

DEVELOPMENT OF THE CHILDREN'S MENTAL
HEALTH LOCUS OF CONTROL
SCALES

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PREFACE

The Children's Mental Health Locus-of-Control scale (CMHLC) was developed in the present study in order to bring the assessment of children's locus-of-control abreast with recent refinements in adult locus-of-control research and to improve basic methodology in assessing the outcome of psychotherapy with children. The CHMLC evolved over three successive experiments. In its final form it consists of three subscales (i.e., Internal, Powerful Others, and Chance) and 41 items. It was administered to 858 fourth through seventh graders and found to yield significant differences in mental health locus-of-control according to grade of the school children and according to important test construction characteristics.

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CHAPTER I

INTRODUCTION

In Rotter's introduction of the locus-of-control construct (1966), he explained that it is a social learning process whereby behavioral choices are determined not only by contingent reinforcement but also by the person's perception of the contingent relationship. Over time, these learning experiences are consolidated into "generalized expectancies" or beliefs regarding the degree to which rewards or outcomes are controlled by one's own actions (internal control) at one end of the continuum and by external forces such as chance or powerful others (external control) at the other end of the continuum.

The robustness and utility of the basic locus-of-control construct has been maintained under a multitude of research demands, where its measurement has frequently provided a pivotal point from which personality and psychopathology variables can be investigated and compared. The measurement of locus-of-control is also reported to be one of the most powerful techniques available for predicting long range outcome of psychotherapy (Tramontana & Sherrets, 1982). It is perhaps the most useful technique of those available for assessing cognitive change due to psychotherapy (Beutler & Crago, 1983).

Locus-of-control has been related to a variety of mental health variables in children. (For a recent review of the adult literature, see Lefcourt, 1982). For example, internal locus-of-control has been

related to self-esteem (Piers, 1977, Wolfe, Hunter, Webber, Berenson, 1981) and academic achievement (Gordon, 1977), while external locus-of-control has been related to low self-esteem (Friedberg, 1982), depression (Moyal, 1977), anxiety (Finch & Nelson, 1974, Ollendick, 1979), emotional disturbance (Nelson, Finch, Montgomery & Bristow, 1975), and physical abuse (Barahal, Westerman & Martin, 1981)

Two fairly consistent demographic effects have been found to be related to locus-of-control 1) increasing internality with age and/or grade (Crandall, Katkovsky & Crandall, 1965, Milgram, 1971, Nowicki & Strickland, 1973, Milgram & Milgram, 1975, Wolf et al , 1981) and 2) both Blacks (Wolf, et al , 1981) and Indians (Tyler & Holsinger, 1975) were more external than Whites

There has been less consistency in socioeconomic and sex effects for locus-of-control Ibitsky and White (1981) found socioeconomic level to be positively related to internality, while Crandall, Katkovsky and Crandall (1965) did not Crandall, et al did find girls to be more internal than boys as did Wolfe et al (1981), but the reverse was found by Ibitsky & White However, factor analytic studies of the Nowicki-Strickland Locus-of-Control Scale for Children, a very widely used questionnaire, revealed that the effects of age, sex (Nowicki, 1976) and culture (Barling, 1980) are really quite complex and probably cannot be adequately understood with a simple, unidimensional model of locus-of-control

In fact, Rotter's original description of locus-of-control has been criticized for its overly simplistic, unidimensional conceptualization (Tyler, Gatez, & Keenan, 1979, Mischel, Zeiss & Zeiss, 1974) While the

organization of self-regulatory behavior is based on broad or "generalized expectancies", a locus-of-control attribution in any given situation is a product not only of global beliefs but also of actively constructed cognitions which themselves depend on an array of mediating variables

Such views led to highly detailed examination of questionnaire construction characteristics. As a result, refinements in questionnaires have been facilitated by isolating four particular variables, 1) area of functioning which questionnaire items address, 2) dimensionality of locus-of-control (i.e., Internal, Powerful Others, and Chance dimensions), 3) valence of items (i.e., positive or negative outcome) and 4) perspective of items (i.e., personal or impersonal wording)

Rotter himself suggested that instruments be designed to assess control expectancies specific to targeted areas of functioning (1975). The heuristic value of this notion has been demonstrated with the development of several such area-specific instruments for adults. These instruments focused on, personal efficacy, interpersonal control, and sociopolitical control (Paulhus & Christie, 1981), desired control in the elderly (Reid & Ziegler, 1981), achievement and affiliation (Lefcourt, Vonbaerer, Ware, & Cox, 1979), health (Wallston & Wallston, 1981), mental health (Hill & Bale, 1981), and alcoholic responsibilities (Worrell & Tumilty, 1981). However, there were only a few scales for children found in the literature. Two child scales focus on achievement (Crandall, Katkovsky & Crandall, 1965, Bradley, Stucks, & White, 1977) and another on physical health (Parcel & Meyer, 1978). A fourth scale

focuses on social interactions (Dahlquist and Ottinger, 1983)

There is not a mental health locus-of-control scale for children as there is for adults (Hill & Bale, 1981) This is a significant deficit in the literature given the obvious relevance for psychological research Children's attitudes about mental health and mental illness have been a productive area of study, however, and children clearly do have the cognitive ability to form such conceptions (Novak, 1974, Coie & Pennington, 1976, Marsden & Kalter, 1976, Roberts, Beidleman & Wurtele, 1981, Dollinger & McQuire, 1981)

Dimensionality is another construction characteristic of major importance in locus-of-control research Although Rotter presented locus-of-control as a unidimensional construct, investigators have repeatedly found a variety of dimensions with factor analysis on both adult and child measures (Lefcourt, 1982, Barling, 1980, Olds, Wolf, Sklov, Hunter & Berenson, 1982, Kendall, Finch, Little, Chirico & Ollendick, 1978) Such studies illustrate the lack of precision of the unidimensional construct which, at times, leads to questionable conclusions

Fortunately, some investigators have followed up on these factorial findings by developing subscales Levenson (1971) developed a tripartate model designed to allow measurement of Internal, Powerful Others, and Chance locus-of-control beliefs separately Although both Powerful Others and Chance control beliefs are external and at least moderately correlated, they are distinct in one very important respect That is, Powerful Others' beliefs include the perception that the world is orderly, predictable, and thus controllable even though the

direct source of control may lie in people more powerful than oneself. Chance beliefs, on the other hand, are based on the assumption that the world is unordered and outside anyone's control. The validity of this distinction, as well as its heuristic value, has been supported in numerous studies using both Levenson's scale and others modeled after it (Levenson, 1981, Mahler, 1974, Garcia & Levenson, 1975, Caster & Parsons, 1977a, 1977b, Shaddish, Arrick & Hickman, 1979, Wallston, Wallston & Devellis, 1978)

Although there have been no children's scales developed on the basis of the tripartate model, the Children's Health Locus-of-Control Scale (Parcel & Meyer, 1978) was factor analyzed and found to yield Levenson's three factors. The development of subscales based on these particular factors might prove especially useful with children, given their daily dependence on powerful others such as parents and teachers.

Valence of item outcome is another important source of variability which must, at least, be balanced across questionnaire items (Gruen, 1970, Stephens & Delys, 1973, Crandall, Katkovsky & Crandall, 1965). Unfortunately, both the Nowicki-Strickland scale for children (Rothbaum, Wolfer & Vistainer, 1979) and Rotter's I-E Scale (Gregory, 1981) were found to be negatively biased. When positive and negative items were assessed separately, factors such as age, sex, intelligence (Milgram & Milgram, 1975), self-esteem (Piers, 1977), and physical abuse (Barahal, Waterman & Martin, 1981) were found to differentially effect locus-of-control according to type of valence. Children who were older, were male, were more intelligent, or had higher self-esteem were more internal for positive events compared to children who were younger, were

female, were less intelligent, or had lower self-esteem. Children who were abused were less internal for negative events than were non-abused children.

Furthermore, intriguing results were obtained from a series of investigations comparing children with behavior problems to controls (Ducette, Wolk, & Sourcar, 1972). It was found that both Black problem children and low I Q problem children had much lower internal locus-of-control scores for negative event items than for positive event items. The reverse was found for White problem children and high I Q problem children. No such differences were found for the control subjects. The authors concluded that maladaptive behavior is not so much a product of internal or external control. Rather, it is the discrepancy between acceptance of responsibility for positive and negative events. Furthermore, the direction of the discrepancy will vary across different clinical populations.

Some investigators have also found locus-of-control to vary according to item **perspective** that is, personal versus impersonal items (Mirels, 1910, Gurin, Gurin, Lao & Beattie, 1969). Tyler, Gatz, and Keenan (1979) found that impersonally worded items tended to be endorsed in an external direction while personal items tended to be endorsed in an internal direction. They concluded that people tend to see others as victims and themselves as active agents. Although other investigators have not found these relationships (Reid & Ware, 1974), differences in methodologies used across studies disallow any conclusive interpretations. The only study that explored the effect of perspective on children's locus-of-control beliefs found no differences (Curtis &

Schildhaus, 1980) However, because most of their subjects held more external control beliefs, any conclusions regarding the relationship between perspective and locus-of-control based on this study would be premature

In summary, research on locus-of-control continues to support its utility for investigation of personality and psychopathology However, the complexity of this construct requires increasingly sophisticated assessment techniques Although these are being developed for adults, progress on equivalent measures for children has lagged behind The four variables emphasized above (i e , **area specificity, dimensionality, valence, and perspective**) are particularly important considerations in scale construction, but there are no locus-of-control questionnaires which incorporate them conjointly Furthermore, there is a notable absence of a mental health-specific scale for children despite its obvious potential in personality and clinical research

Therefore, the purpose of the present research was the development of the Children's Mental Health Locus-of-Control Questionnaire (CMHLC), which would allow comparative analysis of Internal, Powerful Others, and Chance control beliefs according to differences in both valence and perspective in life areas relevant to mental health and mental illness As part of this scale development process, which is intended to involve continuous re-evaluation and refinement in programmatic research, initial steps will be taken toward the assessment of construct validity Normative data will be sequentially gathered as well Specifically, it was hypothesized that

1 Dimensionality, perspective, and valence would interact with

each of five demographics (i.e., age, grade, race, occupation of parents, and sex

- 2 The validity of the three-factor model (i.e., Internal, Powerful Others, and Chance) would be supported by analysis of the component structure of the CMHLC
- 3 The convergent validity of the CMHLC with other measures of locus-of-control would be supported by moderate intercorrelations between the CMHLC, the Children's Health Locus-of-Control Scale, and the Nowicki-Strickland Locus-of-Control Scale for Children

CHAPTER II

REVIEW OF LITERATURE

Assessment of Locus-of-Control in Specific Areas of Functioning

On area specific locus-of-control scales Rotter stated, "It would be worth developing such a specific measure if one's interest is in a limited area and particularly if one is seeking some practical applications where every increment in prediction is important" (1975, p 59) Because locus-of-control beliefs are not consistent across all areas of functioning, Crandall, Katkovsky & Crandall (1965) developed the first area specific scale in order to obtain more accurate prediction of academic achievement in children The Intellectual Achievement Responsibility Questionnaire (IAR) has since then been used to obtain significant relationships between achievement variables and locus-of-control (Crandall & Lacy, 1972, Chance, 1965, McGee & Crandall, 1968, Messer, 1972) and has been particularly useful in investigations of learning disabled children (Dudley-Marling, Snider & Tarver, 1982)

Since the development of the Intellectual Achievement Responsibility Questionnaire a variety of specific questionnaires have been developed for adults A few examples include the Spheres of Control Battery (Paulhus & Christie, 1981) aimed at assessing locus-of-control related to personal efficacy, interpersonal control, and

sociopolitical control, the Desired Control Measure (Reid & Ziegler, 1981) aimed at understanding desired control and adjustment of the elderly, Multidimensional-Multiattributonal Casualty Scales (Lefcourt, VanBaerer, Ware, & Cox, 1981) aimed at achievement and affiliation, the Alcoholic Responsibility Scale (Worrell & Tumilty, 1982), and the Multidimensionality Health Locus-of-Control Scales (Wallston, Wallston & Devellis, 1978) Of particular interest for the present research is the Mental Health Locus-of-Control Questionnaire for adults designed to assess beliefs about the source of responsibility for progress in psychotherapy (Hill & Bale, 1981) This scale was developed in conjunction with the Mental Health Locus of Origin Scale, which measures beliefs about the etiology of mental health along an endogenous (biological)-exogenous dimension The instruments described by Hill and Bale hold promise for the study of mental health treatment However, their range of application is limited by inclusion of filler items which are appropriate only for psychology students, on whom the instrument was normed Furthermore, the Hill and Bale questionnaires are narrowly focused on psychotherapy and etiology rather than on a generalized mental health topic area

A more productive approach to the study of mental health locus-of-control would be to focus on areas beyond the psychotherapy situation while retaining specificity to those areas especially relevant to mental health Of the 28 items on the Mental Health Locus-of control Scale (Hill & Bale, 1981), only three do not involve mental health professionals or their services More items regarding control of adjustment in the areas of emotional, social, marital, and vocational

functioning would expand the range of applicability of such a scale. However, no such instruments were found for either children or adults.

Although there has been no mental health locus-of-control scale for children up to this time, there has been some investigation of children's attitudes about mental illness. A prerequisite to the development of a mental health locus-of-control scale would be that children have the cognitive ability to conceptualize mental illness. According to several investigators, children clearly do possess such conceptions (Novack, 1973, Cole & Pennington, 1976, Marsden & Kalter, 1976, Roberts, Beidleman & Wurtele, 1981, Dollinger & McQuire, 1981). However, as would be expected, there seems to be a developmental trend to both the acquisition of concepts of mental health and mental illness and to their quality. Cole and Pennington (1976) compared children in first, fourth, seventh, and eleventh grades according to their descriptions of deviant peers and ratings on deviance categories of story characters described in brief vignettes. They found greater attribution of distorted perception with increasing age. They also found qualitative differences. That is, first graders tended to rationalize the deviant behavior of others, fourth and seventh graders emphasized behavioral rule violations, and eleventh graders were able to perceive not only overt behavioral violations but covert irrational thinking as well. Marsden and Kalter (1976) also found that sixth graders attributed more emotional disturbance to vignette characters than did fourth graders although both groups were able to make such attributions appropriately. It appears, then, that while developmental changes do occur, the ability to conceptualize mental illness is present.

at last by the fourth grade. However, younger children apparently understand only very concrete, overt manifestations of mental illness, and by mid-adolescence understanding has become relatively abstract and sophisticated.

Marsden and Kalter (1976) also found that children's ratings of vignette characters correlated with expert ratings of both the presence of disturbance and the severity of disturbance. However, other investigators found that children were not able to accurately assess the severity of mental disorders (Novak, 1974, Roberts, Beidleman & Wurtele, 1981). Instead children considered the more obviously aggressive, acting-out forms of mental illness to be severer.

Socioeconomic status (SES) has also been found to influence children's perceptions of mental illness (Roberts, Beidleman & Wurtele, 1981). Low and high SES children were compared on several variables in response to mentally and physically ill vignette characters. High SES children reported less desire "to be like" the disordered characters and less susceptibility to contract the disorders than the low SES children. Furthermore, high SES children were more likely to endorse "something happened" to cause the mentally ill character's behavior than "born that way", which characterized the views of low SES children. High SES children also tended to recommend psychiatrists and psychologists for treatment of the mentally ill characters while the low SES children were more likely to recommend non-mental health medical professionals.

SES differences aside, all children in the Roberts et al (1981) study indicated less willingness "to be like" the mentally ill than the

physically ill vignette characters, and they rated the mentally ill characters as less attractive. Novak (1974) also found that the strangest mentally ill characters were rated by children as least similar to themselves and less attractive. He concluded that normal children deny similarity to mentally ill children because perceived similarity would be personally threatening.

In an investigation of children's understanding of defense mechanisms, Dollinger & McGuire (1981) found that children were much more attracted to vignette characters who were portrayed as using internalization of conflict (self-blame) and much less attracted to characters who used externalization of conflict (projection and displacement). The finding of greater attraction to children who internalize responsibility for conflict is in keeping with the previously described findings where behavioral acting-out and overt rule violations were perceived as more severe than covert disturbances. It also hints at a more positive view of internal locus-of-control than of external locus-of-control.

One final result of the Roberts et al (1981) research that is particularly relevant to locus-of-control was the finding that children believed mental illness could be prevented by greater self-control and adherence to social norms. The belief in preventive value of self-control suggests that while children are generally rule followers, their mental health locus-of-control attitudes are likely to be more internal than external.

Assessment of Dimensionality

Although Rotter's I-E Scale was thought to measure the

unidimensional construct, Hersch and Scheibe (1967) raised the issue of multidimensionality when the internals they tested with Rotter's scale showed a more homogeneous performance than the externals. Later, factor analytic studies by Mirels (1970), by MacDonald and Tsing (1971) and by Lefcourt (1981) found at least two distinct factors, i.e., personal control and political or Powerful Others control. The work by Mirels, by MacDonald and Tsing, and by Lefcourt suggested that a general dimension score might not necessarily reflect variability present on other more specific factors.

