latter group of theorists was adopted for this research, distress behaviours were assessed as an aspect of the coping process.

The data from the schools study provided some interesting information as to how strategies that can be categorized as Negative/Distress Behaviours relate to other kinds of strategies. The Negative/Distress subscale, along with the Cooperation subscale, it is interesting to note, was markedly less well correlated than other subscales with the total CSCS score, as well as with many of the other subscales. The Negative/Distress and Cooperation subscales were negatively intercorrelated. Interestingly, Negative/Distress was quite strongly correlated in a positive direction with both the Monitoring and Self Focus subscales. This finding corresponds with previous research results that suggest that monitoring is associated with distress in uncontrollable situations (e.g., Miller & Mangan, 1983), and that catastrophizing most frequently takes the form of focusing on negative affect (Brown, O'Keeffe, Sanders, & Baker, 1986), represented here in both the Monitoring and Self Focus subscales.

Examination of the subscale descriptive statistics provided evidence that there may be weak or inappropriate items included within the Negative/Distress subscale, although the mean interitem correlation and the coefficient alpha were comparable to those of other subscales. The Negative/Distress subscale is a combination of four cognitive and three behaviour items. All of the behavioural items were quite adequately correlated with the CSCS total score and well correlated with the subscale score. In contrast, three of the four cognitive items were

essentially uncorrelated with the CSCS total, and two of these were only modestly correlated with the subscale score. The three items in question could all be classified as **catastrophizing** (e.g., "I thought: Something is going wrong. Something will go wrong.") as opposed to **simple distress** (e.g., I thought about how scared I was." or "I screamed when it hurt."). This may be an important distinction. While expression of emotion may help to reduce certain physiological indices associated with anxiety (Kaloupek & Stoupakis, 1985), or at least free up the energy required for suppression to be used in more constructive coping efforts (Silver & Wortman, 1980), and simple distress cognitions may be a form of emotional monitoring, catastrophizing may serve no constructive purposes.

The issue concerning the inclusion of distress in a measure of coping might be examined further by assessing the coping individual's appraisal of the function of various self-reported behaviours. From an entirely subjective perspective, if the coping individual perceives the distress behaviour as a coping strategy (perhaps aimed at ventilating feelings or sending a message), it should be accepted as such.

Convergent Validity

Test-retest correlations remained high across different methods of administration (.62 to .90) in the schools study. They were generally lower across different hypothetical situations (.39 to .79), but these correlations were not significantly different from same situation test-retest correlations. These findings support the initial hypotheses.

The convergence of CSCS scores with parental reports of child strategy use in the schools study was, however, unimpressive. It has already been noted that this result is entirely consistent with other research comparing parent and child reports concerning the child's internal processes (e.g., Beitchman & Corradini, 1988), and thus cannot be considered damaging to the validity of the CSCS particularly. The child, it seems, is uniquely privileged in having access to internal cognitions and, to a large degree, an affective life, which shape a personal frame of reference that is not completely shared with parents. It would be interesting to examine how a parent's (i.e., a mother's) clearly demonstrated impact on child coping in medical situations (Bush, Melamed, Sheras, & Greenbaum, 1986) might be affected by the parent's increased knowledge of the child's preferred coping strategies. While certain parenting behaviours broadly described as "positively oriented parenting strategies" (Bush & Cockrell, 1987, p. 515) have been associated with better child reactions to anticipatory medical stress (Bush & Cockrell, 1987), having the parent make direct enquiries into the child's preferences might serve to improve outcomes even more.

The evidence for the concurrent validity of the CSCS in the hospital study, as assessed by comparison to behavioural observations and postprocedure interviews, was perhaps only adequate, but the instrument certainly warrants a full-scale field study.

The failure to find a strong correspondence between the CSCS and the Cognitive Coping Interview in the hospital study is not of great concern since there is no compelling evidence that the Cognitive Coping Interview itself is a more adequate measure. Indeed, children in the

age group studied here seemed to have a very limited conceptualization of coping when asked to generate their own responses. The CSCS may give a more complete picture of the children's coping strategies. It is unfortunately not possible to examine this conjecture with the data generated in this study because the interview dealt with only cognitive strategies. To test the above hypothesis, it would be necessary to ask children to report on their **behavioural** strategies in a postprocedure interview, and then to compare these results, as well as those those on the CSCS, to observed behaviours.

The levels of comparability found between the behavioural observations and the CSCS in the hospital study were adequate enough to be encouraging. The weaknesses here may be attributable to a number of sources. First, as noted in the results, **expectations** may have been a factor: Two of the three children with poor matches between observed and self-reported behaviour experienced procedures that were either much more or much less painful than they had anticipated (as measured on the Oucher pre and postprocedure). It may be that children's reports of their coping strategies are valid if they are able to employ strategies that they see as part of their style (i.e., that they predict they will use), which is more likely to happen if the procedure matches their expectations. This hypothesis bears further investigation, although evidence in support of it is only marginal in this study. That, however, may be due to a second factor that may have affected the overall findings in the hospital study.

In the course of the analysis of the data, the decision was made to convert the initially developed scoring system for the CSCS (percentage

of items endorsed within subscales) to a system more comparable to the metric employed for the observational data (number of strategy endorsements within subscales as a percentage of total strategy usage). This was only a partially satisfactory solution to achieving comparability between the two types of measures. While the CSCS subscale scores had artificial ceilings determined by the number of items in the subscale and on the total CSCS, the observation "scale" had no ceiling in this way. There was a different kind of restriction placed on observed behaviours, though: Two or more distinct behaviours of the same type (e.g., monitoring or avoidance) occurring within the same 30-second observation interval were recorded only once. Although, theoretically, this kind of sampling works well to demonstrate individual or group difference within the same measurement method (i.e., metric), it is not clear that valid comparisons can be made across these two different metrics.

This problem could be resolved by (a) adopting an event sampling approach to the recording of observed behaviours, an approach that would entail coding all instances of selected behaviours, and (b) employing the formula recomended by Vitaliano, Maiuro, Russo, and Becker (1987) for the computation of relative scores for measures with subscales of unequal length. Vitaliano et al. explored the respective strengths of raw versus relative scoring approaches with the Ways of Coping Checklist (Aldwin et al., 1980) and found that the relative scoring system may be more sensitive than raw scores to individual and group coping differences. They noted that

> (an) advantage of the relative scoring method is that it uses both idiographic/individual norms (by making the subject his or her own standard of reference) and nomothetic/group norms (by comparing relative efforts across subjects)... The recommendations of previous researchers, along with the results reported here, suggest that relative scores may be better suited for empirically evaluating the dynamic interplay of coping efforts and distress and, as such, they can be especially useful in studying the transactional model of stress. (p. 16)

Relative scores might by used to address the problem of overendorsement in supplied response approaches noted by Ross and Ross (1984) in their discussion of the respective merits of supplied (e.g., CSCS) versus self-generated (e.g., the Cognitive Coping Interview) responses. When an individual's own level of endorsement serves as a baseline for computing the score for each subscale, the relative importance of various strategies is made clear in spite of different overall response levels.

The use of relative scores is not standard practice in the measurement of coping at this time, and for this reason the approach was not adopted for this study. However, the work of Vitaliano et al. (1987) is suggestive and the logical next step in the evolution of the CSCS would include an exploration of the use of raw versus relative scores.

Discriminant Validity

The discriminant validity of the CSCS was investigated in the schools study only. The results were extremely encouraging. As

predicted, the correlations of the CSCS subscales with the selected comparison measures were much lower than CSCS autocorrelations (see Table 24), and in most cases significantly lower. The notable exception to this pattern was the "Ideal Child" CSCS: these correlations were lower, but not significantly so. The CSCS thus appears to be influenced by a type of social desirability in that if a child judges a strategy to be good, that strategy will be reported as one used in a stressful situation. At the same time, however, it should be noted that CSCS subscale correlations with a more traditional measure of social desirability were significantly lower than CSCS autocorrelations.

It is possible that the "Ideal Child" scores are not reflective of what is typically considered to be the social desirability response set. Traditional measures of social desirability have obviously right (or socially acceptable) and wrong (socially unacceptable) answers, while responses to the "Ideal Child" CSCS may be closer to the child's assessment of how efficacious various strategies are. Asking children what strategies should be recommended to a friend, or even more directly what strategies they think would work best in such a situation, and then comparing these responses to the "Ideal Child" responses might be one way to check out this possibility. If the two sets of scores correlated with each other, and also with the child's self-reported strategies, this would indicate that the CSCS scores are influenced by a tendency for children to report using strategies they deem to be useful. The children appear to want to be seen in a positive light, or perhaps more basically want to see themselves in a positive way.

What this correlation of CSCS strategies attributed to the self and those attributed to the ideal child might mean to the interpretation of CSCS scores is not inherently obvious. It could be seen as either very damaging to the validity of the measure, or as only a cautionary note in understanding what the scores mean. Perhaps the latter interpretation is more realistic. It is widely recognized that self-report measures are subject to a variety of response sets (Anastasi, 1982): The CSCS is not unique in this regard.

The stability of the scores across time in the schools study suggests that the children may perceive themselves as having a coping style -- a style very likely based on their experience of what works for them. The existence of coping styles in children has been established (Miller & Green ,1985; Peterson & Toler, 1986). In most situations, it may not matter too much whether the child actually engages in the behaviour, or perhaps most especially, the cognition. Simply having the intention to use the strategy, or seeing it as an option in the situation, could result in its being reported -- especially if the procedure went more or less as anticipated. The reasoning used might be: "Things worked out. I coped well. I used the good strategies.".

It should also be noted that only 13 of 41 items on the CSCS are behavioural strategies, strategies where failure to engage in the behaviour would be more or less observable (e.g., "I asked questions about how it would feel."). All of the others can be classified as either strictly cognitive ("I thought about everything that was happening.") or cognitive regulation of behaviour (e.g., "I tried hard not to cry.").

This whole issue of the influence of the child's assessment of strategy efficacy on self-report behaviour bears further investigation. The results of such work may affect recommendations for the use of the CSCS. If, for example, one's goal were to assess what a child's coping style or preferences are, either in a research or a clinical setting, the possible tendency of children to report strategies judged to be efficacious would not be a problem: These are the strategies the child would probably choose to employ. However, if the goal of a study were to assess changes in strategy use over the course of the coping process, such a tendency, if confirmed by further research, may limit the utility of the measure.

Sensitivity to Individual and Group Differences

As indicated earlier in this discussion, the range of subscale scores found in both the schools and hospital studies suggests that the CSCS is sensitive to individual differences. Sensitivity to group differences could not be tested statistically because of low n's in the various subgroups. However, there were some apparent trends in the data that should be investigated with a larger sample, and these will be commented on below.

Gender Differences

The pattern of results tended to match gender differences reported previously in the literature (see Gender Differences in Strategy Use, Chapter II). The magnitude of these differences was small, but girls in this study did report using more strategies overall than boys (as in Tessler, Wegler, Savedra, Gibbons, & Ward, 1981). The differences

between the sexes was greatest in the Negative/Distress, Cooperation, and Self Focus subscales. This finding tends to support previous findings that girls seem to focus more on negative affect (Brown, O'Keeffe, Sanders, & Baker, 1986) and report proportionately more support-seeking (Wertlieb, Weigel, & Feldstein, 1987), both represented here in the Self Focus subscale. Boys on the other hand reported more strategies related to a possible "macho" effect (personal communication, Ferguson, 1990), reflected here in lower Negative/Distress and Self Focus scores.

These differences reflect strategy preferences that could be predicted on the basis of traditional sex role orientations. It would be interesting to explore coping strategy differences on the basis of children's assessed sex role orientations, as well as parental orientations and socialization practices.

Age/Grade Differences

Previously reported age trends (see Developmental Differences in Strategy Use, Chapter II) were not well reflected in the broad tendencies observed this study. This was expected, since the age range here was restricted to, presumably, one cognitive developmental level. Nevertheless, the results must be viewed with caution because of the problem of low n's. Furthermore, examination of the gender distribution across grades showed these two factors to be confounded. Girls outnumbered boys by ratios of 2 to 1 in Grade 1 and 1.5 to 1 in Grade 3; boys outnumbered girls by a ratio of 1.5 to 1 in Grade 2. Although most differences between boys and girls were small, this confounding does make any interpretation of gender or grade differences questionable.

The most notable subscale difference by grade level was the decrease in endorsement of Self Focus strategies with increasing grade level.

Sensitivity to Situational Differences

The CSCS was not sensitive to situational differences as these were represented in the schools study (i.e, different hypothetical medical situations). There were no significant differences in the levels of test-retest correlations when the same situation was presented at Time 1 and Time 2 as compared to when two different situations were presented at the different times of measurement. The same findings held when situational appraisals (same versus different across time) were considered, rather than the objective differences in situational descriptions.

It has already been proposed in the results chapter that this failure to find differences may be due to insufficient variability in the perceptions of the hypothetical situations: Both were basically undesirable hospital procedures which the children tended to perceive as relatively uncontrollable. Results from the hospital study also indicated that children responded similarly across situations (comparing settling-in and postprocedure administrations of the instrument). The situations were perceived somewhat differently in terms of pain, fear, and controllability ratings, but the situational manipulation was apparently not strong enough to test whatever sensitivity may be present in the CSCS to situational differences.

It is clearly necessary to consider the possibility that the CSCS is actually a better measure of coping style or strategy preference than it is of actual strategy use. At the same time, it must not be

forgotten that others have found that children may simply be more consistent in their behaviour across situations than either adolescents or adults (Compas et al., 1988), and young adolescents may display greater consistency than adults (Wills, 1986).

While there is evidence of a developmental pattern in cross-situational consistency, there is also evidence for persisting individual differences. Stability or coherence in adaptive versus maladaptive functioning across childhood has been identified (Block & Block, 1980; Sroufe, 1979), as have temperamental consistencies (Goldsmith, Buss, Plomin, Rothbart, Thomas, Chess, Hinde, & McCall, 1987). It has already been noted that Kagan (Kagan & Snidman, 1991) has proposed the existence of a basic temperamantal dimension of approach-avoidance which he suggests is probably rooted in a biological predisposition. Rothbart and Derryberry (1981) have made a similar proposal concerning the importance of biologically based approach-avoidance tendencies to self-regulation. This aspect of temperament would clearly impact on coping strategy preferences and would thereby contribute to cross-situational consistency. Such dispositional differences in coping style seem to become most apparent in highly stressful situations (Miller, in press). Similarly, consistency in adaptive behaviour over time also seems to manifest itself in psychologically challenging conditions (Shoda, Mischel, & Peake, 1990).

The influence of developmental patterns and persisting individual differences in style should be investigated in a study encompassing a broader age range, including adolescents, and a wider range of

situations. In addition to the CSCS, a measure of temperament which specifically assesses the approach-avoidance dimension should also be administered. Coping strategies must be differentiated along more than this one dimension, however. It would be interesting to explore if some types of strategies are more consistent across situations than others, as would be suggested by the work of Bem and Allen (1974).

There were some suggestive differences across times of measurement in the hospital study that should be investigated with a larger sample. These include higher Fantasy/Restructuring scores during the settling-in period, and higher Negative/Distress and proportionately higher Avoidance/Distraction and Self Focus scores during the actual procedure. This shift across time was of course what was anticipated, although it had been hoped that the trend would be stronger. Nevertheless, the pattern that emerged is interesting. One might speculate that the use of Fantasy/Restructuring during the settling-in period is one way in which children can process, in a non-threatening, indirect manner, all of the new information assaulting their senses as they arrive at the hospital. These strategies touch for a moment on the reality of the situation, and then transform the reality in some reassuring way.

