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ABSTRACT

Presented is the final report of the Child Study Program, in which the following objectives were investigated with 140 abused children (from birth to 72-months-old) -- whether abused children are developmentally different from non-abused children, whether there are differences between children who sustained non-accidental trauma (NAT) and children who failed to thrive (FTT), and the effectiveness of an intervention program. Included is a review of the literature on social-emotional, physical, cognitive, and intervention aspects of child abuse. The experimental design is described as including developmental testing, physical measurement, and receiving of routine services, routine services and ongoing medical care, or therapeutic intervention in addition to the preceding services. Reported are results of comparisons of the experimental groups with one another and non-abused controls, such as the following: significant differences do exist between the abused and non-abused Ss in the cognitive, physical, social, and emotional areas with abused Ss functioning less optimally; abused Ss live under more adverse family environments; mother-infant attachment patterns differ between the NAT and FTT categories of Ss; families of FTT Ss indicate a higher percentage of social problems; and treatment techniques tested do not significantly affect the developmental performance of the abused Ss. Tables presenting descriptive data on the Ss, biological parents, environmental factors, the abusive incident, and the abusers are included. (IM)

PROSPECTIVE STUDY IN CHILD ABUSE

THE CHILD STUDY PROGRAM

FINAL REPORT

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INTRODUCTION

Child abuse has become of increasing concern to the community of child-care workers during the past thirty years. Because of these growing concerns, the problem of child abuse has recently been more widely publicized. Consequently, not only child-care workers but the general public as well are becoming more aware of this socio-medical problem.

In 1967, the Denver Department of Health and Hospitals, recognizing the special needs of children, established the Developmental Evaluation Center. It was the purpose of this Center to evaluate and refer children with developmental deviations. This Center evaluated approximately 250 new children per year. Throughout the years it became increasingly evident that a number of the children, seen at the Center, had been subjected to abuse. A review of the records revealed that 22% of the children referred for developmental evaluations had histories of failure-to-thrive and/or non-accidental trauma. As a result of this awareness, it was decided to initiate a research project that would, prospectively, examine the various ramifications of child abuse as well as the effect of intensive intervention on the child and his family.

For purposes of this research project, the term "child abuse" is defined in accordance with the legal definition provided by the Colorado Child Abuse Reporting Act of 1967[1]. As defined in this Act,

> 'Abuse' means any case in which a child exhibits evidence of skin bruising, bleeding, malnutrition, sexual molestation, burns, fracture of any bone,

[1] Senate Bill #37

> subdural hematoma, soft tissue swelling, failure to thrive, or death, and such condition or death is not justifiably explained, or where the history given concerning such condition or death is at variance with the degree or type of such condition or death, or circumstances indicate that such condition or death may not be the product of an accidental occurrence.

As can be seen, both Non-Accidental Trauma (NAT) and Failure-to-Thrive (FTT) are included in this definition of abuse. The Child Study Program operationally defined NAT as any non-accidental physical injury or injuries that the child sustained as a result of acts or omissions on the part of his parent(s) or caretaker(s). FTT was operationally defined as a condition in which the child's weight either fell below the third percentile or fell one standard deviation below his expected growth pattern.. Furthermore, this weight loss could not be accounted for by the presence of an underlying physical disorder.

This research report will include a review of the literature pertinent to issues of child abuse, the research methodology, and the findings of the study. Finally, a discussion of the results and their implications will be presented.

REVIEW OF THE LITERATURE

The literature on child abuse has grown rapidly in the last 10 years. Much of this literature describes the personality profiles of abusing adults. Unfortunately, only a few studies have attempted to describe the abused child and even fewer have described his development. Most of the studies have been retrospective in nature and therefore developmental measures at the time of abuse have not been obtained.