Multidimensionality of locus-of-control has also been found in children (Nowicki, 1976, Barling, 1980, Kendall, Finch, Little, Chirico & Ollendick, 1978, Kendall, Finch & Mahoney, 1976, Parcel & Meyer, 1978). Kendall, Finch, and Chirico (1974) found five factors with a heterogeneous sample of urban school children, i.e., "Helplessness", "Persecution", "Futility", "Superstition", and "Genetic Determinism". Subsequently, Nowicki (1976) performed separate factor analyses by age group and sex. He found three factors. First was a general factor of "Helplessness". The second factor varied for each age group. For elementary school children it was described as achievement and strength, for junior high subjects it dealt with getting things wanted by persistence, work, and planning, and for high school males it dealt with persistence to overcome luck or powerful others. For high school females the second factor dealt with acceptance that fate, chance, and powerful others govern things. The third factor dealt with "Luck" for all ages, and for elementary school males it also dealt with deference to parents, while for females it dealt with the ability to

manipulate others in social areas For high schoolers the third factor also dealt with uses of fantasy as a defense for feelings of powerlessness

Barling (1980) took a cross-cultural approach to studying dimensionality of locus-of-control with the Nowicki-Strickland scale using South African elementary school children He found a first factor of "Personal Action" and a second factor of "Luck" In a biracial study of 10 to 17 year olds, Wolf, Asklov, Hunter & Berenson (1982) found three factors "Personal Control and Helplessness", "Achievement and Friendship", and "Luck" which lent support for Nowicki's (1976) findings They also compared groups within factors according to age, race, and sex and found that on the factor of "Personal Control and Helplessness" boys endorsed more personal control and less helplessness than girls as did Whites relative to Blacks and older children relative to younger children On the "Achievement and Friendship" factor, girls emphasized achievement more than boys as did older children relative to younger children On the "Luck" factor, younger children emphasized luck more than older children and Blacks did so more than Whites

Not only does the factor structure, or dimensionality, of the Nowicki-Strickland scale sometimes vary between some seemingly equivalent samples due to demographic differences, it also differs between normals and non-normals Kendall, Finch, Little, Chirico, and Ollendick (1978) compared samples of 10 year old normal, emotionally disturbed, and juvenile delinquent children with separate factor analyses for each group A different factor pattern emerged for each group, with a main factor for normals described as "Generalized

Expectancy" For the emotionally disturbed children it was Helplessness, Persecution and Futility" For the juvenile delinquents it was "at Home, with Peers, with Parents" Factor analysis of their data from the normal children by sex yielded a major factor for males of "Parental Fairness" while the results for the females were apparently unclear

Investigations which continue to operationalize locus-of-control as a unidimensional construct run the risk of losing valuable, instructive information This danger was well illustrated by Kendall, Finch and Mahoney (1976), who used the five factors previously found in the Kendall et al study (1974) described earlier They found that normal and emotionally disturbed children did not differ according to the Nowicki-Strickland total scale score (the only score it was originally designed to yield) nor on four of the five factors Importantly, however, on the specific "Helplessness" factor, the emotionally disturbed children attained a significantly higher score than the normal children

Parcel and Meyer (1978) also factor analyzed their Children's Health Locus-of-Control Scale (described previously) and found three factors Internal, Powerful Others, and Chance However, they made no attempt to score the factors separately as subscales or to assess their validity However, the authors pointed out that their factor analysis provided strong support for the application of a tripartate model of locus-of-control to children's scales Such a model with adult scales has been productively advanced by Hanna Levenson (1981)

Levenson's questionnaire contains three subscales representative of

the same three factors described by Parcel and Meyer (1978), i.e. Internal, Powerful Others and Chance. Her scales were theoretically rather than empirically derived. While the Internal subscale is in keeping with the traditional idea of internality, the Powerful Others and Chance subscales are simply subdivisions of traditional external-type items. This subdivision, however, allows for an important distinction between two types of externality. In this view, the Chance dimension represents beliefs that the nature of the world is basically random and unordered with no potential control from any specified agent. The Powerful Others dimension, on the other hand, does represent potential for control in a world that is orderly and predictable, "a person who believes in control by powerful others may also perceive enough regularity in the actions of such people as to believe that he or she can obtain reinforcements through purposeful action," (Levenson, 1981, p. 15)

Levenson's definition of Powerful Others locus-of-control is not too dissimilar to Rotter's (1966) concept of internality and may represent a middle ground between Internal and Chance beliefs. Furthermore, each subscale is scored independently with a low score reflecting little belief in the given source of control irrespective of scores on the other two scales. It is thus possible to assess the degree to which all three types of beliefs exist within the same individual.

The Levenson (1981) questionnaire differs from the Rotter's I-E scale in two other important respects, i.e., it uses a Likert response format instead of a forced choice format and all items are worded in the

first person instead of items with both personal and impersonal perspectives. The construction considerations will be further elaborated later in this review.

Levenson's approach has proven to be extremely fruitful, and it is worth describing a few findings from investigations using her questionnaire although, unfortunately, no such work has been carried out with children to date. Some interesting demographic differences have been found. For example, males obtained higher Powerful Others scores than females with no differences on their Internal or Chance scores (Levenson, 1981). Mahler (1974) found that Japanese women had higher Powerful Others scores than Japanese men, and still others found no gender differences (e.g., Hall, Joesting & Woods, 1977).

Race and socioeconomic differences also influenced subjects of locus-of-control subscale scores (Garcia & Levenson, 1975), i.e., Blacks had higher Powerful Others and Chance scores than Whites, and lower-income subjects had higher Chance scores than wealthier subjects but didn't differ on the Internal or Powerful Others subscales. Another demographic variable that has received attention in the literature is occupation. Professionals were found to obtain higher Internal scores than either college students or blue collar workers (Ryckman & Malickoski, 1974).

Levenson (1981) described research by Rupkey (1978) which assessed locus-of-control differences between entrepreneurs and nonentrepreneurs and found the former group to hold both more Internal control beliefs and more beliefs in Powerful Others control than the latter group but a similar degree of belief in Chance control. It was speculated that

while entrepreneurs need to be more independent than nonentrepreneurs, they also may have a more realistic understanding of the overall power structure. Levenson also described a study by Scanlan (1979) who compared small-business owners with those involved in "Organized Building". Interestingly, both groups were more Internal than established norms, but the small-business owners had significantly higher Chance scores. It was suggested that small-business owners prefer operating on a smaller scale in order to exercise greater control over their business and they thereby reduce the element of chance.

In an effort to explore the relationship of the tripartate model of locus-of-control with respect to psychotherapy, Levenson (1973) compared three groups of newly hospitalized psychiatric patients with a group of non-psychiatric subjects according to repeated locus-of-control scores taken at monthly intervals. No differences between subjects were found for Internal scores. However, paranoid and undifferentiated schizophrenics obtained significantly higher Powerful Others and Chance scores than the neurotics and normals. Over time, the Internal scores of all the inpatients increased. Furthermore, inpatients who stayed less than ten days had lower Chance scores than those who remained longer. Martin (1979), as described by Levenson (1981), replicated these findings with paranoid schizophrenic patients compared to schizoaffective patients. The paranoid schizophrenics had higher Powerful Others scores than the schizoaffectives. Furthermore, all the patients showed an increase in Internality over time in the hospital and a decrease in Powerful Others and Chance control beliefs.

The three-dimensional approach to the study of locus-of-control has

been particularly useful in understanding alcoholism and assessing treatment effects. Previous research using the unidimensional approach yielded contradictory results finding that alcoholics were more Internal than normals (Goss & Morasko, 1970), finding the reverse (Butts & Chotlos, 1973), and finding no differences (Donoval & O'Leary, 1975). Caster and Parsons (1977b) helped clarify this confusion somewhat by demonstrating with Levenson's scale that alcoholics did not differ from nonalcoholics on Internal and Powerful Others scores, but had significantly higher Chance scores. Furthermore, at follow-up after an inpatient rehabilitation treatment regimen, subjects who were again drinking had higher Chance scores than those who remained sober. Those investigators additionally found the Powerful Others scores to be positively correlated with a measure of depression, and the Chance scores to be positively correlated with a measure of sociopathy in their alcoholic subjects.

In another study assessing the effects of inpatient rehabilitation on alcoholics, Caster and Parsons (1977a) found an increase in subject's Internality with no differences on Powerful Others and Chance scores. They also found that those subjects who dropped out of the program and drank continuously had higher Chance scores than the successful program completers.

Levenson's questionnaire has also been applied to the examination of behavior related to physical health. Levenson (1981) reported a well-controlled comparison of women with and without cancer where the cancer patients had significantly lower Internal scores than the normals but did not differ from them on the Powerful Others or Chance scales.

Although it was concluded that particular premorbid personality variables (according to both the Levenson scale and several other personality measures) are associated with people who develop cancer, the critical reader will note that these results could also reflect personality changes due to cancer. In another case using cancer patients who were interested in imagery treatment, no difference was found in Internality between those who outlived their life expectancy and those who did not (Achterberb, Mathers-Simonton & Simonton, 1977).

A final examination of the differential predictive power of the Levenson scale compared hospitalized veterans to a normative group (Shadish, Arrick & Hickman, 1979). It was found that subjects with spinal cord injury had higher Chance scores than non-injured subjects. Furthermore, poor psychological adjustment to the injury according to several measures was best predicted in a multiple regression analysis by Powerful Others scores. In addition, Internality and coping were significantly related.

Recently, the Multidimensional Health Locus-of-Control scale for adults was developed using Levenson's dimensions but tailored specifically to the area of physical health functioning (Wallston, Wallston & DeVellis, 1978). It was felt that the distinction between Chance and Powerful Others externality would be particularly important in studying people seeking health care services. That is, significant involvement with health professionals might result in increased perceptions of control by Powerful Others who come to be depended upon for health care.

In two investigations described by Wallston and Wallston (1982)

using the Multidimensional Health Scale, compliance behavior was examined in end-stage renal dialysis patients. In one study (Hatz, 1978) Powerful Others was negatively correlated with adherence to treatment regime as measured by weight gain between treatments. In another study (Levin & Schultz, 1980), dialysis patients whose Internal score was higher were more compliant on a diet and restricted their weight in contrast to those patients with lower Internal scores. The Multidimensional Health Locus-of-Control Scale has been relatively untried to date. Given its plausible theoretical basis and the heuristic value of Levenson's model on which it is based, more extensive validity data will hopefully be forthcoming.

The development of a multidimensional locus-of-control scale for children has received virtually no attention. This is surprising given Nowicki's suggestion of the need for subscales, as well as the factor analytic findings of multiple dimensions, especially the finding of Levenson's three factors on the Children's Health Locus-of-Control scale (Parcel & Meyer, 1978) described above. A measure of Powerful Others would seemingly facilitate more discriminative prediction with children who deal so frequently with the attempts of parents and teachers to control their life experience.

There were two exceptions to the dearth in the literature of multidimensional children's scales, i.e., the Locus-of-Control Inventory for Three Achievement Domains (Bradley, Stuck, Coop & White, 1977), which measures achievement in intellectual, physical, and social domains (this scale was mentioned previously under area specific scales where it was noted that no follow-up studies were found of its use), and the Tel

Aviv Locus-of-Control scale (Milgram & Milgram, 1975) The Tel Aviv scale consists of three dimensions, Time, which included a Past events and a Future Events scale, is based on the logic that future events would better represent "behavioral intention" and "motivational expectancy", Content, covering peers, parents, etc, and Positive/Negative valence It was concluded that each dimension was empirically distinct according to extensive statistical analysis On the Tel Aviv scale, Internality was positively associated with grade and with a more positive self-concept (according to a standardized self-concept measure)

Assessment of Valence

The differential effects of positive and negative valence of events (questionnaire items) on locus-of-control varies according to demographic characteristics and personality characteristics (Milgram & Milgram, 1975, Piers, 1977) Valence of events in relation to locus-of-control also differentially effects performance on laboratory tasks (Mischel, Zeiss & Zeiss, 1974, Howell & Gregory, 1980, Garrett & Willoughby, 1972) Most importantly for clinical researchers, however, examination of interactions between valence of events and locus-of-control has led to increased understanding of the relative acceptance of responsibility for negative and positive events in clinical populations Unfortunately, the significance of valence has been overlooked in much of the locus-of-control research

On the Tel Aviv scale (described earlier) for Past events the Positive subscale yielded higher Internal scores for boys than girls,

and higher Internal scores for older children in contrast to younger children. When gifted children were compared to non-gifted children on the Positive subscale for Past Events, higher Internal scores were found for the gifted children. Such differences were not found on the Negative subscale for Past Events. It can be seen that on the Tel Aviv scale, important differences in locus-of-control across subjects of differing sexes, ages and intelligence are evident only on positive past events.

In an examination of locus-of-control differences in children relative to self-esteem, Piers (1977) used the Intellectual Achievement Responsibility Questionnaire (IAR) (Crandall, Katkovsky & Crandall, 1965). The IAR was constructed so that positive and negative events could be assessed separately, although the total score it also yields has been most frequently used. Piers found that high self-esteem children (according to the Piers-Harris Children's Self-Concept Inventory) were more Internal for positive events when contrasted to low self-esteem children. No differences were found for negative events.

In an attempt to account for the significant influence of self-esteem on Internality for positive events versus its insignificant influence on Internality for negative events, Piers (1977) proposed the following model. She suggested a consistency hypothesis such that "confirmations of expectancies tend to be accepted by the individual and disconfirmations tend to be rejected" (Piers, 1977, pp. 302). Thus, high self-esteem children, who have a general Internal orientation, accept responsibility for positive events while low self-esteem children, who have a general External orientation, reject responsibility for

positive events When presented with negative events, however, high self-esteem children experience a conflict between their tendency to internalize and their expectation to succeed (on the IAR positive items are those with outcomes which reflect successful experiences and negative items are those with outcomes which reflect failure experiences) This conflict is resolved with a medium degree of acceptance for failure Conversely, when low self-esteem children are faced with negative events, they experience a conflict between their tendency to externalize and their expectation to fail This conflict is also resolved with a medium degree of acceptance for failure Thus, in Pier's model Internals accept more responsibility for positive events than externals, but they accept equal responsibility for negative events

Investigators have also examined the relationship between valence of events and locus-of-control as it effects performance on laboratory tasks The differential predictive capability of positive and negative events with children was assessed using the Intellectual Achievement Responsibility Questionnaire and a digit-symbol coding task (Howell & Gregory), 1980) Children who were Internal on positive events and External on negative events (I+E-) and children who were External on positive events and Internal on negative events (I-E+) coded more digits under a response-cost condition than under a reward condition The latter finding with children who were Internal on negative events and External on positive events (I-E+) is consistent with what would be expected because the sense of responsibility exclusively for failure (negative events) would lead to greater effort under conditions of potential loss than potential gain The finding with children who were

Internal for positive events and external for negative events (I+E-) is more complex. The authors interpreted this to mean that these children who attributed their success to internal factors and their failure to external factors were more defensive about failure, and it was thus a more salient consideration for them. They pointed out that according to attribution theory, success is generally attributed to internal factors while failure is generally attributed to external factors. Rotter (1966, 1978) explained that Internals have a tendency to "repress failure" because their sense of responsibility results in a greater potential for feelings of failure than externals who have already accepted external factors as responsible for their successes and failures. Thus, it follows that children who are Internal for positive events and external for negative events (I+E-) might be more motivated to avoid feelings of failure (i.e., response cost condition) than to earn a reward.

Howell and Gregory (1980) also found that children who were Internal for both positive and negative events (I+I-) did not differ under conditions of response-cost or reward. These children outperformed those who were External for both positive and negative events (E+E-) and who also did not differ under the two conditions.

It appears from the Howell & Gregory (1980) study that performance is often consistent with expectations for success and failure, according to task conditions. That is, greater effort is made to attain a reward when control is perceived over positive events and less effort is made when control is not perceived over positive events. Likewise, greater effort to avoid a loss is made when control is perceived over negative

events and less effort is made when control is not perceived over negative events. However, in one important exception to this trend, the reverse is true. Children who perceive control only over positive events (which may be the more typical profile for Internals according to both Rotter and attribution theorists) try harder to avoid a loss than they do to gain a reward. Unfortunately, Howell and Gregory (1980) were unable to replicate these findings and any conclusions drawn from this study are tenuous.

However, Howell and Gregory's (1980) conclusions were partially supported in a study by Garrett and Willoughby (1972). In that study the Intellectual Achievement Responsibility Questionnaire was used to measure the effects of locus-of-control on an anagram task, although valence of locus-of-control events was not considered. Internals performed worse after failure than externals. This finding lends credence to the speculation that failure is a more salient variable for internals than externals.

The differential effects of valence of locus-of-control events on task performance was also assessed by Mischel, Zeiss, & Zeiss (1974). They used the Stanford preschool Internal-External Scale (SPIES) which contains separately validated negative and positive subscales. The positive subscale was correlated with duration of instrumental activity when children were led to believe such activity would lead to quicker attainment of reward while the negative subscale was not. On the other hand, the negative subscale was correlated with duration of task practice-time when children were led to believe that lack of practice would result in poor performance or when they thought good performance

could prevent loss of reward. The positive subscale was not correlated with practice time under this condition. This study provided partial support for the findings by Howell & Gregory (1980) (described earlier) that task performance varies under conditions of loss versus gains in relation to valence of locus-of-control.

