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SOCIAL HYPERVIGILANCE IN ABUSED CHILDREN

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While considerable research has addressed issues relevant to the prevention of child abuse and the treatment of adult abusers, little attention has been given to the psychological consequences of abuse in child victims. One characteristic of abused children that is often observed but not yet empirically examined is social hypervigilance. In this study, 20 abused and 20 distressed children were compared using WISC-R subtests, two measures of social and environmental vigilance, and measures of locus of control and need for attention. Consistent with predictions, the class of social vigilance behaviors were highly intercorrelated, were inversely related to non-social performance, and were more evident in the abused sample. A clear set of behaviors measuring environmental vigilance was not found. Abused children were found to evidence less internal control in their perceptions of social interactions, especially for negative social events.

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CHAPTER I

SOCIAL HYPERVIGILANCE IN ABUSED CHILDREN

Since John Caffey (1946) first began to publish accounts of bone fractures of suspicious origin in children and Kempe, Silverman, Steele, Droegemuller, and Silver, (1962) first identified "battered child syndrome," there has been a serious need for research in the area of child abuse. Over the last decade, dramatic increases in the incidents of reported child abuse have occurred (Barahal, Waterman, & Martin, 1981). The U.S. National Center on Child Abuse and Neglect estimates that there are approximately one million abused and neglected children in America. Between ten and twenty percent of that number are physically abused, six to ten percent are sexually abused and the remainder are neglected (Besharov, 1977).

It appears that the rate of child maltreatment is increasing. Helfer (1974) estimates a thirty percent increase of reported abuse annually, and suggests that the increase is only partially due to greater public sensitivity and more intensive ascertainment of cases. In addition, Starr (1979) asserts that most incidence rates are under-estimates.

In response to the societal concern for the problem of child abuse, research has focused on the incidence, etiology, detection, and prevention of child abuse (Toro, 1982). The majority of the studies examine adult abusers and the antecedents and contextual aspects of abuse. Little attention has been given to the psychological impact that abusive environments have on their child victims (Barahal, Waterman, & Martin, 1981; Jacobson & Straker, 1982; Toro, 1982).

The studies that have attempted to delineate the psychological consequences of abuse generally have measured only global effects (Martin, 1979). A variety of authors have identified mental retardation resulting from abuse (Elmer, 1977; Martin, Beezley, Conway, & Kempe, 1974; Sangrund, Gaines, & Green, 1975), neurological impairment (Kempe, Silverman, Steele, Droegemuller, & Silver, 1962), as well as severe emotional disturbance (Green, 1978a, 1978b). While measures of gross cognitive and emotional functioning have identified pathological development in abused children, most studies have failed to provide proper control groups and some have noted comparable incidences of delayed cognitive and emotional development in non-abused low SES populations (Elmer, 1977). It is clear that methodologically sound research examining more subtle psychological consequences of abuse is needed. Martin (1979) calls for "more discerning and microscopic investigations of the effects of abuse and neglect on children and their development" (p. 416).

Although the research examining the psychological consequences of abuse and neglect is limited, it is useful to examine what sequelae have been identified, beyond those measures of gross impairment previously mentioned. One of the most common findings in abused children is a high incidence of aggressive behavior. George and Main (1979) noted increased aggression among abused infants, while Reidy (1977) found greater aggression in three- to five-year old abused preschoolers than in normal controls. Others have noted aggression in physically abused children (Fontana, 1973; Kempe & Kempe, 1978; Martin & Beezley, 1977; Terr, 1970) and Rohner and Rohner, (1980) note greater aggression in all rejected children, whether physically abused, neglected, or emotionally attacked.

An underlying factor in aggression is an ability to control impulses. Elmer (1977) identifies some abused children with behavioral disturbances largely manifested by poor impulse control. Sandgrund, Gaines, and Green (1975), in a study attempting to differentiate between abused, neglected, and non-abused children, used discriminant analysis to find that an overall ego competency and sexual impulse control factor was highly significant in differentiating between abused and neglected children. Although interesting, these findings are suspect due to differences in SES between the abused and control groups.

Abusive environments have also been found to affect the social interactions of children (Kempe & Kempe, 1978). Abused children have been found to be more withdrawn (Baldwin & Oliver, 1975; Galdston, 1965; Rolston, 1971), passive, apathetic, and unresponsive to others (Martin & Beezeley, 1977; Terr, 1970). George and Main (1979) compared abused and non-abused children matched for age, race, and SES and observed that the abused children showed significantly less approach behavior toward adults and more avoidant behavior toward adults and peers. Jacobson and Straker (1982) found maltreated children to be less socially interactive, a characteristic common to abusing adults, and that they tended to interact in "a less imaginative and sustained fashion with less enjoyment" (p. 325).

Rohner and Rohner (1980) in a study of victims of parental aggression and neglect, found that while these children are avoidant, they also are dependent, and can be clingy, possessive, and attention seeking. This dependence was found to extinguish or transform, after a long period of rejection, into a "defensively independent" stance in which the child emotionally becomes insulated and unable to "openly form warm, lasting, intimate relations to others" (p. 192).

The research addressing anomalies in the development of abused children has been remarkably limited (Toro, 1982).

Martin (1976) notes that the incidence of gross motor, speech, and language delays are quite frequent. Johnson and Morse (1976) identified eighteen percent of their sample of one hundred abused children as having below normal speech development. Martin and Rodeheffer (1976) attribute language delays in children to a lack of trust in the environment. Abused children fear the consequences of talking and delays occur due to restricted practice of their verbal skills. Recent research (Allen & Oliver, 1982) comparing abused, neglected, and non-maltreatment control groups finds that neglect is the critical factor contributing to language delay in maltreated children. Those children who are abused do not differ significantly from controls, while neglected children do differ. This research is complicated by high correlations between abuse and neglect in children. In fact, Friedrich and Boriskin (1980) find significant differences between abused and non-abused children on the verbal component of the McCarthy Scales of Children's Abilities. While language development appears to be affected by child maltreatment, current studies are only beginning to delineate the precise factors leading to delays in abused and neglected children.

A common finding among many clinicians is that abused children have a diminished sense of self-adequacy or low self-esteem (Rohner & Rohner, 1980). Elmer (1967) found that seventy-six percent of abused children he studied showed poor

self concepts, as judged by psychological evaluation or psychiatric examination. Martin and Beezeley (1977), in examining the long term effects of abuse, find low self-esteem and a pattern of behaviors in abused children that lead to rejection by peers, parents, and teachers.

Rohner and Rohner (1980) find the emotional development of rejected children to be delayed, as manifested by emotional instability, unresponsiveness, and a negative world view. Martin (1979) notes trends in the developmental levels of abused children with specific delays in the areas of moral reasoning, perspective-taking, and mastery motivation. The vast majority of research highlights the behavioral, emotional, and cognitive deficits in maltreated children, and Martin and Rodeheffer (1976) term developmental delays as the "sine qua non" of the abused children. In contrast to the obvious adverse effects, the adaptive capacities of maltreated children lead to what has been termed as "precocious islands of ego development" (Martin & Rodeheffer, 1976). An example of a precocious ability is that identified in abused children as "frozen watchfulness" or hypervigilance (Ounsted, 1972).

Hypervigilance and other islands of precocious abilities can be more clearly understood within the context of the abusive environment in which the child grows. The child must grow up in an environment that is, at times, hostile and dangerous.

Lagerberg, Nilsson, and Sundelin (1979) note that:

To survive, children living under such conditions may develop a combination of cunning and cowardice. It becomes a question of getting along as well as possible. The child anxiously watches the reaction of the environment . . . Eventually he develops a method for cleverly reading off and anticipating his parents' emotional needs (p. 448).

Abused children tend to use their initial contact with adults to determine whether the adult is safe and to "ascertain the rules of the relationship" (Aber & Zigler, 1981, p. 19). This preoccupation with the behavior of others has been termed "hypervigilance" (Kempe & Kempe, 1978). Martin and Rodeheffer (1976) speculate that parental attacks create interpersonal ambivalence in children and the child becomes hypervigilant out of self-defense. This vigilance is then reinforced by the intermittent assaults of his caretakers. The ambivalence of abused children arises out of the need to defend oneself from the adults from whom he seeks nurturance and safety. Balla and Zigler (1975) have reported high needs for adult responsiveness and attention in maltreated children which conflicts with this defensive stance. Hypervigilance can be seen as an adaptive response to the competing demands of the needs for nurturance and safety.

Several of the WISC-R subtests have been construed clinically as sensitive for measures of social and environmental vigilance. Three subtests appear to be related to skills in the social world. Comprehension involves the use of one's assets in an emotionally relevant manner in response to situations that have a social, if not moral, flavor (Ogden, 1977). Picture Arrangement is often referred to as a measure of social intelligence (Waugh & Bushe, 1971) and reflects planning, anticipation, and interpretation of situations which most often involve interpersonal relations (Ogden, 1977). Picture Completion involves the ability to differentiate essential versus non-essential detail (Wechsler, 1958) and, while not related explicitly to social competencies, it has been noted by clinicians working with abused children to be elevated relative to other scores in abused populations. Three WISC-R subtests also are presumed to relate to environmental vigilance. The Information subtest has been described as a measure of an ability which requires long term memory and an alertness to the environment (Waugh & Bushe, 1971). Object Assembly involves the identification of an object and giving meaning to environmental stimuli (Ogden, 1977). Both Object Assembly and Block Design demand an ability to integrate visual and motor skills which develop in interaction with objects in the environment.

While most of the psychological characteristics outlined above have some limited empirical support, the often

cited phenomenon of hypervigilance has not been examined systematically. This study represents an initial attempt at confirming the presence of social hypervigilance in abused children.

Hypervigilance is a term that is not well-defined in the abuse literature. Its current utility lies in its descriptive value of an often-observed clinical phenomenon. Since no previous experimental research has been identified that examines social hypervigilance, no operational definition of the construct has been formulated.

Social hypervigilance must first be differentiated from the large literature examining perception using "vigilance" tasks. Vigilance tasks represent an experimental technique that seeks to identify elementary perceptual operations and their functioning. Typically, vigilance tasks involve the presentation of a target stimulus, usually to be identified by a subject within a field of non-target stimuli of the same type. For example, Patterson and Torgeson (1981) utilized a .5 centimeter round red light presented for twenty milliseconds at random intervals replacing a constant presentation of green color at the same location. The subject was to watch for the red target stimulus and respond by pressing a trigger button when the target was perceived. Vigilance, in these tasks, refers to the ability to maintain attention for a continuous period of time.