It is also important in assessing the abused child that a distinction is made between the abusive incident and the abusive environment. Martin et al (1974) makes such a distinction. The abusive environment is defined as a home that is unstable and that has one or more of the following conditions: nutritional neglect; maternal or parental deprivation and/or neglect, both physical and emotional; sexual abuse; severe psychiatric disturbances in one or both parents; and social and/or economic disadvantage. Martin cites one study which shows that abused children and their siblings did not differ in personality characteristics or in intellectual performance. Therefore, the traumatic event or events of abuse are perhaps not as important as the total environment in which the child is raised. One of the purposes of this project was to prospectively study and follow the social-emotional, physical, and cognitive development of abused children.

Another significant portion of the literature concerning child abuse has dealt with various intervention techniques. A second purpose of this project was to develop, implement, and assess a program designed to intervene in the abusive environment.

Social-Emotional Aspects of Child Abuse

It is difficult to fit some of the social-emotional and developmental literature into proper perspective. This literature is based upon extreme

conditions of neglec which are sometimes, but not always, comparable with the abusive environment. Bowlby (1951) describes orphanages where children received good maintenance care but were otherwise neglected and understimulated. Under these conditions some children demonstrated delays in one or more areas of development, and some even died. In addition, Bowlby states that deprivation can also exist when the mother is present in the home. This implies that some mothers are so ineffective that they create conditions which are detrimental to their children's development.

Similar conditions of understimulation are sometimes found in the abusive environment. Furthermore, Martin et al (1974) states that within the abusive environment, one also finds gross neglect. Situations in abusive homes may be more depriving than in some institutions in that even the child's physical needs are not met. This is especially true among children who fail to thrive. The mothers of these children do not provide adequate physical care or adequate stimulation. Insufficient growth in the areas of social and emotional development may result.

The abusive environment can also considerably affect the process of maternal attachment. This attachment can be viewed as an affective bonding which occurs between mother and child. This process takes three directions: 1) between the infant and its mother, 2) between mother and her infant, and 3) between mother and her unborn child. Attachment may or may not be dependent upon a reciprocal relationship. Within abusive environments, the attachment process can possibly break down at several points.

The attachment that a child demonstrates for its mother is difficult to extinguish or alter. Harlow (1959) found that a mother monkey does not have to be stimulating or interesting to her infant in order for attachment to occur. In addition, Harlow found that although cloth mothers only

provided contact comfort, they nevertheless became objects of attachment for the infant. In subsequent generations, it was found that infants of motherless mothers would persevere in their attachment efforts in spite of the risk of being killed. Some of these mothers abused their infants to the point of killing them (Wachtel, 1975).

In a study by Fischer (cited in Maccoby and Masters, 1970) puppies were divided into two groups. One group was petted and fondled upon approaching the experimenter. The second group received inconsistent responses, characterized by petting and fondling on some occasions, but rough handling and electric shock on others. This unpredictable behavior was designed to create anxiety in those puppies. Nevertheless, the puppies receiving inconsistent responses demonstrated the most attachment behavior toward the experimenters. Research with children has revealed a similar phenomenon. Maccoby and Masters (1970) report that children may seek comfort from those to whom they are attached as one response to anxiety. Therefore, although within the abusive environment children do display attachment behavior, this behavior may be a product of anxiety, a persistence of the basic attachment process, or a combination of both of these.

Another breakdown in the attachment process which can occur is that maternal attachment may not develop between the mother and her infant. Harlow and Harlow (1965) have demonstrated that, in monkeys, the mother must receive some positive feedback to establish and maintain an attachment relationship with her infant. He cites an example of a mother monkey whose infant was taken away at birth, and who was given a kitten to adopt. For the first few days the monkey mother would carry the kitten around and nurse it. However,

since the kitten could not cling, the mother lost interest and abandoned it. With regard to human interactions, Patton and Gardner (1969) comment that the nature of the mother-child relationship is dependent upon the behavioral characteristics of the infant.