The need for understanding the complex relationship between locus-of-control and valence is especially important in working with clinical populations. Differences in locus-of-control for positive versus negative events has far-reaching implications for both the assessment of psychological dysfunction and its treatment. The significance of such differences was highlighted in a two-part study comparing children referred for psychological intervention due to seriously disruptive classroom behavior to normal children (Ducette, Wolk & Soucar, 1972). In the first experiment, Black and White problem children were compared to Black and White normal children. The Black and White problem children differed significantly from their matched controls on both positive and negative subscales of the Intellectual Achievement Responsibility Questionnaire (higher scores reflect greater internal locus-of-control), according to analysis of variance procedures. However, the profile of subscale mean scores was fascinating. Among the White problem children, their negative locus-of-control (mean = 14.90) was higher than their positive locus-of-control (mean = 9.90) while the White normals obtained little difference between the two (mean = 12.10 and 13.70, respectively). Conversely, among the Black problem children, their negative locus-of-control (mean = 6.60) was lower than their positive locus-of-control (mean = 11.20) while there was little

difference between the two for Black normals (mean = 10 60 and 11 50, respectively)

In the second experiment (Ducette et al , 1972) with another sample of children, I Q replaced the race variable with similar results That is, both groups of problem children (high and low I Q) differed significantly from their matched controls Furthermore, among the high I Q problem children, their negative locus-of-control was higher (mean = 14 94) than their positive locus-of-control (mean = 7 94) while there was little difference between the two for controls (mean = 11 63 and 12 19 respectively) Among the low I Q children, their negative locus-of-control (mean = 9 86) was lower than their positive locus-of-control (mean = 13 14) with little difference for controls (mean = 11 18 and 12 55, respectively) It is noteworthy that the mean scores obtained by normals in both cases were similar to those of the IAR normative sample (Crandall, Katkovsky & Crandall, 1965)

The authors contended that "the problem child, by his discrepancy between the assumption of responsibility for positive and negative events, has systematically reduced the amount of meaningful feedback he can obtain for himself" (Ducette, et al , 1972, p 296) It can be seen from this important research that different clinical populations may be dysfunctional for different reasons related to the direction of the discrepancy between positive and negative locus-of-control This information is essential in the development of appropriate treatment strategies

In a study on abused children, Barahal, Waterman and Martin (1981) shed further light on the meaning of extreme differences between

positive and negative locus-of-control using the Stanford Preschool Internal-External Scale (SPIES) They found that abused children were more external than normal children While abused children accepted somewhat less responsibility for positive events than normals, they accepted dramatically less responsibility for negative events Barahal et al explained that rejection of responsibility for negative events by abused children is consistent with learned helplessness theory That is, abused children experience non-contingent punishment and therefore learn that they cannot control negative events

The studies by Ducette et al (1972) and Barahal et al (1981) illustrate that differences between positive and negative locus-of-control have important implications for the understanding and treatment of psychological problems in children While the use of overall locus-of-control scores has been helpful, the danger exists that important differences relative to the treatment of children may be overlooked

The lack of focus on valence in much of the locus-of-control literature has led, not only to the obvious loss of information due to more gross measurement, but perhaps also to some basic misconceptions in our understanding of the locus-of-control construct Recent evidence (Rothbaum, Wolfer and Visintainer (1979) suggested that the most widely used general scale for children, the Children's Nowicki-Strickland Scale (Nowicki & Strickland, 1973), as well as its preschool and primary school version (Nowicki & Duke, 1974), are both negatively biased A similar negative bias has also been found with the most widely used adult scale, Roter's Internal-External Scale (Gregory, 1981) It is difficult to determine the detrimental impact of such a bias, except

perhaps that much of what is believed about locus-of-control in general may be more accurately applied only to locus-of-control for negative events. In reviewing all the children's scales found which were constructed so that positive and negative events could be assessed separately and where scale scores were reported (Crandall et al , 1965, Mischel, et al , 1974, Milgram & Milgram, 1975, Chartier, Lankford & Ainley, 1976), the mean positive scores across age and sex were consistently higher than the mean negative scores. While the discrepancies were all relatively small, this trend toward a positive bias in locus-of-control perceptions is clearly present. This positive bias may well compound any misinterpretations made due to the negative bias built into the Nowicki-Strickland scales.

In summary, valence of locus-of-control perceptions is an important consideration in evaluating the interaction of locus-of-control with demographic and personality variables. Furthermore, it is a vital consideration in the assessment and treatment of children with psychological problems. Further evaluation of valence is sorely needed in order to rectify any misconceptions about locus-of-control that may exist, and in order to improve evaluation and treatment of clinical populations.

Assessment of Perspective

One final variable that may contribute to unexplained variance in locus-of-control perceptions is that of perspective (i.e., personally worded versus impersonally worded items). Mirels (1970) was one of the first investigators to raise questions about item perspective when he

factor analyzed Rotter's Internal-External scale and found that items worded in the first person loaded on a separate factor than did items worded impersonally. A few other investigators also examined the effect of personal versus impersonal items on locus-of-control. Gurin, Gurin, Lao and Beattie (1969) found that subjects differentiated between "personal control" (personally worded items) and "control ideology" (impersonally worded items about people in general). Reid and Ware (1974) took issue with Gurin et al.'s interpretation. They modified Rotter's I-E scale and compared responses on personal and impersonal Chance control items. It was concluded from factor analysis that subjects did not differentiate between the two types of Chance items. However, it could be argued that Reid and Ware might have obtained different results had they taken another approach to comparing responses to the two types of items, such as analysis of variance procedures.

Other investigators (Tyler, Gatz & Keenan, 1977) later conducted a fine-grained structural analysis of Rotter's scale using high school students and drew new and interesting conclusions regarding the effect of perspective. They found that on personally worded items, subjects endorsed the Internal response alternative. On impersonally worded items, subjects endorsed the external alternative.

In some cases, questionnaire constructors bypassed the issue of perspective by using only personally worded items. Levenson did so with her tripartate scale described earlier (Levenson, 1981). Likewise, most of the children's scales consist primarily of personal items (e.g., the Nowicki-Strickland scales, Nowicki & Strickland, 1963, Nowicki & Duke, 1974, the Intellectual Achievement Responsibility Questionnaire,

Crandall et al , 1965, and the Stanford Preschool Internal-External Sclae, Mischel et al , 1974) However, the Children's Health Locus-of-Control scale (Parcel & Meyer, 1978) disregarded the perspective variable and included a mixture of personal and impersonal items

Only a few studies were found which explored the effect of perspective on perceptions of locus-of-control in children Curtis and Schildhaus (1980) examined locus-of-control with an attributional interview which measured subject's tendency to attribute the cause of events to either personality or situational characteristics for both themselves and others They also adapted the Stanford Preschool I-E scale so that some items were deleted, and impersonal items were added to match the remaining personal items Curtis and Schildhaus (1980) found no relationship between locus-of-control and attribution style Furthermore, they found no differences on personal versus impersonal locus-of-control items Unfortunately, of their 32 subjects, 24 were found to be more external Therefore, no firm conclusions can be drawn regarding the relationship between attributional style and locus-of-control It was found that their subjects made more personality attributions to others than to themselves Responses to the positive and negative attribution questions were also examined separately On positive questions, subjects made 51% personality attributions to themselves and 69% personality attributions to others For negative questions, subjects made 6% personality attributions to themselves and 31% personality attributions to others It can be seen that children are much more willing to make negative personality attributions to others than to themselves It is difficult to draw any other

conclusions from this study (Curtis & Schildhaus, 1980) It may be that externals in particular make more personality attributions to others than to themselves, especially if they are negative, even though they do not differentiate between themselves and others on locus-of-control According to Piaget (Rosen, 1985), preoperational children are unable to decenter and take the role of another It is not clear how this developmental effect fits in with the performance of preschoolers in this study However, there is other evidence that perceptual decentering is related to Internal locus-of-control

Role taking and locus-of-control were examined in two studies of adolescents Deysach, Keller, Ross and Hiers (1975) found that high scores on Feffer's Role Taking Task were negatively correlated with Externality Similarly, Cohen and Farley (1973) found with male adolescents that subjects who could adopt the role of another were more Internal, and those who could not were more External

In summary, findings regarding the differential effect of personal versus impersonal perspective have been mixed Some investigators have found no effect due to perspective Others have bypassed the issue of perspective by using only personally worded items Still others have disregarded the possible effect of perspective and used an uneven mixture of personal and impersonal items In some cases where the effect of perspective was more closely examined, it was found to produce important differences Internal adolescents were better able to take the perspective of another than externals Adolescents viewed themselves as more internal than others Young children viewed themselves more positively than they viewed others In conclusion,

internals may be more cognitively mature in their ability to decenter than externals. Furthermore, children's tendency to view themselves more positively and as more internal than they view others suggests that attitudes toward Internal locus-of-control may be positively biased.

CHAPTER III

METHODS AND PROCEDURES

Experiment 1

Subjects

The subjects were 67 fourth through seventh grade school-children drawn from a rural South Central United States school district (Table I) Fourth and fifth graders were drawn from an elementary school, and sixth and seventh graders were drawn from a middle school. A parental consent form (Appendix A) was sent home with children from selected classrooms and those who returned a signed consent form were included.

Materials

The CMHLC Mental health Locus-of-Control Scale was constructed with three interests in mind. They were (a) how do children conceptualize mental health and mental illness, (b) what multidimensional scales are appropriate with children, and (c) how can children be asked about their control beliefs regarding mental health/illness-related behaviors without necessitating their self-identification with one or the other pole.

The first interest was addressed with a brief set of questions designed to elicit the ideas and language that children use to

conceptualize mental health A small group of children, 24 Boy Scouts, aged 11-14 years, and 12 girl gymnasts, aged 9-14 years, were asked to write two stories, one each about a child who is "crazy" and one who is not crazy" and to answer seven relevant open-ended questions (Appendix B) Their responses fell into five general logically derived categories, i e , conduct, thought, intelligence, mood and tension level This information was incorporated into the process of generation of face valid items for the CMHLC

TABLE I
SUBJECTS - EXPERIMENT 1

Grade	Sex	
	Males	Females
4	9	12
5	9	9
6	9	8
7	5	6

The second interest was the multidimensionality of mental health locus-of-control in children It was felt that the previously described Powerful Others dimension would be particularly relevant in the present context, especially with a focus on parents and teachers Thus, items

were written to tap Internal, Powerful Others and Chance locus-of-control beliefs which formed three subscales with approximately equal numbers of items in each subscale

The third interest was the potential bias that might be introduced by children's probable reluctance to identify themselves as mentally ill (Beidleman, Roberts, and Johnson, 1982) It was decided that items worded in the third person would be an appropriate alternative Although Levenson (1981) suggested that personally worded items more accurately measure an individual's perceived locus-of-control, Nunnally (1970) pointed out that beliefs held about people in general reflect one's underlying attitudes Furthermore, Hill and Bale (1981) found impersonally worded items a satisfactory approach for assessment of mental health locus-of-control in adults Thus, items were written so that their referent, which was always the item stem, was phrased "Mentally health children" or "Mentally ill children" In this way the target concept was concretely identified, yet kept impersonal and, therefore, less threatening

In accordance with the above considerations, a pool of 71 items was written by the principle investigator There were equal numbers of "Mentally healthy" and Mentally ill" stemmed items, and they were evenly balanced across areas of functioning relevant to CMHLC mental health, i e , intrapersonal, family relations, peer relations, and school relations The response format was a five-point Likert scale These items were then submitted to the remaining authors for evaluation of face validity Some items were thus discarded and others rewritten so that at this stage the CMHLC consisted of 61 items, 21 items on the

Internal subscale, 20 items on the Powerful others subscale, and 18 items on the Chance subscale. Two additional items were included, as per Rotter's (1975) suggestion, to assess the degree to which mental health is valued.

The following definitions were provided on the cover sheet of the CMHLC for those children who might not be familiar with the terms "mentally healthy" and "mentally ill"

Mentally ill children often are moody and worried, have mixed-up thoughts, or get into trouble

Mentally healthy children often are even tempered and not worried, have clear thoughts, and stay out of trouble

A practice loop was also provided on the cover sheet as a teaching aid in the use of the Likert format. It included two example items and two practice items. Readability of the CMHLC was calculated to be at the third grade level according to Fry's readability formula (Maginnis, 1969)

Procedure

Administration The CMHLC was administered to the subjects as a group while they were in their respective classrooms during classtime. They were told that the purpose of the study was to determine what children believe about mental health and mental illness. The instructions and examples on the cover sheet were read aloud by the experimenter, and time was allowed to answer the practice items and ask questions. Administration time ranged from about 40 minutes for the fourth graders to 25 minutes for the seventh graders.

Scoring Responses on the Likert scale earned scores ranging from one for "never" to five for "always". These scores were used in the

principal component analysis described below

Item analysis Item selection was carried out in a step-wise fashion on the basis of both expert judgements and principal components analyses with varimax rotation. Items that were excluded from the original 61 items based on expert judgements were not considered in the components analyses. Expert judgements involved ten judges, six who were Doctoral level and four who were Master's level pediatric psychologists. They were given the questionnaire and brief descriptions of the Internal, Powerful Others and Chance dimensions. Instructions were to identify the dimension each item tapped. Only those items that obtained 100 per cent agreement were retained. Component analyses for two and three component solutions with varimax rotation were carried out on the total set of items to determine if items grouped together according to locus-of-control subtype or any other meaningfully identifiable variables. The preplanned screening criteria for an item to be considered as a member of a given subgroup required that a loading of $\geq .40$ be obtained on the respective component for the three component solution.

Experiment 2

Subjects

The subjects were 260 fourth through seventh graders drawn from a small metropolitan south central United States school district (Table II). Subjects were drawn in the manner described in Experiment 1.

Materials

A second revision of the CMHLC was prepared for administration in

this experiment. It included 12 items comprising the two subscales (Internal and Powerful Others) found in Experiment 1. Fifty new items were added: four and five items, respectively, were added to the Internal and Powerful Others subscales from Experiment 1 so that each scale would be balanced in its distribution of item valence as well as in its representation of the original areas of functioning described in that experiment. A new set of 10 Chance items was also constructed with that same balance. After these additions there were 31 items, all with consistent valence between stem and outcome. That is, the items that had a positive outcome had a "mentally healthy" stem and items with a negative outcome had a "mentally ill" stem. A duplicate of each of those 31 items was then written with a new stem consisting of "I". Thus, half of the questionnaire items had impersonally worded stems, ("Mentally health children" or "Mentally ill children") and the other half of the questionnaire consisted of identical but personally worded items (i.e., "I"). The CMHLC thus included 62 items. The cover sheet was retained in its original form as was the response format.

Procedure

Administration Administration of revision 2 of the CMHLC was identical to that used in Experiment 1, except that classroom teachers were instructed in the administration process and in all cases they administered the questionnaire to their own students. Teachers were debriefed afterward and they described no difficulties. The investigator was intermittently present throughout the testing.

Scoring Responses on the Likert scale earned scores ranging from one for "never" to five for "always" These scores were used in the principal components analysis

Item analysis Preplanned screening criterion for selection of items from the principle components analysis was a loading of $\geq .35$ on the respective component This criterion is less conservative than that used earlier in the interest of a larger item pool

TABLE II

SUBJECTS - EXPERIMENT 2

Grade	Age	Sex		Total <u>n</u>
		Males <u>n</u>	Females <u>n</u>	
4	8	0	1	67
	9	17	33	
	10	9	7	
5	10	20	18	46
	11	5	3	
6	10	3	3	49
	11	17	18	
	12	6	2	
7	12	29	39	98
	13	17	12	
	14	0	1	

Experiment 3

Subjects

The subjects were 858 school children drawn from an urban South Central United States school district. Subjects by grade and sex were Fourth grade - 102 males and 121 females, fifth grade - 89 males and 91 females, sixth grade - 112 males and 104 females, seventh grade - 100 males and 139 females (sex of one subject was unknown). Fourth, fifth and sixth graders were drawn from three elementary schools, and seventh graders were drawn from one junior high school. Subject selection was identical to that described in Experiment 1 (Table III).

Table III
SUBJECTS - EXPERIMENT 3

Grade	Sex		Total <u>n</u>
	Males <u>n</u>	Females <u>n</u>	
4	102	121	223
5	89	91	180
6	112	104	216
7	100	139	239

Materials

A third revision of the CMHLC was prepared for administration in

this experiment (Appendix C) It included only 41 items isolated from Revision 2 that were balanced across valence and perspective, making up the three subscales, i e , 12 Internal items, 12 Powerful Others items and 17 Chance items The cover sheet used previously, as well as the 5-point Likert type response format were also retained Added to the cover sheet were labeled spaces for age, grade, race, sex, and occupation of head of household

Two other previously established locus-of-control measures were also used to corroborate that the CMHLC is indeed a valid measure of locus-of-control having some modest similarity to other such measures The Children's Health Locus-of-control Scale (CHLC) (Parcel & Meyer, 1978) is a previously developed instrument consisting of 20 forced choice items relating to locus-of-control of physical health It was scored to obtain an overall total mean score, as well as mean subscale scores for Internal, Powerful Others and Chance

The Nowicki-Strickland Locus-of-Control scale for children (NSLC) (Nowicki & Strickland, 1973) is a previously standardized instrument and consists of 40 forced choice items which sample general locus-of-control It was scored to obtain a single mean score This instrument was previously found to be moderately correlated with the CMHLC Health

Procedure

Administration Subjects were administered the CMHLC twice, with a two-week interval in between On test day #1 the CMHLC was administered and followed immediately by the CHLC, and NSLC Subjects were tested in groups while they were in their respective classrooms during

classtime They were told that the purpose of the study was to determine what children believe about mental health and mental illness The instructions and examples on the cover sheet were read by the examiner or a teacher, and time was allowed to answer the practice items The examiner was intermittently present throughout the testing Administration time ranged from one to one and a half hours After testing, the teachers who participated in questionnaire administration were debriefed to determine if any difficulties arose Although some teachers had questions, none described any difficulties Two weeks later the CMHLC was readministered again to subjects from three of the four schools participating, yielding retest data on 561 subjects

Scoring Responses on the CMHLC were scored as described in the previous experiment Item scores were used in the reliability and validity studies and in the principal components analysis with varimax rotation However, in the analyses of variance procedures subscale mean scores were used Socioeconomic status was obtained by a method adapted from Hollingshed's (1957) social position index

Item analysis A principal components analysis with varimax rotation was carried out for the three components on the CMHLC Internal consistency was assessed with alpha coefficients for the CMHLC subscales, and with item to total correlations within each subscale Internal consistency within each of the four valence-perspective subgroups of items was also obtained Test-retest correlations were obtained for the 561 subjects on the subscales

CHAPTER IV

RESULTS AND DISCUSSION

EXPERIMENT 1

Results

The principal purpose of Experiment One was to construct a preliminary Children's Mental Health Locus-of-Control scale (CMHLC) that clinicians and experimenters could use in identifying children's mental health locus-of-control beliefs for purposes of clinical diagnosis, treatment planning, and treatment outcome research. It was expected that three dimensions of locus-of-control would emerge, i.e., Internal, Powerful Others, and Chance. It was also expected that children would perceive mental health and mental illness beliefs independently in accordance with the respective valence of those beliefs. The statistical techniques used were principal components analyses with varimax rotation set for two and three component solutions.