The finding that the use of Avoidance/Distraction increased during the essentially uncontrollable procedure is compatible with previous coping process research (e.g., Kaloupek, White, & Wong, 1984). Kaloupek et al. proposed that in a situation such as this, where the threat is nonambiguous, attention diversion becomes a more effective strategy than situation redefinition.

Children in both the hospital and schools studies reported not only distraction techniques, but also substantial amounts of monitoring of the situation. In the hospital study, it was observed that children would alternate rapidly between monitoring and distraction. This pattern of response may be a way in which children "dose" themselves with just as much information as they can manage: Roth & Cohen (1986) proposed that "the positive consequences of avoidance are largely effects that work to facilitate approach" (p. 817). Monitoring may serve to alert the child to when the venipuncture will actually be performed, while distraction may serve to reduce arousal until it happens.

Melamed (1982) reported an inverse relationship between measures of autonomic arousal and retention of relevent medical information. Children may thus alternate between monitoring and distracting in order to optimize information processing (Roth & Cohen, 1986). Accurate processing of information may be critical to maintaining a sense of control over the situation (Thompson, 1981). But in essentially uncontrollable situations, the coping individual may alternate between monitoring and distraction strategies in order to minimize the maximum potential aversiveness of the situation, according to Miller's (1980b) Minimax Hypothesis. Distraction, or blunting in Miller's terms, would serve to reduce what she calls the "psychological presence" of the threat stimuli, thereby reducing the level of anxiety and subjective distress.

In the end, how much information a child of a given age can or will choose to process may be determined at least as much by personological

factors (e.g., trait anxiety, locus of control) as by situational variables (Miller, in press). A regression design might be considered in a future study to assess the relative importance of various personological and situational factors in determining strategy selection. Possible variables in such a study would include (a) personological factors such as gender, age, temperament, behavioural style, metacognitive understanding of self-regulation, notions of control, perceptions of competence, anxiety, previous medical experience, predictions, and expectations, (b) parental variables such as coping style and anxiety, and (c) situational factors such as objective and perceived threat value and objective and perceived assessments of controllability.

Gender and Age Differences

The impact of gender and age on **strategy selection** has already been discussed, as has the confounding of the two variables in the schools study. Generally speaking, it was found that the few gender differences existing in this data set tended to confirm differences found in previous research. Also noted in this study was a greater variability in boys' as opposed to girls' scores.

Looking at gender differences from a different perspective, i.e., in terms of the **reliability of the instrument**, a totally unexpected finding emerged. There was a notable difference in the test-retest reliabilities of boys and girls in that boys tended to achieve higher Time 1 - Time 2 correlations in CSCS scores than girls did. The differences were sizable for the Avoidance/Distraction, Fantasy/Restructuring, and Negative/Distress subscales, but they were

most remarkable for the Self Focus subscale and the CSCS total score. However, none of the gender differences was significant at the .01 level.

The differences between boys and girls in parallel forms reliabilities were much less remarkable, but tended in the same direction. In terms of internal consistency reliabilities, the differences were virtually non-existent, with the only sizable discrepancy in level of correlation favouring girls as being more consistent than boys within the Self Focus subscale.

These findings are very difficult to interpret and need to be investigated using a much larger sample with a more equal distribution of gender across grade. The differences found here may be an artifact of the confounding of gender and grade. It has already been noted that boys outnumbered girls in the Grade 2 sample, while the reverse held true in the Grades 1 and 3 samples. The apparent gender effect may well be contaminated by a grade effect. There were no a priori hypotheses in this area, so these suggestive findings regarding age effects require further investigation.

Practice Effects

The pattern of results tended to suggest that the same possible gender differences reported for **strategy selection** on the CSCS Form 1 Time 1 were also apparent in subsequent administrations of the CSCS (Form 2 Time 1 and Form 1 Time 2). If anything, the tendencies seemed to be somewhat accentuated, primarily as a result, it would appear, of a drop in boys' overall endorsement levels accompanied by an increase in variability of scores (see Table 14 and Appendix K). The same pattern

of changes across administrations was present in girls' scores also, but the differences were smaller. Thus, boys appeared to be somewhat more susceptible to a testing effect in that, on average, boys' overall endorsement levels dropped more than the level for girls, and the variability in boys' scores increased more than that of girls. This finding is not easy to reconcile with the higher test-retest reliabilities found for boys as compared to girls.

Regardless of possible gender differences, it does appear that there may be a practice effect to be considered in the use of the CSCS. Children appear to become more selective in their strategy endorsements (i.e., levels of endorsement tend to drop), and the instrument may become more sensitive to individual and group differences after the first exposure (i.e., score variability tends to increase). Interestingly, the correlations between the CSCS Form 2 Time 1 (which, overall, was the second CSCS administered) and the CSCS Form 1 Time 2 (which was the third administration of the CSCS) tended to be higher than those between Form 2 Time 1 (the second CSCS administered) and Form 1 Time 1 (the first CSCS administered: see Table 13). This pattern is especially notable in view of the fact that the more highly correlated pair were administered on different days, and the other pair were administered on the same day.

Unfortunately, these tentative findings cannot be confirmed with the limited data from the hospital study since the three administrations of the instrument in that study were done under very different conditions. This issue also remains to be dealt with in future investigations.

Medical Experience

A possible practice effect should not be confused with the children's exposure to or experience in medical settings. The practice effect is an instrumentation issue, to use Campbell and Fiske's (1959) term. The data relating to the effect of prior experience in medical situations on the reliability of the instrument clearly showed that there were no such effects, although it should be noted that these results are based on relatively small sample sizes (cell sizes ranging from 14 to 41).

This finding of no difference may indicate that the average child in our society has sufficient exposure to routine health care to develop a realistic understanding of strategy preferences in **medical** settings. It is also very likely that the children in this sudy have been exposed to **hospital** settings incidently through books and television. Although enquiries were made about explicit hospital preparation or formal information exposure, incidental exposure was not assessed.

Whatever the children's level of vicarious exposure to hospital settings or real exposure to related medical settings, another possible interpretation of this finding of no difference is that the "Let's Pretend" stories portrayed the hospital experience sufficiently well to the group of children with no hospital experience that they were able to respond in the same way as the experienced children.

Conclusion

In conclusion, this research on the psychometric properties of the newly developed CSCS represents a major step toward the development of a reliable and valid measure of children's coping in medical settings. While there remain many important issues to be addressed, including the factor validity of the subscale structure, the optimal procedure for scoring, and whether the CSCS is actually a measure of coping style or disposition rather than of strategy use, a basic approach (self-report), format (card sort), and framework (the six subscales) have been laid out.

What has been demonstrated, at the very least, is that children see themselves as coping individuals capable of employing certain types of strategies in potentially threatening situations. They are clearly able to report on their strategy preferences, if not on actual strategy use. Their strategy endorsements are fairly stable across time, and there may be further evidence here for the existence of coping styles in children (as in Peterson & Toler, 1986, for example). There is also evidence that children's coping involves the use a mixture of strategies, as has been suggested by others (e.g., Murphy & Moriarty, 1976).

If the CSCS stands up to further tests of its validity such as those recommended in this discussion, its use in future research will allow for a more sophisticated examination of the coping process in children and eventually to a better understanding how coping styles, situational demands, and strategy use interact to affect coping outcomes.

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APPENDICES

APPENDIX A

SELF-REPORT INSTRUMENTS ASSESSING COPING IN CHILDREN

INSTRUMENT: Children's Behavioral Style Questionnaire (Child Version)
AUTHOR: Miller (unpublished)
DESCRIPTION: Four hypothetical stressful situations described with six yes-no response options. Assesses monitoring and blunting styles in school-aged children.
COMMENTS: Assesses only a single dimension (monitoring-blunting).

INSTRUMENT: Children's Stress Inventory
AUTHORS: Wertlieb, Weigel & Feldstein, 1987
DESCRIPTION: Adaptation of the Ways of Coping Questionnaire (see below) for 6- to 12-year old children. Uses an interview format.
COMMENTS: Long. Not specific to medical situations.

INSTRUMENT: Cognitive Coping Interview
AUTHORS: Curry & Russ, 1985
DESCRIPTION: For 8- to 10-year olds in dental situations. Self-report in response to three open-ended questions regarding thoughts, self-statements, and wishes.
COMMENTS: Restricted age range. Requires self-generated responses.

INSTRUMENT: Control-related Coping Strategies Questionnaire
AUTHORS: Worchel, Copeland & Barker, 1987
DESCRIPTION: Developed for use with school-aged oncology patients. 28-item self-report questionnaire assessing four types of control-related strategies: behavioural, cognitive, informational, and decisional.
COMMENTS: Quite specific to longer term control strategies.

INSTRUMENT: Coping Strategies Interview
AUTHOR: Siegel, 1981 (unpublished), cited in Peterson and Toler, 1986
DESCRIPTION: Structured interview for 5- to 11-year old children, asking, after the fact, what things they did and thought about, just before, during, and after a specific procedure. Also asked are what things helped, which made it worse, and what advice they would give a friend about coping. Responses coded along a basic approach-avoidance dimension.
COMMENTS: Requires self-generated responses. Assesses only a single dimension (approach-avoidance). Questions good.

Appendix A (Continued)

INSTRUMENT: Coping Questionnaire
AUTHORS: Brown, O'Keeffe, Sanders & Baker, 1986
DESCRIPTION: Written answers required to three questions eliciting cognitions in response to two hypothetical stressful situations (dentist and class report) and one self-selected actual situation. Designed for use with 8- to 18-year old children.
COMMENTS: Age range and written format inappropriate. Requires self-generated responses.

INSTRUMENT: Coping Strategies Test
AUTHOR: Asarnow, Carlson & Guthrie, 1987
DESCRIPTION: Assesses responses to three hypothetical situations not involving the self, in terms of the following: interpersonal sensitivity, expectancies (positive or negative), number of solutions generated to explain a happy ending, and number of solutions generated in response to an obstacle.
COMMENTS: Projective technique requiring too high a level of inference.

INSTRUMENT: Open-ended question
AUTHORS: Tessler, Wegler, Savadra, Gibbons & Ward, 1981
DESCRIPTION: 9- to 12-year old subjects asked to respond to a single question: What helps you feel better when you are in pain?
COMMENTS: Age range inappropriate. Self-generated responses. Single question limiting.

INSTRUMENT: The Pre-operative Mode of Coping Interview
AUTHOR: Adapted for children by Lamontagne (1984) from Janis (1958) and Cohen and Lazarus (1973)
DESCRIPTION: 26 interview questions designed to delineate coping along a dimension termed avoidant-active. Questions tap knowledge about the medical problem and operation, post-surgical outcome, alertness to medical routine, and emotions associated with the event.
COMMENTS: Age and cognitive level could confound results as a result of differing abilities to retain and report information. Designed specifically for pre-operative use.

Appendix A (Continued)

INSTRUMENT: Process coping measure
AUTHORS: Wong & Kaloupek, 1986
DESCRIPTION: Respondents asked to select one of six representative statements typifying three coping methods (cognitive, behavioural, and avoidant), and one of three statements representing three possible foci (problem, emotion, unfocused). Developed within the framework of Lazarus's theory.
COMMENTS: Developed for adults. Degree of generalization required too difficult for children.

INSTRUMENT: Roberts Apperception Test for Children
AUTHORS: McArthur & Roberts, 1982
DESCRIPTION: Children verbalize their responses to situations and problems of an interpersonal nature. Designed to assess their adaptive capacity to cope with potentially stressful situations in an indirect manner.
COMMENTS: Projective technique requiring too high a level of inference. Long.

INSTRUMENT: A semi-structured interview
AUTHORS: Compas, Malcarne, & Fondacaro, 1988
DESCRIPTION: 10- to 14-year old subjects asked to identify recent life events and then generate possible coping strategies as well as identify those actually used. Subjects rated degree of control over event. Researchers coded strategies as either problem or emotion focused.
COMMENTS: Inappropriate age range. Requires self-generated responses. Coded along a single dimension (Problem-focus/emotion-focus).

INSTRUMENT: Ways of Coping Questionnaire
AUTHORS: Aldwin, Folkman, Schaefer, Coyne & Lazarus, 1980
DESCRIPTION: Yes-no answers required to 69 possible ways of coping listed on a questionnaire in response to a specific self-selected situation or event. The respondent also rates the degree of control inherent in the situation.
COMMENTS: Developed for adults. Long. Many strategies of questionable validity given proposed age range and situation. Written response format. Not specific to medical situations.

APPENDIX B

The "Let's Pretend" Story - IV START

I want you to use your imagination for me. I want you to imagine that you have to go to the hospital to have a very special medical test done. Let's pretend that your doctor has said you need to have this test because you've had so many colds all year long, and this test will help him to figure out why. You'd really like to know why too, because you don't want to miss any more school and special activities.

Now, before you imagine having this test, which is a special kind of a needle, I'll tell you what I will want to know. I will want to know what you would think about while the test is being done. Some boys and girls do certain things or think about certain things that help them when they have to go through something like this. Everybody is different. Some of the things other kids do might seem silly to you, but these things make it easier for them. I want to find out exactly what it is YOU think or do.

So now are you ready to pretend? Good.

Imagine that you have just arrived at the hospital on the special floor for children. (PROJECT SLIDES 1-5.) After you get changed into the hospital gown, the nurse brings you and your mother to a small room called the treatment room (SLIDE 6). There's a high narrow bed -- that's where you've been put (SLIDE 7). There are shelves filled with different medical instruments (SLIDE 8), and all sorts of colourful pictures on the walls (SLIDES 9, 10). Imagine yourself on that bed as the nurse turns and tells you she'll be right back. You wait. (TURN OFF PROJECTOR.) Don't tell me yet, but just imagine and think to yourself. What would you think about? What would you do as you wait for the nurse to return? Just think. Don't talk.

Just a few minutes later the nurse returns, carrying a tray with more hospital equipment (SLIDE 11). She tells you it's time to get started.

The nurse explains that this special test starts with having a needle put into your arm right here (point). Having the needle will HURT a bit -- maybe more than a bit if she has a hard time -- like if you move around too much. Once that needle is in, it won't hurt any more, but it will be left in for AT LEAST AN HOUR. It will be attached to a little ball that will be filled with a special medicine. While she tells you all these things, the nurse prepares the tape and bandages she'll need to hold the needle in place once it's in.

Now everything's ready and the nurse cleans your arm. She's holding the needle (SLIDE 12), and she says that it's time. She inserts the needle into your arm -- there's the prick. Think for a minute: What would you think about? What would you do? Don't tell me. Just imagine. (TURN OFF PROJECTOR.)

Finally, she fiddles with the needle while she attaches it to the cap, and then she says "All done!".

Now I will show you some pictures that show about all the different things kids might do when they have a needle. I want to know which ones you would do. What did you do and think in your imagination while you

were pretending to have this needle? You certainly wouldn't do all the things I tell you about -- there are just too many. Maybe you would do just a few.

Don't think too hard about each one. You'll know right away when we get to a picture that shows something that you would do. Remember, there are no good or bad answers. Everybody is different. This is just about you.

This is the way we will do this. I will give you each a little booklet with pictures in it. I will tell you what the child is thinking about or doing in each picture, and then I want you to circle a yes or a no beside the picture.

Circle YES if the picture shows something you WOULD think or do.

Circle NO if the picture shows something you would NOT think or do.

Be sure to circle a yes OR a no beside EACH picture, and please wait for me to READ to you what each picture is about before you make up your mind. I will show each picture on the screen as I read about it, so you will be sure to know which picture in your booklet I am talking about. So let's get started.

The "Let's Pretend" Story -- X-RAY

I want you to use your imagination for me. I want you to imagine that you have to go to the hospital to have a very special medical test done. Let's pretend that your doctor has said you need to have this test because you've had so many colds all year long, and this test will help him to figure out why. You'd really like to know why too, because you don't want to miss any more school and special activities.