In reviewing the literature presented above, it may be seen that the attachment process can be adversely affected by an abusive environment. In situations where NAI occurs, the attachment process and mother-child relationship may be abnormal from birth or may be normal except during the battering incident. However, in environments where children fail to thrive, there may be a total lack of affective bonding which can result in maternal neglect (Pollitt, Eichler, and Chan, 1975). Because of the mother's insensitivity to the child, the child may not be allowed to provide the feedback necessary for maternal bonding.

Another important aspect of development, but one that has been neglected in the literature, is that of social development. Terr (1970) found that young children who had been abused (non-accidental trauma) tended to be withdrawn. Older children, on the other hand, tended to demonstrate shallow relationships with their parents. Furthermore, these children appeared to be superficially friendly toward adults in general.

Bowlby (1951) reviews some of the past literature on maternal deprivation. His description of deprived children is similar to Terr's description of abused children. Bowlby notes that deprived children develop only superficial relationships. These children have no real feelings for other people and no capacity to establish deep and meaningful friendships. In addition, Bowlby also states that these children can form social relationships but such relationships have no real roots. It may be that, because of inadequate attachment, the abused child has not developed a sense of trust.

Without such trust, the child may not be capable of establishing meaningful relationships. It may also be that abused children adopt friendly attitudes towards adults because they feel that is the expectation of them. On the other hand, perhaps these attitudes are developed as defense mechanisms. Such mechanisms may explain the compliant, superficial behaviors demonstrated by some abused children.

Other research which addresses the topic of maternal deprivation has been done by Harlow. He found that monkeys raised without mothers, and in isolation, were unable to form relationships with other monkeys and were unable to perform sexually as adults. In addition, Harlow raised a group of monkeys with surrogate cloth-covered mothers. As infants, these monkeys attached to the mothers and used them as bases for exploration. However, as adults these monkeys behaved much like the isolated monkeys. They were unable to either form relationships with other monkeys or to function in a sexually-mature way. It appears from ethological research as well as from observations of human behavior that without appropriate mother-child interactions, the child does not learn how to function in a socially-adequate manner.

Physical Aspects of Child Abuse

The obvious manifestations of NAI have been well delineated by many workers and include fractures, bruises, subdural hematomas and burns (Kempe et al, 1962; Fontana et al, 1963; Birrell and Birrell, 1966; Holter et al, 1968; Lauer et al, 1974; Smith and Hanson, 1974). There are also the more subtle signs of NAI as described by Kempe (1975), Pena and Modouy (1973), Tomasi and Bosman (1975), and Lansky (1975). Pancreatic injuries, human bites, and tears on the floor of the mouth are a few examples of these subtle injuries. The Whiplash Shaken Syndrome, as described by Caffey (1974),

includes a number of physical findings which result from the violent shaking of children. Two examples of injuries found are retinal hemorrhage and bleeding under the covering of bones. Among some children who have died, often supposedly of unknown causes, the pathological findings in the brain suggest that death resulted from injuries consistent with those described in the whiplash shaken syndrome.

The outcome and long-term prognosis for children subjected to SAI is variable and dependent upon the site of injury and the degree of central nervous system (CNS) damage. The most extreme outcome of SAI is the death of the child.

FIT is a condition characterized by growth failure which is unrelated to any underlying disease process. One of the earliest descriptions of FIT was made by Spitz (1946) and Spitz and Wolfe (1946) who studied a group of institutionalized children. Since that early description, many workers have elaborated, refined and clarified the deleterious results of institutionalization and maternal deprivation (Prugh and Harlow, 1966; Coleman and Provence, 1957; Silver and Finklestein, 1967; Bowlby, 1951; Patton and Gardner, 1963).

There have been many explanations as to why FIT children do not grow well. The most obvious explanation is that they do not receive adequate nutrition. It is known that brain growth is dependent upon adequate nutrition. Stoch and Smythe (1963) emphasize that 70% of the adult brain weight is reached by the end of the first year of life. Chase and Martin (1970), and Cravioto et al (1966) suggest that because of significant nutritional deprivation during early life, there is deficient brain growth resulting in both physical and cognitive retardation in the FIT child.