The data collected consisted of children's mean on a five-point Likert scale for each of 61 items on the CMHLC. Expert judgements were also obtained to assess item validity.

Calculation of expert judgements yielded 100% agreement on 54 items. Seven items which ranged from 60% to 90% agreement were deleted.

The two-component solution revealed a first component that was composed predominately of items with "mentally healthy" stems and a second component that was composed exclusively of items with "mentally ill" stems. Together they accounted for 20.4% of the variance (see Appendix D for component loadings and Eigenvalues) This pattern of loadings suggested that children responded independently to "mentally healthy" and mentally ill" items. The three-component analysis revealed a first component with six Internal items. that obtained loadings .40 on that component and low loadings on the other two components. On both the second and third components three Powerful Others items each met the criterion. On Component Two, two of these were "mentally ill" items and one was a "mentally healthy" item. On Component Three all three were "mentally ill" items. Together the three components accounted for 26% of the variance. (Appendix E) Chance items obtained very low loadings across all three components It was noteworthy that all items with "mentally healthy" stems and negative outcome, and all items with "mentally ill" stems and positive outcomes obtained low to zero loadings.

Experiment 2

Results

The purpose of experiment Two was three-fold (a) to increase the length of the Internal and Powerful Others subscales by adding new items within each subscale which had stems matched to outcomes according to valence, (b) to improve the strength of association of items within each subscale by adding equal numbers of matched, personally worded items,

and (c) to create a new Chance subscale with items that were more concrete than the ones previously used in Experiment One. The statistical technique used was a principal components analysis with varimax rotation set for three components

The three-component analysis revealed a first component composed primarily of Chance items, 17 of which met criterion. On the second component 11 Powerful Others items met criteria and one was marginal. On the third component seven internal items met criteria, while five were marginal. Together the three components accounted for 31% of the variance (Appendix F). The 35 targeted items plus the six marginal items were retained in Revision 3 so that subgroups of items according to item perspective and valence could be compared to Experiment 3.

Experiment 3

Results

There were two primary purposes in experiment three. One was to assess the construct validity and reliability of Revision Three of the CMHLC. The second purpose was to explore the interactive effects of dimension (i.e., Internal, Powerful Others and Chance), valence (i.e., positive or negative), and perspective (i.e., personal or impersonal) with each of five demographic variables (i.e., age, grade, race, sex and occupation of head of household) according to CMHLC scores. The statistical techniques used were (a) principal components analysis of the CMHLC scores and Pearson correlation coefficients between the CMHLC and the other two locus-of-control scales described earlier to assess the construct validity of the CMHLC, (b) alpha coefficients on the three

CMHLC subscales as well as the four subgroups of items according to valence and perspective (i.e., positive-impersonal, negative-impersonal, positive-personal, negative-personal) to assess internal consistency, (c) test-retest correlations on the CMHLC to assess reliability, and (d) three-factor split-plot analyses of variance (i.e., grade X dimension X valence-perspective, age X dimension X valence-perspective, sex X dimension X valence-perspective, race X dimension X valence-perspective, and occupation X dimension X valence-perspective.

Construct Validity. On the component analysis with varimax rotation the first three factors that emerged were consistent with Chance, Powerful Others and Internal subscales, in that order. They account for 34% of the variance (see Table IV for item loadings and Eigenvalues). The Chance Component was the strongest with all Chance item loadings exceeding .50. The Powerful Others component was also strong, with all Powerful others items exceeding .33. The Internal Component was the weakest, as in experiment Two. Three Internal items loaded higher on the Powerful Component, and the other Internal items obtained loadings ranging from .23 to .68 with most exceeding .45 on component three. Items which loaded according to their respective subscales generally obtained very low loadings on the other two components. The correlation coefficients obtained between the three locus-of-control scales can be found in Table V. Correlations between CMHLC subscales, the CHLC subscales as well as its total scale score, and the NSLC were all significant, generally beyond the .01 level of probability, in accordance with their respective locus-of-control directions as was expected. The highest correlation for the CMHLC with

TABLE IV
 CMHLC EXPERIMENT 3, THREE-COMPONENT SOLUTION

Item	Component I	Component II	Component III
1	.03	.49	.06
2	.02	.32	.08
3	.03	.20	.07
4	-.03	.37	.13
5	.26	.34	-.04
6	.53	.08	-.13
7	-.03	.08	.47
8	.57	.17	-.07
9	.60	.08	.05
10	.06	.54	.12
11	.02	.24	.22
12	.09	.14	.23
13	.07	.31	.29
14	.25	.44	-.09
15	.64	.06	-.06
16	.67	.09	.02
17	.13	.67	-.02
18	.15	.62	-.07
19	.59	.20	-.11
20	.35	.43	-.16
21	-.15	.13	.48
22	.62	.14	.07
23	.16	.61	.02
24	.38	.38	-.02
25	.60	.26	-.03
26	-.16	-.10	.67
27	.62	.23	-.09
28	.66	.14	.08
29	.15	.63	.02
30	.74	.07	.06
31	.18	.37	.07
32	-.11	-.17	.68
33	.74	.06	.02
34	-.15	-.07	.61
35	.10	.13	.28
36	.14	.18	.32
37	.70	.10	-.03
38	.57	.24	-.11
39	.70	.03	-.01
40	.69	.18	.03
41	.72	.06	.06
Eigenvalue	8.94	2.86	2.10

the other scales was between the CMHLC and the CHLC Chance subscales, .34 ($p < .01$). The lowest correlation was between the CMHLC Powerful Others subscale and NSLC, .09 ($p < .05$). All the CMHLC correlations were quite modest, and their level of significance may be attributable, in part, to the large sample size. The correlation between the NSLC and the CHLC was .40 ($p < .01$).

TABLE V
INTERCORRELATIONS BETWEEN QUESTIONNAIRES

QUESTIONNAIRE	1	2	3	4	5	6	7	8
1. CMHLC-I	-	.19**	-	.16**	-	-	.14**	.10*
2. CMHLC-P		-	.48**	-	-	.15**	.09*	.17**
3. CMHLC-C			-	.15**	.24**	.34**	.31**	.33**
4. CHLC-I				-	-.14**	-	-.84**	-.30**
5. CHLC-P					-	.12*	.52**	.24**
6. CHLC-C						-	.20**	.16**
7. CHLC-TOT- External							-	.40**
8. NSLC- External								-

Note. All nonsignificant correlations were omitted. NS = Nowicki-Strickland Locus-of-Control Scale, CMHLC = Children's Mental Health Locus-of-Control of Scale, CHLC = Children' Health-Locus-of Control Scale, I = Internal, C = Chance, P = Powerful Others, TOT = Total
* .05 **p .01

Internal consistency. Reliability coefficients were as follows
Internal subscale = .58, Powerful Others subscale = .73, Chance subscale

= .92, (Table VI). Alpha coefficients according to valence-perspective item subgroups within each subscale are shown in Table VII.. Although the 12 item subgroups are small, ranging from two to five items each, some of the coefficients were quite large, particularly on the Chance subscale where they ranged from .70 to .81. The Internal subgroups were the lowest. Interestingly, the Powerful Others subgroups with negative valence obtained the highest coefficients on that subscale. Test-retest reliability coefficients were .53 for the Internal subscale, .66 for the Powerful Others subscale and .74 for the Chance subscale.

TABLE VI
ALPHA COEFFICIENTS AND ITEM TO TOTAL COEFFICIENTS

Internal		Powerful Others		Chance	
Item#	Coeff.	Item#	Coeff.	Item#	Coeff.
2	.15	1	.34	8	.53
4	.17	3	.15	9	.54
7	.27	5	.34	15	.58
11	.18	10	.36	16	.62
12	.16	14	.41	19	.56
13	.22	17	.52	22	.59
21	.30	18	.49	25	.59
26	.37	20	.45	27	.60
32	.31	23	.47	28	.61
34	.29	24	.44	30	.68
35	.19	29	.48	33	.67
36	.24	31	.32	37	.65
				38	.55
				39	.63
				40	.66
				41	.66
Alpha	.58	Alpha	.76	Alpha	.92

TABLE VII
TOTAL CORRELATIONS AND ALPHA COEFFICIENTS
BY ITEM SUBGROUPS

Valence- Perspective	Dimension					
	Internal		Powerful Others		Chance	
	Item	Coeff	Item	Coeff.	Item	Coeff.
<hr/>						
Positive Impersonal						
	7	.20	3	.08	8	.52
	34	.20	5	.08	9	.52
	36	.09	Alpha	.14	16	.58
	Alpha	.29			33	.59
					37	.55
					Alpha	.78
Negative Impersonal						
	2	.24	10	.38	6	.42
	4	.24	20	.27	22	.50
	12	.11	23	.56	25	.54
	Alpha	.34	29	.48	25	.54
			Alpha	.64	38	.50
					Alpha	.70
Positive Personal						
	26	.35	24	.26	15	.53
	32	.30	31	.26	28	.62
	35	.10	Alpha	.41	30	.65
	Alpha	.41			39	.61
					4	.65
					Alpha	.82
Negative Personal						
	11	.13	1	.31	19	.51
	13	.22	14	.28	27	.53
	21	.25	17	.50	40	.50
	Alpha	.35	18	.47	Alpha	.70
			Alpha	.61		
<hr/>						

Analysis of variance. In all of these analyses the interaction between Dimension and Valence-Perspective was significant beyond the .01 level of probability. However, explication of the simple effects will be reserved for the description of the Grade X Dimension X Valence-Perspective analysis. Likewise, post hoc analysis on the consistently

significant main effects for Dimension and for Valence-Perspective will be reserved. Note that in all cases, degrees of freedom were adjusted by a fractional constant for theta due to repeated measures (adjusted degrees of freedom are not shown on the source tables)

An Age X Dimension X Valence-Perspective split-plot factorial analysis of variance yielded a significant main effect for Dimension, $F(1,851) = 1771.76, p < .01$, a significant main effect for Valence-Perspective, $F(1,851) = 288.93, p < .01$, a significant interaction between Age and Dimension, $F(6,851) = 3.57, p < .01$, and a significant interaction between Dimension and Valence-Perspective, $F(1,851) = 109.70, p < .01$. Simple effects tests of the interaction between Age and dimension indicated that there were no significant differences between levels of age, but that levels of dimension significantly differed at each level of Age ($p < .01$). According to Tukey's HSD statistic for each significant simple effects the Internal dimension was significantly greater than the Powerful Others and Chance dimensions ($p < .01$), which did not differ significantly from one another (Tables VIII, IX).

A Race X Dimension Valence-Perspective split-plot factorial analysis of variance yielded a significant main effect for dimension, $F(1,853) = 1753.77, p < .01$, a significant main effect for Valence-Perspective, $F(1,853) = 289.30, p < .01$, a significant interaction between race and Dimension, $F(4,853) = 2.63, p < .05$, and a significant interaction between Dimension and Valence-Perspective, $F(1,853) = 109.70, p < .01$ (Tables X, XI). Simple effects tests of the interaction between Race and Dimension revealed no differences between levels of Race, but the levels of Dimension significantly differed at each level

of Race ($p < .01$). Tukey's HSD statistic for each significant simple effect revealed that the Internal Dimension was significantly greater than the Powerful Others and Chance Dimensions ($p < .01$) which did not differ from one another.

TABLE VIII
ANALYSIS OF VARIANCE OF THE EFFECTS OF AGE, DIMENSION
AND ITEM VALENCE-PERSPECTIVE ON
CMHLC SUBSCALE MEAN SCORES

Source	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Subjects				
A (Age)	9 98	6	1.66	93
Subj. wgr.	1522.69	851	1.79	
Within Subjects				
B(Dimension)	3248.35	2	1624 17	1771 76**
AB	39.24	12	3.27	3.57**
B X Subj. wgr.	1560 16	1702	.92	
C (Valence-Perspective)	299.91	3	99.97	288 93**
AC	5 51	18	.31	88
C X Subj wgr.	883. 31	2553	.35	
BC	179 96	6	29.99	109.70**
ABC	16 77	36	.47	1 70
BC X Subj wgr.	1395 84	5106	.27	

Note. In all cases, level of significance of F Values was determined with degrees of freedom adjusted by a fractional constant for theta.

Note Subjects within groups (Subj wgr).

*p less than .05. **p less than 01.

TABLE IX
ANALYSIS OF VARIANCE FOR SIMPLE EFFECTS OF
AGE BY DIMENSION INTERACTION

Source	Degrees of Freedom	Mean Square	F Ratio
Between Subjects			
A (Age)			
A at b ₁	6	1 29	71
A at b ₂	6	.57	.32
A at b ₃	6	6 40	3.55
Error	2553		
Within Subjects			
B (Dimension)			
B at a ₁	2	3.90	4.26*
B at a ₂	2	116 62	127.22**
B at a ₃	2	281.18	306 73**
B at a ₄	2	365 60	398 82**
B at a ₅	2	482.78	526.65**
B at a ₆	2	372 95	406.84**
B at a ₇	2	20 75	22 63**
Error	1702	.92	

Note In all cases, level of significance of F values was determined with degrees of freedom adjusted by a fractional constant for theta.

*p less than .05. **p less than 01

TABLE X
ANALYSIS OF VARIANCE OF THE EFFECTS OF RACE, DIMENSION
AND ITEM VALENCE-PERSPECTIVE ON
CMHLC SUBSCALE MEAN SCORES

Source	Sum of Squares	Degrees of Freedom	Mean Squares	F Ratio
Between Subjects				
A (Race)	12 88	4	3.22	1 81
Subj wgr.	1519.79	853	1.78	
Within Subjects				
B (Dimension)	3248 35	2	1624 18	1753 77**
AB	19.47	8	2 43	2.63*
B X Subj. wgr.	1579.93	1706	93	
C (Valence-Perspective)	299.91	3	99 97	289.30**
AC	4 52	12	38	1.09
C X Subj. wgr.	884.30	2559	.35	
BC	179 96	6	29.99	109.07**
ABC	6.56	24	27	99
BC X Subj. wgr.	1406.05	5118	.28	

Note In all cases, level of significance of F values was determined with degrees of freedom adjusted by a fractional constant for theta

Note. Subjects within groups (Subj wgr).

*p less than 05 **p less than 01

TABLE XI
ANALYSIS OF VARIANCE FOR SIMPLE EFFECTS OF THE
RACE BY DIMENSION INTERACTION

Source	Degrees of Freedom	Mean Square	F Ratio
Between Subjects			
A (Race)			
A at b ₁	4	1 32	73
A at b ₂	4	1 16	.64
A at b ₃	4	5 61	3.11
Error	2559	1 80	
Within Subjects			
B (Dimension)			
B at a ₁	2	160.30	173.10**
B at a ₂	2	1346.35	1453.94**
B at a ₃	2	65.05	70.25**
B at a ₄	2	14.35	15.50**
B at a ₅	2	47.90	51.73**
Error	1706	.93	

Note. In all cases, level of significance of F values was determined with degrees of freedom adjusted by a fractional constant for theta.

*p less than .05 **p less than .01

A Sex X Dimension X Valence-Perspective split-plot analysis of variance yielded a significant main effect for sex, $F(1,855) = 4.65, p < .05$, a significant main effect for Dimension, $F(1,855) = 1757.79, p < .01$, a significant main effect for Valence Perspective, $F(1,855) = 288.13, p < .01$, and a significant interaction between Dimension and Valence-Perspective, $F(1,855) = 109.88, p < .01$ (Table XII) Tukey's HSD statistic revealed that there were no significant differences between levels of Sex.

An Occupation X Dimension X Valence-Perspective split-plot analysis

of variance yielded a significant main effect for Dimension, $F(1,853) = 1763.44$, $p < .01$, a significant main effect for Valence-Perspective, $F(1,853) = 289.77$, $p < .01$, a significant interaction between Dimension and Valence-Perspective, $F(1, 853) = 109.46$, $p < .01$. and a significant interaction between Occupation and Dimension, $F(4,853) = 3.82$, $p < .01$. Analysis of simple effects of the interaction between Occupation and Dimension revealed significant differences between levels of Occupation at Dimension Three (Chance). However, Tukey's HSD statistic found no significant differences. Significant simple effects were also found for levels of Dimension at each level of Occupation ($p < .01$). Tukey's HSD statistic found that the Internal Dimension was significantly greater than the Powerful Others and Chance Dimensions at each level of Occupation ($p < .01$), while the Powerful Others and Chance Dimensions did not differ from each other (Tables XIII, XIV).

A Grade X Dimension X Valence-Perspective split-plot analysis of variance yielded a significant main effect for Grade $F(1,427) = 3.96$, $p < .05$, a significant main effect for Dimension, $F(1,854) = 1792$, $p < .01$, and a significant main effect for Valence-Perspective, $F(1,854) = 290.05$. There was also a significant interaction between Grade and Dimension, $F(3,854) = 9.57$, $p < .01$, a significant interaction between Dimension and Valence-Perspective, $F(1,854) = 110.27$, $p < .01$, and a significant three-way interaction, $F(3,854) = 3.57$, $p < .01$ (Table XV). Because the three-way interaction was significant, the main effects and two-way interactions were not further analyzed (W. Rambo, personal communication, December 15, 1984). Results of simple effects of the three-way interaction and Tukey's HSD statistics are summarized below.

In reviewing these results, keep in mind that, Positive-Impersonal mean scores are those for positive items with "mentally healthy children" stems, Negative-Impersonal scores are those for negative items with "mentally ill children" stems, Positive-Personal scores are those for positive items with "I" stems, and Negative-Personal scores are those for negative items with "I" stems.