Traditional vigilance tasks involve the identification of a single stimulus with only one salient characteristic (e.g., color of light). The simplicity of the target stimulus usually requires a minimum of processing by higher cognitive processes. More recent vigilance studies examining language processing and the interference of performance due to simultaneous demands on single perceptual processing channels have begun to examine cognitive processes beyond elementary mental operations (Moscovitch & Klien, 1980; Posner & McLeod, 1982). Some researchers (Erlenmyer-Kimling, 1977) have developed alternative forms of the vigilance task that involve processing two relevant dimensions (e.g., color and shape) as well as requiring the use of memory when the subject must compare two consecutive stimuli. This variation on the vigilance procedure presents playing card faces in a slide viewer at 1.42 second intervals and the subject is asked to respond when a presented slide is identical with the one presented immediately prior.

Nuchterlein (1983) notes that these studies are substantially different from traditional vigilance tasks in that there is an increase in the number of relevant dimensions and a demand for successive matching-to-sample operations, as well as a relative rather than an absolute target stimulus. These characteristics and the use of memory clearly demand the use of more complex cognitive operations when compared to traditional vigilance tasks (Parasuraman, 1979).

It is clear that when the stimuli in vigilance tasks become more complex and the target stimuli become more ambiguous, then the vigilance situation changes from a measure of elementary perceptual operations to one that demands increasingly more sophisticated cognitive operations.

While traditional vigilance tasks are designed to measure isolated elementary mental operations, social hypervigilance denotes a more complex and synthesized response that integrates several mental operations and is mediated by experience. Social hypervigilance is more likely a result of cognitive schema or an organization of mental operations that have been prepared by experience to selectively attend to and evaluate stimuli relevant to social interactions associated with abuse. Hypervigilance may represent a stable cognitive and emotional style that persists across differing situations.

Such descriptions of social hypervigilance are consistent with those characteristics of cognitive style as outlined by Messick (1976):

These styles represent consistencies in the manner or form of cognition or the level of skill displayed in the cognitive performance. They are conceptualized as stable attitudes, preferences, or habitual strategies determining a person's typical mode of perceiving, remembering, thinking, and problem solving.

As such, their influence extends to almost all human activities that implicate cognition, including social and interpersonal functioning (p. 5).

Many cognitive styles have been identified. Field independence (Witkin, Lewis, Hertzman, Machover, Meissner, & Wapner, 1973), field articulation (Messick & Fritsky, 1963; Mos, Wardell, & Royce, 1974), conceptualizing style (Kagan, Moss, & Sigel, 1960, 1963; Wallach & Kogan, 1965), breadth of categorization (Messick & Kogan, 1965), conceptual differentiation (Gardner, Lohrenz, & Schoen, 1968), cognitive complexity (Bieri, Atkins, Briar, Leaman, & Tripodi, 1966; Kelly, 1955), conceptual articulation (Bieri, Atkins, Briar, Leaman, & Tripodi, 1966), conceptual integration (Harvey, Hunt, & Schroeder, 1961), leveling versus sharpening (Gardner, Holzman, Klein, Linton, & Spence, 1959), scanning (Gardner & Long, 1962a, 1962b; Wachtel, 1967), and reflection versus impulsivity (Kagan & Kogan, 1970) are just some of the styles that are described. With the exception of reflection versus impulsivity, most of the literature in cognitive style focuses on style characteristics first identified in adults. The measurement of the styles in children have been difficult due to the need to develop comparable, age appropriate tests (K.H. Nelson, personal communication, January, 1983).

The limited literature regarding children's cognitive styles reflects both the difficulty of measurement and an overall difficulty in finding characteristics and traits that remain stable throughout a child's development. Witkin (1967),

in a study examining field dependence versus field independence in approximately 370 children both longitudinally and cross-sectionally, found that the trait failed to show stability in individuals until after age 17. While the subjects almost uniformly showed increases in the level of field independence with time, a stable level of the characteristics was not established until late adolescence.

Cognitive styles are generally viewed as developing slowly and experientially as an adaptive response to consistent, long-term environmental demands (Kogan, 1976). As such, they are "intimately interwoven with affective, temperamental, and motivational structures as part of the total personality" (Messick, 1976, pp. 6-7). Shapiro (1965) asserts that cognitive styles are one aspect of the personality structure that determines the form of adaptive traits, defense mechanisms, and pathological symptoms.

The extension of observations of specific perceptual skills into constructs of cognitive style is common. Field dependence versus independence was identified from individual differences on the Rod and Frame test, a task which asks subjects to adjust a luminescent rod to a horizontal orientation despite the orientation of a moving luminescent rectangular frame (Witkin, 1965). Kagan, Rosman, Day, Albert, and Phillips (1964) identified reflective versus impulsive styles using the Matching Familiar Figures Test, a timed task in which subjects are asked to identify a target figure from a group of similar but slightly different non-target figures.

The measures of cognitive style may focus on perceptual skills but they require complex processing which is regulated by the cognitive organizational structure the person possesses.

Cognitive styles differ from intellectual and perceptual abilities in a number of ways (Messick, 1976). First, ability dimensions are measures of "how well" a task is performed. Vigilance tasks are used to differentiate persons on the speed of processing. The concept of cognitive style is used to denote "how" a task is performed or information is processed. Hypervigilance is defined as how attention is deployed in a complex information processing task. Abilities are measured in terms of characteristic modes of operation with an emphasis on process. Social hypervigilance is a characteristic focus and value placed on specific salient characteristics in social and performance situations. Abilities are viewed as unipolar, with a range from zero to high levels of ability. Styles are typically bi-polar "in a sense of pitting one syndrome or complex of interacting characteristics against a contrasting complex at the opposite pole of distribution" (Messick, 1976, p. 8).

Social hypervigilance is a complex constellation of attentional, emotional, and behavioral characteristics that contrast with environmental vigilance, which can be characterized as a focus that attributes greater value and salience to non-social environmental events and demands and a relative inattention to social cues. Each pole can be adaptive or

maladaptive depending on the environmental context. Social hypervigilance is adaptive for an abused child in his family but may be a disadvantage in school or later, as a parent. Environmental vigilance can be a benefit to an accountant working in a bustling office but may be maladaptive for a mental health professional. As can be seen, cognitive styles tend to be value free, with the value depending on the context. Abilities tend to be value directional with one direction of the characteristic seen as most desirable across contexts. A final difference between abilities and styles lies in their breadth of coverage. Abilities tend to be task or domain specific. Cognitive styles are present across domains. They function, in part, as controlling mechanisms determining an individual's characteristic regulation and control of impulse, thought, and behavioral expression in diverse areas (Gardner, Jackson, & Messick, 1960).

Social hypervigilance can be viewed as a primitive cognitive style that develops as an adaptive response to a pathological environment. The intensity of the experience through which the cognitive and emotional styles develop may speed the formation and consolidation of the style structure.

Social hypervigilance is characterized by an exaggerated attention to other persons and socially relevant stimuli. It reflects an underlying value that is placed on social events at the expense or exclusion of non-social events. It can be differentiated from attention seeking in that abused

children presumably are attentive to their environment, but do not initiate social interaction which would elicit the attention of the environment.

Social hypervigilance is outwardly manifested by several defining attributes identified by previous researchers. "Frozen watchfulness" (Ounsted, 1972) and a preoccupation with others (Kempe & Kempe, 1978) are the core characteristics of this style. As such, socially hypervigilant children are those whose attention is focused on social events and for whom social cues are most salient and are given selective attention.

Other characteristics of abused children are not core aspects of social hypervigilance, but are seen as common extra-class correlates of a social hypervigilant style, particularly in abused children. Physical withdrawal (Baldwin & Oliver, 1975; Rolston, 1971), "defensive independence" (Rohner & Rohner, 1980), low self-esteem (Elmer, 1967; Martin & Beezley, 1977), lack of trust (Martin & Rodeheffer, 1977), a negative world view (Rohner & Rohner, 1980), and poor ego controls (Sandgrund, Gaines, & Green, 1974) are all seen in abused children and are also aspects of the personality structure that tends to develop in children raised in abusive environments.

According to Martin and Rodeheffer (1976), hypervigilance is exacerbated in the testing situation. They describe distractability and disrupted attention on the part of the

abused child in response to minor stimuli which interfere with play or test performance.

While the discussion, thus far, has focused on the observation of social hypervigilance and its relation to an abused child's overall personality structure, a more parsimonious explanation may exist. While hypervigilant behavior has not been described in other than abused populations, the presumed preoccupation of these children with adults may result from a more common characteristic: an extreme desire or need for social approval (Crandall, 1966; Crowne & Marlowe, 1964).

A second characteristic that may be related to social hypervigilance is the characteristic of locus of control. Locus of control refers to an enduring perception regarding whether personal or external factors control events in one's life. Research has demonstrated that those persons who believe themselves to have control over events in their lives (internals) were more concerned with issues of self actualization, while those attributing control to factors outside of their personal control (externals) were more concerned with issues of safety (Barling & Fincham, 1979). Nichols and Duke (1977) have described internally oriented persons as "willful, almost negativistic when pressured to change attitudes. By contrast, externals are more responsive to pressure and influence" (p. 292).

Other researchers find somewhat different and possibly contradictory results. Dudley (1977), found that internals spent more time talking with a stranger. Internals demonstrated more developed perspective taking skills (Handy & Elliot, 1977), and were more sociable than externals. The research is mixed in regard to the relation between locus of control and social relations. Externals show an emotional interest and internal preoccupation with social relations that are similar to descriptions of hypervigilant children. Internals, on the other hand, demonstrate greater social understanding and an active interest in others. Although the direction of the relationship between locus of control and hypervigilance is unclear, its value in providing important information regarding the dynamics of hypervigilance cannot be doubted.

Social vigilance has been noted many times in the child abuse literature. Whether it is called "frozen watchfulness" or hypervigilance, the characterization of the phenomenon in abused children is remarkably similar. The descriptions of social vigilant behaviors are consistent with the characteristics of cognitive styles, as outlined by Messick (1976), and provide a theoretical basis for postulating that environmental vigilant characteristics are a class of behaviors that constitute the opposing pole of the cognitive style.

Specifically, attention to social stimuli, facial gaze toward adults, and several of the WISC-R subtests have been

identified as relating to social vigilance. Attention to non-social environmental stimuli, gaze toward objects, and several WISC-R subtests are seen as relating to environmental vigilance.