Furthermore, they maintain that nutritional deficiencies must be corrected early. If these deficiencies are not corrected within the first year of life, the physical and cognitive retardation may be permanent.

Other researchers have offered other explanations as to why children fail to thrive. Bowlby (1951), Provence (1962), and Prugh and Harlow (1965) propose that FTT results, primarily, from maternal deprivation and lack of stimulation in early life. Talbot et al (1947) attempted to explain FTT on a psycho-physiological basis. He suggested that psychological stress, by effecting both endocrine and digestive functions, could cause growth failure. Engel and his co-workers (1956) have demonstrated an association between emotional states and gastric secretions. Powell et al (1967) reported that some FTT children have deficiencies in growth hormone and ACTH secretion. These deficiencies were corrected simply by changing the child's environment. In addition, Frasier and Hallison (1972) found that growth retardation among FTT children was unresponsive to growth hormone therapy. However, it did correct itself with a change in the child's environment. Finally, one of the most interesting approaches to the problem of FTT is one presented by Gardner (1972). They suggest that the growth retardation found in FTT children, which resembles hypopituitarism, is related to sleep disturbances. Sleep disturbances disrupt the normal cyclic secretion of growth hormone. Furthermore, it is known that children who fail to thrive do have sleep disturbances (Glasser et al, 1968). The above explanations suggest that in FTT there is a relationship between maternal deprivation, stress, and the functioning of the hypothalamic-pituitary axis. These explanations extend beyond obvious effects of inadequate nutrition.

Cognitive Aspects of Child Abuse

The cognitive outcome for abused children is variable and depends upon the age at which abuse occurred and the nature of that abuse.

The majority of the studies examining the development of abused children have found that the effects of the environment have left them cognitively incompetent. The rate of retardation among abused children is very high. Birrell and Birrell (1968) studied 35 children who had been abused. They found 10 of the 35 to be mentally retarded. Martin et al (1974) cites a study done by the Denver Department of Child Welfare which included 101 children. Seventeen percent were found to be retarded or to have learning disabilities. Morse et al (1970) examined abused children three years after they had been hospitalized and found that 42% were considered to be mentally retarded. A study by Martin (1972) found that 33% of 42 abused children had IQ's under 80. In addition, Sandgrun et al (1974) reported that there was significant retardation among abused children without serious head injury. Smith and Hanson (1974) also found significant developmental delays among abused children without head trauma. These delays occurred particularly in the language areas.

A study by Martin et al (1974) examined the development of abused children. Using a variety of tests including the Wechsler Intelligence Scale for Children (WISC), the Wechsler Preschool and Primary Scales of Intelligence (WPPSI), and the Bayley Scales of Infant Development, he attempted to compare the development of abused children to that of the normal population. Martin did not find significant statistical differences between the two populations. However, he noted that 19 of the abused children scored one or more standard deviations below the expected IQ mean,

while only eight children scored one or more standard deviations above that mean.

In addition, Martin found that when children with brain damage were excluded from the data analysis, there were still powerful environmental influences that resulted in developmental delays. He suggested these influences included instability of the home. Instability was characterized by disorganization, unemployment, mobility, and chaotic social structure. It was found that the 12 children in unstable homes had a mean IQ of 96.2 while children in stable homes had a mean IQ of 107.4. This finding was statistically significant.

Martin also included, as another environmental influence, the existence of the punitive environment. Punitiveness was characterized by excessive physical punishment, rejection and/or hostility toward the child. He found that children who remained in the punitive environment had a mean IQ of 98.5, while those children who had been removed from the environment had an IQ of 108.5. Again, this was statistically significant.