Simple effects tests of the interaction between Grade, Dimension, and Valence-Perspective yielded numerous significant effects. F values can be found in Table XVI

TABLE XII
ANALYSIS OF VARIANCE OF THE EFFECTS OF SEX, DIMENSION
AND ITEM VALENCE-PERSPECTIVE ON
CMHLC SUBSCALE MEAN SCORES

Source	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Subjects				
A (Sex)	8.29	1	8.29	4.65*
Subj. wgr.	1523.93	855	1.78	
Within Subjects				
B (Dimension)	3256.83	2	1628.42	1757.79**
AB	5.22	2	2.61	2.82
B X Subj. wgr.	1584.15	1710	.93	
C (Valence-Perspective)	298.97	3	99.66	288.13**
BC	.33	3	.11	.32
C X Subj. wgr.	887.16	2565	.35	
BC	181.31	6	30.22	109.88**
ABC	.71	6	.12	.43
BC X Subj. wgr.	1408.26	5130	.28	

Note. In all cases, level of significance of F values was determined with degrees of freedom adjusted by a fractional constant for theta

Note. Subjects within groups (Subj wgr.).

*p less than .05 **P less than .01.

TABLE XIII
ANALYSIS OF VARIANCE OF THE EFFECTS OF OCCUPATION, DIMENSION,
AND ITEM VALENCE-PERSPECTIVE ON
CMHLC SUBSCALE MEAN SCORES

Source	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Subjects				
A (Occupation)	15.81	4	3.95	2.22
Subj. wgr.	1516.86	853	1.78	
Within Subjects				
B (Dimension)	3248.35	2	1624.18	1763.44**
AB	28.13	8	3.52	3.82**
B X Subj. wgr.	1571.27	1706	.92	
C (Valence-Perspective)	299.91	3	99.97	289.77**
BC	5.97	12	.50	1.44
C x Subj. wgr.	882.85	2559	.35	
BC	179.96	6	29.99	109.46**
ABC	9.94	24	.41	1.51
BC X Subj. wgr.	1402.67	5118	.27	

Note. In all cases, level of significance of F values was determined with degrees of freedom adjusted by a fractional constant for theta

Note. Subjects within groups (Subj. wgr.).

*p less than .05 **p less than .01.

TABLE XIV
ANALYSIS OF VARIANCE FOR SIMPLE EFFECTS OF THE
OCCUPATION BY DIMENSION INTERACTION

Source	Degrees of Freedom	Mean Square	F Ratio
Between Subjects			
A (Occupation)			
A at b ₁	4	1 24	.69
A at b ₂	4	3.10	1.73
A at b ₃	4	10 98	6 10*
Error	2559	1.80	
Within Subjects			
B (Dimension)			
B at a ₁	2	26.98	29 29**
B at a ₂	2	295.00	320.30**
B at a ₃	2	856.90	930 41**
B at a ₄	2	186.54	202 54**
B at a ₅	2	272 82	296.23**
Error	853	92	

Note In all cases, level of significance of F values was determined with degrees of freedom adjusted by a fractional constant for theta.

*p less than 05. **p less than .01

TABLE XV
ANALYSIS OF VARIANCE OF THE EFFECTS OF GRADE, DIMENSION
AND ITEM VALENCE-PERSPECTIVE ON
CMHLC SUBSCALE MEAN SCORES

Source	Sum of Squares	Degrees of Freedom	Mean Square	F Ratio
Between Subjects				
A (Grade)	21.03	3	7.01	3.96*
Subj. wgr.	1511.65	854	1.77	
Within Subjects				
B (Dimension)	3248.35	2	1624.18	1792.75**
AB	52.00	6	8.67	9.57**
B X Subj. wgr.	1547.40	1708	.91	
C (Valence-Perspective)	299.91	3	99.97	290.05**
AC	5.78	9	.64	1.86
C X Subj. wgr.	883.04	2562	.35	
BC	179.96	6	29.99	110.27**
ABC	17.46	18	.97	3.57*
BC X Subj. wgr.	1395.15	5124	.27	

Note. In all cases, level of significance of F values was determined with degrees of freedom adjusted by a fractional constant for theta.

Note Subjects within groups (Subj wgr).
*p less than .05 , **P less than .01

TABLE XVI
ANALYSIS OF VARIANCE FOR SIMPLE EFFECTS OF THE
GRADE BY DIMENSION BY VALENCE-
PERSPECTIVE INTERACTION

Source	Degrees of Freedom	Mean Square	F Ratio
Between Subjects			
A (Grade)			
A at bc ₁₁	3	1.43	2.75
A at bc ₁₂	3	.42	.81
A at bc ₁₃	3	1.92	3.70
A at bc ₁₄	3	2.07	3.97*
A at bc ₂₁	3	4.08	7.84**
A at bc ₂₂	3	.69	1.33
A at bc ₂₃	3	3.28	6.31*
A at bc ₂₄	3	.64	1.23
A at bc ₃₁	3	4.99	9.61**
A at bc ₃₂	3	3.04	5.84*
A at bc ₃₃	3	4.89	9.40**
A at bc ₃₄	3	4.36	8.39**
Error	10248	.52	
Within Subjects			
B (Dimension)			
B at ac ₁₁	2	55.48	63.05**
B at ac ₁₂	2	57.47	65.31**
B at ac ₁₃	2	126.08	143.27**
B at ac ₁₄	2	78.77	89.51**
B at ac ₂₁	2	71.35	81.08**
B at ac ₂₂	2	51.32	58.32**
B at ac ₂₃	2	157.08	178.52**
B at ac ₂₄	2	74.56	84.73**
B at ac ₃₁	2	104.03	118.22**
B at ac ₃₂	2	67.33	76.51**
B at ac ₃₃	2	198.98	226.11**
B at ac ₃₄	2	101.62	115.48**
B at ac ₄₁	2	140.12	159.23**
B at ac ₄₂	2	72.14	81.98**
B at ac ₄₃	2	245.61	279.10**
B at ac ₄₄	2	146.12	166.05**
Error	6832	.88	
C (Valence)			
C at ab ₁₁	3	17.93	43.74**
C at ab ₁₂	3	24.41	59.54**
C at ab ₁₃	3	5.56	13.56**
C at ab ₂₁	3	22.19	54.12**

TABLE XVI (Continued)

C at ab ₂₂	3	10.03	24.46**
C at ab ₂₃	3	3.85	9.39**
C at ab ₃₁	3	22.02	53.71**
C at ab ₃₂	3	13.43	32.76**
C at ab ₃₃	3	1.88	4.59*
C at ab ₄₁	3	31.25	76.22**
C at ab ₄₂	3	9.53	23.24**
C at ab ₄₃	3	4.44	10.83**
Error	7686	41	
AB			
AB at c ₁	6	3.14	3.57*
AB at c ₂	6	1.56	1.77
AB at c ₃	6	3.86	4.39**
AB at c ₄	6	3.23	3.67*
Error	6832	88	
AC			
AC at b ₁	9	.81	1.98
AC at b ₂	9	1.53	3.73*
AC at b ₃	9	.12	.30
Error	7686	41	
BC			
BC at a ₁	6	5.26	19.33**
BC at a ₂	6	7.08	26.04**
BC at a ₃	6	9.57	35.16**
BC at a ₄	6	10.84	39.85**
Error	5124	.27	

Note In all cases, level of significance of F values was determined with degrees of freedom adjusted by a fractional constant for theta
* p less than .05 ** p less than .01.

Results of simple effects tests on Grade at Dimension by Valence-Perspective are as follows (Figure 1). Significant differences were found for Grade on the Internal dimension for Negative-Personal scores ($p < .05$), on the Powerful Others dimension for Positive-Impersonal scores ($p < .01$), and on the Powerful Others dimension for Positive-Personal scores ($p < .05$). Significant differences were also found for

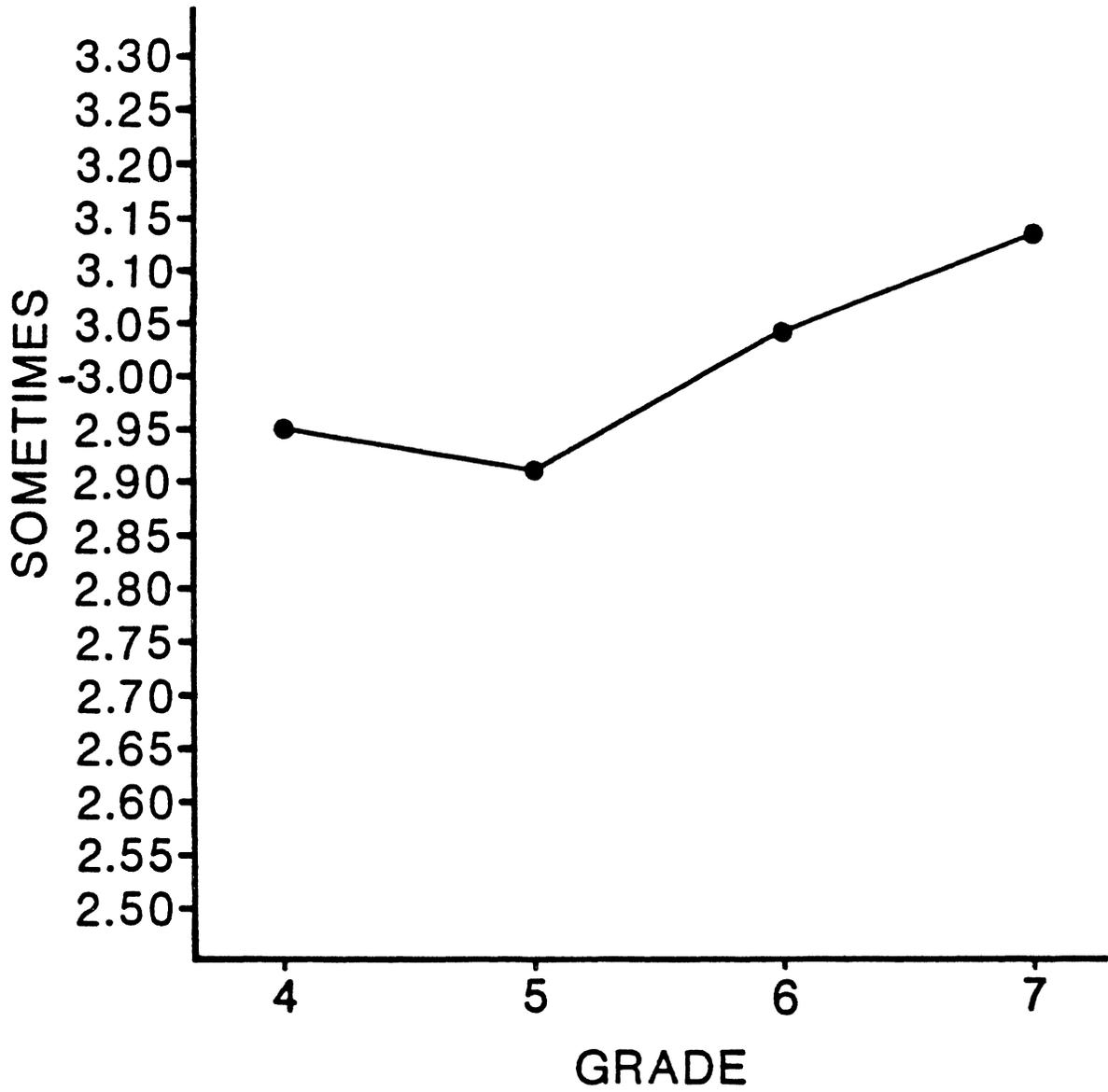


Figure 1 Grade at Dimension by Valence-Perspective Internal
Negative-Personal

Grade on the Chance dimension for Positive-Impersonal scores ($p < .01$), for Negative-Impersonal scores ($p < .05$), for Positive-Personal scores ($p < .01$), and for Negative-Personal scores ($p < .01$).

Tukey's HSD statistics found the following results. On the Internal dimension seventh graders' Negative-Personal scores were greater than those for fifth graders ($p < .05$) (Figure 1). On the Powerful Others dimension the fourth grader's Positive-Impersonal scores were higher than those for the other grades ($p < .01$) (Figure 2). On this Dimension the fourth graders also obtained higher Positive-Personal scores than the fifth and sixth graders ($p < .01$) (Figure 2). On the Chance dimension grade differentiated children's responses at each level of Valence-Perspective (Figure 3). The fourth graders Chance Positive-Impersonal scores were higher than those for the older grades ($p < .01$) (Figure 3). Furthermore, the Positive-Personal scores for the fourth ($p < .01$), fifth and sixth grades ($p < .05$) were higher than those for the seventh graders (Figure 3). Likewise, the Negative-Personal and Negative-Impersonal scores were higher for younger grades than older grades ($p < .01-.05$) (Figure 3).

Results of simple effects tests on Dimension at Grade by Valence-Perspective indicated that significant differences were found for Dimension for all levels of Grade by Valence-Perspective ($p < .01$). Tukey's HSD statistic indicated that Internal scores were consistently higher than Powerful-Others and Chance scores for all children regardless of grade or Valence-Perspective ($p < .01$) (Figure 4). Powerful Others Positive-Impersonal scores were also consistently higher than Chance Positive-Impersonal scores for all grades ($p < .01$) (Figure