The reports of hypervigilance by clinicians have, unfortunately, not received much research attention. In fact, there appears to be no attempt to empirically define, confirm, and examine hypervigilant behaviors. Although there are adequate behavioral descriptions of social hypervigilant behaviors, no attempt has been made to operationally define them into a class of behaviors defining social vigilance.

Observations of abused children and their social hypervigilance have led researchers to conclude that social vigilance has general detrimental effects on the child's non-social development and abilities to perform non-social tasks (Aber & Zigler, 1981). In contrast, though, abused hypervigilant children are expected to have precocious abilities in the social area. Although this speculation regarding the adverse effects of social hypervigilance is common, no research currently exists that addresses this question.

In addition, there has been no reported research comparing the incidence of social vigilant behaviors in abused children to any other population. Although the experience of abuse can, theoretically, produce social vigilant behavior, no study has examined actual behavioral differences between an abused sample and another comparison group. Cichetti and Rizley (1981)

have criticized all the research involving child abuse for the general use of inadequate comparison or control groups. There is a clear need for research examining the phenomenon of social vigilance, its etiological relation to abusive environments and experience, and the extra-class correlates associated with social vigilant behavior, such as locus of control and need for approval. In addition, the research needs to overcome the difficulties previously encountered in conducting child abuse research, and to provide an adequate comparison group matched for socio-economic status, intelligence, and age.

Hypotheses

Hypothesis 1: Stronger relationships would occur among behaviors within each of the two classes of behaviors (social vigilance behaviors versus environmental vigilance behaviors) than between the two response classes. For the purpose of this study, social vigilance behaviors, were: Frequency of off-task gaze toward adults, amount of attention to social stimuli, the WISC-R Picture Completion subtest, and WISC-R Picture Arrangement subtest. Environmental vigilance behaviors, were: Frequency of off-task gaze toward non-social objects, amount of attention to non-social environmental stimuli, WISC-R Block Design subtest, and WISC-R Object Assembly subtest.

Hypothesis 2: Social vigilant behaviors would relate directly to problem solving ability on tasks involving social problems and would relate inversely to problem-solving on

tasks involving non-social problems. Conversely, environmental vigilance behaviors would relate directly to problem solving ability on tasks involving non-social problems and would relate inversely to problem-solving on tasks involving social problems.

Hypothesis 3: Abused children would show more social vigilance behaviors than non-abused children and fewer environmental vigilance behaviors.

No hypotheses were proposed regarding the relationship of personality variables (locus of control & need for approval) to social vigilance and environmental vigilance behaviors, but the relations will be explored in this study. In addition, the relation of several variables that are indirectly related to the social vigilance and environmental vigilance classes of behaviors also will be examined. Specifically, the Comprehension and Information WISC-R subtests have been described as relating to social vigilance and environmental vigilance, respectively.

CHAPTER TWO

METHOD

Subjects

Twenty abused children and twenty non-abused, distressed children served as subjects in the present study. Subjects ranged in age from six years to thirteen years. Children included in the abused sample were those who had suffered repeated physical injuries resulting from burning, biting, shooting, or stabbing, and beatings or spankings that left injuries such as bruises or fractures. To be included in the abused sample, the abuse must have been inflicted by an adult living in the child's home and reported, documented, and confirmed by the state agencies responsible for the investigation of child abuse. The subjects included in the abused group were part of a larger group of abused children referred to psychological evaluation at a metropolitan community mental health center prior to juvenile court proceedings. Experimental data were collected for this entire group and inclusion in the present study was determined by each subject's meeting of the above inclusion criteria, of exclusion criteria outlined below, and of the availability of a suitably matched control subject.

The non-abused control subjects were drawn from children brought in for evaluation at the same metropolitan community mental health center. Subjects were not included in the control

group if they or their siblings were known to have ever been involved in a state investigation of child physical abuse, sexual abuse, or neglect. In addition, they were excluded from the study if the psychologist, psychiatrists, or social workers involved in their evaluation ever considered, in the course of their evaluation, reporting the child's case to state authorities due to a suspicion of child abuse.

Control subjects were matched with the abused subjects on intelligence and the groups were comparable in regard to socio-economic status, and age. Any child with documented brain damage, physical disabilities, drug or alcohol problems was excluded from the study. All subjects below a scale score of six on the WISC-R Vocabulary subtest were suspected of mental retardation and excluded from the experiment. Consent forms (see Appendix A) for all subjects were obtained prior to participation from parents or legal custodians.

The two groups were roughly comparable in many of their demographic variables. In addition to the matched variables (intelligence, age, family income), the groups showed similar distributions of sex, race, and family constellations. The abused group included eight girls and twelve boys, while the distressed-control group was composed of nine girls and eleven boys. Comparison of frequencies show no significant differences between the groups ($\chi^2(1, N = 40) = .20, p > .05$).

The groups also showed similarities in the races of their various members. Within the abused group, eight of the children

were black, while twelve were white. The distressed control group had nine black subjects and twelve white subjects. Chi square comparison found no significant differences in frequencies ($\chi^2 (2, \underline{N} = 40) = 1.92, \underline{p} > .10$). The races of the abused subjects in this study, though, do not reflect the distribution of ethnic backgrounds in a nationwide sample (U.S. Department of Health, Education, and Welfare, 1979). The current sample is composed of 40 percent blacks while the nationwide sample included 18.5 percent. This sample has 60 percent whites compared to 71.7 percent in the nationwide sample and no hispanic subjects compared to 9.8 percent of all abused children reported nationwide. The racial composition of the current abused sample represents a significant deviation from the composition of abused children nationally ($\chi^2 (2, \underline{N} = 20) = 7.37, \underline{p} < .05$).

Of the children assigned to the abused group, six were from two parent households, three lived with their fathers, and 11 lived with their mothers. Eleven of the children in the distressed-control group were from two parent households, while one lived with a single father, and eight others lived with their mothers. Chi square analysis comparing the family constellations of the subjects in each of the two groups ($\chi^2 (2, \underline{N} = 40) = 2.96, \underline{p} > .20$) was non-significant.

While the two groups are comparable in the type of family constellation within which the subjects lived, the abused group used in the current study differed significantly from demographic data revealing family constellations of abused

children nationwide ($\chi^2(1, N = 20) = 22.45, p < .001$). The current sample is composed of subjects 70 percent of whom are from single parent homes while the nationwide sample (U.S. Department of Health, Education, & Welfare, 1979) includes only 25 percent from single parent households.

The abused group included children who appeared to have been abused by only one of their parents. Within the current sample nine (45 percent) of the children were abused by their mothers while 11 (55 percent) were abused by fathers or father figures. This is similar to the nationwide figures that reveal that 44 percent of perpetrators are female while 56 percent are male, with 98.9 percent of the perpetrators being relatives (U.S. Department of Health, Education, & Welfare, 1979).

Test Measures

The Wechsler Intelligence Scale for Children - Revised (Wechsler, 1974) is an individually administered test that measures specific cognitive, perceptual, and motor skills and offers a general estimate of intelligence. The WISC-R Vocabulary subtest was viewed as the best estimate of intelligence unconfounded by vigilance, and was used to match the subjects in each group on intelligence. The Vocabulary subtest is considered the best single subtest estimate of general intelligence (Kaufman, 1975) and, as such, is reported as being less susceptible to the effects of psychopathology (Kaufman, 1979). The Picture Arrangement and Picture

Completion subtests of the WISC-R were used to assess social vigilance and the Block Design and Object Assembly subtests were used to assess environmental.

The Locus of Control Scale for Children's Perceptions of Social Interactions (LOC-CPSI) (Dalquist & Ottinger, 1983) is an inventory developed specifically for measuring expectancies of control within social interactions. The test consists of 48 statements to which the subject responds "yes" or "no". Three locus of control scores are derived from this scale. The I score is the number of items answered in the internal direction. The I+ score is the number of positive content items answered in the internal direction (out of a possible 24). The I score is calculated by adding the I+ and I- scores. Dalquist and Ottinger (1983) report that the LOC-CPSI demonstrates acceptable levels of internal consistency, as outlined by Nunnally (1967).

The measure of Need for Social Approval also is obtained through the LOC-CPSI through its social desirability (SD) scale. The SD scale consists of 24 items to which the subject responds "yes" or "no". The SD scale also shows acceptable internal consistency and test-retest reliability (Dalquist & Ottinger, 1983). Several researchers have found social desirability to be an indirect measure of Need for Social Approval (Crandall, 1966; Crowne & Marlowe, 1964).

Procedure

Prior consent for the study was acquired from the parents or legal custodians (see Appendix A). All subjects were

escorted by the experimenter to the test room. The experimenter was a 28 year old male, caucasian, of average height and build with a beard and glasses, who was an advanced doctoral student in Clinical Psychology. The same experimenter administered the experimental procedures for all children. At first contact, the experimenter greeted the subjects and offered the following introduction. "Hi, I'm Mr. Harrison. We're going to ask you some questions and see if you can solve some problems for me."

Each subject was then seated at a seven feet long by three feet wide table in a position at one side, one foot from the end. In front of the subjects was the Marble Sorting Test apparatus which consisted of a 14 inches by eight inches by two inches container filled with 400 colored acrylic balls, equally divided between green, blue, black, and red. The balls were thoroughly mixed. To the side of this container, away from the subjects, were four circular containers, each five inches in diameter and three inches deep. Each circular container was coded with four vertical bars colored either green, blue, black, or red. The containers were placed in order, from the subject's left to right, of black, red, green, and blue.

The Marble Sorting Test was introduced to each child with the following instructions: "See these difference colored balls? The black balls belong in this bucket (the experimenter places a black ball in the black coded container), the red

balls belong in this bucket (the experimenter places a red ball in the red coded container), the green balls belong in this bucket (the experimenter places a green ball in the green coded container), and the blue balls belong in this bucket (the experimenter places a blue ball in the blue coded container). When I tell you to begin, I want you to put each of these balls into the bucket in which it belongs. I want you to continue to do this until I tell you to stop. Do you understand?" The experimenter responded to any questions. To any questions pertaining to strategy or technique, the experimenter responded by stating: "You may do it any way you wish."

After the instructions were given, the experimenter positioned himself at the table, on the opposite side of the subject, at the end approximately five feet away from the subject and at a 55 to 60 degree angle to the right of the subject's forward gaze. The experimenter then assumed a practiced neutral facial expression and looked toward the subject's left shoulder. The subject was then directed, "you may begin," and a timer was started. After a five minute period ended, the subject was then asked to "please stop." The experimenter placed lids on the color coded containers and the Marble Sorting Test apparatus was removed.