In another study, Elmer and Gregg (1960) examined the intellectual functioning of failure-to-thrive children. These children were evaluated five or more years following hospital treatment. Using the Oppenheimer Scale for Mental Development, they found that of 15 children, five were mentally normal, six were mildly retarded and four children were moderately retarded. Glasser et al (1968) also examined children who had failed to thrive. Among younger children, he noted abnormal feeding patterns and dysfunctional families. Among the 19 children who were of school age, seven had either failed their first year of school or were having problems.

One should note that none of the studies discussed above had adequate control groups. The one study which did have controls was done by Sandgrund,

Gains, and Green (1974). They studied three groups of children. The first group included 60 children who had been abused. In addition, 30 neglected children and 30 non-abused children served as the two control groups. Using the WISC and the WPPSI, it was found that 25% of the abused children and 20% of the neglected children had IQ scores below 70. In contrast, only 3% of the non-abused children were found to be retarded.

It is apparent from the literature review that abuse does adversely effect the child's cognitive development. These effects are far-reaching and involve all parameters of cognition.

Intervention Aspects of Child Abuse

A review of the current literature reveals the existence of a number of interventive techniques relative to the problem of child abuse. The most commonly described treatment modalities will be presented.

The use of a multidisciplinary team approach was noted with great frequency throughout the literature as an effective means of working with abusive families (Bean, 1971; Court, 197 ; Silver, 1971; Alexander, 1972; Kempe, 1972; Pollack, 1972; Newberger, 1973). Court (1971) stated that, in many instances, abusive families made overwhelming demands for their worker's time and attention, especially during stressful periods. Kempe (1972), also recognizing this problem, recommended the use of at least one other team member as a back-up to the primary worker: 1) during times of crisis, 2) when the person primarily responsible for the management of the case was not available, and/or 3) when interactional problems affected the relationship between the parent and the primary worker. A multi-disciplinary team, for example, could include a psychiatrist, social worker, pediatrician, psychologist, public health nurse, and lay therapist.

Long term, 24-hour availability to abusive families was recorded in the literature as a standard procedure in dealing not only with the demands of these families, but also to help ensure the protection of the child (Alexander, 1972; Kempe, 1972; Pollack, 1972; Burt, 1974; Helfer, 1974). Furthermore, the provision of personal counseling and advice on a 24-hour basis was viewed as necessary to aid in the development of a supportive and trusting relationship with parents (Helfer, 1974).

Many authors stressed the use of role-modeling as a means to alter dysfunctional parent-child relationships. More specifically "mothering" the mother was suggested by some. One goal of this approach was to help the mother see herself as vital in the parent role (Hopkins, 1970; Alexander, 1972; Savindo, 1973; Tracy, 1974; Friedman, 1970). It was the general impression of those authors that the mother's view of her relationship to the child was critical. Furthermore, agency involvement was most useful when it supported and strengthened this relationship. It was stressed that education of the parent concerning a child's general development was important. In addition, however, parents frequently wanted to know how to cope with specific childhood behaviors, such as temper tantrums (Alexander, 1972).

Another very important point brought out in the literature was that workers should use a non-critical, non-judgmental approach when dealing with abusing families. It was also stressed that these parents should be supported in non-controlling, non-threatening ways (Friedman, 1970; Pollack, 1972; Mitchell, 1973; Savindo, 1973; Fontana, 1975; Lystad, 1975). Friedman (1970) reported a tendency on the part of abusing parents to perceive workers as being accusing, judging, and prying. Mitchell (1973) emphasized that

a worker should recognize and accept the fact that abuse did occur and not badger an unwilling and suspicious client for details as to who did what. It should be noted, that frequently before the clinician becomes involved with the family, authority figures may have already accused the parents of not providing adequate child care. Therefore, it is important that this clinician not follow the same pattern. However, efforts to project a non-judgmental attitude into the therapeutic relationship may be complicated by the fact that the clinician may be involved in the legal proceedings regarding the abuse situation (Mitchell, 1973). Therefore, establishing a therapeutic relationship with abusive families may be more difficult if the parent views the clinician as one of the accusers.