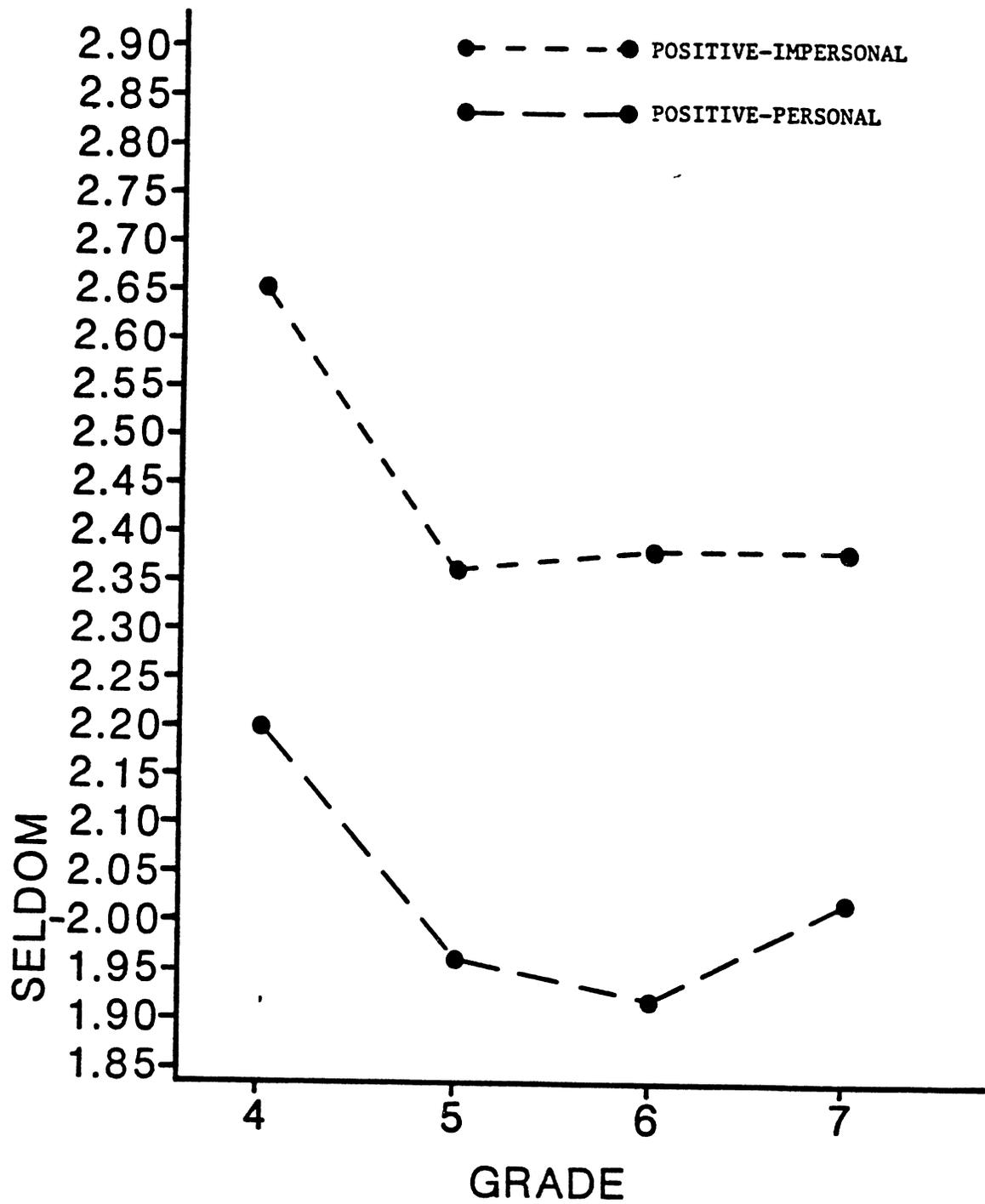


Figure 2. Grade at Dimension by Valence-Perspective Powerful Others

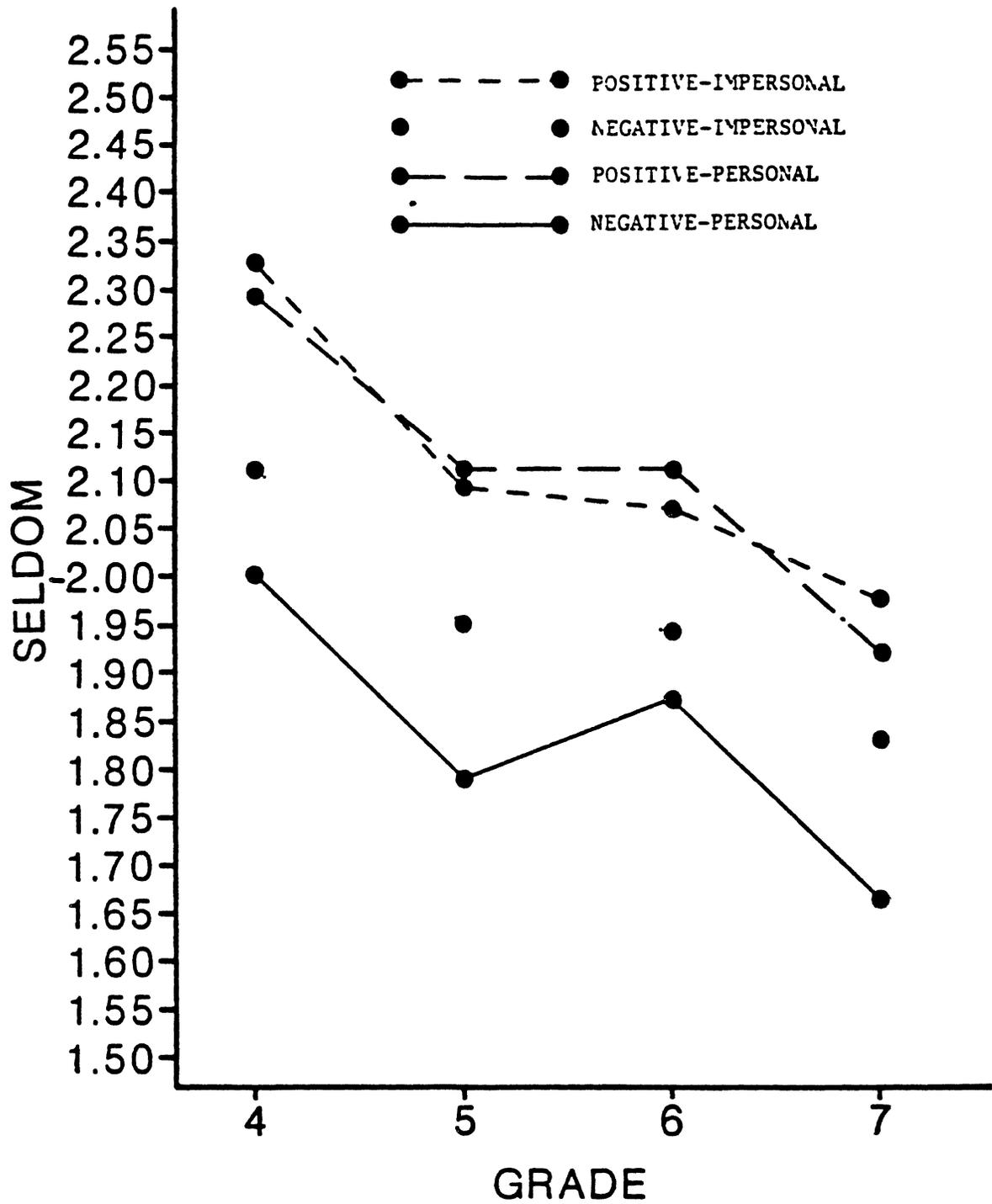


Figure 3. Grade at Dimension by Valence-Perspective Chance

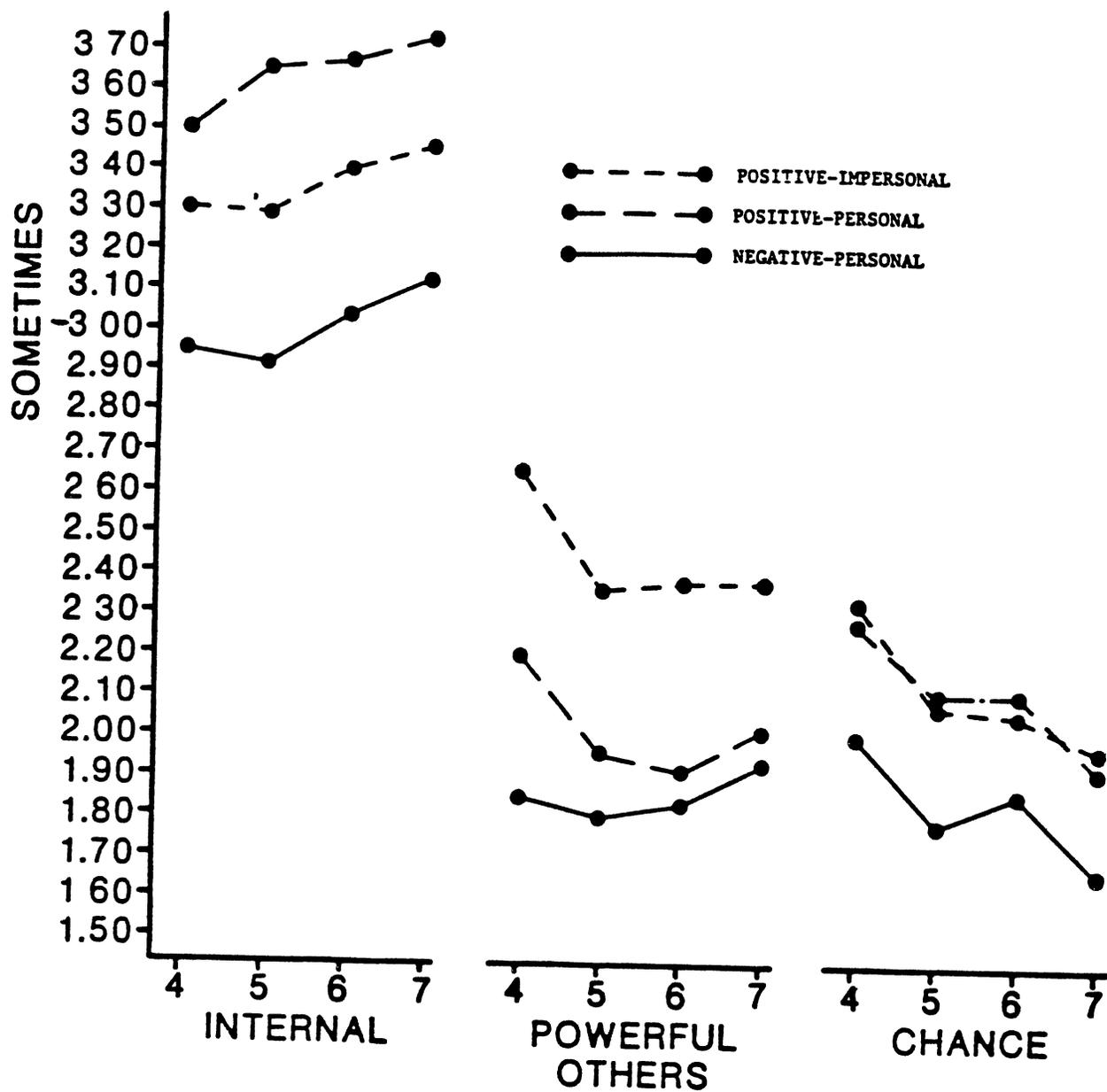


Figure 4. Grade by Dimension at Valence-Perspective

4). For seventh graders only, Powerful Others Negative-Impersonal and Negative-Personal scores were also higher than their scores on the like Chance items ($p < .01$).

Results of simple effects tests on Valence-Perspective at Grade by Dimension revealed significant differences for Valence-Perspective for all levels of Grade by Dimension ($p < .01$) (Figure 4). Tukey's HSD statistics found that Positive-Personal scores consistently exceeded Negative-Personal scores except on Powerful Others for fifth, sixth, and seventh graders ($p < .01-.05$) (Figure 4). On the Internal Dimension Positive-Personal and Impersonal scores exceeded Negative-Personal and Impersonal scores for all grades ($p < .01-.05$). However, on the Powerful Others dimension, while Positive-Impersonal scores still exceeded Negative-Personal scores for all grades ($p < .01$), Positive-Personal scores exceeded Negative-Personal scores only for the fourth graders ($p < .01$). On the Powerful Others dimension only Negative-Impersonal scores exceeded Negative-Personal scores ($p < .01-.05$) (Figure 5). On the Chance dimension, Positive-Personal scores exceeded Negative-Personal scores for all grades ($p < .01-.05$). On this dimension, Positive-Impersonal scores exceeded Negative-Personal scores for all but the sixth graders ($p < .01-.05$).

Results of simple effects tests on Grade by Dimension at Valence-Perspective were as follows (Figure 4). Significant differences were found for Grade by Valence-Perspective on Positive-Impersonal scores ($p < .05$), on Positive-Personal scores ($p < .01$), and on Negative-Personal scores ($p < .05$). Tukey's HSD statistic found the following significant differences.

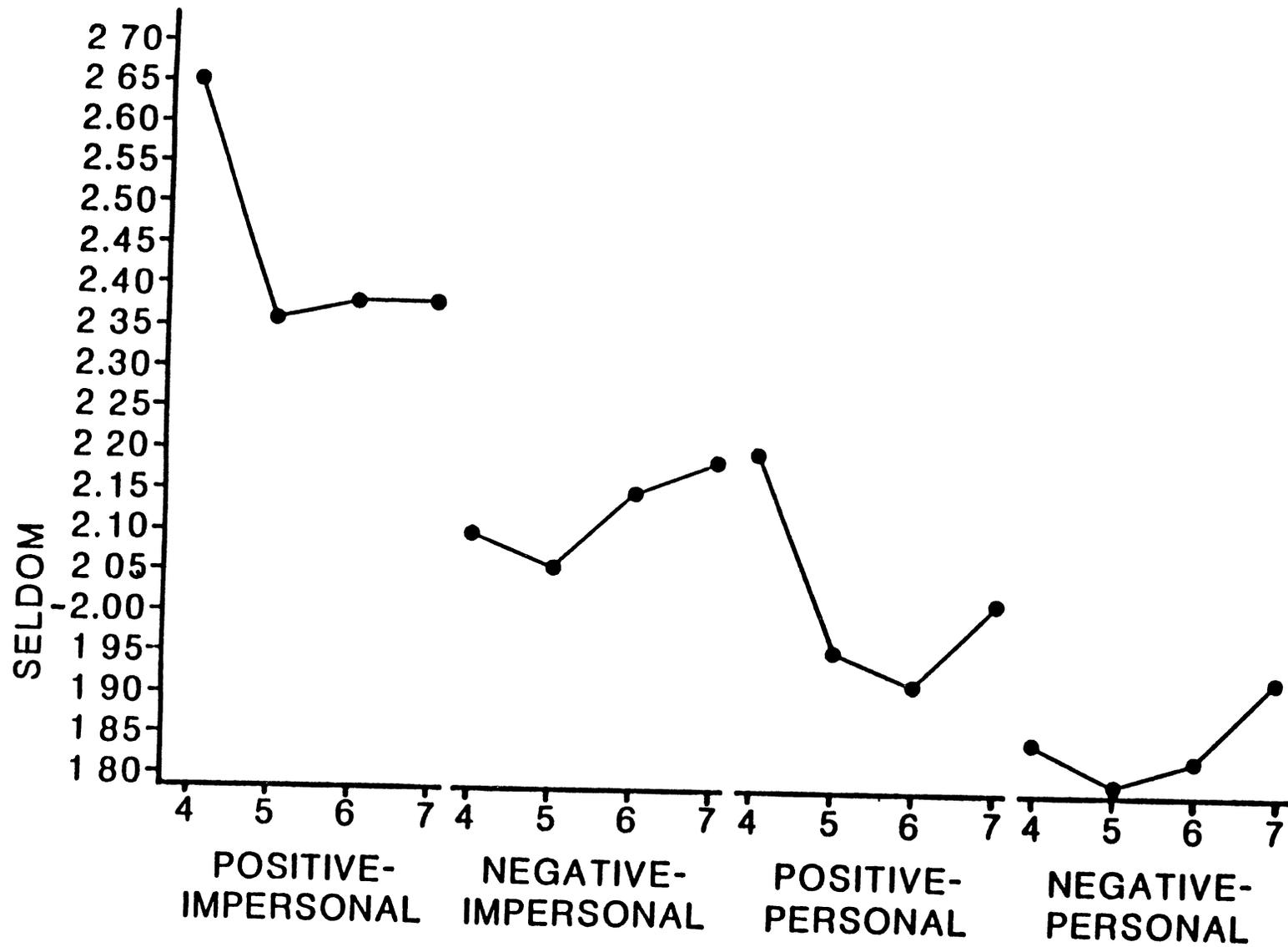


Figure 5. Grade by Valence-Perspective at Dimension Powerful Others

On Positive-Impersonal items (Figure 4) Internal scores were higher for each grade than Powerful Others and Chance scores ($p < .01$), fourth graders Powerful Others scores were higher than their own Chance scores ($p < .05$) and the Chance scores of the other grades ($p < .01$), sixth and seventh graders' Powerful Others scores were higher than sixth ($p < .05$) and seventh grade Chance scores ($p < .01$), fifth graders' Powerful Others scores were higher than seventh graders Chance scores ($p < .01$), fourth graders' Chance scores were higher than seventh graders' Chance scores ($p < .01$).

For Positive-Personal scores (Figure 4) all grades' Internal scores were higher than their own and other grades' Powerful Others and Chance scores ($p < .01$), fourth graders' Chance scores were higher than fifth and sixth graders' Powerful Others scores ($p < .05$) and seventh graders' Chance scores ($p < .01$) (Figure 4).

On Negative-Personal items (Figure 4) the results were basically the same as those for Positive-Personal items, except that fourth graders' Chance scores were higher only than seventh graders' Chance scores ($p < .05$).

Results of simple effects tests on Dimension at Grade by Valence-Perspective found significant differences only in the Powerful Others Dimension ($p < .05$) (Figure 5). Tukey's HSD statistics revealed that Positive-Impersonal scores for fourth graders exceeded all other scores for all grades ($p < .01$) (Figure 5). Positive-Impersonal items for the other grades also obtained the highest scores for their respective grades ($p < .01$). The next highest scored item category was Positive-Personal for fourth graders over Fifth ($p < .05$) and sixth graders' ($p < .05$).

.01) Positive-Personal scores. Fourth grader's Positive-Personal scores were also higher than all grades' Negative-Personal scores ($p < .01$). Below fourth graders' Positive-Personal scores fell Negative-Impersonal scores, which exceeded Negative-Personal scores within each grade ($p < .01-.05$). Seventh graders' Negative-Impersonal scores also exceeded fifth ($p < .05$) and sixth graders' ($p < .01$) Positive-Personal scores. Sixth grade Negative-Impersonal scores exceeded sixth graders' Positive-Personal scores ($p < .05$). Negative-Personal scores were the lowest scores by grade for all grades.

Results of simple effects tests on Dimension by Valence-Perspective at Grade found significant differences at each grade level ($p < .01$) (Figure 6). Tukey's HSD statistic showed that the following mean comparisons were significant.

On the Internal Dimension for all grades (Figure 6) Positive-Personal scores were the highest ($p < .01$) and Positive-Impersonal scores were the next highest ($p < .01$), Negative-Personal and Impersonal scores were the lowest for all grades ($p < .01$), for the seventh graders only, Negative-Personal scores were higher than Negative-Impersonal scores ($p < .05$). Next down the rank order for all grades were Powerful Others Positive-Impersonal scores ($p < .01$). They were followed by Chance Positive-Personal and Impersonal scores for the fourth and fifth graders ($p < .01$), but by Powerful Others Negative Impersonal scores for sixth and seventh graders ($p < .01$).

For fourth graders both Chance Positive scores were equivalent to their Powerful Others Positive-Personal scores, which exceeded only the Powerful Others Negative-Personal scores and the Chance Negative-

Personal scores ($p < .01$) (Figure 6).

For the fifth graders the Powerful Others Negative-Impersonal scores were equivalent to the two Chance Positive scores, but exceeded the Chance Negative-Personal scores and the Powerful Others Negative-Personal scores ($p < .01$) (Figure 6).

For the sixth graders, the Powerful Others Negative-Impersonal scores were equivalent to the Chance Positive-Personal scores and the Chance Positive-Impersonal scores (Figure 6). The Powerful Others Negative-Impersonal scores and the Chance Positive-Personal scores exceeded the Chance Negative-Personal scores ($p < .01$), the Chance Negative-Impersonal scores ($p < .05$), and the Powerful Others Positive Personal scores ($p < .05$). The Chance Positive-Impersonal scores exceeded only the Powerful Others and Chance Negative-Personal scores ($p < .01$) (Figure 6).

For the seventh graders, Powerful Others Negative-Impersonal scores exceeded Powerful Others Positive-Personal scores ($p < .05$), as well as Powerful Others Negative-Personal scores ($p < .01$) (Figure 6). Powerful Others Positive-Personal scores exceeded Chance Negative-Personal and Impersonal scores ($p < .01$). Chance Positive-Impersonal scores, Powerful Others Negative-Personal scores, and Chance Positive-Personal scores exceeded only Chance Negative-Personal scores ($p < .01$).