Now, before you imagine having this test, which is a special kind of a picture of the inside of your body, I'll tell you what I will want to know. I will want to know what you would think about while the test is being done. Some boys and girls do certain things or think about certain things that help them when they have to go through something like this. Everybody is different. Some of the things other kids do might seem silly to you, but these things make it easier for them. I want to find out exactly what it is YOU think or do.

So now are you ready to pretend? Good.

Imagine that you have just arrived at the hospital on the special floor for children (PROJECT SLIDES 1, 2, 3, 5). After you get changed into the hospital gown, the nurse puts you in a wheelchair and brings you and your mother down the elevator to a special area of the hospital where they take the pictures of the inside of your body (SLIDE 6). These pictures are called X-rays. A new nurse greets you when you arrive, and brings you into the X-ray room. This room is filled with huge pieces of equipment (SLIDE 7) -- all sorts of special kinds of cameras and the machines needed to control them (SLIDE 8). In the middle of it all is a

high narrow bed (SLIDE 9), and that's where you've been put. Imagine yourself on that bed, lying under a great big camera.

The X-ray nurse talks to your mother for a minute while she helps your Mom put on a heavy plastic-looking dark blue coat (SLIDE 10) to protect her from the X-rays. She explains to you that X-rays don't hurt, and won't harm you, but your Mom doesn't need the X-ray pictures taken of her body, and so she should be protected from them. (TURN OFF PROJECTOR.) Now, don't tell me yet, but just imagine and think to yourself. What would you think about? What would you do as things are being prepared for your X-ray? Just think. Don't talk. (PAUSE.)

The X-Ray nurse then says that it's time to get started. She helps you to lie down in a special position -- she places your head and your arms just so and tells you that you must be sure to stay very still in that position for 5 minutes while all the pictures are taken. She takes a minute to move the camera into position (SLIDE 11), using one of the many machines to make it move itself. The camera hums and whirs into position (SLIDE 12). Finally the nurse says everything is ready, and she goes behind the window to make the X-ray machine take its pictures (SLIDE 13). You lie there for 5 minutes while the camera whirs and hums some more, taking lots of pictures (SLIDE 14). Suddenly, it stops, and the nurse announces that you're all done. (TURN OFF PROJECTOR.)

Now I will show you some pictures that show about all the different things kids might do when they have X-ray pictures taken. I want to know which ones you would do. What did you do and think in your imagination while you were pretending to have these X-ray pictures? You certainly wouldn't do all the things I tell you about -- there are just too many. Maybe you would do just a few.

Don't think too hard about each one. You'll know right away when we get to a picture that shows something that you would do. Remember, there are no good or bad answers. Everybody is different. This is just about you.

This is the way we will do this. I will give you each a little booklet with pictures in it. I will tell you what the child is thinking about or doing in each picture, and then I want you to circle a yes or a no beside the picture.

Circle YES if the picture shows something you WOULD think or do.

Circle NO if the picture shows something you would NOT think or do.

Be sure to circle a yes OR a no beside EACH picture, and please wait for me to READ to you what each picture is about before you make up your mind. I will show each picture on the screen as I read about it, so you will be sure to know which picture in your booklet I am talking about. So let's get started.

APPENDIX C
COPING STRATEGIES CARD SORT ORIGINAL SUBSCALE STRUCTURE AND SUBSCALE DEFINITIONS

COGNITIVE AVOIDANCE

The child employs cognitive means to avoid confrontation with the stressor or its consequences, i.e., the child deliberately avoids thinking about the medical procedure. The means employed include:

Diversion: The child focuses attention away from the situation by deliberately thinking about other things.

Wishful Thinking: The child wishes for what cannot be.

General: The child does not employ diversionary or wishful thinking, but is clearly trying to avoid thinking about the procedure and its consequences.

Items

I tried hard not to think about how I was feeling.
I tried hard not to think about what was happening.
I kept my mind busy with games -- like counting in my head or looking for patterns in the ceiling tiles.
I thought about the happiest things I possibly could.
I just wished I could be somewhere else.
I thought about the treat I was promised for after.
I thought about what my friends or family might be doing.

COGNITIVE APPRAISAL: POSITIVE

The child is thinking about or imagining aspects of the procedure per se, or about his/her response to the procedure.

Reality-based appraisals: Concrete, fact-based appraisals. There is no obvious positive or negative bias, and no restructuring.

Positive self-statements: The child's thinking is straight-forward and reality-based, but it has a distinct positive focus which appears to make the situation seem tolerable.

Items

I thought about everything that was happening.
I thought about how it made me feel.
I thought: I can take this. I can be brave.
I thought: It will all be over soon.

COGNITIVE APRRAISAL: FANTASY/RESTRUCTURING

The child is thinking about or imagining aspects of the procedure per se, or about his/her response to the procedure.

The child's thinking has its roots in the reality of the situation (i.e., it is not diversionary thinking), but the child has mentally restructured the situation to make it seem benign or positive, or to make it fall into line with his/her wishes, or has constructed a fantasy that allows him/her to reinterpret the entire situation.

Appendix C (Continued)

COGNITIVE APPRAISAL: FANTASY/RESTRUCTURING (Continued)
Items
I thought about how I would pay these guys back some day.
I thought lots of kids have this done, so it can't be that bad.
I thought of good reasons for having this done -- like it would help me get better.
I pretended my heart was pounding because I had just run a big race or something like that -- not because I was afraid.

COGNITIVE APPRAISAL: NEGATIVE
The child is thinking about or imagining aspects of the procedure per se, or about his/her response to the procedure.
The child's thinking is rooted in the reality of the situation, but it focuses on negative aspects, or exaggerates the negative aspects to unrealistic proportions.
Items
I thought the whole time: Gee, I hate this. I really, really hate this.
I thought about how much it hurt.
I thought about how scared I was.
I thought something is going wrong. Something will go wrong.

INFORMATION SEEKING: QUESTIONING AND VIGILANCE
The child deliberately seeks out information about the procedure and its consequences. Information seeking may include
Questioning: The child asks questions about the procedure and its consequences.
Vigilance: The child does not ask questions, but attempts to gather information in other ways.
Items
I asked questions about how it would feel.
I tried to find out what was going to happen next.
I got the hospital people to explain everything as they did it.
I looked carefully at all the medical things in the room.

INFORMATION SEEKING: AVOIDANCE
The child deliberately avoids information about the procedure and its consequences by actively blocking out the available information or engaging in behaviours that divert his/her attention.
Items
I kept my mind off things by looking at a book or something.
I didn't listen to what people were saying. I just blocked it all out.
I ignored all the medical equipment in the room. I didn't even see it.
I didn't pay attention to what was going on around me. I just turned away.

Appendix C (Continued)

SUPPORT SEEKING
The child seeks out physical or emotional support.
Items
I asked Mom to stay right with me.
I asked God to take care of me.
I asked someone to hold me or to hold my hand.
I told them I needed help.

EMOTIONAL RELEASE
The child displays some affective response which could serve as a means of stress reduction.
Items
I cried.
I screamed when it hurt.
I made jokes about what was happening -- about me or the hospital people or the equipment.

EMOTIONAL CONTROL
The child takes some action to gain control of self (emotions).
Items
I took big deep breaths.
I tried very hard to make my heart stop pounding.
I held back my tears.

LIMIT SETTING
The child takes some action to gain control of the situation.
Items
I told them whenever it hurt.
I told the nurse to stop, to wait.

ACTIVE PARTICIPATION
The child is actively involved in the procedure by his/her own special effort. (This may be a form of secondary control.)
Items
I did whatever I was told.
I did whatever I could to help things along.

NO STRATEGY
Items
I did nothing special.

APPENDIX D

PILOT STUDY

CSCS and S.A.I. MEANS AND STANDARD DEVIATIONS

By Method of Administration, Gender, and Grade

A. TIME 1

SUBSCALE	GENDER						METHOD OF ADMINISTRATION					
	BOYS			GIRLS			INDIVIDUAL			GROUP		
	M	n	SD	M	n	SD	M	n	SD	M	n	SD
CSCS												
Cognitive Appraisal:												
Avoidance	6.38	21	2.20	5.86	22	2.32	6.14	14	1.83	6.10	14	2.46
Positive	4.09	23	1.47	3.68	22	1.39	3.57	14	1.28	4.03	14	1.49
Fantasy/Restructure	5.88	24	2.40	5.17	24	2.04	6.29	14	2.89	5.21	14	1.86
Negative	2.13	23	1.67	2.80	24	2.17	2.29	14	2.16	2.55	14	1.87
Information Seeking:												
Questioning/Vigilance	4.08	24	2.19	3.92	24	1.79	4.36	14	1.65	3.85	14	2.11
Avoidance	33.13	24	1.73	3.00	24	1.14	3.00	14	1.41	3.09	14	1.49
Support Seeking	3.88	24	2.07	4.50	24	2.06	4.57	14	1.74	4.03	14	2.20
Emotional Release	1.54	24	1.32	1.46	24	1.25	1.43	14	1.09	1.53	14	1.35
Emotional Control	2.50	24	1.35	2.38	24	1.14	2.79	14	1.19	2.29	14	1.24
Active Participation	2.21	24	0.88	2.29	24	0.75	2.21	14	0.98	2.26	14	0.75
Limit Setting	2.13	24	1.48	1.83	24	1.49	1.64	14	1.15	2.12	14	1.59
No Strategy	0.92	24	0.72	0.71	24	0.75	0.93	14	0.73	0.76	14	0.74
TOTAL	39.38	21	12.69	37.14	21	11.90	39.21	14	10.69	37.79	14	13.06
SITUATIONAL APPRAISAL INDEX												
Scared	2.48	23	1.65	2.83	23	1.53	2.00	14	1.11	2.94	14	1.68
Hurt	2.88	24	4.05	4.04	24	3.95	3.36	14	3.80	3.50	14	4.14
Control 1	2.52	21	1.21	2.23	22	1.34	2.43	14	1.09	2.34	14	1.37
Control 2	4.14	22	1.13	4.36	22	0.95	4.29	14	0.73	4.23	14	1.17

APPENDIX D (Continued)

A. TIME 1

SUBSCALE	GRADE 1			GRADE 2			GRADE 3		
	M	n	SD	M	n	SD	M	n	SD
CSCS									
Cognitive Appraisal:									
Avoidance	5.75	16	2.44	6.86	14	1.17	5.76	17	2.28
Positive	5.06	16	2.17	5.85	13	1.52	5.69	16	1.08
Fantasy/Restructure	6.13	16	2.16	5.79	14	1.72	5.06	17	2.30
Negative	3.58	12	1.51	2.36	11	1.21	3.13	15	2.03
Information Seeking:									
Questioning/Vigilance	4.13	15	1.55	4.57	14	1.50	3.50	16	1.71
Avoidance	3.44	16	1.67	2.64	14	1.22	3.44	16	0.89
Support Seeking	3.64	14	1.28	3.08	13	1.12	2.54	13	1.39
Emotional Release	1.62	13	0.65	1.70	10	0.67	1.22	9	0.44
Emotional Control	3.60	15	1.45	2.93	14	1.21	2.76	17	1.25
Active Participation	2.69	16	1.01	3.00	14	0.88	3.12	17	0.78
Limit Setting	1.55	11	0.52	1.71	7	0.49	1.22	9	0.44
No Strategy	1.50	16	0.52	1.00	4	0.00	1.10	10	0.32
TOTAL	38.00	17	16.13	38.64	14	6.49	35.53	17	9.28
SITUATIONAL APPRAISAL INDEX									
Scared	2.53	17	1.81	2.39	13	1.50	3.00	16	1.41
Hurt	4.00	17	4.64	4.57	14	4.31	2.00	17	2.60
Control 1	2.19	16	1.28	1.92	13	1.19	3.00	14	1.18
Control 2	4.59	17	0.71	4.31	13	0.95	3.79	14	1.31

APPENDIX D (Continued)

B. TIME 2

SUBSCALE	GENDER						METHOD OF ADMINISTRATION					
	BOYS			GIRLS			INDIVIDUAL			GROUP		
	M	n	SD	M	n	SD	M	n	SD	M	n	SD
CSCS												
Cognitive Appraisal:												
Avoidance	7.16	19	2.36	6.05	20	2.33	7.08	13	1.71	6.35	26	2.65
Positive	5.20	20	1.88	5.15	20	1.87	5.62	13	1.81	4.96	27	1.87
Fantasy/Restructure	6.05	21	2.72	4.60	20	2.48	6.23	13	3.11	4.89	27	2.38
Negative	1.86	21	2.20	2.30	20	2.20	1.69	13	2.25	2.25	28	2.17
Information Seeking:												
Questioning/Vigilance	3.43	21	1.99	3.40	20	2.16	3.69	13	1.97	3.29	28	2.11
Avoidance	2.43	21	1.57	2.65	20	1.60	2.85	13	1.77	2.39	28	1.47
Support Seeking	3.62	21	2.25	4.35	20	2.25	4.38	13	2.33	3.79	28	2.23
Emotional Release	1.48	21	1.33	1.20	20	0.95	1.46	13	1.33	1.29	28	1.08
Emotional Control	2.10	21	1.30	1.95	20	1.47	2.31	13	1.25	1.89	28	1.42
Active Participation	1.91	21	1.04	2.10	20	0.97	2.31	13	0.86	1.86	28	1.04
Limit Setting	1.62	21	1.20	1.80	20	1.47	1.92	13	1.44	1.44	28	1.29
No Strategy	1.00	21	0.78	0.40	20	0.60	0.85	13	0.80	0.80	28	0.73
TOTAL	39.47	17	15.14	35.95	20	13.34	40.38	13	12.89	12.89	24	14.75
SITUATIONAL APPRAISAL INDEX												
Scared	1.90	21	1.45	2.75	20	1.25	2.15	13	1.21	2.39	28	1.50
Hurt	1.57	21	2.71	4.20	20	4.00	2.38	13	2.99	3.07	28	3.90
Control 1	2.45	20	1.32	2.75	20	1.07	2.23	13	0.93	2.78	27	1.28
Control 2	3.48	21	1.44	4.05	20	1.15	4.00	13	1.16	3.64	28	1.39

APPENDIX D (Continued)

B. TIME 2

SUBSCALE	GRADE 1			GRADE 2			GRADE 3		
	M	n	SD	M	n	SD	M	n	SD
CSCS									
Cognitive Appraisal:									
Avoidance	6.58	12	2.75	6.50	12	1.73	6.93	15	2.09
Positive	4.83	12	2.55	4.92	12	1.68	5.56	16	1.41
Fantasy/Restructure	6.55	11	2.66	5.09	11	1.81	5.27	15	2.69
Negative	3.40	10	1.96	2.29	7	1.89	3.50	10	2.01
Information Seeking:									
Questioning/Vigilance	3.90	11	1.76	3.55	11	2.07	3.87	15	1.73
Avoidance	3.18	11	1.72	2.67	12	1.23	2.85	13	1.07
Support Seeking	3.36	11	1.50	3.50	10	1.43	2.62	13	1.56
Emotional Release	1.88	8	0.99	1.14	7	0.38	1.63	8	0.92
Emotional Control	2.82	11	1.54	2.58	12	1.31	2.73	15	1.33
Active Participation	2.70	10	1.25	2.82	11	0.98	2.94	16	0.93
Limit Setting	1.45	11	0.52	1.29	7	0.49	1.14	7	0.38
No Strategy	1.50	10	0.53	1.14	7	0.38	1.20	5	0.45
TOTAL	35.77	13	18.48	33.82	11	11.05	34.69	16	11.30
SITUATIONAL APPRAISAL INDEX									
Scared	2.23	13	1.79	2.25	12	1.36	2.44	16	1.15
Hurt	3.08	13	4.43	3.00	12	4.05	2.56	16	2.63
Control 1	2.69	13	1.25	3.08	12	1.00	2.13	15	1.19
Control 2	3.85	13	1.68	3.92	12	1.24	3.56	16	1.09

APPENDIX E

COPING STRATEGIES CARD SORT: PARALLEL FORMS
(ORIGINAL SUBSCALES)

FORM 1	FORM 2
Cognitive Avoidance	
I tried hard not to think about how I was feeling.	I didn't think about how it made me feel.
I tried hard not to think about what was happening.	I didn't think about what was going on.
I kept my mind busy with games -- like counting in my head or looking for patterns in the ceiling tiles.	I pretended I was a hero on some kind of a dangerous adventure.
I thought about the happiest things I possibly could.	I pretended to be somewhere else.
I just wished I could be somewhere else.	I tried not to think bad thoughts -- only to think good thoughts.
I thought about the treat I was promised for after.	I thought: I know I'll get a treat after this.
I thought about what my friends or family might be doing.	I thought about what was happening at home or at school.
Cognitive Appraisal: Reality Based, Positive	
I thought about everything that was happening.	I thought about what was going on.
I thought about how it made me feel.	I thought about how I felt as it was being done.
I thought: I can take this. I can be brave.	I thought: It's O.K. These people know what they're doing.
I thought: It will all be over soon.	I thought: I'll be fine. I've been through worse things before.
Cognitive Appraisal: Fantasy, Restructuring	
I pretended that it wasn't really happening to me. It was sort of happening to someone else. I pretended I was just watching.	I just hoped and hoped it was almost over.
I thought about how I would pay these guys back some day.	I imagined I was the one giving the test to someone else.
I thought lots of kids have this done, so it can't be that bad.	I thought: This is just like taking medicine. It will make me feel better.
I thought of good reasons for having this done -- like it would help me get better.	I thought things could be worse.
I pretended my heart was pounding because I had just run a big race or something like that – not because I was afraid.	I pretended that the test was not going to be done to me, so no need to worry.