The subjects were then placed in a modified vigilance paradigm. They remained seated at the table and a desk top bell was placed in front of them. Approximately 12 feet away

was a full length projection screen, to which the subject's attention was directed. In this task, subjects were presented with slides depicting scenes of adult-child pairs in household settings (see Appendix B). There were four standard stimulus scenes (A-1, B-1, C-1, D-1) involving different combinations of sexes in the adult-child pair. The four combinations are as follows: A-1, male adult, male child; B-1, female adult, male child; C-1, male adult, female child; D-1, female adult, female child. Each of the four pairs appeared in a different environmental setting. Each of the four standard stimuli described above also had parallel versions which served as vigilance stimuli. For the social vigilance stimuli (A-2, B-2, C-2, D-2), only a social detail changed from the corresponding standard stimulus slide. For A-2, B-2, C-2, D-2, this change involved the loss of a smile on the part of one of the persons pictured in the standard slide (A-1, B-1, C-1, D-1).

For the environmental vigilance stimuli (A-3, B-3, C-3, D-3), only an environmental detail changed from the corresponding standard stimulus slide. For A-3, B-3, C-3, D-3 this change in detail involved the removal of an object in either the foreground or the background of the setting pictured in the standard slide A-1, B-1, C-1, D-1. For social plus environmental vigilance stimuli (A-4, B-4, C-4, D-4), both a social and an environmental detail changed from the corresponding standard stimulus slide.

In the vigilance task, all subjects were presented with 15 trials, each trial containing 10 to 22 identical slides of a standard stimulus and a final slide of a corresponding vigilance stimulus scene. For example, one trial presented to subjects is as follows: A-1, A-1, A-1, A-1, A-1, A-1, A-1, A-1, A-1, A-1, A-4. A list of slide sequences for each of the 15 trials appears in Appendix C.

All subjects initially participated in three practice trials presenting six slides (standard stimulus) of a single geometric shape at two second intervals followed by a final slide (vigilance stimulus) showing a variation of that shape. The subject was instructed: "I am going to show you several pictures. Most of the pictures will be the same, but some will be different. I want you to watch for the pictures that are different and when you see one, ring the bell. After you ring the bell, I'll ask you to tell me what is different about the picture. Let's try some for practice."

The three practice trials were then presented. After each successful identification of a change, the subject was told "Good! That's right." If the subject failed to identify the vigilance stimulus correctly, the subject was shown the standard stimulus and was told: "This one is the same as the others," and then was shown the vigilance stimulus slide and was told, "This one is different. See that the (identifies change) is different."

After the practice trials were completed, the subjects were given the 15 experimental trials. No help was given with the experimental trials. A new trial was begun following the last slide of the previous trial. After the end of each trial, subjects were told, "Let's try another."

The slides were presented using a Kodak carousel slide projector adapted to project slides automatically at two second intervals. The stimuli were approximately six feet square.

After completion of the vigilance task, all subjects were administered the LOC-CPSI questionnaire. If the WISC-R had not been administered within the previous month, it was administered immediately after the LOC-CPSI. The experimenter administered all tests, with the exception of the WISC-R which, in some cases, was previously administered by a licensed psychologist or psychological examiner.

Behaviorial Measures

Three measures were derived from the Marble Sorting Test. Two off-task gazing behaviors were recorded, using a procedure adapted from Vliestra and Mansky (1981), as measures of distractability or disrupted attention. Off-task gaze was recorded separately each time the subject turned his head or directed his gaze away from the task to the left versus to the right. Gazes toward the left (Left Gaze Score) were assumed to reflect natural exploration of the environment. Gazes to

the right (Right Gaze Score) were assumed to reflect regard toward the experimenter. A third observation, noting the total number of balls correctly sorted, constituted the Performance Score.

Four behavioral measures were derived from the vigilance task. A Total Social Vigilance Score was calculated by adding the number of perceived social changes acknowledged by the subject. A Total Environmental Vigilance Score was calculated by adding the number of perceived environmental changes acknowledged by the subject. An Accurate Social Vigilance Score was calculated by subtracting any falsely perceived social changes from those social detail changes accurately identified. An accurate Environmental Vigilance Score was calculated by subtracting falsely perceived environmental changes from those environmental detail changes accurately identified.

CHAPTER THREE

RESULTS

Before considering the various hypotheses of the present study, it is necessary to consider first of all the various demographic characteristics of the abused and non-abused groups (see Table 1). Between group comparisons on each

Table 1
T-Tests Comparing Abused and Distressed
Groups on Demographic Characteristics

Variable	Mean	SD	T	Prob.
Age (in months)				
Abused	118.5	20.78	-.07	.95
Distressed	119.0	20.16		
Family Income (in dollars)				
Abused	9,925	7,381	-.24	.81
Distressed	10,515	8,422		
WISC-R Vocabulary Subtest				
Abused	8.9	2.38	.00	1.00
Distressed	8.9	2.38		

Note. N = 40

demographic factor are nonsignificant for intelligence based on the WISC-R Vocabulary subtest scores, socio-economic status based on total family income, and age of subjects.

For the purpose of clarity, the behaviors included in this study are categorized as follows: Social Vigilance -- Right Gaze, Total Social Vigilance, WISC-R Picture Completion subtest, WISC-R Picture Arrangement subtest; Environmental Vigilance -- Left Gaze, Total Environmental Vigilance, WISC-R Block Design subtest, WISC-R Object Assembly subtest; Performance -- Marble Sorting Performance, Accurate Social Vigilance, Accurate Environmental Vigilance; Personality Traits -- Locus of Control, Need for Approval; and Etiology -- abused versus distressed subject groups.

For the first hypothesis, it was proposed that stronger relationships would occur among behaviors within each of the two classes (social vigilance behaviors versus environmental vigilance behaviors) than between the two response classes. Table 2 is the matrix of Pearson product moment correlations (Winer, 1982) among the four social vigilance variables: Right Gaze (RG), Total Social Vigilance (TSV), and the WISC-R subtests of Picture Completion (PC) and Picture Arrangement (PA).

Table 3 is the matrix of Pearson product moment correlations among the four Environmental Vigilance variables: Left Gaze (LG), Total Environmental Vigilance (TEV), and the WISC-R subtests of Block Design (BD), and Object Assembly (OA).

Table 4 is the matrix of Pearson product moment correlations between the four Social Vigilance variables and the four Environmental Vigilance variables.

Table 2
Pearson Product Moment Correlations
Among Social Vigilance Behaviors

	Picture Completion	Picture Arrangement	Right Gaze
Total Social Vigilance	r = .520 p = .001	r = .362 p = .001	r = .241 p = .067
Picture Completion		r = .619 p = .001	r = .323 p = .021
Picture Arrangement			r = .347 p = .014

Note. N = 40. One-tailed tests of significance.

Table 3
Pearson Product Moment Correlations
Among Environmental Vigilance Behaviors

	Block Design	Object Assembly	Left Gaze
Total Environmental Vigilance	r = .188 p = .124	r = .224 p = .083	r = .239 p = .070
Block Design		r = .808 p = .001	r = .088 p = .295
Object Assembly			r = -.041 p = .400

Note. N = 40. One-tailed tests of significance.

Table 4

Pearson Product Moment Correlations Between
Social Vigilance and Environmental Vigilance Behaviors

	Total Environmental Vigilance	Left Gaze	Block Design	Object Assembly
Total Social Vigilance	r = -.170 p = .135	r = .133 p = .206	r = .091 p = .289	r = .048 p = .348
Right Gaze	r = -.190 p = .120	r = .427 p = .003	r = .179 p = .134	r = .240 p = .068
Picture Completion	r = -.069 p = .335	r = .215 p = .091	r = .286 p = .037	r = .216 p = .090
Picture Arrangement	r = -.105 p = .259	r = .109 p = .252	r = .298 p = .031	r = .148 p = .182

Note. N = 40. One-tailed tests of significance.

In order to test the first hypothesis, average correlations were derived for the intra-class correlations of social vigilance behaviors ($r_{avg} = .40$) and environmental vigilance behaviors ($r_{avg} = .10$, see Table 5). As predicted, the average intra-class correlation for social vigilance behaviors is significantly greater ($t = 13.70$, $p = .002$) than the average correlation between the two classes of behaviors. In contrast though, the average intra-class correlation for environmental vigilance behaviors is not significantly different ($t = 1.45$, $p = .67$) from the average correlation between the two classes of behaviors.

Table 5

T-Tests Comparing Average Intra- and Inter-Class
Correlations of Social Vigilance Behaviors and
Environmental Vigilance Behaviors

Group	Mean	SD	t	Prob.
Social Vigilance	.4020	.140	-3.70	.002
Intergroup	.1033	.176		
Environmental Vigilance	.1712	.355	-0.45	.671
Intergroup	.1099	.176		
Social Vigilance	.4020	.140	1.48	.169
Environmental Vigilance	.1712	.355		

Note. N = 40. One tailed tests of significance.

In addition to level of statistical significance of correlations within the social vigilance and environmental vigilance classes, a second criterion was employed to establish intra-class memberships. Specifically, for a particular social vigilance behavior to be considered within the same class with another social vigilance behavior, the two would need to have a positive correlation of .50 or greater, resulting in at least 25 percent common variance. The same criterion was employed for establishing intra-class membership for environmental vigilance.

With respect to intra-class membership for social vigilance, inspection of Table 2 reveals that all four variables are significantly and positively related. However,

only three variables meet the criterion ($r \geq .50$) for membership within the same class of behaviors. The Picture Arrangement, Picture Completion, and Total Social Vigilance variables constitute a class of behaviors that, for convenience, will be labelled social vigilance.

Intra-class membership for environmental vigilance is found in Table 3. One pair of variables is significantly and positively related. Only the correlation between Block Design and Object Assembly meets the criteria established for acceptable common variance and the two constitute a class of behaviors that, for convenience, will be labeled environmental vigilance.

Although those variables established as intra-class members in each response class remained the primary focus in subsequent analysis, those behaviors that did not meet the criterion for membership also continued to be studied. Of particular interest were their consistency with theoretical expectations and with the patterns demonstrated by those behaviors included in the social and environmental vigilance classes.

The second hypothesis proposes, first, that social vigilance behaviors would relate directly to problem solving tasks that involve social problems and would be inversely related to problem solving tasks involving non-social problems. In order to test the second hypothesis, stepwise multiple regression analyses (Pedhazur, 1982) were performed

examining the relation of the group of social vigilance behaviors to each of the performance variables. Table 6 presents the summary of the multiple regression analyses.