Although the main effect for Dimension was not further analyzed, it can be seen in Figures 1 through 4 and Figure 6 that, overall, Internal scores were greater than Chance scores. Although the main effect for Valence-Perspective was also not further analyzed, it can be seen in Figures 4 and 6 that, overall, Positive-Impersonal scores were greater

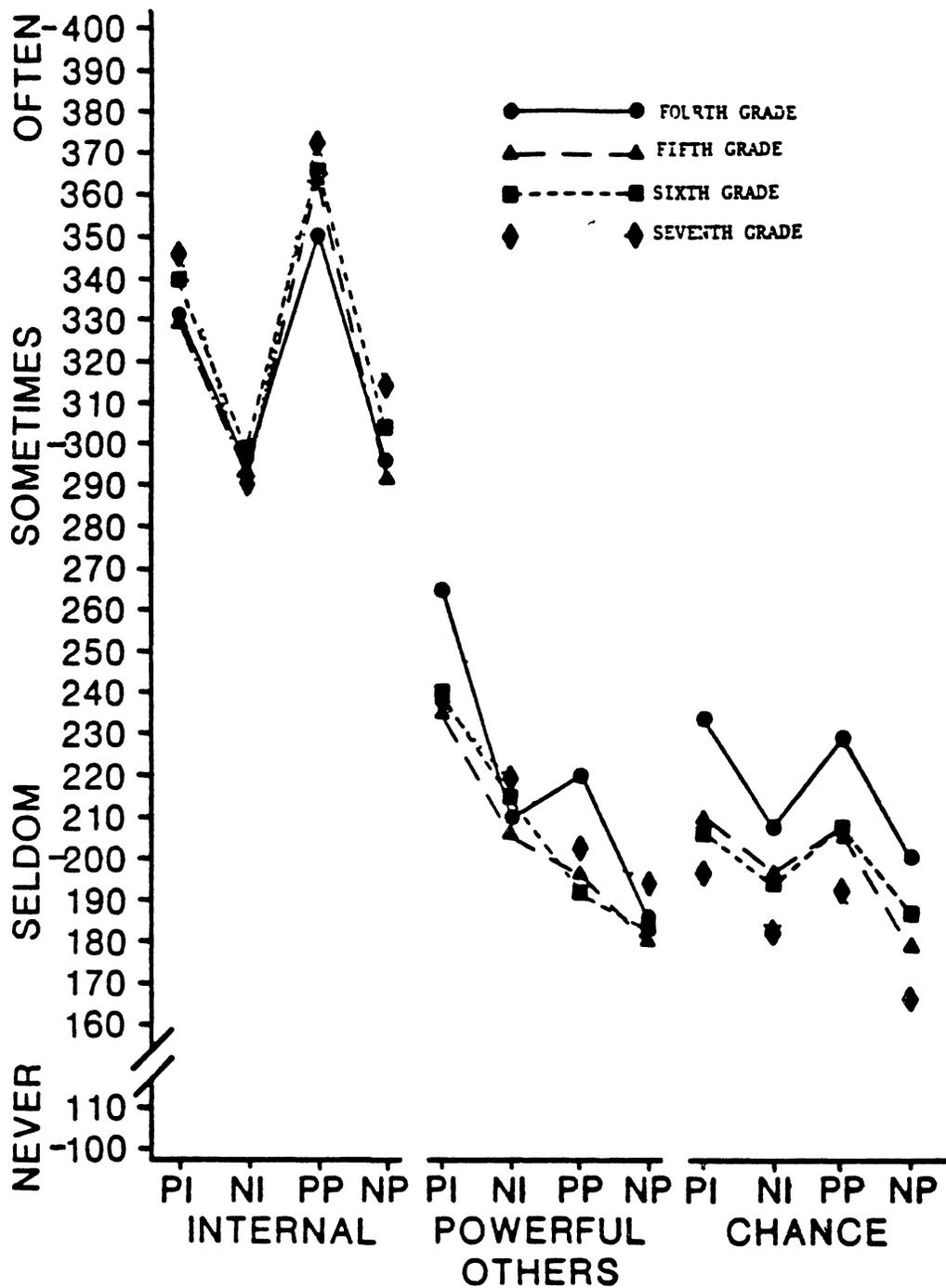


Figure 6 Dimension by Valence-Perspective Grade

than Positive-Personal scores. Positive-Impersonal and Positive-Personal scores were in turn greater than Negative-Impersonal scores, which were greater than Negative-Personal scores

Discussion

In Experiment One it was found that children do perceive mental health locus-of-control and mental illness locus-of-control independently according to the preliminary CMHLC. However, this independence appears to be a reflection of the relative valence of the two poles of mental health locus-of-control. That is, according to the two-factor component analysis, children's responses on the CMHLC items were correlated along the component of mental health or mental illness if the valence of those items stems was consistent with the item's outcome. If, instead, the item began with "Mentally healthy children and had a negative outcome (e.g , mentally healthy children have trouble making friends because ...) or if it began with "Mentally ill children" and had a positive outcome (e.g. Mentally ill children can make friends because. .), it was uncorrelated with either component. It was thus concluded that children were confused by the mismatch between item stem valence and item outcome valence because it conflicted with their association of negative valence to mental illness and vice versa. Mental illness has previously been found to have a negative valence in both children (Novak, 1974) and adults (Rabkin, 1972).

It was also concluded that children perceived at least two dimensions of mental health locus of control on this preliminary CMHLC, i e , Internal and Powerful Others. Powerful Others beliefs were

partially differentiated into two components according to their valence. It seems that children's association of positive and negative valence toward Powerful Others control is mixed. These three components accounted for only a small proportion of the variance, i.e., 26%. Furthermore, the predicted Chance dimension did not emerge. This was unexpected given that children are generally capable of conceptualizing chance causes by about seven years of age when they enter the cognitive stage of concrete operations. It was considered that perhaps the items were too abstract or unclear (e.g., Mentally ill children are unlucky because they can not be normal, even if they go to the doctor).

At this stage of the research new items were added to the questionnaire in accordance with the above findings, i.e., a new set of Chance items, more Powerful Others items with stem and outcome valence matched, and a new set of items with personally worded stems, i.e., items beginning with "I". Only those items that obtained appropriate loadings were retained from the preliminary CMHLC. It was hoped that these revisions would improve the dimensional structure in Revision Two of the CMHLC.

In Experiment Two with the revised version of the CMHLC, the three dimensional model did emerge as predicted, i.e., Internal, Powerful Others, and Chance locus-of-control. However, the three components still accounted for only a small proportion of the variance, i.e., 31%. The Internal subscale items were the least correlated with one another, with only seven items meeting criterion loadings. The Chance subscale items obtained the highest loadings, with 17 items meeting criterion. The Powerful Others subscale was adequate with 12

satisfactory items. While the fit of the CMHLC data to this three dimensional model was encouraging, it was clear that many items were extraneous. It was decided to eliminate most of those. However, there was also an interest in further exploration of the effects of valence and perspective as those variables interact with mental health locus-of-control. To further this purpose, six marginal items were retained to have equal numbers of items matched for positive and negative valence and personal and impersonal perspective.

In Experiment Three, the construct validity of the newly revised CMHLC was supported by the component analysis. The Internal subscale was again the weakest, but all three subscales were found to be quite adequate. However, they only accounted for 34% of the variance.

In the assessment of the construct validity of the CMHLC via convergence with the two existing measures of locus-of-control, i.e., the Nowicki Strickland Locus-of Control scale (NSLC) and the Children's Health Locus-of-Control scale (CHLC), only modest correlations were found. However, the predicted correlations were found to be significant. The sample size was very large and the obtained significance levels may be partially attributable to that. Furthermore, high correlations were not expected given that mental health locus-of-control is hypothesized to be related to, but different from, general locus-of-control and health locus-of-control. Correlations between the NSLC and the CMHLC were highest for the CMHLC Chance scale, i.e., 33. The NSLC is a very broad measure with item content ranging from prevention of colds, physical strength, and cheerleading to being blamed for things that aren't one's fault. Furthermore, it is not balanced for

valence or perspective. The CMHLC Chance scale was also most correlated with the CHLC Chance scale, i.e., 34. This instrument is highly specific to health and contains only three items on its Internal factor. Furthermore, it is also not balanced for valence or perspective, therefore, it was not surprising that the correlation between the Internal items on the CMHLC and the CHLC was low, i.e., 16. Unfortunately, construct validity is difficult to assess when there are no comparable measures available. In the future, comparisons with a measure such as a self-esteem scale might be more productive.

Low self-esteem has frequently been found to be positively related to external locus-of-control (e.g., Moyal, 1977, Piers, 1977, Milgram & Milgram, 1976, Roberts, 1971). Piers (1977) explained that high self-esteem implies expectancy for success and low self-esteem implies expectancy for failure. In her description, the low self-esteem person experiences the need to attribute success to luck in order to maintain self consistency. However, as explained in Chapter II of the present report, for low self-esteem people the conflict between the tendency to externalize and the expectation to fail leads to medium acceptance of responsibility for failure. Thus, Piers' explanation suggests that positive internal locus-of-control events would be positively correlated with high self-esteem. Positive external locus-of-control would be positively correlated with low self-esteem. Negative locus-of-control events, either internal or external, would not be correlated with self-esteem. The Piers-Harris Children's Self-Concept Scale is an 80 item questionnaire thought to measure self-esteem and would be appropriate for use with the age group in the present study. Reported levels of

internal consistency were .90 - .91 and test-retest reliabilities range from .62 to .96 (Piers & Harris, 1984).

Assessment of the internal consistency of the CMHLC suggested that it is an adequately reliable instrument, although the Internal scale obtained only .58. The Chance scale was the most reliable (.92) and the Powerful Others scale was satisfactory (.73). These reliability coefficients compare quite favorably with that found recently on the NSLC (.58) on a large sample of children (Halpin & Ottinger, 1983). Reliabilities of the four item subgroups according to valence and perspective ranged from very low to very high. The lowest item group had only two items, and though it was a positive item group one of those items might have been construed negatively. The addition of a few items would be appropriate to increase reliability.

Test-retest reliability (Internal .53, Powerful Others .66, Chance .74) was moderate but adequate for such a personality instrument because personality characteristics are more variable across time than others such as intelligence (Golden, Sawicki & Franzen, 1984). For example, changes in mood could lead to reduced test-retest reliability. Furthermore, the effects of the first administration can effect performance on the second administration.

Further support for the construct validity of the dimensions of the CMHLC was provided by results of analyses of variance. It was found that the children in this sample perceived themselves, as well as mentally health and mentally ill children, as more controlled by Internal factors and less controlled by Powerful Others and Chance.

The hypothesis that Dimension and Valence would interact with race,

sex, occupation of head of household, and age was not supported in this research. While some effects were found on race, sex, and age, finer analysis revealed that these effects were due to the strong main effects of dimension or valence and perspective. These findings may explain the inconsistency in the locus-of-control literature regarding these demographic variables. That is, because dimension, valence and perspective are not conjointly controlled in any of the existing measures, there is no way to be sure that reported norms are not confounded by their effects.

Age has, however, been typically found to effect locus-of-control. Although many studies refer to age effects, they are, in fact, describing grade effects, as if the two were synonymous. However, cognitive development and locus-of-control are products of both neurophysiological maturation and experience. Therefore, children of similar ages in like grades may be at a more equivalent level of development and hold more equivalent beliefs than same-aged children in different grades

The results of the present research lend support to the hypothesis that grade has more of an effect on locus-of-control than age. In fact, grade was found to interact with all levels of both dimension and valence-perspective. The data clearly indicated that children become more Internally controlled and less Chance controlled with increasing grade regardless of valence or perspective.

However, the effects of grade on Powerful Others mental health locus-of-control is more complex and can be understood only in relation to valence and perspective. The mental health locus-of-control for all

the children in this study, but especially for the younger children was effected by valence of Powerful Others items. They endorsed more belief in positive Powerful Others control, regardless of perspective, relative to the higher grades. The younger children also viewed mentally healthy children as even more controlled by Powerful Others on positive items than they did themselves. It would be expected that children of younger grades would be more positively biased in their views in general because the experience of the typical middle class child is one where frustration is minimized by powerful others, who provide a safe, positive environment. With age and increased contact with the conflicts of life, views become more realistic in keeping with a world that is both good and bad. The fourth graders' beliefs in negative Powerful Others control over mental health were more in keeping with the older grade children.

The effect of valence must be partially attributed to cognitive development. Younger children, who think in more concrete egocentric terms would have greater difficulty separating themselves as causal agents from their experience. Thus, to have a bad experience is tantamount to being bad, and to have a good experience is to be good (Rosen, 1985). Naturally, the average healthy child will choose to hold positive over negative self-views. Although this egocentric thinking is truer for younger, preoperational children, vestiges of this tendency are evident for all the children in this study. Positive items tended to be given higher endorsement and negative items tended to be given lower endorsement, especially negative items on the Chance subscale.

Egocentric thinking of younger children may also explain why they

hold more Chance beliefs while older children believe less in Chance control over mental health. Chance for children of younger ages is still an amorphous concept and is probably indirectly linked to their own sense of "goodness" or "badness". However, as chance becomes better differentiated and the laws of probability are grasped, fewer and fewer events are attributed to chance. As the subtleties of causal events are better grasped the child's competence and actual control over events increases. Therefore, events which were once attributed to chance are gradually understood as influenced more directly by intentional control. Thus children become more internally controlled with age.

The tendency for children to attribute more Internal beliefs to themselves than others and more external beliefs to others, as was found in this study, is suggestive that external beliefs are themselves viewed somewhat negatively. There is also some support for this hypothesis in the literature. Younger children believe other children can get sick but not themselves (Redpath & Rogers, 1984), and preschoolers are more willing to attribute negative personality attributes to others than to themselves (Curtis & Schildhaus, 1980). It would appear that negative events tend to be externalized as Rotter (1966) suggested. Tyler et al (1977) found that on Rotter's I-E scale impersonally worded items tended to be endorsed in the External direction and personally worded items tended to be endorsed in the Internal direction. Thus, Internal control may itself have a positive bias relative to External control. If so, the efforts in locus-of-control research to do away with social desirability may be a fruitless task in that people probably believe themselves to be more Internally controlled because they have a positive

self-view rather than because they are putting on a good face.

Nevertheless, the social desirability component in the CMHLC needs further exploration.

Some support was found for the hypothesis that Internal locus-of-control has a positive bias (Dahlquist and Ottinger, 1983). These authors developed a particularly interesting method for assessing the social desirability component of their children's locus-of-control scale on social interactions. Items from their questionnaire were rewritten as declarative statements. They were administered to a large group of children with instructions to indicate whether the statements would be good things to say about one's self if one were trying to impress an adult. Items which obtained 70% or greater rating as "good" were considered to be socially desirable. Those items that met criterion then served as a social desirability subscale in the questionnaire. The authors obtained a .69 correlation between internality regarding social interactions and the social desirability subscale. This is an innovative method of assessing social desirability which may be more accurate than general measures typically used. If, in fact, perceptions of internal locus-of-control are positively biased, then perhaps such a social desirability subscale might best be used as a validity check relative to scores obtained from a normative sample. A social desirability subscale might also serve as a measure of defensiveness much like one of the validity scales on the well known Minnesota Multiphasic Personality Inventory

The tendency to view others as more externally controlled may be related not only to valence but also to perspective. It was described

earlier that younger children judge mentally ill others more according to overt behavioral violations, while older children are able to perceive irrational thinking (Cole & Pennington, 1976). In another study (Mancuso, Morrison & Aldrich, 1978) on children's moral judgements of transgressors, it was found that first graders made more negative judgements of transgressors, regardless of good intentions or mitigating circumstances than did sixth or eighth graders. In the present study, this developmental trend was most evident on the Internal subscale (Figure 1). Seventh graders, but not younger children, endorse more negative personal Internal beliefs than negative impersonal Internal beliefs. That is, they accepted some responsibility for negative mental health and at the same time were able to empathize with mentally ill children. They seemed to realize that even though they themselves, for example, might not make friends because they didn't want to act friendly, mentally ill children might have trouble making friends for reasons partially outside their control.

Thus, it would seem that while older children are capable of both differentiating themselves from another and feeling empathy for another, younger children are less able to take another's perspective. They simply view others more negatively and are unable to incorporate mitigating circumstances or internal states of others in making personality judgements. At the same time, they are not capable of the metacognition necessary to realize that the same negative events affecting other children also affect themselves, whether it be internally or externally controlled events.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

In summary, the basic hypothesis of this research that children's mental health locus-of-control beliefs would fall along three differentiating dimensions (Internal, Powerful Others, and Chance) and would interact with valence and perspective was supported by the data.

Children were found to respond differently to each dimension of mental health locus-of-control. They were more Internal than Powerful Others or Chance controlled. However, other differences due to dimension cannot be understood independently from valence or perspective.

Children more strongly endorsed locus-of-control events on most dimensions when the items were positive, and their endorsement was lower if items were negative. However, this effect varied somewhat on the Internal and Powerful Others dimensions according to grade. Furthermore, the effect of dimension and valence varied according to perspective. If items were positive and personally worded on the Internal dimension, they obtained greater endorsement than if items were positive and impersonally worded. Conversely, if items were negative and personally worded on the Powerful Others and Chance dimensions, they generally obtained lower endorsement than if they were negative and

impersonally worded. Furthermore, if items were external and impersonally worded, they tended to obtain greater endorsement than if they were external and personally worded.

An additional hypothesis of this research was that dimension, valence, and perspective would interact with grade, race, sex, age, and occupation of head of household. Only grade was found to obtain the predicted interaction.

It was found that children become more Internal and less Powerful Others and Chance controlled with increasing grade. Furthermore, children were found to become less Chance controlled than Powerful Others controlled with increasing grade. However, again, the effect of grade cannot be understood independently from valence and perspective. That is, on Powerful Others items that were positive, younger children's endorsement of them exceeded that of older children. On Internal items that were negative, older children endorsed greater beliefs if the item was worded personally than if it was worded impersonally. A variety of other interesting effects were also found.

It was also hypothesized that the CMHLC would be a reliable and valid measure of locus-of-control. Reliability estimates were modest to moderate, according to assessment of internal consistency and test-retest reliability. Construct validity was also obtained for the three dimensional model according to component analysis, and was also supported by findings from the analyses of variance. Convergent validity was less than expected when compared to existing measures but was significant.

Conclusions and Recommendations

It was concluded that the Children's Mental Health Locus-of-Control is an adequately reliable and valid instrument for assessment of children's mental health locus-of-control. However, there is a need for continued refinement in order to improve the reliability of this instrument. Furthermore, while the construct validity of the CMHLC was partially supported, ongoing efforts must be made to create appropriate methods for assessment and improvement of its construct validity.