Cognitive Appraisal: Negative

I thought the whole time: Gee, I hate this. I really, really hate this.
I thought about how much it hurt.
I thought about how scared I was.
I thought something is going wrong. Something will go wrong.
I thought: This will never be over.
I thought: I know this will hurt.
I thought: I know I'm going to cry.
I thought something bad will happen, like someone will make a mistake.

Information Seeking: Questioning and Vigilance

I asked questions about how it would feel.
I tried to find out what was going to happen next.
I got the hospital people to explain everything as they did it.
I looked carefully at the medical things in the room.
I tried to find out what it would feel like.
I asked questions about what was happening.
I listened carefully to what everyone around me was saying about what was going on.
I watched what they did -- I wanted to be sure to see everything.

Information Seeking: Avoidance

I talked about all sorts of things, but not about what was happening.
I kept my mind off things by looking at a book or something.
I didn't listen to what people were saying. I just blocked it all out.
I ignored all the medical equipment in the room. I didn't even see it.
I didn't pay attention to what was going on around me. I just turned away.
I kept myself busy by doing something like tapping my fingers, or fiddling around with the bandages.
I studied all the pictures and things on the walls to keep my mind off things.
I didn't pay attention to any of the explanations. I just didn't want to know.
I didn't look at any of the medical stuff in the room. I just blocked it all out.
I didn't watch what was happening. I just closed my eyes.

Support Seeking

I asked Mom to stay right with me.
I asked God to take care of me.
I asked someone to hold me or to hold my hand.
I told them I needed help.
I had Mom right there to take care of me.
I prayed.
I reached out to someone and held on tight.
I asked someone to help me.

Emotional Release

I cried.
I screamed when it hurt.
I made jokes about what was happening -- about me or the hospital people or the equipment.
I had lots of tears in my eyes.
I cried out loudly when it hurt.
I sang.

Emotional Control

I took big deep breaths.
I tried very hard to make my heart stop pounding.
I held back my tears.
I held on tight to the bed.
I tried not to feel nervous.
I tried very hard not to cry.

Limit Setting

I told them whenever it hurt.
I told the nurse to stop, to wait.
I told them how much it hurt.
I asked for something to stop the hurt.

Active Participation

I did whatever I was told.
I did whatever I could to help things along.
I got myself ready for what was going to happen next.
I cooperated with everything I was asked to do.

Other items:
I did nothing special. (No strategy)
I thought about nothing special. (No strategy)

APPENDIX F

CSCS FORM 1

Wished to be somewhere else

Yes No

Good reasons for doing this

Yes No

Did not listen

Yes No

Held back tears

Yes No

Yes No

Did what I was told

Yes No

Thought about everything happening

Yes No

I am scared

Yes No

All over soon

Yes No

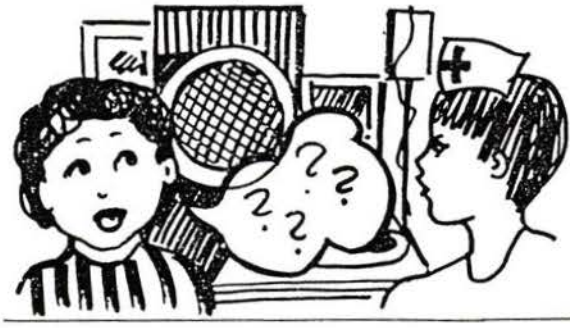
I need help

Yes No

Did not think how I was feeling

Yes No

What will happen next ?



Yes No

I will pay these guys back

Yes No

Talked about different things

Yes No

Stop pounding, heart !

Yes No

Happiest thoughts possible

Yes No

I can be brave

Yes No

How will it feel?

Yes No

Yes No

Did nothing special

Yes No

I made jokes

Yes No

Lots of Kids have this done

Yes No

Looked at books

Yes No

TooK big deep breaths

Yes No

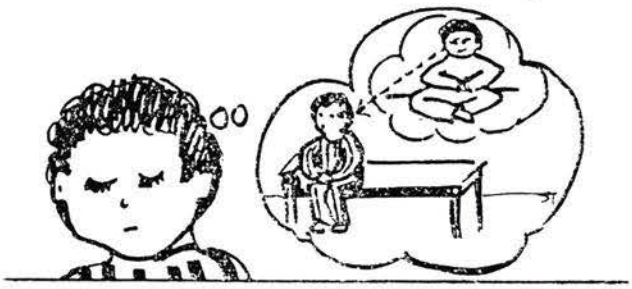
Yes No

Yes No

Yes No

Yes No

Pretended I was just watching



Yes No

Explain everything, please

Yes No

I cried

Yes No

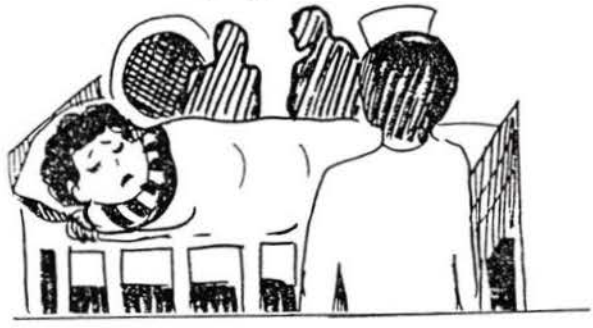
Ignored the medical things

Yes No

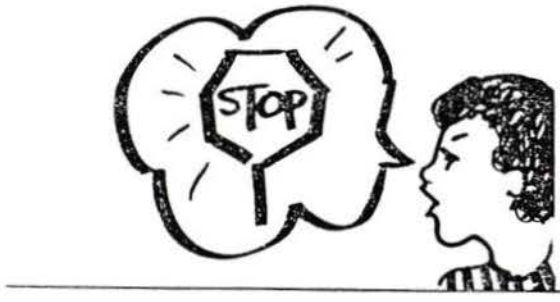
What are friends or family doing ? Yes No

This hurts! Yes No

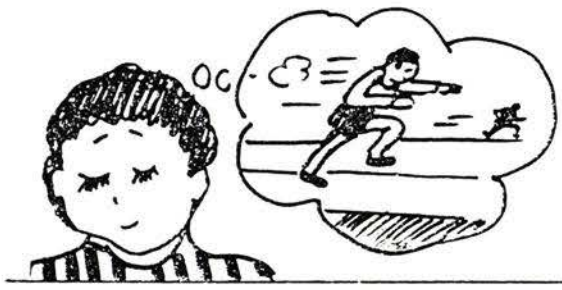
Did not pay attention Yes No



Yes No



Pretended I had run a race



Yes No

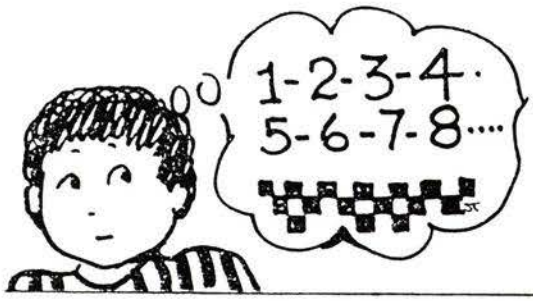
Looked at all the medical things

Yes No

I screamed

Yes No

Busy with mind games



Yes No

Thought how it made me feel

Yes No

Something is wrong

Yes No

God will take care of me

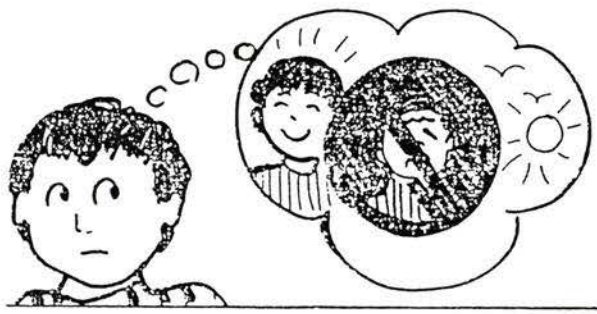
Yes No

Helped things along

Yes No

CSCS FORM 2

No bad thoughts



Yes No

Things could be worse

Yes No

Did not pay attention to explanations

Yes No

Tried not to cry

Yes No

Mom will take care of me

Yes No

Got myself ready

Yes No

Thought about what was going on

Yes No

I am going to cry

Yes No

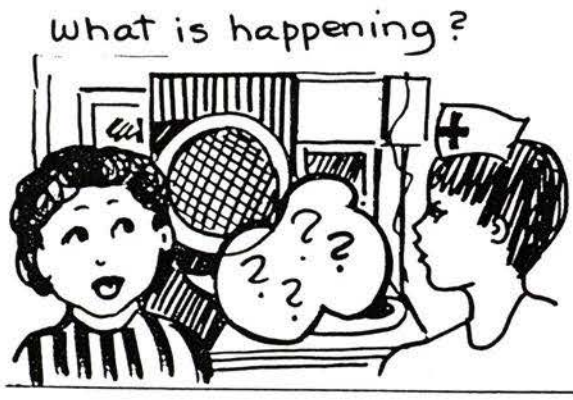
I have been through worse

Yes No

Yes No

Did not think how it made me feel

Yes No



Yes No

Imagined I was giving the test

Yes No

Kept busy fiddling around

Yes No

Do not be nervous!

Yes No

Pretended to be somewhere else.

Yes No

They Know what they are doing

Yes No

What will it feel like?

Yes No

Reached out to Someone

Yes No

Thought nothing special

Yes No

I sang

Yes No

Like medicine - make me better

Yes No

Looked at pictures and things

Yes No

Held on to the bed

Yes No

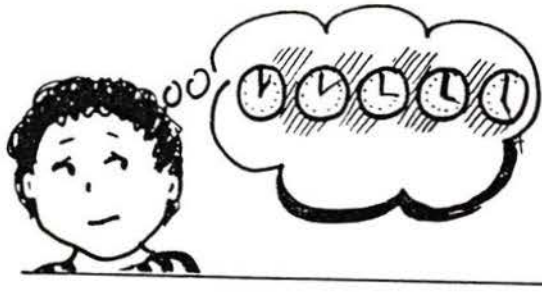
Did not think what was going on

Yes No

I will get a treat

Yes No

This will never be over.



Yes No

Yes No

Hoped it was over

Yes No

Listened carefully

Yes No

Lots of tears

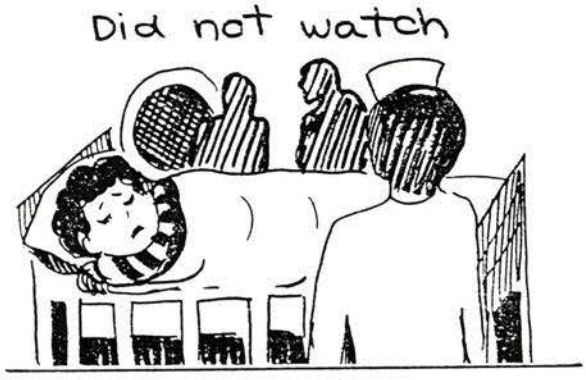
Yes No

Did not look at medical stuff

Yes No

Yes No

Yes No



Yes No

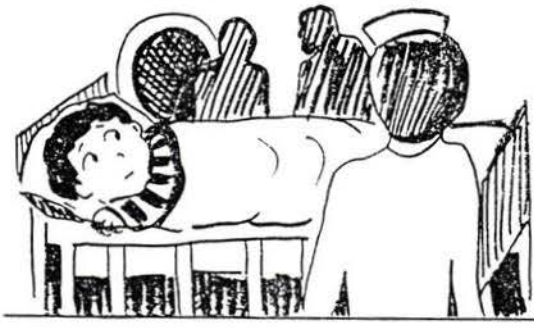
Yes No

Pretended it was not for me

Yes No

Watched what they did

Yes No



I cried out loudly

Yes No

Pretended I was a hero

Yes No

Thought about how I felt

Yes No

Something bad will happen

Yes No

I prayed

Yes No

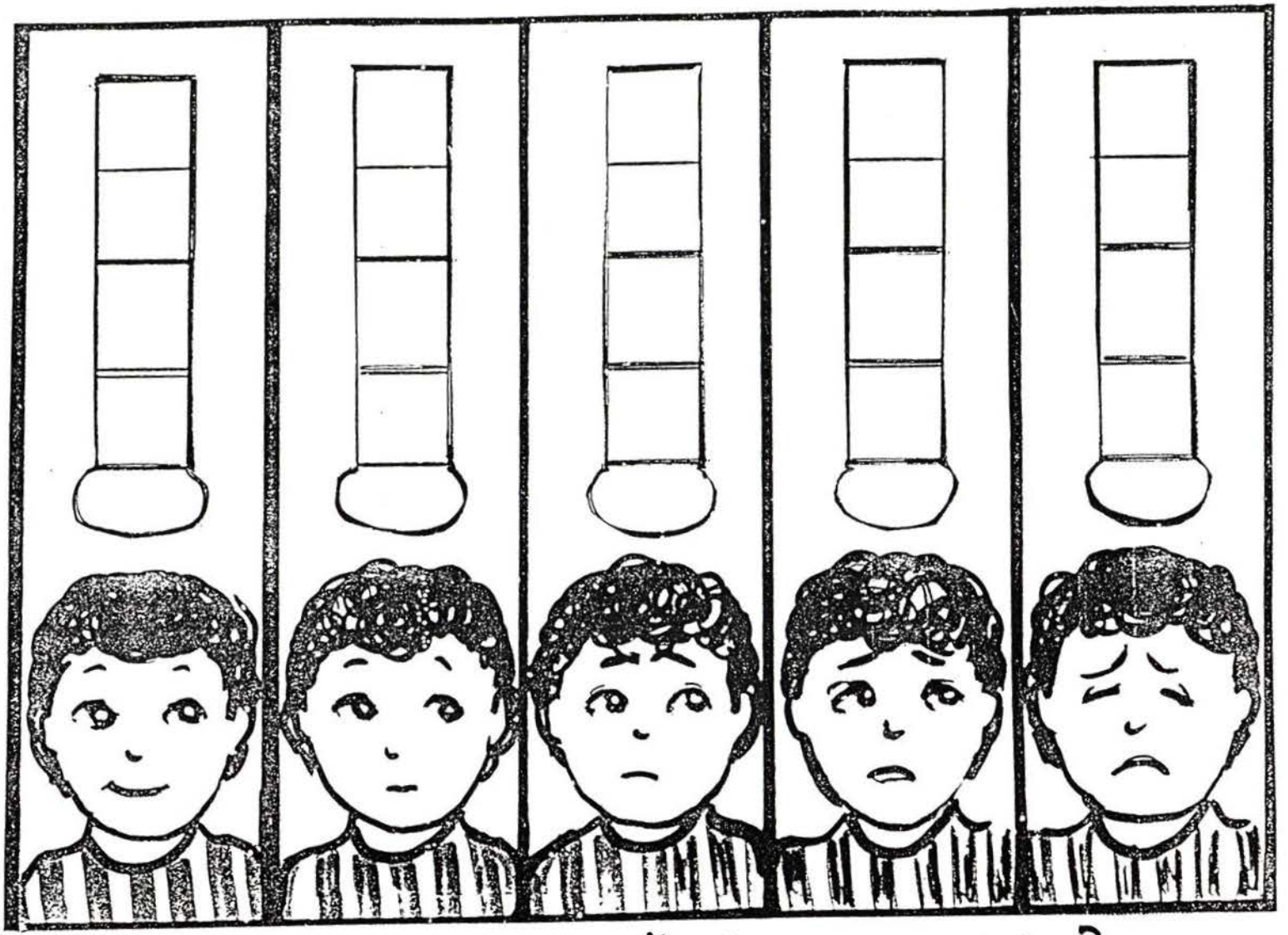
Cooperated with everything

Yes No

SITUATIONAL APPRAISAL INDEX

THE OUCHER

HOW MUCH DO YOU THINK THE NEEDLE HURT?