Each of the multiple regression analyses was statistically significant. Picture Completion and the WISC-R Comprehension subtest are related to marble sorting performance, while Total Social Vigilance predicts Accurate Environmental Vigilance. Picture Completion and Picture Arrangement show a significant relationship to Accurate Social Vigilance. The level of R^2 for the above analyses though, is quite low and none of the combinations of predictive variables explains more than 10 percent of the variance of the target abilities.

The contention that the social vigilance behaviors are directly related to problem solving tasks involving social problems is not well supported. Accurate Social Vigilance is such a problem task and Picture Completion is weighted negatively in the regression equation, while Picture Arrangement is weighted positively. Conversely, the hypothesis that social vigilance behaviors and non-social problem solving tasks are inversely related does receive limited support. Total Social Vigilance is negatively weighted in the Accurate Environmental Vigilance regression equation and Picture Completion is negatively weighted for prediction of marble sorting performance.

The second part of the second hypothesis proposes that Environmental Vigilance Behaviors would relate directly to

Table 6

Stepwise Multiple Regression Analysis for
Social Vigilance Behaviors Onto Each Performance Behavior

Predictor	Stepwise R	Adjusted R ²	<u>t</u>	Final Beta
Marble Sorting Performance				
Picture Completion	.30	.07	1.94*	-.42
Comprehension	.37	.09	1.71*	.23
Total Social Vigilance	.39	.08	1.47	-.15
Picture Arrangement	.41	.07	1.31	.15
Right Gaze	.41	.05	1.17	-.07
Accurate Environmental Vigilance				
Total Social Vigilance	.33	.08	2.13*	-.31
Comprehension	.37	.09	1.70*	-.17
Right Gaze	.38	.08	1.43	-.13
Picture Completion	.39	.06	1.26	.11
Accurate Social Vigilance				
Picture Arrangement	.18	.01	1.14	.42
Picture Completion	.39	.10	1.82*	-.48
Comprehension	.40	.09	1.49	.13
Right Gaze	.40	.06	1.28	-.05
Total Social Vigilance	.40	.04	1.12	.04

Note. * $p < .05$. t = one-tailed test.

problem solving tasks that involve non-social problems and would be inversely related to tasks involving social relations. In order to test this hypotheses, stepwise multiple regression analyses were performed examining the relation of the group of Environmental Vigilance behaviors to each of the performance variables. Table 7 presents a summary of the multiple regression analyses.

Significant multiple correlations were found relating Environmental Vigilance behaviors to each of the performance variables. Total Environmental Vigilance, Information, and Left Gaze were predictive of marble sorting performance. Left Gaze was negatively weighted in the regression equation. Block Design was negatively related to Accurate Environmental Vigilance. Left Gaze and Object Assembly were found to be related to Accurate Social Vigilance. Again, Left Gaze produced a negative beta weight.

The findings are of only partial support for the second hypothesis. The levels of R^2 in each of the analysis are unacceptably low, explaining only five percent to 15 percent of the variance of each of the performance measures. In addition, the direction of predictive relationships is often inconsistent with hypothetical expectations. While the social vigilance behavior of Picture Completion is inversely related to marble sorting performance and the Picture Arrangement behavior is positively related to Accurate Social Vigilance, as predicted, Picture Completion is inversely related to Accurate Social Vigilance in contrast to predictions. For the

Table 7

Stepwise Multiple Regression Analyses for
Environmental Vigilance Onto Performance Variables

Predictor	Stepwise R	Adjusted R ²	<u>t</u>	Final Beta
Marble Sorting Performance				
Total Environmental Vigilance	.45	.16	3.07**	.36
Information	.46	.17	2.25*	.14
Left Gaze	.47	.16	1.85*	-.07
Object Assembly	.48	.14	1.61	.19
Block Design	.48	.12	1.44	-.15
Accurate Environmental Vigilance				
Block Design	.28	.06	1.83*	-.24
Left Gaze	.33	.06	1.53	-.17
Total Environmental Vigilance	.34	.04	1.25	.07
Information	.34	.02	1.07	-.05
Object Assembly	.34	-.01	.90	-.03
Accurate Social Vigilance				
Left Gaze	.35	.10	2.30*	-.33
Object Assembly	.40	.11	1.87*	.11
Total Environmental Vigilance	.41	.10	1.56	.09
Block Design	.41	.07	1.42	.08
Information	.41	.05	1.18	.02

Note. * $p < .05$. ** $p < .01$. $N = 40$. t = one tailed test.

Environmental Vigilance measures, Object Assembly is directly related to Accurate Social Vigilance, in contrast to predictions, and Block Design is negatively related to Accurate Environmental Vigilance.

The third hypothesis proposes that abused children will show more social vigilant behaviors than non-abused children and fewer environmental vigilance behaviors. The abused children showed significantly less internality when compared to the distressed children ($t = 1.401$, $p = .0010$). Consequently, analyses of covariance, controlling for the effects of locus of control were calculated to examine the differences between groups for both social vigilance and environmental vigilance behaviors. The two groups did not differ in their level of need for approval.

The analyses of covariance between the abused and distressed groups on the social measures are presented in Table 8. Only one of the variables classified in the social vigilance response class demonstrated significant between group differences. The abused group demonstrated significantly higher Total Vigilance scores than the distressed sample. Right Gaze also demonstrated significantly higher frequency in the abused group than in the non-abused group. Picture Completion and Picture Arrangement are the remaining social vigilance response class behaviors and the variables did not show between group differences when locus of control is a covariate.

Table 8

Analysis of Covariance for Social Vigilance Behaviors
by Etiological Group Controlling for Locus of Control

Variable	Source	df	mean sqr	F	Sig
Right Gaze	LOC	1	4.09	.75	.39
	Group	1	75.79	13.88	.001
	Residual	37			
Total Social Vigilance	LOC	1	183.75	11.16	.002
	Group	1	133.52	8.11	.007
	Residual	37	16.46		
Picture Completion	LOC	1	36.41	6.17	.02
	Group	1	2.39	.41	.53
	Residual	37	19.40		
Picture Arrangement	LOC	1	39.37	8.05	.007
	Group	1	.68	.14	.712
	Residual	37	20.03		

Table 9 presents summaries of the analyses of covariance between the abused group and the non-abused, distressed group on the Environmental Vigilance variables. The two variables designated as members of the environmental vigilance response class in hypothesis one (Block Design and Object Assembly) did not show significant between group differences. Two other Environmental Vigilance variables did differentiate between the abused and non-abused children. Abused children gaze significantly more toward the non-social environment than

Table 9

Analysis of Covariance for Environmental Vigilance
Behaviors by Etiological Group Controlling for Locus of Control

Variable	Source	df	mean sqr	F	Sig
Left Gaze	LOC	1	2.45	3.17	.09
	Group	1	3.28	4.18	.05
	Residual	37	.79		
Total Environmental Vigilance	LOC	1	59.15	6.78	.01
	Group	1	130.12	14.92	.001
	Residual	37	8.71		
Block Design	LOC	1	20.47	4.46	.04
	Group	1	1.03	.24	.64
	Residual	37	10.79		
Object Assembly	LOC	1	35.30	7.43	.01
	Group	1	00.00	.002	.967
	Residual	37	17.65		

non-abused children, a finding inconsistent with predictions. Consistent with predictions though, is that distressed non-abused children demonstrate significantly higher scores on Total Environmental Vigilance than abused children.

Additional Findings

In addition to the major focus of this study, several other areas are of interest. In particular, etiological group differences on the performance, WISC-R, and personality

variables will be examined, as well as the relationships of Locus of Control, Need for Approval, and intelligence to the vigilance and performance measures.

Table 10 presents a summary of analyses of covariance (controlling for Locus of Control) examining etiological group differences on the Performance variables.

Table 10
Analysis of Covariance of Etiological Groups for Performance Variables with Locus of Control as a Covariate

Variable	Source	df	mean sqr	F	Sig
Marble Sorting Performance	LOC	1	152343.69	5.28	.024
	Group	1	14998.24	5.43	.025
	Residual	37	2758.26		
Accurate Environmental Vigilance	LOC	1	4.57	.49	.49
	Group	1	12.00	1.30	.26
	Residual	37	9.20	.90	
Accurate Social Vigilance	LOC	1	6.62	1.19	.30
	Group	1	1.33	.23	.64
	Residual	37	5.91		

The analyses reveal that marble sorting performance was significantly higher in the distressed group. Group differences for the Accurate Vigilance scores were not significant.

Analyses of covariance (controlling for Locus of Control) examining etiological group differences on the remaining unexamined WISC-R subtest scores are summarized in Table 11.

Table 11

Analysis of Covariance of Etiological Groups for
WISC-R Subtests with Locus of Control as a Covariate

Variable	Source	df	mean sq	F	Sig
Information	LOC	1	3.73	.73	.40
	Group	1	30.61	5.99	.02
	Residual	37	5.11		
Similarities	LOC	1	8.72	1.06	.31
	Group	1	3.68	.45	.50
	Residual	37	8.25		
Arithmetic	LOC	1	2.37	.76	.39
	Group	1	2.45	.78	.38
	Residual	37	3.13		
Comprehension	LOC	1	.13	.02	.89
	Group	1	6.73	.96	.33
	Residual	37	6.98		
Digit Span	LOC	1	4.87	1.25	.27
	Group	1	4.62	1.18	.28
	Residual	37	3.90		
Coding	LOC	1	6.71	.76	.39
	Group	1	.03	.01	.95
	Residual	37	8.96		

Note. Vocabulary subtest was matched by group.

Only one of the seven subtests remaining showed significant group differences. Distressed children demonstrate higher Information scale scores than abused children.

Table 12 summarizes t-test comparisons made between the Locus of Control subtest scores and the Need for Approval scores from the two etiological groups.

Table 12
T-test Comparisons Between Etiological Groups for
Locus of Control and Need for Approval Variables

Variable	Group	mean	sd	t	Prob
I+	Abused	17.00	3.29	-2.03	.049
	Distressed	18.85	2.39		
I-	Abused	8.35	4.78	-3.03	.004
	Distressed	12.70	4.29		
I	Abused	25.35	5.24	-4.01	.001
	Distressed	31.55	4.51		
Need for Approval	Abused	16.00	3.78	-1.20	.239
	Distressed	17.35	3.34		

Significant differences were found between the abused and distressed groups on the Locus of Control subtests with the abused children acknowledging less control over both negative and positive social events. No significant group difference were noted for the Need for Approval variable.