The literature also indicates that abusive families tend to be isolated. Lystad (1975) suggested that when dealing with the problem of isolation, one should consider not only the parent-child relationship, but also the relationship of the parent to the community. In view of the problem of isolation, abusive families may be reluctant to involve themselves with social agencies. The extensive use of home visits, as an interventive technique, is one way of reaching out and soliciting parental involvement in the therapeutic process. Because the problem of abuse usually had its origins in the home environment, it was thought best to provide treatment in the home setting (Alexander, 1972; Savindo, 1973). In addition, it was believed that more personal and individualized care could be provided when the parent and child were worked with directly in the home (Savindo, 1973)

The treatment techniques discussed thus far have answered, in part, many of the criticisms leveled at social agencies in the past. These criticisms were aimed at those agencies who close their doors at 5:00 p.m.,

locate themselves far from their clientele, and wait for families to come to them (Bard, 1971).

The use of social learning theory and group therapy with abusive families was also discussed in the literature. Treatment based upon social learning theory was utilized to avoid reinforcement of parental dependent behavior in the worker-parent relationship (Tracy, 1974). In contrast, dependency within the therapeutic relationship has historically been encouraged. This dependency discourages the professional distance preferred by some workers, but, on the other hand, enhances closeness within the worker-parent relationship (Alexander, 1972). It would seem that such dependency would result in the parent's use of the 24-hour availability, and therefore, the greater the chance that the child would be protected in times of crisis. Bean (1971) reported the use of group therapy as a primary mode of intervention for those clients who were difficult to involve in individual treatment. However, home visits were used involving individual interviews. Perhaps it was felt that only individual treatment would be more time consuming and require more staff.

In terms of the success or failure of treatment techniques, it was the opinion of Silver et al (1971) that the only successful intervention was the court-ordered removal of the child from the home. However, even this strategy has had little success, since the authorities cannot indefinitely keep the child from the parent (Gelles, 1973).

It can be seen from this review of the literature that the treatment of child abuse should be shared and varied, since abusive families suffer in all areas of life. Clinicians attempted to involve themselves in nearly every facet of family life. These treatment approaches brought them into

contact with all the factors affecting family functioning - social as well as psychological. This intensive, in-depth involvement would seem to be in keeping with the growing trend of considering the multiple social factors affecting the family (e.g., unemployment and overcrowded living conditions) rather than just focusing on the mental aberrations of parents as the cause for abuse (Court, 1971; Gelles, 1973; Gil, 1975).

A number of therapeutic intervention techniques used in the treatment of abusive families have been described in the literature. However, there has been little or no empirical evidence to support the use of one treatment intervention as opposed to another. Despite this, Helfer (1974) stated that although the understanding of how to provide treatment to abusive families is available, the actual implementation of these treatment programs has not occurred in most communities.

OBJECTIVES OF THE CHILD STUDY PROGRAM

The Child Study Program has three main objectives:

The first objective is to determine whether or not abused children are developmentally different from non-abused children. It is hypothesized that the abused children will score lower on developmental tests than will their non-abused counterparts.

The second objective is to determine whether or not there are differences between children who sustained NAT and those who failed to thrive. These differences will be measured by examining the childrens' cognitive, physical and social development. It is hypothesized that there will be differences between the two groups, but the nature of these differences cannot be predicted.

The third objective is to determine the effectiveness of an intervention program. Effectiveness will be measured by examining the childrens' performance on sequential developmental tests, the parents' perception of their children, the childrens' behavioral patterns, and whether or not reabuse occurred. Furthermore, it is hypothesized that those children involved in the intervention program will score higher on developmental tests than will those not involved.