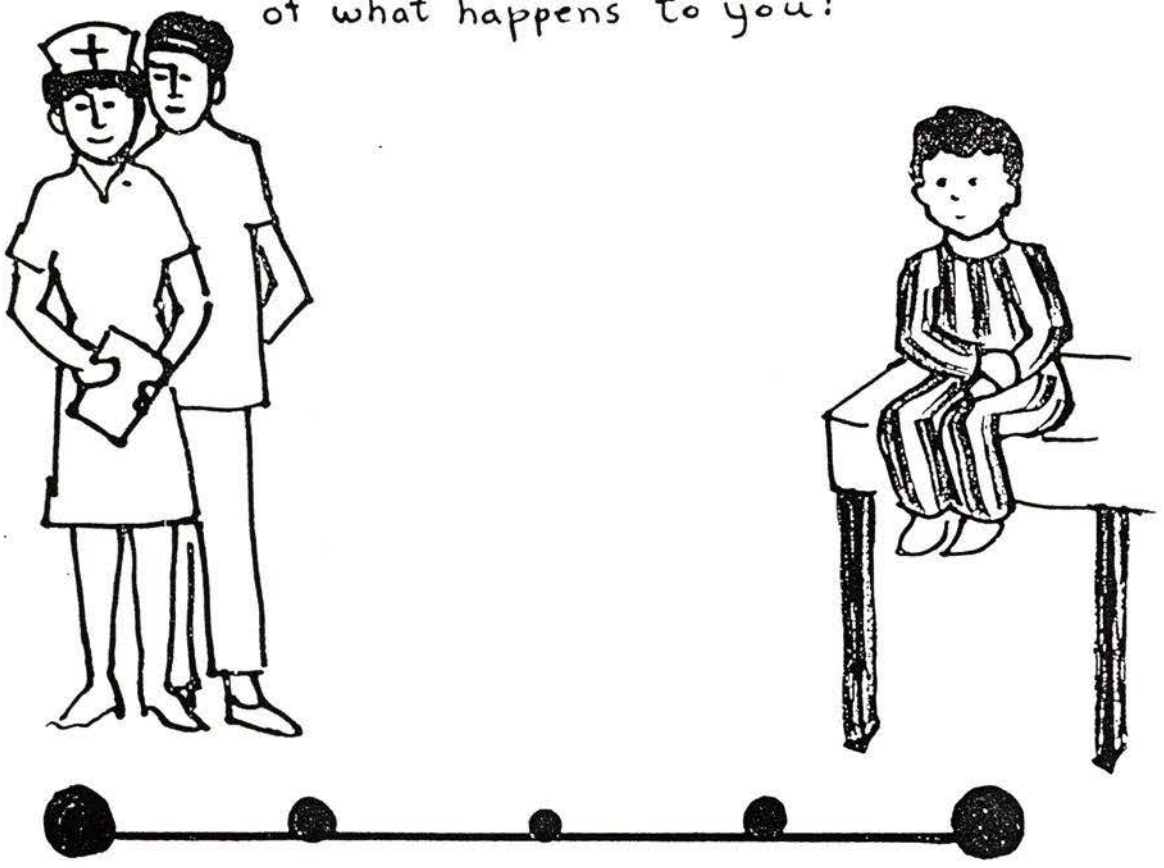


How scared do you think you would be?

For sure you would want everything to work out really well for this special test. Can you make things work out the way you want?

Yes Yes No **No**

At the hospital, who do you think is in charge of what happens to you?



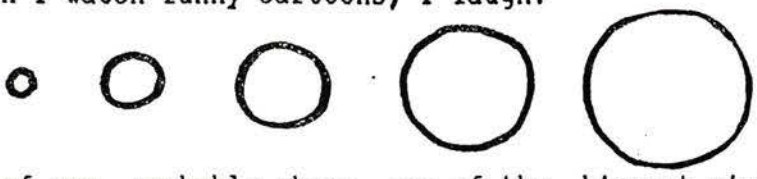
APPENDIX G

OTHER CHILDREN´S MEASURES

THE COPING STRATEGIES QUESTIONNAIRE

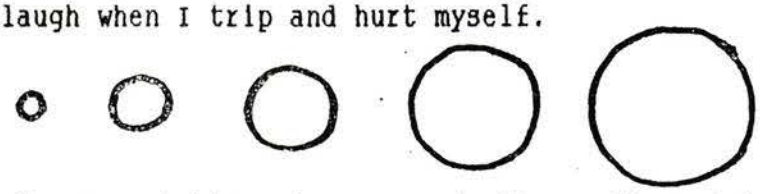
I would like you to answer each of the questions in this booklet for me. Put an X on the circle you choose for your answer. The bigger the circle you choose, the more you do what the question asks about. The smaller the circle, the less you do it. For practice, answer this question.

* When I watch funny cartoons, I laugh.



Most of you probably chose one of the biggest cicles because most of you probably laugh a lot when cartoons are funny.
Now answer this question.

** I laugh when I trip and hurt myself.

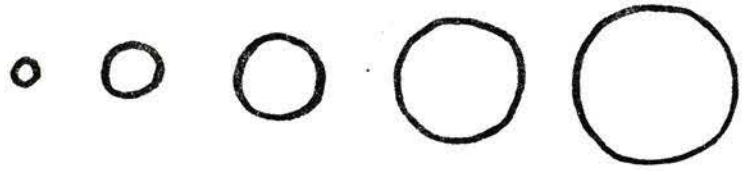


Most of you probably chose one of the smaller cicles, because most of you probably wouldn't laugh when you get hurt.

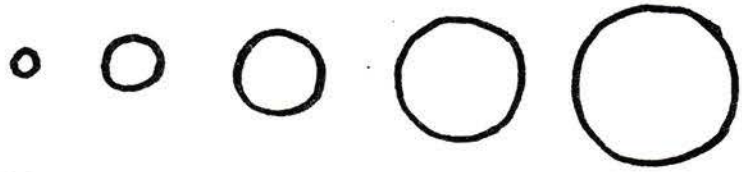
Now, I'll tell you what my questions are all about. You've probably had to go to the doctor's office or to the public health nurse to have an immunization shot. Maybe you've been to the dentist to have your teeth cleaned, or even to have a cavity filled. What do you do when something like that happens to you? What do you think about and what do you do just as it is happening to you? Please tell me by answering each question.

WHEN I AM GETTING A SHOT OR HAVING MY TEETH CLEANED:

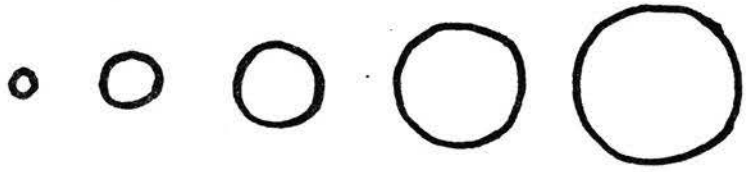
1. I think about everything that is happening, and say good things to myself about how everything will work out.



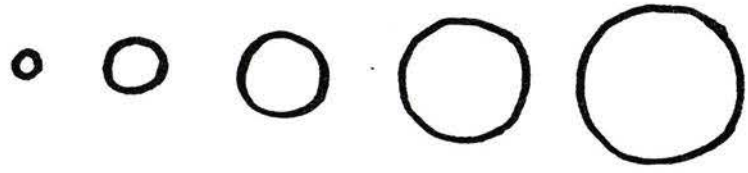
2. I try hard not to think about how I feel or about what is happening. I make myself think about other things.



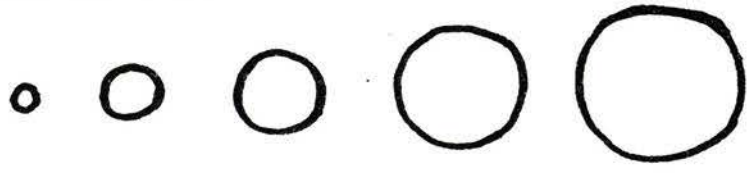
3. I think about everything happening, and use my imagination to make things seem better.



4. I worry about everything that is happening -- about how much it will hurt, about how long it will last.

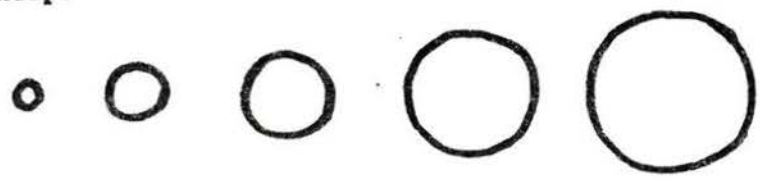


5. I watch and listen carefully to everything and I ask questions, because I want to know what is happening, and what it will feel like.

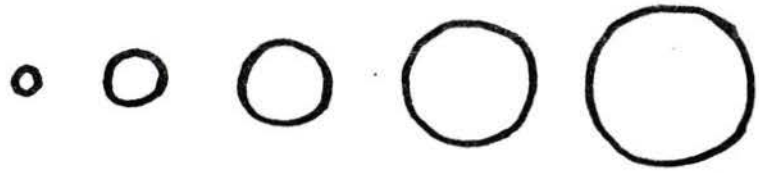


WHEN I AM GETTING A SHOT OR HAVING MY TEETH CLEANED:

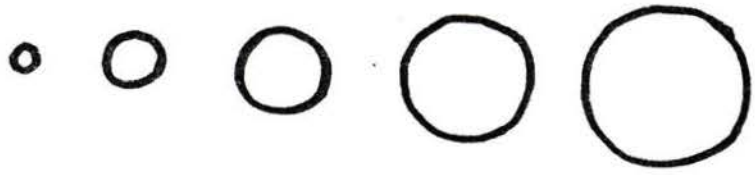
6. I reach out to people, and ask them to stay by me. I even ask for help.



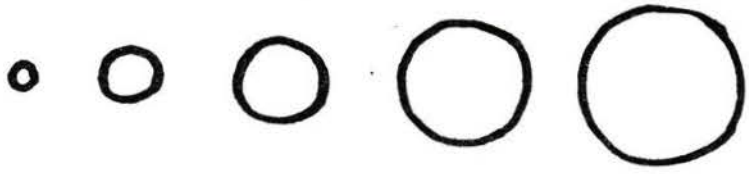
7. I make sure the people know how I feel and what I want.



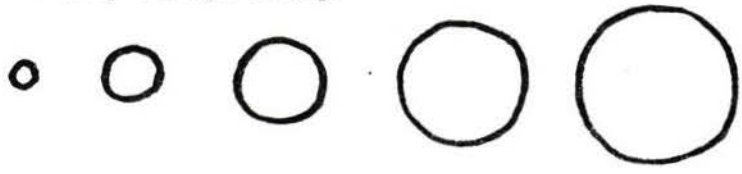
8. I block out or ignore what is going on all around me and do things to take my mind off it all.



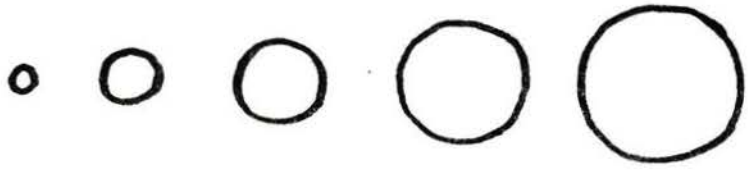
9. I let my feelings show by maybe crying, or I try to do the opposite -- like singing or joking around.



10. I cooperate completely with everything I am asked to do, and I try to help things along.



11. I keep my feelings inside, and even try to make them go away.



THE SOCIAL DESIRABILITY SCALE

Circle Yes OR No

1. Do you wash your hands before every meal ?..... Yes No
2. Do you sometimes forget to say please and thank you ? Yes No
3. Do you ever say things that you should not ?..... Yes No
4. Are you always nice to everyone ?..... Yes No
5. Do you tell the truth every single time ?..... Yes No
6. Do you sometimes feel like keeping all your toys to yourself and not sharing them ?..... Yes No
7. Do you sometimes feel angry when you do not get your way ? Yes No
8. Are you always good ?..... Yes No

CHILDREN'S HEALTH LOCUS OF CONTROL

I WOULD LIKE TO LEARN ABOUT THE WAY YOU THINK ABOUT YOUR HEALTH.

This booklet contains some sayings about health or sickness.

You may think some of these sayings are true, and so you will circle YES.

You may think that some are not true, and so you will circle NOçM.

EVEN IF IT IS VERY HARD TO DECIDE, BE SURE TO CIRCLE A YES OR NO FOR EVERY SAYING. NEVER CIRCLE BOTH YES AND NO. JUST CIRCLE ONE.

There are no right or wrong answers -- this is just about the way you feel.

LET'S PRACTICE: Do you think these sayings are true or not true?

Children can get sick.
If you think this is true, circle.....YES
If you think this is NOT true, circle .....NO

Children never get sick.
If you think this is true, circle.....YES
If you think this is NOT true, circle.....NO

TRY ONE MORE

When I am not sick, I am healthy.....YES NO

NOW DO THE REST OF THE STATEMENTS THE SAME WAY YOU PRACTICED.