Pearson product moment correlations were calculated between the Locus of Control score and the Vigilance and Performance behaviors. The results are presented in Table 13. In general, the Social Vigilance measures are negatively related to internal locus of control, and the Environmental Vigilance measures are positively related.

Pearson product moment correlations were calculated between IQ scores, Need for Approval score, and the Vigilance and Performance behaviors. The correlation are presented in Table 14. Right Gaze is the only variable significantly related to Need for Approval. Right Gaze and Total Social Vigilance are positively related to IQ and Accurate Environmental Vigilance is negatively related. All four WISC-R subtests are, not surprisingly, positively related to IQ.

Table 13

Pearson Product Moment Correlations Between Locus of Control and the Vigilance and Performance Behaviors

Variable	Internality Total	Internality Positive	Internality Negative
Right Gaze	r = -.12 p = .24	r = -.26 p = .05	r = .02 p = .46
Total Social Vigilance	r = -.45 p = .07	r = -.28 p = .04	r = -.35 p = .02
Picture Completion	r = -.38 p = .01	r = -.21 p = .10	r = -.31 p = .03
Picture Arrangement	r = -.43 p = .01	r = -.21 p = .34	r = -.45 p = .01
Left Gaze	r = -.27 p = .05	r = -.24 p = .07	r = -.16 p = .16
Total Environmental Vigilance	r = .34 p = .02	r = .16 p = .17	r = .28 p = .03
Block Design	r = .33 p = .02	r = .16 p = .17	r = .28 p = .04
Object Assembly	r = .41 p = .01	r = .24 p = .07	r = .33 p = .02
Marble Sorting Performance	r = .34 p = .02	r = .06 p = .36	r = .36 p = .01
Accurate Environmental Vigilance	r = -.12 p = .24	r = -.03 p = .42	r = .11 p = .25
Accurate Social Vigilance	r = .17 p = .15	r = .19 p = .12	r = .08 p = .31
Need for Approval	r = -.01 p = .48	r = .72 p = .00	r = -.45 p = .01

Table 14

Pearson Product Moment Correlations Between Need for Approval and IQ, and the Vigilance and Performance Behaviors

Variable	Need for Approval	IQ
Right Gaze	r = .26 p = .05	r = .37 p = .01
Total Social Vigilance	r = -.13 p = .22	r = .34 p = .02
Picture Completion	r = -.02 p = .45	r = -.59 p = .01
Picture Arrangement	r = .19 p = .12	r = .67 p = .01
Left Gaze	r = -.20 p = .10	r = .24 p = .07
Total Environmental Vigilance	r = .11 p = .24	r = .16 p = .16
Block Design	r = -.12 p = .25	r = .30 p = .03
Object Assembly	r = -.05 p = .37	r = .22 p = .08
Marble Sorting Performance	r = .04 p = .41	r = .06 p = .35
Accurate Environmental Vigilance	r = .12 p = .22	r = -.30 p = .03
Accurate Social Vigilance	r = .11 p = .25	r = .16 p = .17

CHAPTER FOUR

DISCUSSION

This study was undertaken in order to empirically validate the numerous clinical observations of social hypervigilance in abused children. Two sample of children, abused and distressed, were drawn from patients referred to a metropolitan community mental health center. Prior to discussion of the findings of this study and their possible implications, it is important to examine the characteristics of each of the sample groups and the extent to which we can generalize from the current results.

Prior investigators (Cicchetti & Rizley, 1981; Elmer, 1977; & Martin, 1979) have criticized research involving abused children for the lack of adequate control groups, and the lack of attention to the confounding influence of age, intelligence, and socio-economic status. The current research design attempted to address these criticisms. Comparisons of the two groups as to age, a measure of verbal intelligence, and family income find no significant differences between the experimental and control groups. In addition, the two groups showed comparable frequencies of subjects' gender, ethnic background, and family constellation, as well as comparability as to the sexes of their alleged perpetrators. An emotionally distressed control group was chosen so as to differentiate

the effects of physically abusive environments from those within which emotionally distressed children live. As such, the current control group constitutes a conservative choice among possible control groups and differences between the two groups on experimental measures may reflect more strongly the actual effects of abusive environments. The similarities between the two samples appear to adequately control confounding variables and argue strongly for the validity of the current findings.

While the current samples adequately address methodological concerns raised by previous researchers, the abused group included in this study differs from the national sample of abused children in several characteristics. First, the ages of children in the abused sample range from six years, two months to 13 years, one month with a median age of 10 years. The limited range of the current sample restricts the generalizability of the findings. The effects of physical abuse on preschool children and adolescents are not directly addressed in this study and it would be inappropriate to assume that abuse would affect all children similarly, regardless of age.

The family income of the abused sample ranged from complete dependence on AFDC and other government programs to an annual income of \$28,000 with a sample mean of \$9,925 per year. The vast majority of the children in the abused sample are from lower SES families with a significant number living below the poverty line. Since physical abuse is known to

occur across all income levels, the findings of the current study may be limited in applicability to only abused children in lower and lower-middle SES groups.

The racial distribution of the abused sample included fewer white children, more black children, and no hispanic children in comparison to national samples. While no empirical evidence is currently available that would lead to a suspicion of differential effects of physical abuse based on ethnic background, the current sample is limited in its representation of all ethnic backgrounds and this may become important should differential effects be found in future studies.

A final limitation of the current sample resides in its distribution of single and two-parent families. Fully 75 percent of the current sample is from single parent families, while only 25 percent of the nationwide sample lived in single-parent homes. Single parents experience greater task demands in the care of their children (Beal, 1979), greater social isolation (Spicer & Hampe, 1975), and are more vulnerable to stress and economic hardship (Beal, 1979). Dysfunctional parent-child relationships cannot be compensated by a sympathetic other parent in single family homes. Even when improvement is seen in the father-child dyad after a divorce, a child's functioning is not compensated in the face of a dysfunctional mother (Wallerstein & Kelley, 1975). The current abused sample contains a large number of single-parent abusive families which can be assumed to impact the child

differentially in comparison to two-parent abusive homes. Generalization of the current findings should be made with caution, and may reflect dynamics specific to only single-parent abusive homes.

Two methodological issues present possible confounding variables. First, the race and sex of the experimenter (white, male) and the models for the vigilance task stimulus slides (white) may have had effects upon subjects in a manner uncontrolled by the matched control subjects. If hypervigilance is a phenomenon that occurs specific to the race or sex of the abuser, the black children in the abused group would not be expected to demonstrate hypervigilant behavior in the presence of a white experimenter, since each was abused by his/her same race parent. Nor would one expect hypervigilant behavior from abused subjects whose mothers inflicted the abuse. The current study presumes a generalized hypervigilant phenomenon that has developed into a consistent cognitive style. A more specific phenomenon would result in diminished hypervigilant behavior in some members of the abused group and smaller between group differences in this study.

A second methodological consideration involves a neuropsychological response to the performance task in the gaze observation procedure (marble sorting test). There is some evidence (Bedwell, Grant, & McKeon, 1980; Pavlidis, 1981) that performance of visual-motor tasks, such as the

marble sorting test, is associated with increased ocular movements toward the left. This phenomenon would increase the number of Left Gaze observations during the marble sorting test and would be associated with vigilance to the environment. While the control subjects would also be affected by this phenomenon and thus this phenomenon is controlled in this study, the utility of observations of gaze as an indicator of social hypervigilance in visual motor performance situations will remain unclear until further research can adequately differentiate the two effects.

Overall, the design and method of this research has adequately controlled the known confounding variables of age, SES, and intelligence, as well as sex, family constellation, and ethnic background. The sample is limited in that it generally only includes subjects in middle childhood, in the lower to lower-middle socio-economic classes, and largely from single-parent families.

One purpose of this study was to identify a class of behaviors that could adequately represent the phenomenon of social vigilance. Social vigilance was seen as one pole of a bi-polar cognitive style that was contrasted by the phenomenon of environmental vigilance. This study is only partially successful in fulfilling that purpose.

Exploration of the first hypothesis led to the establishment of two classes of behavior, one labeled social vigilance, the other, environmental vigilance. The social

vigilance behaviors were extensively intercorrelated at a high level of significance. Three of four behaviors met the criterion for inclusion into the class of variables labeled social vigilance: Total Social Vigilance, Picture Completion, and Picture Arrangement. The only variable excluded was Right Gaze behavior.

Identification of a class of environmental vigilance behavior was much less successful. There were few intercorrelations among the original set of behaviors, and the average correlation among the environmental vigilance behaviors was not significantly different from the average correlation between the social and environmental vigilance variables. Only one pair met the criteria for common variance for entry into the environmental vigilance response class; Block Design and Object Assembly. While the strength of the correlation was quite strong between these two variables, it is highly unlikely that the common variance shared is due to their relation to social vigilance. It is more likely that Block Design and Object Assembly share similar test modes and task demands, rather than directly assessing environmental vigilance. This conclusion is reinforced by the uneven patterns of prediction of performance found for the two variables, as well as the lack of any etiological group differences.

While this study appears to have adequately supported a social vigilance response class as proposed in the

literature, it has not done so for environmental vigilance. Two possible explanations may be used to account for this finding. First, the behaviors included in this study may not represent the best choices for assessing environmental vigilance. Further research is needed to explore this possibility. Second, environmental vigilance may not be a viable polar opposite of social vigilance and no set of variables can adequately define it. This second possibility would require that social vigilance be reevaluated in terms of its description as a cognitive style (Messick, 1976). The phenomenon of social vigilance has been empirically defined in this study but its characteristics have to be explored to determine whether it actually is a cognitive style, an ability, or a temporary adaptive response.

A second concern of this study involved the relation of performance to social vigilance. Previous researchers have speculated that social hypervigilant behavior as a symptom would have detrimental effects upon a child's non-social performance (Abe & Zigler, 1981). This study proposed that social vigilance variables would relate directly to problem solving tasks involving social problems and be negatively related to problem solving tasks involving non-social problems. The converse hypothesis was proposed in regard to environmental vigilance. The findings indicate that the social vigilance behaviors are not related to task performance on social tasks. The social vigilance behaviors,

though, are inversely related to performance on non-social tasks. This finding is consistent with the speculation that children evidencing hypervigilant behavior will be adversely affected in their performance of non-social tasks. While attention directed toward social stimuli appears to interfere with non-social performance, the focus on social events seemingly does not enhance performance on social tasks.