It was also concluded that the CMHLC has extensive potential for considerable improved predictive power over existing measures of locus-of-control. Dimension, valence, and perspective were shown to be highly important variables whose effects cannot be overlooked if locus-of-control measures for children are to keep abreast with adult measures.

Reviewers of psychotherapy outcome research (Barrett, Hampe & Miller, 1978) have noted that there have been far fewer outcome studies with children than with adults. It was suggested that because outcome research for children requires even greater sophistication than that for adults, methodological factors that are especially problematic with children include the effects of maturation, developmental changes in personality and symptom manifestation, and age specific constraints. As a result of this increased complexity, existing outcome studies with children have been limited by assessment shortcomings. Development is a multidimensional process, and the rate and pattern of development is highly variable. Therefore, it is important to assess the pattern of development across specific developmental dimensions both within and between individual children. The pattern of development of locus-of-

control is particularly important. Therefore, more global measures of locus-of-control that are typically used are less than adequate despite their superiority over most other measures used. The dearth of good outcome measures for children (Tramontana & Sherrets, 1983) is further reflected by an overemphasis in existing outcome studies on objective external criteria as evidence of change despite the frequently asserted importance of using both internal and external criteria.

The CMHLC was developed particularly for use as a treatment outcome measure. The value of locus-of-control in the assessment of psychotherapy was noted in Chapter II of this report. While such measures have been cited as the most promising of the children's outcome measures available, it has also been pointed out that their promise rests on the weakness of other existing attribution scales (Beutler & Crago, 1983). This point highlights the robustness of the locus-of-control construct to measurement weaknesses. It also suggests that locus-of-control is a particularly important personality variable that extends beyond the relatively narrow range of attributions that are directly reflected in its measurement. It is not surprising that external locus-of-control has been correlated with a variety of variables representing poor adjustment when it is understood that the sense of purpose in life and the capacity for personal growth are products of the belief that one has the power to obtain desired goals.

Both the ascent of man and the process of human development follow parallel courses based on the innate need to master the environment. Our ancestors hypothesized the existence of gods (e.g., rain gods, harvest gods, etc.) in an effort to understand and thereby predict and

control their world. Likewise, very young children imbue environmental forces and inanimate objects with goal directed life (magical thinking) and incessantly ask "why" questions in an effort to understand, predict, and control their world (researchers are likewise motivated). Both the development of civilization and the development of human beings is heavily dependent upon such striving for control. The degree to which such control is limited is the degree to which the individual is unable to get his basic needs met and move on to higher level goals.

Therefore, the child (or person) who presents for psychotherapy does so because of an inability to master himself and his environment in one or more areas. Depending upon particular deficits, goals in therapy would likely include increased responsibility and awareness in life decision making and decreased abdication of responsibility to powerful others and chance. While the psychological dysfunction presented may be manifested in a variety of critical as well as less important ways, the most important focus in therapy will be on those areas critical to mental health, i.e., control over self, family relations, peer relations, and school relations. Therefore, progress toward improved control over mental health can best be measured by focusing on those particular areas. A healthy degree of defensiveness is also necessary for good adjustment. Too much defensiveness (denial of responsibility for negative events) and overacceptance of responsibility for positive events leads to a deficit of information necessary to appropriately impact the environment. Not enough defensiveness leads to excessive vulnerability to uncontrollable events which can also generalize to events which would otherwise be controllable. Younger children need a

greater degree of defensiveness than older children and adults because of their limited ability to control themselves and their environment. They not only have less practice and physical competence than older children, but they also have less information by virtue of their limited cognitive ability and limited grasp of the intentions of others. Defensiveness can be measured in part with the CMHLC according to valence of items. If it is found that the degree of defensiveness is not age appropriate, the child's awareness of the degree of his responsibility for events must be facilitated by the therapist.

A general goal in most psychotherapies is to help the patient develop an appropriate degree of acceptance of responsibility (which brings with it both freedom of movement and mastery). Pre and post measures of mental health locus-of-control can both define the extent of dysfunction and assess the degree of improvement. The CMHLC is capable of measurement of areas especially relevant to mental health and in this way is a substantial improvement over existing skills. It also has the capacity for differentially assessing Powerful Others and Chance control beliefs, thus enabling the investigator or therapist to further delineate children's misconceptions. While it would be expected that younger children would hold a more or less equivalent amount of Powerful Others and Chance beliefs, by late childhood or preadolescent Chance beliefs should begin to significantly decrease relative to Powerful Others beliefs and Internal beliefs. When this is not found, the therapist must focus particularly on facilitating the child's perception of the orderliness of the world and the direct connections between behavior and events. This is especially important as the child moves

into an age that typically allows more freedom of movement from the constraints of adults. Furthermore, if Powerful Others beliefs exceed what has been found to be age appropriate according to the standardization sample, this may well signal the existence of some degree of symbiosis with a significant parent figure. If so, this symbiosis is also likely to show up in older children as an egocentric inability to differentiate self from other on the perspective component on the CMHLC. In such a case it would be important for the therapist to focus on decreasing dependency, amelioration of splitting, and identity issues.

In summary, the CMHLC is a considerable improvement over existing measures and will provide both an ideal diagnostic technique and a treatment outcome measure. It shows promise as a measure of self-esteem due to its strong valence component. It may also prove to be a measure of developmental level in at least two ways. First, the trend from greater to less Chance control relative to Powerful Others control could provide a yardstick for what might be expected at a given grade level so that deviations from this trend could be identified. Second, the increasing capacity to differentiate self from other with respect to valence could serve as a measure of egocentricity. An additional use for the CMHLC as a diagnostic measure would be the discrepancy between negative and positive events. As was pointed out earlier, either too little or too much perceived control over negative and/or positive events can be problematic.

Hand in hand with the diagnostic value of the CMHLC would be its value as an aid to treatment planning and measurement of treatment

outcome. Once target problems are identified, appropriate treatment plans can be made with goals for treatment defined in the context of the child's CMHLC profile along with additional assessment data as appropriate. Such a study is presently in the planning stages by the principle investigator.

However, in order to partial out the differential effects of age, intelligence, and developmental factors additional research needs to be done. An initial step in this effort would be to analyze the CMHLC data for internal consistency according to developmental age groups. Furthermore, a meaningful extension of such a reanalysis by developmental groups would be to obtain CMHLC data from an adult sample of subjects. Such data would be used to provide information relevant to the developmental components assessed by the CMHLC. In further research with children using the CMHLC it would also be important to assess the contribution of intelligence and developmental levels as proposed by Piaget. Such assessment could serve as screening criteria for the composition of groups used in subsequent child research.

Recommended changes in the CMHLC at this time include the deletion of items that obtained low correlations on component analysis and reliability studies, the addition of Internal items, the reverse scoring of some items to decrease variance due to response set, the inclusion of a social desirability scale.

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APPENDIX A
PARENTAL CONSENT

Your child's participation is requested in a research project sponsored by the Oklahoma State University Psychology Department. The purpose of this study, which is being conducted by Ms. Mickey Ozolin and Dr. Stephen Caldwell of O.S.U., is to obtain information regarding children's attitudes and beliefs about mental health. This study represents one of the first attempts in this area of psychological research, and is intended to lay the groundwork for future investigations into the nature of children's mental health.

Participation in the project requires only that your child fill out a questionnaire which can be completed in class in approximately 30 minutes. The questionnaire is anonymous and all responses will be kept strictly confidential.

The Harrah Public School System has generously granted its cooperation in this research, but it is not a sponsor nor involved in any other way.

This is to certify that _____
has my consent to participate in the research project concerning
children's beliefs about mental health

(Parent or Guardian)

(Date)

APPENDIX B
MENTAL HEALTH QUESTIONNAIRE

Age _____

Grade _____

Boy or Girl (Circle one)

1. Write about what a person is like who is "crazy".

APPENDIX B (Continued)

2. Write about a what a person is like who is not "crazy"

APPENDIX B (Continued)

Age _____

Grade _____

Boy or Girl (Circle one)

- 1 If people are not "Mentally fried," they are _____.
2. If people are not "looney," they are _____.
- 3 If people are not "wacko," they are _____.
4. If people are not "weird," they are _____.
- 5 If people are "mentally unbalanced," they are _____.
6. If people are not "mentally normal," they are _____.
7. If people are not "nutty," they are _____.

APPENDIX C

CMHLC

Grade _____

Age _____

Boy or Girl (Circle one)

Race _____

Occupation of head of household _____

Mentally ill children often are moody and worried, have mixed-up thoughts, or get in trouble

Mentally healthy children are even-tempered and not worried, have clear thoughts, and stay out of trouble.

Read these examples and decide how often you think each sentence is true.

EXAMPLE MENTALLY ILL CHILDREN GET WORRIED.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

The answer circled is okay. The answer "always" or "sometimes" would also be okay. "Never" would not be an okay answer to this question. Now you answer the next one.

EXAMPLE MENTALLY ILL CHILDREN HAVE CLEAR THOUGHTS.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

If you circled "sometimes," "seldom," or "never," your answer is okay. "always" would not be an okay answer to this question.

EXAMPLE MENTALLY HEALTHY CHILDREN STAY OUT OF TROUBLE.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

The answer circled is okay, "Always," or "often," would also be okay. "Never" would not be an okay answer to this question. Now you answer the next one.

APPENDIX C (Continued)

EXAMPLE MENTALLY HEALTHY CHILDREN HAVE MIXED THOUGHTS.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

If you circled "sometimes," "seldom," or "never," your answer is okay. "Always" would not be an okay answer to this question.

Read and answer each of the questions on the next pages. There are 41 questions. For each one, circle the X above the answer that says how often it happens. Go ahead.

1. If I act mean, it's because my parents made me that way.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

2. Mentally ill children have trouble making friends because they don't want to act friendly.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

3. Mentally healthy children don't explode because their parents let them have their own way

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

4. Mentally ill children don't make good grades because they don't try hard in school.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

5. Mentally healthy children get good grades because they are teacher's pet.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

6. Mentally ill children make bad grades because of bad luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

APPENDIX C (Continued)

7. Mentally healthy children get along with their brothers and sisters when they want to.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

8. Mentally health children get along with their brothers and sisters because of good luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

9. Mentally healthy children can do things with and without their parents because of good luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

10. Mentally ill children have trouble making friends because of the way their parents raised them.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

11. When I decide to get my mad feelings out, I let myself explode.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

12. Mentally ill children only explode if they decide to let ther mad feelings come out.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

13. If I have trouble making friends, its because I don''t want to act friendly.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

14. If I get bad grades, it's because my teachers are unfair.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

APPENDIX C (Continued)

15. If I can make friends, it's because of good luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

16. Mentally healthy children are happy because of good luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

17. If I pick fights with my brothers and sisters, it's because of the way my parents raised me.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

18. If I have trouble making friends, it's because of the way my parents raised me.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

19. If I make bad grades, it's because of bad luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

20. Mentally ill children get bad grades because their teachers are unfair

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

21. If I don't make good grades, it's because I don't try hard in school.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

22. Mentally ill children are sad because of bad luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

23. Mentally ill children act mean because their parents made them that way.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

APPENDIX C (Continued)

24. If I get good grades, it's because I am "teacher's pet."

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

25. Mentally ill children fight with their brothers and sisters because of bad luck

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

26. When I want to I can get along with my brothers and sisters.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

27. If I can't make friends, it's because of bad luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

28. If I can do things with and without my parents, it's because of good luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

29. Mentally ill children pick fights with their brothers and sisters because of the way their parents raised them

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

30. If I am happy it's because of good luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

31. If I don't explode, it's because my parents let me have my own way

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

32. I can make friends if I want to act friendly.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

APPENDIX C (Continued)

33. Mentally healthy children make good grades because of good luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

34. Mentally healthy children can make friends if they want to act friendly.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

35. I do things with my parents when I want, and do things without my parents when I want.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

36. Mentally healthy children do things with their parents when they want, and do things without parents when they want

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

37. Mentally healthy children can make friends just because of good luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

38. Mentally ill children can't make friends because of bad luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

39. If I get along with my brothers and sisters it's because of good luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

40. If I fight with my brothers and sisters it's because of bad luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

41. If I make good grades, it's because of good luck.

X	X	X	X	X
Always	Often	Sometimes	Seldom	Never

APPENDIX D
 CMHLC EXPERIMENT 1, A TWO-COMPONENT SOLUTION

Item Number	Component I	Component II
1	- 01	-.20
2	-.10	.11
3	.32	.40
4	.12	.08
5	.15	- 02
6	.49	-.19
7	.36	.30
8	.33	.08
9	.34	.13
10	.18	.54
11	.19	.15
12	.43	.23
13	.65	-.01
14	.24	-.24
15	.36	-.21
16	.44	.50
17	.44	-.06
18	.32	-.18
19	.42	-.08
20	.14	.18
21	.41	.37
22	.04	-.55
23	.46	.05
24	.25	.36
25	.38	.13
26	.00	.25
27	-.15	.33
28	.31	.20
29	.60	.37
30	.41	-.10
31	.55	.17
32	.22	.46
33	.45	.09
34	.75	.08
35	.14	.35

APPENDIX D (Continued)

Item Number	Component I	ComponentII
36	- .12	.44
37	.05	.02
38	.09	.49
39	-.06	.64
40	.07	.62
41	-.00	.51
42	.03	-.22
43	.51	.00
44	.23	.11
45	.23	.45
46	- .05	.03
47	.56	.41
48	-.05	.20
49	.39	.44
50	.34	- .47
51	.50	.16
52	.50	-.27
53	.42	-.06
54	.12	.52
55	-.05	- .10
56	.05	.11
57	.36	.25
58	.42	.36
59	.39	.04
60	.04	-.18
61	.40	-.02
Eigenvalue	8.19	4.24

APPENDIX E

CMHLC, EXPERIMENT 1, THREE COMPONENT SOLUTION

Item Number	Component I	Component II	Component III
1	.07	- 24	- 03
2	10	09	05
3	.22	.09	.50
4	.15	-.08	.20
5	.04	-.22	.21
6	35	.43	20
7	.40	34	.18
8	29	-.05	.18
9	.18	- 21	.43
10*	.19	.23	.54
11	.30	.20	.10
12	.44	.26	20
13*	.65	-.10	.10
14	.34	-.04	-.32
15	42	-.10	-.20
16*	.18	21	.51
17	.38	-.03	-.04
18	21	-.01	-.25
19*	.42	- 19	.10
20	-.01	-.14	.43
21	.30	12	.42
22	12	.28	-.51
23	.49	.01	.07
24	23	20	.30
25	.43	.15	04
26	-.12	-.01	38
27	- 17	22	.24
28	.34	.17	.20
29*	.60	.19	.25
30	38	-.13	.00
31	52	.00	.25
32	17	.20	47
33	.53	.15	-.02
34	80	.05	.07
35	.18	.30	.19
36	-.05	46	.15
37	.03	-.03	.06
38	-.01	19	51
39	.07	38	.18

APPENDIX E (Continued)

Item Number	Component I	Component II	Component III
40*	.15	.61	.25
41	.09	.54	.18
42	-.05	-.29	.01
43*	.58	.06	-.06
44	.16	-.07	.23
45*	.14	.15	.50
46	.08	.26	-.23
47	.44	.15	.57
48	.08	.37	-.10
49	.18	.15	.54
50	.25	.53	-.10
51	.36	.15	.25
52*	.48	-.22	.21
53*	.44	.20	.35
54	-.05	.04	.37
55	-.17	-.27	.17
56	-.08	-.06	.33
57*	.22	.45	.09
58*	.18	.61	.30
59	.22	-.21	.40
60	-.03	-.42	.19
61	.30	-.23	.33
Eigenvalue	8.19	4.24	3.38

APPENDIX F

CMHLC - EXPERIMENT 2, THREE COMPONENT SOLUTION

Item Number	Component I	Component II	Component III
1*	-.06	.33	03
2*	.36	- 09	26
3	.45	13	.07
4*	.17	.37	-.07
5	.26	.32	32
6*	.51	-.06	.28
7	.50	.09	.26
8	.20	04	.34
9	.10	- 03	.17
10	.19	.21	.44
11*	.60	.06	.14
12*	.59	.04	.13
13*	.24	.54	.03
14*	.29	.29	.12
15*	.07	.24	.38
16	.17	-.01	32
17	-.01	-.11	.37
18	.19	.33	.13
19	.35	.30	.15
20*	.10	.09	20
21*	.61	.18	.14
22*	.72	.13	08
23*	.04	.01	.26
24	.14	.06	12
25*	.69	.18	.16
26*	.00	.11	.37
27*	-.05	-.11	.26
28*	.09	.67	.08
29*	.67	.16	.07
30	.20	-.14	.35
31*	.60	.11	.07
32*	.76	.01	12
33*	- 00	-.03	.37
34*	.08	14	.29
35	.03	.09	.48
36	.08	.49	.13
37*	.59	.06	.08
38*	.24	.52	- 12
39*	- 02	.66	.15
40*	.14	.43	03

APPENDIX F (Continued)

Item Number	Component I	Component II	Component III
41*	.17	-.07	.45
42	.25	.22	.24
43	.25	.08	.15
44*	.58	.22	.04
45*	-.06	.25	.52
46*	.12	.36	.02
47	.10	-.02	.17
48*	.04	.17	-.33
49*	.07	.21	.11
50*	-.03	-.30	.52
51*	.03	.13	.29
52*	.56	.14	.02
53*	.21	.41	-.03
54*	.21	.44	.04
55	.38	.28	.04
56	.04	.35	.09
57*	-.12	.14	.28
58	.16	.10	.35
59	.11	-.13	.41
60*	.68	.16	.03
61*	.47	.25	.09
62*	.69	.25	-.04
Eigenvalue	4.26	2.61	2.59

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