Children's Health Locus of Control (Continued)

1. Good health comes from being lucky.....YES NO
2. I can do things to keep from getting sick.....YES NO
3. Bad luck makes people get sick.....YES NO
4. I can only do what the doctor tells me to do.....YES NO
5. If I get sick, it is because getting sick just happens...YES NO
6. People who never get sick are just plain lucky.....YES NO
7. My mother must tell me how to keep from getting sick.....YES NO
8. Only a doctor or a nurse keeps me from getting sick.....YES NO
9. When I am Sick, I can do things to get better.....YES NO
10. If I get hurt, it is because accidents just happen.....YES NO
11. I can do many things to fight illness.....YES NO
12. Only the dentist can take care of my teeth.....YES NO
13. Other people must tell me how to stay healthy.....YES NO
14. I always go to the teacher right away if I get hurt at school.....YES NO
15. The teacher must tell me how to keep from having accidents at school.....YES NO
16. I can make many choices about my health.....YES NO
17. Other people must tell me what to do when I feel sick...YES NO
18. Whenever I feel sick, I tell my mother right away.....YES NO
19. There are things I can do to have healthy teeth.....YES NO
20. I can do many things to prevent accidents.....YES NO

"WHAT I THINK AND FEEL"

THE REVISED CHILDREN'S MANIFEST ANXIETY SCALE

"WHAT I THINK AND FEEL" (Continued)

APPENDIX H

THE PARENT MEASURES

LETTER TO PARENTS OF CHILDREN PARTICIPATING AT SCHOOL

Dear Parents,

I am conducting a study of how young children cope with medical procedures which could be stressful to them. The long range goal is to develop programs to improve the coping skills of children who must have some form of medical procedure, be it stitches, dental work, or major surgery. This research will be the basis for my doctoral dissertation in psychology at the University of Victoria. My supervisor is Dr. Pam Duncan (721-7540).

I am working in the school with the knowledge and approval of the school board and your principal, but participation in the study is entirely voluntary. I would like to obtain your permission to interview your child. This interview would be conducted at school.

Through a literature review, interviews with children, parents, and nurses, and observations at the hospital, I have developed a list of the kinds of ideas or behaviours that children might use when undergoing a medical procedure. An artist has drawn these in simple cartoon style.

During this part of the study, I will be asking the children I interview to imagine that they are at the hospital for a special test, which involves having a needle. I will ask them to imagine what they would think about and what they would do while this is happening. I will then have them select the pictures that show what they might do. It will be emphasized that we are all different, and that there are no right or wrong answers. Your child's responses will be treated as confidential, and anonymity is guaranteed.

Your child will be informed of the purpose of the research on the day of the first interview. In the meantime, please do not discuss the specific nature of the study with your child. I want the responses to be spontaneous. If your child does press you for information, you might say that we will talk about kids going to the hospital. However, please do advise your child that you have granted your consent (if that is the case), and that he or she can choose, when the time comes, not to take part. I am confident that the children will find the task intriguing and interesting, and will choose to participate.

Thank you for considering this request. If you have any questions at all, please feel free to call me at 477-7002. Please leave a message if I am not in.

Yours sincerely,

Louise Costello

CONSENT FORM

I, _____, parent/guardian of

_____ GIVE/DO NOT GIVE

permission for my child to participate in the research project described above.

_____ _____

DATE SIGNATURE

PLEASE RETURN THIS FORM

TO YOUR CHILD'S CLASSROOM TEACHER

BY FRIDAY OF THIS WEEK.

THANK YOU.

MEDICAL HISTORY QUESTIONNAIRE

Does your child have any medical problems that have involved frequent visits to the doctor or hospital? Yes _____ No _____

If yes, please describe. _____

_____

Has your child ever seen a film about hospitalization at his/her school or received any other information about hospitals?

Yes_____ No_____ If yes, please describe.

_____

_____

Has your child ever been in a hospital? Yes _____ No _____

If yes, please describe the nature of the experience.

_____Visiting a friend -- age of child at the time _____

_____Visiting a relative -- age of child at the time _____

_____Medical appointment at hospital -- age of child _____

_____Special investigative procedure -- age of child _____
Specify the procedure _____

_____Emergency room visit -- age of child at the time _____
Specify the reason _____

_____Admitted _____as a day patient
- age of child at the time _____
Specify the reason _____

_____overnight
- age of child at the time _____
Specify the reason _____

Has anyone in the family been in hospital within the past year?

Yes___ No___ If yes, who? Sibling___ Parent___ Other___

Please describe how you think your child might have been affected by this hospitalization. Was the child aware of it? Did the child express concerns?

_____

_____

CHILD'S COPING HISTORY

SECTION A

PLEASE CIRCLE THE NUMBER THAT REPRESENTS THE MOST APPROPRIATE ANSWER.

When your child is going to have a possibly painful medical procedure (for example, getting a shot or having a cavity filled), what approach do you find most effective?

1	2	3	4	5
Tell the child in detail everything that is going to happen beforehand.		Tell the child a little about what is going to happen beforehand.		Do not tell the child until the procedure must happen.

Please rate your child's feelings about the following experiences.
A child rated 1 might cry, protest, complain of fear and refuse to cooperate.
A child rated 3 might complain, act displeased and slightly fearful, but would cooperate when requested to do so.
A child rated 5 would be calm, pleasant and cooperative, and while he/she might not enjoy the experience, he/she would not be unduly fearful.
Circle the number that best describes your child.

	Very upset		Doesn't enjoy it, enjoy it, but is under control		Is calm and unworried
Going to the dentist	1	2	3	4	5
Going to the doctor	1	2	3	4	5
Getting an injection or shot	1	2	3	4	5
Going to the hospital	1	2	3	4	5

How would you say your child typically copes with medical procedures?

1	2	3	4	5
Concentrates on what is happening: wants to know what will happen and how it will feel.		Wants some information, but prefers to pay only a little attention.		Prefers to totally distract him/herself, not pay attention to the procedure.

SECTION B

PLEASE ANSWER EACH OF THE FOLLOWING QUESTIONS TO INDICATE WHAT YOU THINK IS TYPICAL OR CHARACTERISTIC OF YOUR CHILD IN MEDICAL SETTINGS. REFER TO THE FOLLOWING 5-POINT SCALE IN MAKING YOUR RESPONSES.

1	2	3	4	5
VERY UNUSUAL FOR MY CHILD	SOMEWHAT UNUSUAL FOR MY CHILD	NEITHER UNUSUAL NOR TYPICAL	SOMEWHAT TYPICAL OF MY CHILD	HIGHLY TYPICAL OF MY CHILD

PLEASE BEAR IN MIND THAT THERE ARE NO GOOD OR BAD ANSWERS. WHILE SOME COPING STRATEGIES MAY SEEM, AT FACE VALUE, TO BE "BETTER" THAN OTHERS, RESEARCH DOES NOT NECESSARILY SUPPORT THIS. PLEASE BE AS OBJECTIVE AS YOU CAN IN DESCRIBING WHAT YOUR CHILD ACTUALLY DOES.

MY CHILD ...

Acts as if nothing special is happening.

1 2 3 4 5

Asks questions about what will happen.

1 2 3 4 5

Asks questions about what it will feel like.

1 2 3 4 5

Seeks out reassurance or physical contact or closeness.

1 2 3 4 5

Releases emotions through crying, screaming.

1 2 3 4 5

Asserts him/herself by expressing preferences, giving instructions.

1 2 3 4 5

1	2	3	4	5
VERY UNUSUAL FOR MY CHILD	SOMEWHAT UNUSUAL FOR MY CHILD	NEITHER UNUSUAL NOR TYPICAL	SOMEWHAT TYPICAL OF MY CHILD	HIGHLY TYPICAL OF MY CHILD

MY CHILD ...

Seems to have many fearful thoughts about, for example, how much it will hurt, how long it will last.

1 2 3 4 5

Appears to distract him/herself by thinking about other things.

1 2 3 4 5

Cooperates quickly and completely with all instructions and suggestions.

1 2 3 4 5

Seems to focus in on his/her bodily sensations.

1 2 3 4 5

Becomes upset if you talk about the procedure.

1 2 3 4 5

Becomes very quiet or withdrawn.

1 2 3 4 5

Seems to approach the situation as a problem to be solved or a challenge to be faced, and tries to find ways to solve the problem.

1 2 3 4 5

Appears to be fully absorbed by the procedure -- seems to be mentally assessing everything that is going on.

1 2 3 4 5

Quietly accepts what is happening.

1 2 3 4 5

Appears to block out or ignore what is going on all around.

1 2 3 4 5

1	2	3	4	5
VERY UNUSUAL FOR MY CHILD	SOMEWHAT UNUSUAL FOR MY CHILD	NEITHER UNUSUAL NOR TYPICAL	SOMEWHAT TYPICAL OF MY CHILD	HIGHLY TYPICAL OF MY CHILD

MY CHILD ...

Keeps emotions in check.

1 2 3 4 5

Distracts him/herself by looking at pictures, reading books, talking about other things.

1 2 3 4 5

Seems most absorbed by his/her emotional response to the situation.

1 2 3 4 5

Finds a way to put to change the meaning of the situation so it will appear less threatening.

1 2 3 4 5

Says positive things to him/herself or to others about how things will work out, how capable he/she is.

1 2 3 4 5

Watches and listens carefully to everything.

1 2 3 4 5

Seems to want to maintain personal control.

1 2 3 4 5

TEMPERAMENT SURVEY FOR CHILDREN

RATE EACH OF THE ITEMS FOR YOUR CHILD ON A SCALE OF 1 TO 5.

1	2	3	4	5
VERY UNUSUAL FOR MY CHILD	SOMEWHAT UNUSUAL FOR MY CHILD	NEITHER UNUSUAL NOR TYPICAL	SOMEWHAT TYPICAL OF MY CHILD	HIGHLY TYPICAL OF MY CHILD

My child is known as hot-blooded and quick tempered.

1 2 3 4 5

My child is almost always calm -- nothing ever bothers him/her.

1 2 3 4 5

My child cannot sit still long.

1 2 3 4 5

When little, my child stopped fussing whenever talked to or picked up.

1 2 3 4 5

When upset by an unexpected situation, my child quickly calms down.

1 2 3 4 5

My child gets upset easily.

1 2 3 4 5

My child prefers to play by him/herself rather than with others.

1 2 3 4 5

Learning self-control is difficult for my child.

1 2 3 4 5

1	2	3	4	5
VERY UNUSUAL FOR MY CHILD	SOMEWHAT UNUSUAL FOR MY CHILD	NEITHER UNUSUAL NOR TYPICAL	SOMEWHAT TYPICAL OF MY CHILD	HIGHLY TYPICAL OF MY CHILD

My child tolerates frustration well.

1 2 3 4 5

My child gets bored easily.

1 2 3 4 5

My child fidgets at meals and similar occasions.

1 2 3 4 5

My child tends to be nervous in new situations.

1 2 3 4 5

My child often seems insecure.

1 2 3 4 5

If talked to, my child stops crying.

1 2 3 4 5

My child tends to be shy.

1 2 3 4 5

My child likes to be with others.

1 2 3 4 5

It takes a lot to get my child mad.

1 2 3 4 5

1	2	3	4	5
VERY UNUSUAL FOR MY CHILD	SOMEWHAT UNUSUAL FOR MY CHILD	NEITHER UNUSUAL NOR TYPICAL	SOMEWHAT TYPICAL OF MY CHILD	HIGHLY TYPICAL OF MY CHILD

My child tends to be impulsive.

1 2 3 4 5

My child is off and running as soon as he/she wakes up in the morning.

1 2 3 4 5

My child seems to have fewer fears than most children his/her age.

1 2 3 4 5

My child makes friends easily.

1 2 3 4 5

When displeased, my child lets people know right away.

1 2 3 4 5

My child is always on the go.

1 2 3 4 5

My child yells and screams more than most children his/her age.

1 2 3 4 5

My child goes from toy to toy quickly.

1 2 3 4 5

My child is independent.

1 2 3 4 5

1	2	3	4	5
VERY UNUSUAL FOR MY CHILD	SOMEWHAT UNUSUAL FOR MY CHILD	NEITHER UNUSUAL NOR TYPICAL	SOMEWHAT TYPICAL OF MY CHILD	HIGHLY TYPICAL OF MY CHILD

Whenever my child starts crying, he/she can be easily distracted.

1 2 3 4 5

My child is easily frightened.

1 2 3 4 5

My child learns to resist temptation easily.

1 2 3 4 5

My child prefers quiet games such as coloring or block play to more active games.

1 2 3 4 5

There are many things that annoy my child.

1 2 3 4 5

My child tends to be somewhat emotional.

1 2 3 4 5

My child cries easily.

1 2 3 4 5

My child gets excited easily.

1 2 3 4 5

My child panics when scared.

1 2 3 4 5

APPENDIX I

COPING STRATEGIES CARD SORT: ORIGINAL SUBSCALES FORM 1
MEANS (%) AND STANDARD DEVIATIONS BY GENDER AND GRADE

GENDER: CSCS SUBSCALES (No. of Items)	BOYS MEAN	BOYS N	BOYS S.D.	GIRLS MEAN	GIRLS N	GIRLS S.D.
COGNITIVE AVOIDANCE (7)	69.0	54	26.6	74.2	70	21.5
COGNITIVE APPRAISAL POSITIVE (4)	70.3	59	26.9	65.6	69	28.1
FANTASY/RESTRUCTURE (5)	56.9	58	28.0	51.1	70	28.8
NEGATIVE (4)	33.6	58	29.5	40.5	71	30.0
INFORMATION SEEKING QUESTION/VIGILANCE (4)	62.1	57	30.6	70.3	69	30.4
AVOIDANCE (4)	55.1	59	25.7	61.4	71	21.7
SUPPORT SEEKING (4)	61.0	59	35.7	71.7	68	26.6
EMOTIONAL RELEASE (3)	34.5	58	34.4	38.0	71	32.0
EMOTIONAL CONTROL (3)	53.4	58	27.9	57.1	70	29.6
ACTIVE PARTICIPATION (2)	83.9	59	28.5	90.4	73	27.2
LIMIT SETTING (2)	44.7	57	37.4	59.7	72	33.2
TOTAL CSCS (44)	55.6	50	18.7	61.3	63	13.9

Appendix I (Continued)

GRADE:

CSCS SUBSCALES (No. of Items)	GRADE 1 MEAN	N	S.D.	GRADE 2 MEAN	N	S.D.	GRADE 3 MEAN	N	S.D.
COGNITIVE AVOIDANCE (7)	76.5	34	19.5	74.1	37	24.7	67.7	54	25.5
COGNITIVE APPRAISAL POSITIVE (4)	75.0	32	24.6	72.0	41	29.2	60.5	55	26.7
FANTASY/RESTRUCTURE (5)	60.0	32	24.4	57.6	41	28.4	47.3	55	29.9
NEGATIVE (4)	39.0	34	29.0	38.4	41	31.2	35.6	54	29.8
INFORMATION SEEKING QUESTION/VIGILANCE (4)	78.0	33	24.8	68.1	40	30.0	59.1	55	32.4
AVOIDANCE (4)	64.7	34	19.7	58.5	39	27.3	54.9	55	22.8
SUPPORT SEEKING (4)	81.3	32	26.9	66.5	41	31.4	58.3	54	31.5
EMOTIONAL RELEASE (3)	44.1	34	37.4	36.6	41	37.1	31.5	55	26.0
EMOTIONAL CONTROL (3)	66.7	34	27.2	52.5	40	29.1	50.6	54	28.0
ACTIVE PARTICIPATION (2)	87.1	35	30.5	86.0	43	29.5	88.9	54	25.1
LIMIT SETTING (2)	62.9	35	35.0	52.5	43	35.7	47.2	54	35.6
TOTAL CSCS (44)	67.5	28	10.0	58.5	34	19.3	54.2	51	15.3