Environmental vigilance behaviors provide a more confusing picture in their relation to performance. The environmental vigilance class members (Block Design & Object Assembly), are not consistent in their relations. Block Design is inversely related to accurate environmental vigilance, while Object Assembly is included in a multiple regression analysis predicting accurate social vigilance. These findings constitute a direct contradiction of the relationships hypothesized for environmental vigilance behaviors. Examination of the remaining environmental vigilance measures yield similar contradictory or mixed results. This lack of consistency in the findings is most likely a result of the inadequacy of the environmental vigilance response class in providing an operational definition.

A third concern of this study involved the examination of etiological group differences. If abusive environments exacerbate social vigilance among children, then the abused sample should evidence more social vigilant behavior when compared to the distressed group. The third hypothesis of

this study proposed differences between the abused and non-abused samples. Since the two groups differ significantly in their level of internal locus of control, the analysis controls for this personality variable. As predicted, the abused children were, generally, significantly different from non-abused children on those measures designed to directly assess the behaviors identified in the child abuse literature: gaze and vigilance.

Abused children demonstrate comparatively greater attention directed toward both adults and objects in their environment as well as demonstrating a greater predisposition to focus on social stimuli rather than non-social stimuli. Distressed children demonstrate a comparatively greater predisposition to attend to non-social stimuli in the environment, as well as greater abilities to problem solve in non-social tasks. These findings are consistent with the expectations derived from earlier research involving abused children and confirm the observations of social hypervigilance in clinical settings.

Overall, this study has provided strong evidence confirming previous observations of social hypervigilance in abused children. A class of behaviors has been identified that suggests an operational definition for social vigilance in future research and provides guidelines for observation of social vigilance behavior in clinical settings.

The assertion that social vigilance adversely affects performance on non-social tasks (Cichitti & Rizley, 1981) also receives support from this study. The implications of this finding for socially vigilant children are important. Social vigilance is likely to interfere with performance, for example, in school settings and if it persists, in later work settings. Unfortunately, the hypothesis that social vigilance enhances performance on problem solving tasks involving social problems was not confirmed. This suggests that there may be no compensatory advantages for the child in being socially vigilant.

The question of etiology was addressed and the findings indicate that social vigilance results from characteristics of abusive environments that are not shared with environments that produce distressed children. One obvious unique characteristic is the presence of physical abuse within the family. While this characteristic remains a prime possibility for a specific causative factor in social hypervigilance, research examining the unique aspects of abusive family environments may reveal other possible causative factors.

With respect to the additional findings, abused children were found to be more externally controlled than distressed children. This finding is not surprising given the uncontrollable and often unpredictable events in their lives. While abused children tend to be less internally controlled

in general, they are in particular, more likely to acknowledge less control over negative events that occur in their lives. This characteristic is not explained by a desire for approval or to present themselves positively, but seems to reflect either a denial of responsibility for their negative experiences or a fair reflection of the realities of their experience. In either case, though, this characteristic represents a lack of control over the very events that are most troublesome to the child and may point to a possible goal in the treatment of abused children.

While several of the WISC-R subtests were offered as possible measures of social and environmental vigilance, only one subtest was differentially represented in each of the etiological groups. Information was found to be depressed in the abused sample and this may represent a deficit resulting from the narrow focus of attention that abused children assign to social events.

Both Comprehension and Information are correlated with vigilance variables and Information, in particular, has demonstrated value in predicting performance. It appears that intelligence is significantly related to Right Gaze and Total Social Vigilance. In addition, both Right Gaze and Total Social Vigilance are measures in which abused children receive significantly higher scores. One possible implication of these two findings is that the level of hypervigilance evidenced in abused children may vary depending on level of intelligence. Social hypervigilance may be an adaptive

response for intelligent children who have not yet relinquished total control over negative events.

Another finding suggestive of possible underlying mechanisms of psychopathology resulting from abuse is that abused children have significantly higher scores on Total Social Vigilance, when compared to the distressed group, with no significant differences in Accurate Social Vigilance. This finding implies a greater frequency of distorted perceptions on the vigilance task. Abused children appear to be so primed to attend to social stimuli that they may at times see or interpret events in a manner inconsistent with reality.

Left Gaze in this study was postulated as a measure of environmental vigilance. Surprisingly, though, Left Gaze was moderately correlated with Right Gaze and demonstrated a pattern of relationships consistent with predictions made for social vigilance measures. In fact, Left Gaze, at times, demonstrated more predictive power than the Right Gaze. It appears that Left and Right Gaze reflect the same phenomenon, but since neither behavior meets the criterion for inclusion in the class of social vigilance behaviors, the exact nature of the phenomenon is unclear.

Consideration was given to the possibility that Gaze behavior may represent the effects of attention deficit disorder in some of the sample children. One would expect though, that attentional difficulties would reduce the

performance of the children on vigilance tasks. The significantly positive relation between Right Gaze and Total Social Vigilance suggests that increases in Right Gaze behavior are associated with better performance on the vigilance task, thus lending doubt to this possibility.

Gaze behavior appears to be an important characteristic of vigilance described in the literature (Martin & Rodeheffer, 1976) and its relationship to the class of social vigilance variables needs further research.

Appendix A

INFORMED CONSENT

NAME OF CHILD _____

1. I hereby give consent of Jim Harrison to perform or supervise the following investigational procedure or treatment:

Each child will be asked to participate first in a sorting task. The child will sort a large number of marbles, of four colors, into containers of corresponding colors. Hypervigilance, as measured by gaze toward the examiner, will be noted during the 5 minute task.

Next, each child will be asked to observe 20 series of slides depicting adult-child pairs in everyday household situations. The child is to observe individual slides in each series until she/he perceives a change in the scene. Upon detection of change, the child rings a bell and identifies the change. Individual slides in a series are presented at one second intervals. The entire task lasts approximately 12 minutes. In addition, a 48-item questionnaire concerning social judgement will be given. Unless previously administered, the Wechsler Intelligence Scale for Children-Revised will be the final task for each subject.

2. I have (seen,heard) a clear explanation and understand the nature and purpose of the procedure or treatment; possible appropriate alternative procedures that would be advantageous to (him,her); and the attendant discomforts or risks involved and the possibility of complications which might arise. I have (seen,heard) a clear explanation and understand the benefits to be expected. I understand that the procedure or treatment to be performed is investigational and that I may withdraw my consent for (his,her) status. With my understanding of this, having received this information and satisfactory answers to the questions I have asked, I voluntarily consent to the procedure or treatment designated in Paragraph 1 above.
3. I understand, in the event of complications, physical injury or illness resulting from the proposed research, that only acute and essential medical treatment is available. This institution will not provide monetary compensation for wages lost as a result of injury, hospitalization and professional services.