METHODS - THE STUDY DESIGN

Facilities

The Child Study Program was conducted in conjunction with the Denver Department of Health and Hospitals. The study directly involved Denver General Hospital (DGH), the Well Child Clinics (WCC), and the Developmental Evaluation Center (DEC).[2]

DGH is the major publicly supported medical facility providing services for the low-income population within the City and County of Denver. The WCC provide physical examinations, immunizations, counseling and developmental screening to children from birth through six years of age. These clinics are located within the City and County of Denver and serve the same low-income population as does DGH. The DEC provided consultative and diagnostic services for children demonstrating developmental deviations. Referrals for evaluation were received from all facilities within the Department of Health and Hospitals. In addition, specific consultative services were provided by members of the DEC multidisciplinary team.

Staffing

The CSP staff was established as a multidisciplinary group with expertise in child development and family functioning. This staff consisted of the following specialists: child psychologist, pediatrician, social worker, public health nurse, secretary, and driver. The public health nurse and social worker functioned as the two CSP clinicians. All staff positions, with the exception of the pediatric position, were full time. This medical position was shared by two pediatricians. A third pediatrician, from the Department of Health and Hospitals, divided on-call medical responsibilities with the two CSP physicians.

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[2] The DEC was no longer in existence after December 31, 1975.

Subjects

There were 140 children involved in the CSP. All the children were brought into the program between October 1972 and July 1975. The subjects were between birth and 72 months of age at time of initial involvement. Subjects were classified according to whether or not they had been abused.

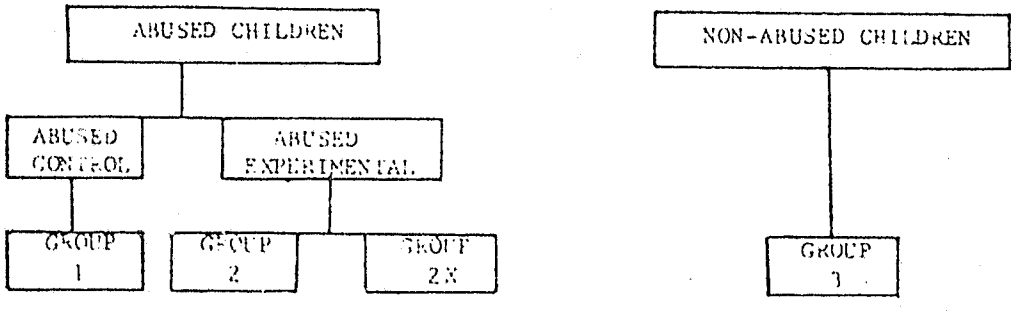
All abused children hospitalized at DGH during this time period were involved in the study. Each child must have had a diagnosis of either NAT, FTT, or both NAT and FTT. Of the 106 abused children, 37 were female and 69 were male.

The non-abused children were recruited from the WCC's. Of the 34 children in this group, 16 were female and 18 were male.

Groups

All of the children involved in the study were placed into one of four groups. The abused children were randomly assigned to either the Abused Control Group or the Abused Experimental Group. In addition, the Abused Experimental Group was further sub-divided into two separate groups. The non-abused children were placed into the Normal Control Group. The abused groups were referred to as Group 1, Group 2, and Group 2X. The non-abused group was Group 3. (See Figure 1)

Figure 1 - Diagram of Study Organization by Group



Group 1 was the Abused Control Group and consisted of 46 children. These children were randomly assigned to Group 1 at time of diagnosis. Group 1 children were developmentally tested and measured for height, weight and head circumference at regular intervals. No other direct services were provided by the CSP staff. However, this group did receive those services offered to abused children, which were routinely available in the community.

Group 2 was one of the Abused Experimental Groups and consisted of 21 children. These children were developmentally tested and measured for height, weight, and head circumference at regular intervals. In addition, Group 2 received both ongoing medical care and coordination of services from the CSP staff.

Group 2X was the other Abused Experimental Group and consisted of 19 children. All of the services provided for Group 2 children were also provided for Group 2X children. In addition, Group 2X received direct therapeutic intervention from the CSP staff.