APPENDIX J

THE REVISED COPING STRATEGIES CARD SORT (FORM 2)
ITEM CHARACTERISTICS

	MEAN ENDORSEMENT (%)	CORRELATION WITH SUBSCALE	CORRELATION WITH TOTAL
AVOIDANCE/DISTRACTION			
I didn't think about what was going on.	35.8	.00	.55
I pretended I was a hero on some kind of a dangerous adventure.	55.6	.46	.39
I pretended to be somewhere else.	63.0	.52	.48
I tried not to think bad thoughts -- only to think good thoughts.	79.0	.22	.19
I thought: I know I'll get a treat after this.	77.8	.40	.40
I thought about what was happening at home or at school.	56.8	.52	.62
I kept myself busy by doing something like tapping my fingers, or fiddling around with the bandages.	50.6	.12	.14
I studied all the pictures and things on the walls to keep my mind off things.	56.8	.56	.58
I didn't watch what was happening. I just closed my eyes.	58.0	.43	.47
TOTAL SUBSCALE (9 ITEMS)	MEAN INTERITEM CORR. .19	SUBSCALE MEAN 59.2	ALPHA .68
MONITOR			
I thought about what was going on.	48.2	.25	.30
I thought about how I felt as it was being done.	44.7	.42	.39
I asked questions about what was happening.	56.5	.51	.53
I listened carefully to what everyone around me was saying about what was going on.	78.8	.38	.47
I watched what they did -- I wanted to be sure to see everything.	50.6	.43	.43
I tried to find out what it would feel like.	52.9	.49	.60
I thought: I know this will hurt.	38.8	.38	.37
TOTAL SUBSCALE (7 ITEMS)	MEAN INTERITEM CORR. .25	SUBSCALE MEAN 52.9	ALPHA .70

Appendix J (Continued)

	MEAN ENDORSEMENT (%)	CORRELATION WITH SUBSCALE	CORRELATION WITH TOTAL
FANTASY/RESTRUCTURING			
I just hoped and hoped it was almost over.	77.4	.29	.54
I imagined I was the one giving the test to someone else.	45.2	.20	.16
I thought: This is just like taking medicine. It will make me feel better.	67.9	.33	.43
I pretended that the test was not going to be done to me, so no need to worry.	48.8	.40	.32
I thought: I'll be fine. I've been through worse things before.	65.5	.20	.23
I sang.	40.5	.43	.49
I pretended to be somewhere else.	63.1	.49	.48
TOTAL SUBSCALE (7 ITEMS)	MEAN INTERITEM CORR. .19	SUBSCALE MEAN 58.3	ALPHA .62
NEGATIVE/DISTRESS BEHAVIOURS			
I thought: This will never be over.	45.2	.13	-.05
I thought: I know I'm going to cry.	33.3	.62	.39
I thought something bad will happen, like someone will make a mistake.	32.1	.51	.14
I thought: I know this will hurt.	40.5	.50	.37
I had lots of tears in my eyes.	32.1	.41	.29
I cried out loudly when it hurt.	31.0	.46	.29
I asked for something to stop the hurt.	46.4	.42	.41
TOTAL SUBSCALE (7 ITEMS)	MEAN INTERITEM CORR. .27	SUBSCALE MEAN 37.2	ALPHA .72

Appendix J (Continued)

	MEAN ENDORSEMENT (%)	CORRELATION WITH SUBSCALE	CORRELATION WITH TOTAL
SELF FOCUS			
I didn't think about how it made me feel.	49.4	.36	.39
I had Mom stay right there to take care of me.	84.3	.41	.50
I prayed.	63.9	.35	.39
I reached out to someone and held on tight.	42.2	.33	.35
I asked someone to help me.	59.0	.53	.53
I held on tight to the bed.	48.2	.50	.57
I tried not to feel nervous.	59.0	.35	.32
I thought about how I felt as it was being done.	43.4	.36	.39
I tried to find out what it would feel like.	54.2	.50	.60
I told them how much it hurt.	55.4	.36	.36
TOTAL SUBSCALE (10 ITEMS)	MEAN INTERITEM CORR. .23	SUBSCALE MEAN 55.9	ALPHA .74
COOPERATION			
I got myself ready for what was going to happen next.	70.1	.41	.48
I cooperated with everything I was asked to do.	81.6	.44	.33
I tried very hard not to cry.	72.4	.44	.31
I thought: It's O.K. These people know what they're doing.	75.9	.58	.47
TOTAL SUBSCALE (4 ITEMS)	MEAN INTERITEM CORR. .35	SUBSCALE MEAN 75.0	ALPHA .68
TOTAL SCALE (40 ITEMS)	MEAN INTERITEM CORR. .16	SUBSCALE MEAN 55.6	ALPHA .88

APPENDIX K

COPING STRATEGIES CARD SORT: REVISED SUBSCALES FORM 2 AND TIME 2 MEANS (%) AND STANDARD DEVIATIONS BY GENDER AND GRADE

CSCS SUBSCALES (No. of Items)	BOYS MEAN	BOYS N	BOYS S.D.	GIRLS MEAN	GIRLS N	GIRLS S.D.
GENDER: TIME 2						
AVOIDANCE/ DISTRACTION (9)	64.5	57	28.7	72.1	69	22.2
MONITORING (7)	47.7	56	29.4	50.6	72	24.8
FANTASY/ RESTRUCTURE (7)	57.1	58	25.0	56.5	70	23.4
NEGATIVE/ DISTRESS (7)	21.1	57	24.6	34.7	72	30.4
COOPERATION (4)	66.7	33	31.7	81.0	46	24.8
SELF FOCUS (10)	50.0	56	29.7	57.8	71	23.7
TOTAL (41)	48.9	31	21.8	61.1	42	16.5
GENDER: FORM 2						
AVOIDANCE/ DISTRACTION (9)	53.5	33	26.9	63.2	48	23.6
MONITORING (7)	49.0	35	33.8	55.7	50	25.4
FANTASY/ RESTRUCTURE (7)	49.4	35	27.4	64.7	49	24.1
NEGATIVE/ DISTRESS (7)	32.3	35	25.5	40.8	49	31.7
COOPERATION (4)	68.6	35	34.0	79.3	52	28.3
SELF FOCUS (10)	49.4	33	29.4	60.2	50	24.1
TOTAL (41)	49.1	32	22.5	60.0	47	17.6

Appendix K (Continued)

CSCS SUBSCALES	GRADE 1			GRADE 2			GRADE 3		
	MEAN	N	S.D.	MEAN	N	S.D.	MEAN	N	S.D.
GRADE: TIME 2									
AVOIDANCE/ DISTRACTION	73.5	31	18.7	63.8	43	26.8	69.9	52	27.6
MONITORING	61.6	32	28.4	48.1	44	26.7	42.9	52	23.7
FANTASY/ RESTRUCTURE	63.0	32	21.7	57.5	45	22.3	52.4	51	26.3
NEGATIVE/ DISTRESS	38.0	32	33.0	18.5	44	21.3	31.5	53	29.3
COOPERATION	72.7	22	27.7	75.0	24	31.3	76.5	33	27.9
SELF FOCUS	64.5	31	25.4	46.8	44	27.3	54.6	52	25.4
TOTAL	63.8	20	18.9	48.6	24	19.5	56.5	29	18.8
GRADE: FORM 2									
AVOIDANCE/ DISTRACTION	58.1	22	21.9	58.7	25	28.1	60.5	34	25.8
MONITORING	58.4	23	27.6	59.9	26	33.8	44.4	36	24.8
FANTASY/ RESTRUCTURE	57.1	23	22.8	56.0	25	29.4	60.7	36	27.0
NEGATIVE/ DISTRESS	44.1	24	32.3	35.4	25	31.4	33.9	35	25.7
COOPERATION	76.0	25	29.3	79.8	26	28.3	70.8	36	34.1
SELF FOCUS	63.5	23	24.6	56.4	25	33.2	50.6	35	22.0
TOTAL	58.3	21	18.9	56.3	25	24.8	53.3	33	17.7

Appendix K (Continued)

SITUATIONAL APPRAISAL INDEX: TIME 2

S.A.I. ITEMS	BOYS			GIRLS		
	MEAN	N	S.D.	MEAN	N	S.D.
GENDER						
SCARED	2.1	58	1.3	2.5	72	1.5
HURT	1.6	58	2.6	2.7	72	3.6
CONTROL 1	2.2	55	1.2	2.4	72	1.2
CONTROL 2	3.1	55	1.4	3.8	70	1.2

GRADE

S.A.I. ITEMS	GRADE 1			GRADE 2			GRADE 3		
	MEAN	N	S.D.	MEAN	N	S.D.	MEAN	N	S.D.
SCARED	2.1	32	1.5	2.3	45	1.6	2.5	53	1.3
HURT	2.7	32	3.8	1.6	45	3.0	2.5	53	3.0
CONTROL 1	2.4	32	1.3	2.4	42	1.2	2.2	53	1.1
CONTROL 2	3.7	29	1.4	3.4	43	1.4	3.4	53	1.3

APPENDIX L

ADDITIONAL CORRELATIONS RESPECTING THE RELIABILITY AND VALIDITY OF THE CSCS - ORIGINAL SUBSCALES

	A	B	C	D	E	F	G	H	I	J	K	TOTAL
SITUATIONAL APPRAISALS												
Similar: Test - Retest	0.52 **	0.44 **	0.47 **	0.47 **	0.46 **	0.59 **	0.47 **	0.35 *	0.20 ns	0.50 **	0.46 **	0.65 **
	56	58	59	60	57	57	59	59	58	59	59	50
Different: Test - Retest	0.79 **	0.76 **	0.62 *	0.17 ns	0.73 **	0.56	0.70 *	0.58 *	0.11 ns	0.32 ns	0.30 ns	0.49 ns
	16	15	16	17	16	15	15	17	17	18	18	11
RESPONSE TENDENCIES												
Social Desirability (Time 1)	0.26 **	0.29 **	0.12 ns	0.05 ns	0.26 *	0.23 *	0.10 ns	0.00 ns	0.21 *	0.03 ns	0.29 **	0.29 **
	121	122	122	123	123	120	121	124	124	124	123	113
Ideal Child (Time 2)	0.31 *	0.18 ns	0.37 *	0.45 **	0.17 ns	0.33 *	0.42 **	0.39 **	0.33 *	0.34 *	0.50 **	0.31 *
	54	54	57	57	56	56	56	58	59	58	57	45
RELATED CONSTRUCTS												
Health Locus of Control (n) (Time 2)	96	96	96	97	97	96	96	98	98	98	97	91
Internality	0.09 ns	0.05 ns	0.14 ns	0.04 ns	0.08 ns	-0.14 ns	0.20	0.07 ns	0.02 ns	0.07 ns	0.19	0.11 ns
Powerful Others	0.36 **	0.28 *	0.44 **	0.06 ns	0.36 **	0.29 *	0.27 *	0.06 ns	0.23 *	0.12 ns	0.36 **	0.44 **
Chance	0.13 ns	0.00 ns	0.32 **	0.18	0.20	0.10 ns	0.16 ns	0.08 ns	0.20	0.21	-0.08 ns	0.26 *
Anxiety (n) (Time 2)	75	74	74	75	75	75	74	76	76	76	75	70
Total	0.01 ns	0.19	0.08 ns	0.37 **	0.13 ns	-0.04 ns	0.28 *	0.30 *	0.09 ns	0.18 ns	0.02 ns	0.25
Physiological Concern	0.06 ns	0.02 ns	0.15 ns	0.12 ns	0.11 ns	0.02 ns	0.17 ns	0.24	0.12 ns	0.07 ns	-0.04 ns	0.24
Worry	-0.03 ns	0.22	0.12 ns	0.44 **	0.16 ns	-0.02 ns	0.33 *	0.29 *	0.07 ns	0.13 ns	0.06 ns	0.21
Social Concern	-0.03 ns	0.15 ns	0.01 ns	0.30 *	0.06 ns	-0.09 ns	0.13 ns	0.23	0.10 ns	0.22	-0.02 ns	0.14 ns
Lie	0.25 *	0.24	0.30 *	-0.16 ns	0.12 ns	0.12 ns	-0.03 ns	-0.18 ns	0.04 ns	-0.08 ns	0.22	0.15 ns

LEGEND

A Cognitive Avoidance
B Cognitive Appraisal: Positive
C Cognitive Appraisal: Fantasy/Restructuring
D Cognitive Appraisal: Negative
E Information Seeking: Questioning/Vigilance
F Information Seeking: Avoidance
G Support Seeking
H Emotional Release
I Emotional Control
J Limit Setting
K Active Participation
TOTAL Total CSCS

** p<0.001
* p<0.01
- p<0.05
ns p>0.05

APPENDIX M

ADDITIONAL MEASURES USED IN THE HOSPITAL STUDY

LETTER TO PARENTS OF CHILDREN SCHEDULED FOR PROCEDURES AT THE HOSPITAL

Dear Parents,

I am conducting a study of how children handle medical procedures which could be stressful to them. The long range goal is to develop programs to improve the coping skills of children who must have some form of medical procedure, be it stitches, dental work, or major surgery. This research will be the basis for my doctoral dissertation in psychology at the University of Victoria. My supervisor is Dr. Pam Duncan (721-7540).

I would like your permission to interview you and your child in your home, and observe and interview your child at the hospital. I am working in the hospital with the knowledge and approval of the hospital administration and nursing staff, but participation in the study is entirely voluntary. Please feel free to call Wendy Amos, Head Nurse, Pediatrics, at 727-4187 if you wish further information about the hospital's participation in this study.

Through a literature review, interviews with children, parents, and nurses, and observations at the hospital, I have developed a list of the kinds of ideas or behaviours that children might use when undergoing a medical procedure. An artist has drawn these ideas in simple cartoon style. I am now testing to see if these pictures help children tell us how they prefer to deal with medical situations, and what they actually do in such a situation. The pictures themselves will not likely add to any anxiety your child may be experiencing about the medical procedure; on the contrary, children tend to find the pictures amusing, or at least entertaining.

Your participation in the study will come in two parts: this home interview involving both you and your child, and then the observations and interviews with your child at the hospital. You will be asked to provide information on your child's medical history, his/her usual coping strategies and basic personality traits (e.g., level of activity, sociability). Your child will be asked about his/her understanding of the test that is going to be done at the hospital, and then asked to imagine how he/she will react. It will be emphasized that we are all different, and that there are no right or wrong answers. All responses will be treated as confidential, and anonymity is guaranteed.

Letter to hospital parents (Continued)

At the hospital, your child will be observed at two points: upon arrival (settling in) and during the IV start prior to the imaging procedure. Both coping and distress behaviours will be noted. These observation times will be audio recorded. After the coping and distress statements on these tapes are coded, the tapes will be destroyed. Your child will also be interviewed on three occasions: upon arrival, immediately after the IV start, and after the imaging procedure. The first two interviews will take about five minutes each, the last one may take ten to fifteen minutes.

Your participation in this research will thus require about one hour of your time in your home, and about fifteen to thirty minutes of time at the hospital, in addition to the time required by the procedures.

Thank you for considering this request.

Yours sincerely,

Louise Costello

CONSENT FORM

I, _____ , parent/guardian of

_____ GIVE / DO NOT GIVE

permission for my child to participate in the research project

described above.

_____ _____

DATE SIGNATURE

MEDICAL HISTORY QUESTIONNAIRE

CHILD'S NAME _____

Please list other household members and their relationship to the child in question. Include ages of other children.

_____

_____

What kind of procedure is your child scheduled for? _____

_____

What have you been told about this procedure? By whom?

_____

_____

What has your child been told about this procedure? By whom?

_____

_____

Has your child ever had an IV started for any reason?
Yes_____ No_____

If yes, please describe his or her reaction.