_____ SIGNED: _____
Date Witness

SIGNED: _____ SIGNED: _____
Person Responsible Relationship

Appendix B
Modified Vigilance Task Stimulus Slides



B-4



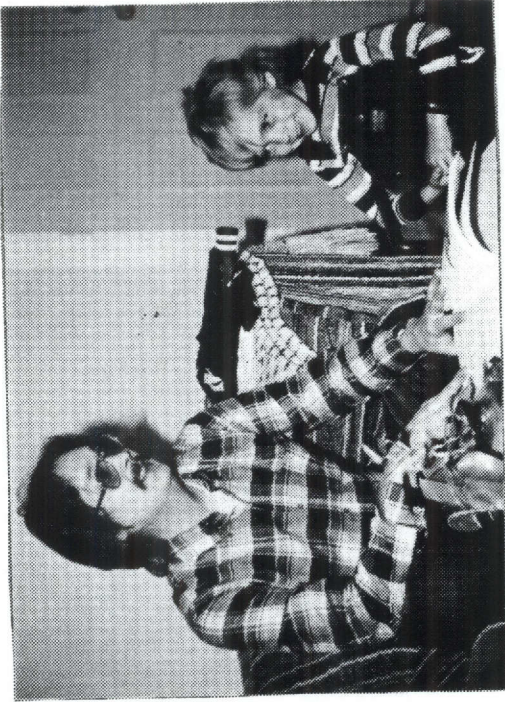
C-3



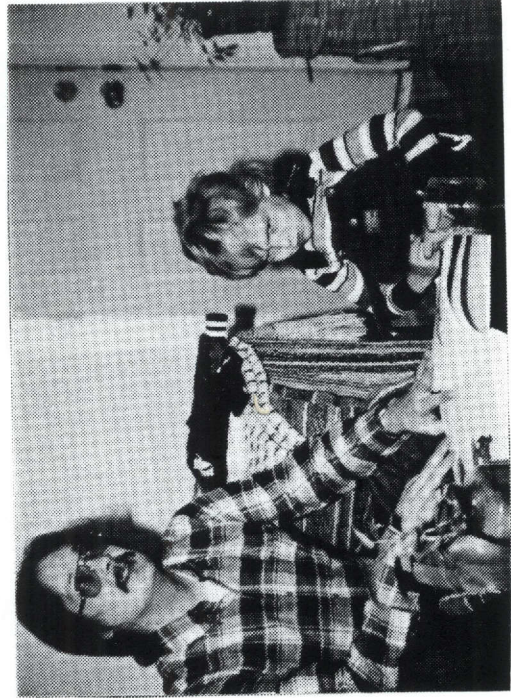
C-2



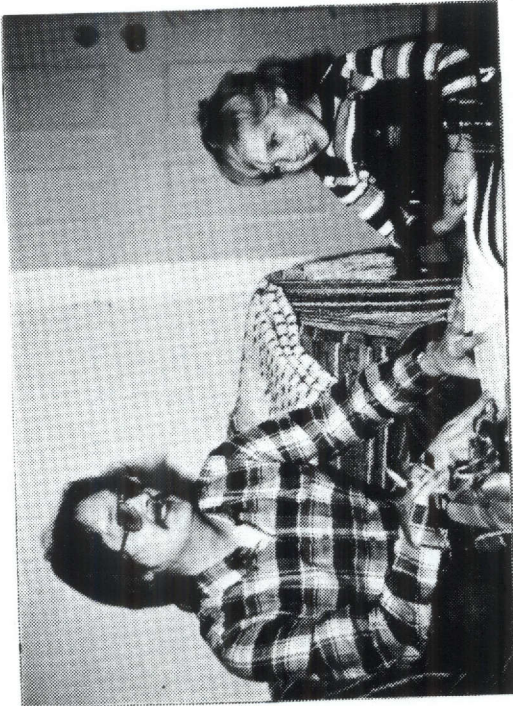
C-2



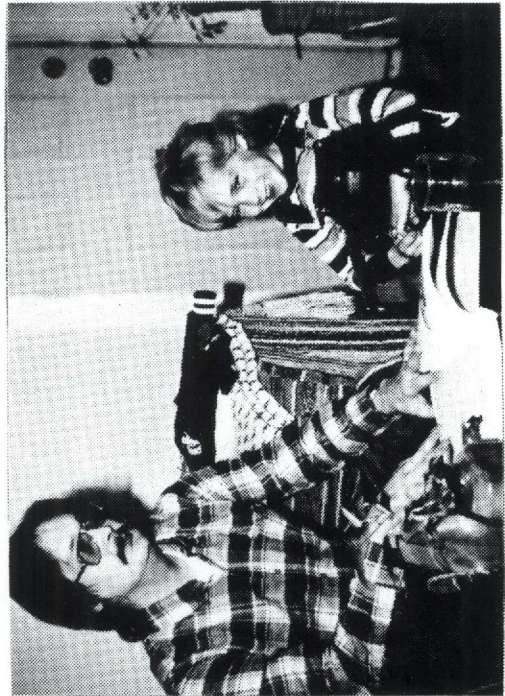
A-3



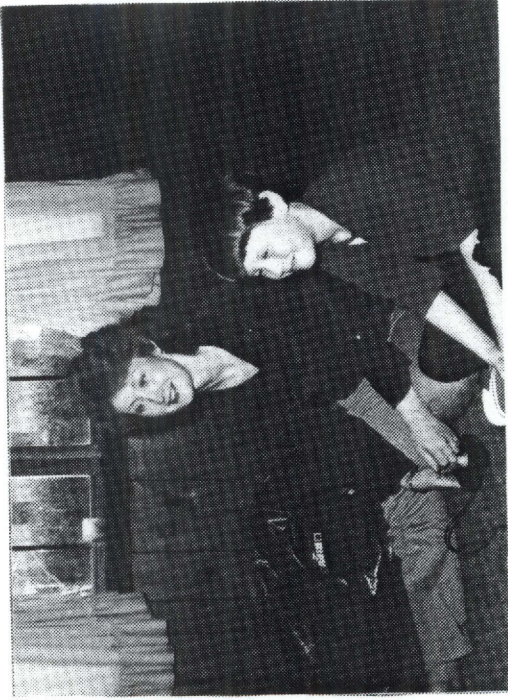
A-2



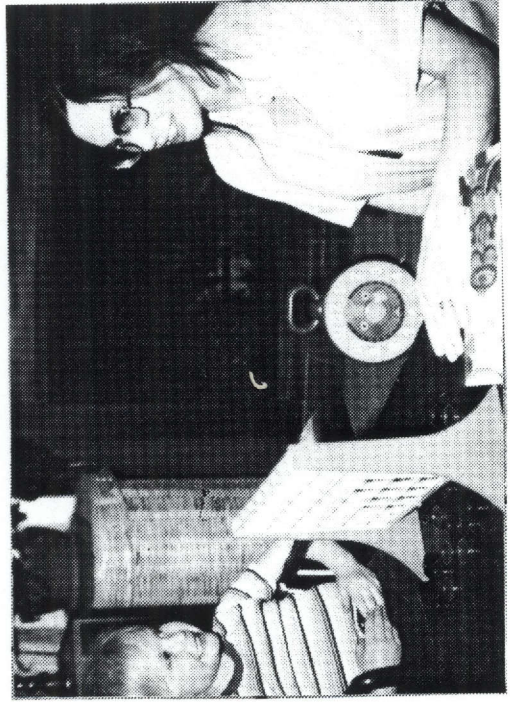
A-3



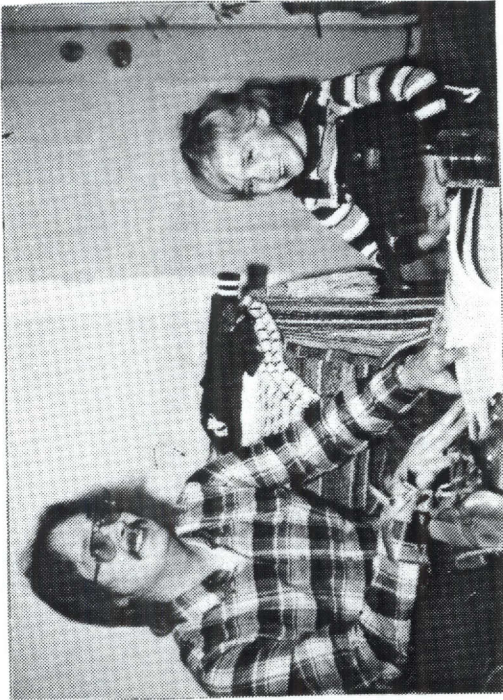
A-2



B-3



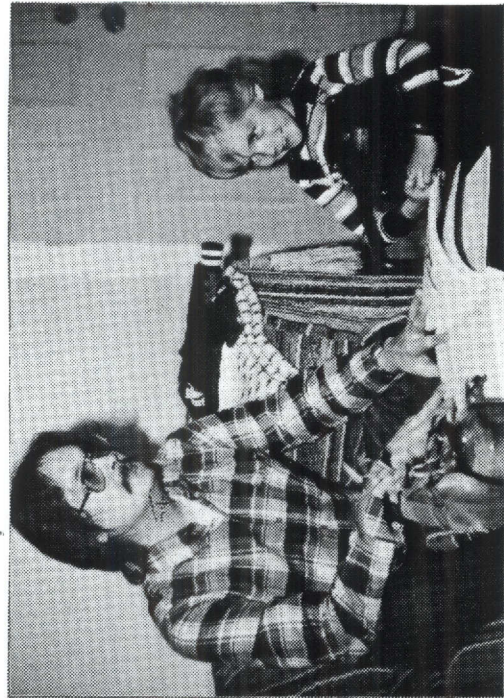
D-1



A-1



C-1



A-4



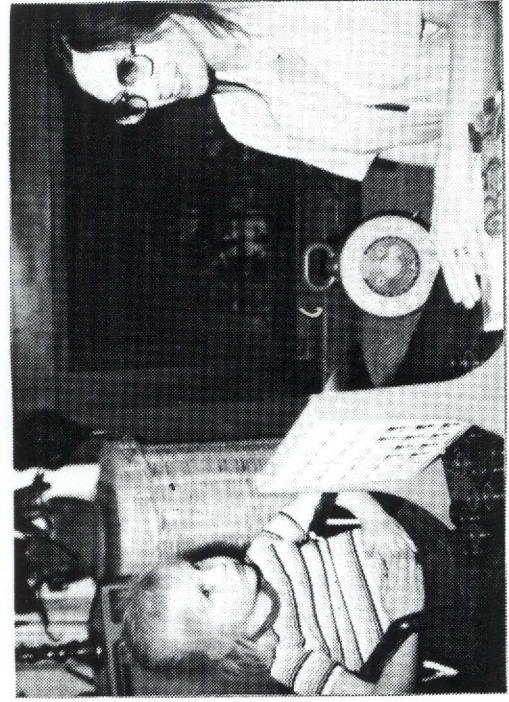
D-4



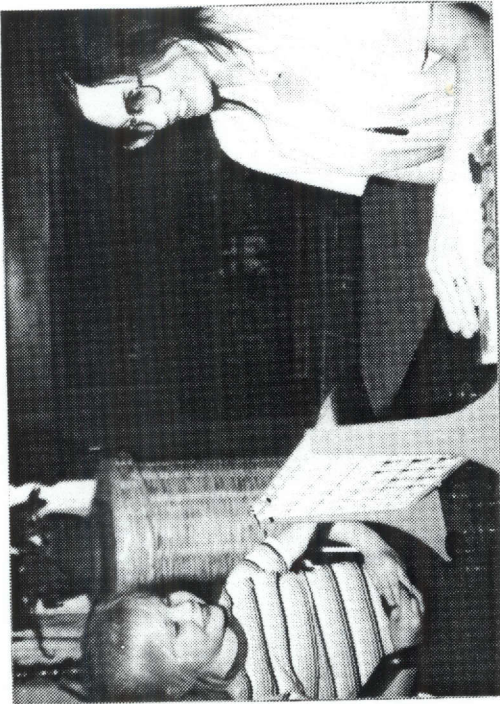
B-1



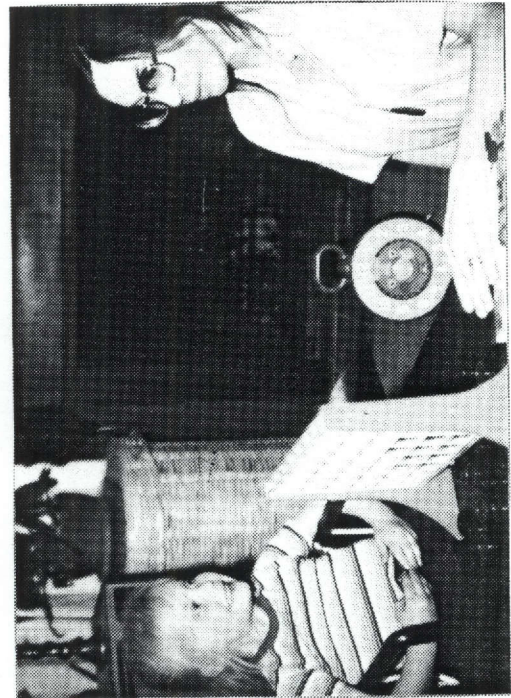
D-3



D-2



D-3



D-2

Appendix C

Order of Presentation for Vigilance Task Slides

Codes: Stimulus Types - A = male adult, male child
 B = female adult, male child
 C = male adult, female child
 D = female adult, female child

Stimulus Change - 1 = standard stimulus - no change
 2 = social change - person frowns
 3 = environmental change -
 object disappears
 4 = dual change - both social and
 environmental changes

<u>Series #</u>	<u>Standard type</u>	<u># Standard slides presented</u>	<u>Final Slide</u>
Sample			
Sample			
Sample			
1	A-1	6	A-2
2	D-1	14	D-3
3	C-1	18	C-2
4	A-1	22	A-4
5	D-1	18	D-3
6	C-1	6	C-2
7	A-1	10	A-3
8	D-1	22	D-4
9	B-1	10	B-3
10	A-1	14	A-2

<u>Series #</u>	<u>Standard type</u>	<u># Standard slides presented</u>	<u>Final Slide</u>
11	D-1	6	D-2
12	B-1	22	B-4
13	A-1	18	A-3
14	D-1	10	D-2
15	C-1	14	C-3

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