Does your child have any medical problems that have involved frequent visits to the doctor or hospital? Yes _____ No _____

If yes, please describe.

_____

Medical History (Continued)

Has your child ever seen a film about hospitalization at his/her school or received any other information about hospitals?

Yes_____ No_____ If yes, please describe.

_____

_____

Has anyone in the family been in hospital within the past year?

Yes_____ No_____
If yes, who? Sibling_____ Parent_____ Other____

Please describe how you think your child might have been affected by this hospitalization. Was the child aware of it? Did the child express concerns?

_____

_____

Has your child ever been in a hospital? Yes _____ No _____

If yes, please describe the nature of the experience.

___Visiting a friend -- age of child at the time _____

___Visiting a relative -- age of child at the time _____

___Medical appointment at hospital -- age of child _____

____Special investigative procedure -- age of child _____

Specify the procedure _____

____Emergency room visit -- age of child at the time _____

Specify the reason _____

_____Admitted _____as a day patient
- age of child at the time _____

Specify the reason _____

_____overnight
- age of child at the time _____

Specify the reason _____

Medical History (Continued)

Describe your child's reaction(s) to these hospital experiences.

_____

_____

_____

Will you be with your child at the hospital during this procedure?

Yes_____ No_____
If no, will another family member be there?_____

If you have any strong feelings about the procedure your child is about to undergo, or about the hospital, please describe them.

_____

_____

_____

If your child has expressed any strong feelings about this procedure or about going to the hospital, please describe them.

_____

_____

_____

Adapted from Peterson and Toler (1986)

HOSPITAL PROCEDURES QUESTIONNAIRE

Child's Name _____ Date _____

Have you ever been into a hospital? Yes_____ No_____

Can you tell me when, and why?_____

_____

_____

Can you tell me why you are going to the hospital (next week)?

_____

_____

If the child cannot say that it is for a special test, supply this information and proceed.

Why do you think that it is important to have this test?

Did somebody tell you this? Yes_____No_____ Who?_____

Has anybody told you about what hospitals are like and what it will be like to have this test done there?

Yes_____ No_____ Who?_____

What have they told you?_____

_____

_____

Don't worry if there are things you don't know about the hospital. When you get there, there is a special nurse whose job it is to tell you anything you want to know. She can answer any questions you want to ask.

Adapted from Peterson and Toler (1986).

THE OBSERVATIONAL SCALE OF COPING BEHAVIOURS
DEFINITIONS

A behaviour (or verbalization) is coded if it occurs once in a thirty second interval. Each thirty second interval of the observation period is scored.

BEHAVIOURS

INFORMATION SEEKING

Exploration: Examination of medical equipment through touch or manipulation.

Vigilance: Fixation of the child's eyes on the hospital staff or equipment relevant to the procedure; any perceptible movement of the child's eyes or head which follows these movements.

Obvious listening behaviours: leaning forward toward speaker, cocking head.

Watching another child on the ward would be vigilance if that child were involved in a medically related activity at the time (e.g., receiving information from a nurse, protesting about procedure to mother).

Avoidance: Obvious attempts to shield eyes, face, or ears from relevant activities, discussion, or other forms of visually or verbally presented procedural information, including shutting eyes, turning away, burying face in mother's shoulder.

Fixed attention on non-relevant aspects of the situation or items in the room, such as watching someone collect garbage from the room, reading a booking, or looking for rabbits out the window.

INTERPERSONAL AND RELAXATION BEHAVIOURS

Compliance/Active Participation: Compliance is coded when the child does something, or attempts to do something that he/she has been told to do (i.e., child's action is in response to a verbal or implied request of another). It can be double coded with any other relavant behaviour category.

Compliance will most frequently involve Active Participation, where the child actively attempts to participate in or become involved in the medical procedures (e.g., wrapping the puppets arm; clenching fist).

Active Participation may also be spontaneous, where the child takes the initiative, or makes some noticeable effort beyond what is required.

CODE ONSET OF THESE BEHAVIOURS ONLY.

Support Seeking or Acceptance: Non-verbal solicitation of hugs, hand-holding, physical comfort or emotional support by the child, or the active acceptance of same when proffered.

Observational Scale of Coping Behaviours (Continued)

Relaxation Behaviours and Participation in Distraction Techniques: The child is engaged in a deliberate relaxation or distraction activity, usually at the direction of, and often with the active participation of, an adult in the room. At the simplest level this would include deliberate relaxation behaviours such as wiggling toes, deep breathing or blowing, and at a more cognitive level it would include distractions such as watching a pop-up story, singing, or story-telling.

Code whether the behaviour is verbal or non-verbal. Where there is a strong emotional support quality to the interaction, Support Seeking/Acceptance should also be coded.

NERVOUS/DISTRESS BEHAVIOURS

Nervous Behaviours: Obvious nervous, usually repetitive, behaviour such as biting lip, twisting fingers, picking at bedclothes, rocking, or tics not noticed in previous contacts with child. May also manifest itself as muscular rigidity (clenching fists, gripping bed rails).

Resistance: Failure to comply with overt or implied requests with respect to behaviours necessary to the successful completion of the procedure (e.g., failure to hold out arm).

Flail: Random gross movements of arms, legs, or whole body. Out of control behaviour. Flailing often occurs in response to restraint.

Cry: Crying sounds and/or onset of tears. Usually non-intelligible, but may be double coded with Verbalizations. Sobbing and and an ongoing flow of tears are examples of crying; sniffling and heavy breathing are not.

Scream: Loud vocal expression at high pitch/ intensity, usually non-intelligible, but may be double coded with Verbalization. High pitch distinguishes this category from Cry.

VERBALIZATIONS

Any intelligible or partially intelligible vocalizations, or vocalizations where the apparent attempt is to be intelligible are coded.

Questions: Procedure: The child asks questions about what will happen during the procedure, or about the instruments (e.g., what the instruments are used for).

Questions: Sensation: The child asks questions about how the procedure will feel.

Observational Scale of Coping Behaviours (Continued)

Compliance/Participation Statements: A verbal accompaniment to these behaviours, such as "O.K.", "I want to try that". The verbalization is coded even if the child does not successfully follow through with the behaviour.

Support Seeking: Verbal solicitation of hugs, hand holding, or physical or verbal comfort by the child.

Competence Statements: The child makes a statement that focuses on the child's competence or abilities in relation to the situation at hand or any other areas of the child's life. Will often sound like bragging.

Relationship-building: The child attempts to establish rapport with the hospital staff by elaborating responses beyond what is strictly required to answer questions, or initiating conversations about non-medical topics, or being humourous.

Relaxation Behaviours: Deliberate relaxation or distraction behaviours usually done in response to direct instruction from parent or hospital staff (e.g., singing, counting, story-telling).

Pain Statements: Any words, phrases, or statements which refer to pain, damage, discomfort, or being hurt. Must be a statement and not a question, but may be in any tense. May be anticipatory as well as actual. Groans and sighs (Owh, Ahhh) are coded here, as well as more typical words such as Ouch, Owwee. Sometimes, the pain is implied: "You are killing me", "That pinches".

Fear Statements: Any words, phrases, or statements which refer to fear or anxiety, which may be in any tense and may be anticipatory as well as actual.

Verbal Resistance: Any intelligible verbal expression of delay, termination, or resistance (e.g., "Let me go", "Stop that", "No, no, no", "I don't like this").

Scream: Loud vocal expression at high pitch/ intensity, usually non-intelligible, but may be double coded with Verbalization. High pitch distinguishes this category from Cry.

Other: Any other intelligible verbalization. E.g., "I need to go to the bathroom" (when this does not appear to be a delay or escape tactic); singing; reading aloud (which should be coded as distraction under Behaviours).

COGNITIVE COPING INTERVIEW

You,ve already told me all about the kinds of things you have been thinking about here in the hospital, by looking at my pictures, and answering my questions. Now, I´d like you to tell me about these same kinds of things again, in your own words. I want to ask you again, one last time, just what it was like for you to have the needle. I want you to think real hard and try to remember just what was going though your head when it was happening. So, imagine you are back in the treatment room, and the nurse is just about to give you your needle.

1. What were some of the things you were THINKING right then, as the nurse was giving you the needle?

   FOLLOW-UP QUESTIONS:
   If the child reports a thought ask ---> "Was there ANYTHING ELSE you were thinking?"

   If the child reports anxiety-related thoughts, or thoughts regarding maladaptive behaviours or reactions, ask ---> "Was there anything you did to help those ideas or feelings go away?"

   If the child responds that he tried not to think about what the nurse was doing, or tried to think about other things, ask ---> "What did you think about that helped you not to think about the needle?", or ---> "What were the things you were thinking?".

2. Did you SAY ANYTHING TO YOURSELF or TELL YOURSELF ANYTHING right then, right when the nurse was giving you the needle?
   Use the same FOLLOW-UP QUESTIONS.

3. Did you have any WISHES when the nurse was giving you the needle?
   Use the same FOLLOW-UP QUESTIONS.

Adapted from Curry, 1985

APPENDIX N
SCORES ON THE CSCS (%) AND THE S.A.I.

PREADMISSION

CSCS SUBSCALE	PARTICIPANT NUMBER 203	204	205	206	207	208	209	210	211	212
AVOIDANCE/ DISTRACTION	100	22	67	89	89	11	89	67	56	67
MONITORING	43	14	14	43	57	43	86	71	14	71
FANTASY/ RESTRUCTURING	57	14	86	71	43	14	71	86	71	57
NEGATIVE/ DISTRESS	0	14	14	0	43	29	14	0	0	29
COOPERATION	100	50	50	100	100	75	100	100	75	100
SELF FOCUS	60	0	60	100	50	80	90	60	60	80
S.A.I. QUESTION										
SCARED	2	2	2	2	1	5	3	1	2	1
HURT	2	2	1	4	0	10	5	2	4	0
CONTROL 1	3	3	1	3	4	1	4	3	2	3
CONTROL 2	3	3	3	4	5	3	5	3	2	3

Appendix N (Continued)

SETTLING IN

CSCS SUBSCALE	PARTICIPANT NUMBER 203	204	205	206	207	208	209	210	211	212
AVOIDANCE/ DISTRACTION	78	33	67	100	89	22	89	56	33	78
MONITORING	57	0	43	43	57	71	71	86	0	29
FANTASY/ RESTRUCTURING	71	14	86	71	86	57	71	86	43	86
NEGATIVE/ DISTRESS	17	17	50	0	0	0	0	17	0	17
COOPERATION	100	25	75	100	100	75	100	100	75	100
SELF FOCUS	67	0	44	100	44	78	78	78	11	67
S.A.I. QUESTION										
SCARED	1	2	1	0	2	2	3	2	2	1
HURT	0	1	2	0	2	1	5	0	2	2
CONTROL 1	2	3	3	4	1	1	4	3	2	3
CONTROL 2	3	3	3	4	5	3	5	3	1	5

POSTPREPARATION

S.A.I. QUESTION										
SCARED	3	2	1	2	2	1	4	2	3	2
HURT	2	1	2	0	2	1	5	2	4	2
CONTROL 1	3	4	3	3	1	1	4	3	2	3
CONTROL 2	4	3	5	5	5	3	5	3	3	5

APPENDIX O

PSYCHOMETRIC PROPERTIES OF OTHER MEASURES

CHILDREN'S COPING MEASURES

Behavioral Coping Observation Scale

Cognitive Coping Interview
Curry and Russ, 1985
- Three behavioural and six cognitive subscales
- 8 to 10 year old children
- Internal Consistency (subscale-total):
  Behavioural subscales: .52 - .91
  Cognitive subscales: .23 - .61
- Interrater Reliability:
  Behavioural subscales: .76 - .98
  Cognitive subscales: .76 - .98

Children's Stress Inventory
Wertlieb, Weigel, & Feldstein, 1987
- Three coding categories: Focus, Function, and Mode
- 7 to 12 year old children.
- Coder reliability: Good
- Convergent Validity: Correlations with Child Behaviour Checklist: -.16 to .22

Control-Related Coping Strategies Questionnaire
Worchel, Copeland, & Barker, 1987
- Six subscales: one behavioural, one cognitive, one information, three decisional
- Convergent Validity: Correlations with nurses' adjustment ratings and Child Behaviour Checklist were mixed.

Coping Strategies Interview
Siegel, 1981, as adapted by Peterson & Toler, 1986
- One subscale investigated (Information Seeking)
- Internal Consistency: .78
- Coder Reliability: .91
- Convergent Validity:
  Correlation with Child Information Index = .42
  Correlation with approach subscale of a child behaviour checklist = .24
- Discriminant Validity:
  Correlation with the Peabody Picture Vocabulary Test = .24

Appendix O (Continued)

A semistructured interview
Compas, Malcarne, & Fondacaro, 1988
- Two subscales: Problem-Focus, Emotion-Focus
- 10 to 14 year old children
- Inter-Rater Reliability: .87 - .88
- Nine Month Test-Retest Reliability: .17 - .26
- Situational Sensitivity: Pattern of strategies changed with type of problem
- Cross-Situational Consistency: .25 - .43

OTHER CHILDREN'S MEASURES

Children's Health Attitudes Questionnaire
Bush & Holmbeck, 1987
- Three subscales: Approach/Avoidance, Effectiveness, Liking
- 5 to 19 year old children
- Internal Consistency: .63 - .76
- Two Week Test-Retest Reliability: .70 - .76

Children's Health Locus of Control
Parcel & Meyer, 1978
- Three subscales. 20 items total
- 7 to 12 year old children
- Internal Consistency: .72 - .75
- Test-Retest Reliability: .62 (full scale)

Perceived Social Competence Scale for Children
Harter, 1982
- Four subscales, six items each
- Grades 2 and 3 children
- Internal Consistency: .53 - .79 (.87 total)
  Subscale intercorrelations: .00 - .80

Revised Children's Manifest Anxiety Scale
Reynolds & Richmond, 1978
- Four subscales, 37 items total
- Grades K to 12 children
- Test-Retest Reliability: .85 (full scale)
- Convergent Validity: Good correlations with the Children's Manifest Anxiety Scale and the State-Trait Anxiety Scale for Children

Appendix O (Continued)

ADULT MEASURES OF COPING

Internal Consistency Data:

Billings & Moos, 1984
- Three subscales, 19 - 31 items each: .41 - .66

Endler & Parker, 1990
- Three subscales, 69 items total: .79 - .91

Folkman & Lazarus, 1980
- Two subscales, 68 items total: .80 - .81

Folkman & Lazarus, 1984
- Eight subscales, 66 items total: .56 - .85

Folkman, Lazarus, Dunkel-Schemer, DeLongis, & Gruen, 1986
- Eight subscales, 66 items total: .61 - .79

McCrae, 1984
- 28 subscales, 2 - 7 items each: up to .83

Miller, in press
-

Pearlin & Schooler, 1978
- Three subscales, 19 items each: .44 - .80

VITA

Name: COSTELLO, LOUISE MICHELE

Place of Birth: St. Boniface, Manitoba
Date of Birth: October 2, 1951

Educational Institutions Attended:

University of Victoria	1986-1992
University of Regina	1983-1986
University of Manitoba	1968-1974

Degrees Awarded:

M.Sc.	University of Manitoba	1974
B.A.	University of Manitoba	1971

Honours and Awards:

Sara Spencer Research Fellowship, University of Victoria, 1989-1990
University of Victoria Graduate Fellowships, 1986-1990
University of Regina Teaching Fellowships, 1985-1986
Donald Vernon Snider Memorial Fellowship, University of Manitoba, 1973-1974
University of Manitoba Graduate Fellowships, 1972-1973
University of Manitoba Gold Medal, Arts, 1971

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Author: [redacted]

LOUISE MICHELE COSTELLO

Date: September 28, 1992