Assignment into the total Abused Experimental Group was on a random basis, however, specific placement into either Group 2 or Group 2X was not. Although randomization was desired, placement into Group 2X was dependent upon the caretaker's acceptance of direct therapeutic intervention. In those cases where such intervention was rejected, it was impossible to include the children into Group 2X. As a result, these children were placed into Group 2.

Group 3 was the Non-abused Control Group which consisted of 34 children. The children in this group were matched with the abused children according to age and ethnic background. However, it should be noted that black children were slightly under-represented in Group 3.

All Group 3 children were tested developmentally and measured for height, weight, and head circumference at regular intervals. The results of these tests were discussed in detail with each child's parents. However, no other direct services were provided by CSP staff.

Procedures

Measurement Techniques

The measurements of development used by the CSP were the Bayley Scales of Infant Development (Bayley) and the McCarthy Scales of Children's Abilities (McCarthy) (See Appendix 1). The Bayley was administered to children ranging in age from two through 30 months. This test has two subscales: the Mental Scale and the Motor Scale. The McCarthy was administered to children over 30 months of age. This test consists of five subscales: Verbal, Perceptual-Performance, Quantitative, Memory and Motor. The combination of the first three subscales yields a measure of the child's General Cognitive Index.

At the time of each developmental evaluation, physical measurements were obtained (See Appendix 2). These measurements consisted of height, weight, and head circumference.

The Bayley Infant Behavior Record (IBR) was utilized as a measure of the child's behavior at the time of each developmental evaluation (See Appendix 3). Although the IBR was not devised for children beyond 30 months of age it was, nevertheless, used for all age groups. It was desirable to have one single, constant measure of behavior rather than utilizing a different measure for older children. The behaviors measured by the IBR were not inappropriate for children over 30 months of age.

The Child Behavioral Characteristics Questionaire (CBC) was utilized as a measure of the mother's perception of her child's behavior (See

Appendix 4). This questionaire assesses a number of different behavioral areas. The CBC was administered at the time of each developmental evaluation. This questionaire was appropriate for all age groups included in the CSP.

The Bayley, the McCarthy, physical measurements, the IBR and the CBC were administered by either the staff psychologist or the staff pediatrician. However, since the CBC was completed by the child's natural mother, this measurement could not be obtained for those children whose mothers were not available. In addition, due to the limitations in staff size and the sometimes obvious appearance of abused children, it was impossible to keep examiners "blind" as to the child's group assignment.

Measurement Schedule

All developmental, behavioral and physical measurements were obtained according to a pre-determined time schedule. All of the abused children were tested initially during hospitalization. Re-evaluations were completed six months following the initial evaluation and yearly thereafter. The non-abused control children were tested initially following recruitment into the program. Re-evaluations were completed according to the same time schedule as that used for the abused children.

Data Collection

In order to facilitate the gathering of information during the course of the CSP, a Data Collection Form was developed. These forms were completed in a manner defined by the Data Collection Narrative (See Appendix).

Referral to Program

Child Study Program involvement began during the time of the child's hospitalization. Abused children were referred, directly, by the BCH pediatric staff to the CSP. Prior to the child's hospital discharge, a

ward conference was held to discuss the child's medical condition, pertinent social information, and possible treatment plans. A CSP staff member was present at these conferences. At this time one community agency was designated to be primarily responsible for following the child and his family. Usually the Denver Child Welfare Department accepted primary responsibility. However; with several families, the Denver Visiting Nurse Service, the Department of Social Services, or the Denver Head Start Program were named as primary agencies.

In all cases the CSP notified the primary agency, in writing, of the study's involvement with the child. Notification included the date of developmental testing and the child's study group placement.

Description of Services

All children enrolled in the Child Study Program received developmental testing. Those children in Groups 2 and 2X also received regular medical care and coordination of services. In addition, those children in Group 2X received direct therapeutic intervention. The following is a detailed description of the medical, coordination, and therapeutic intervention components of the Child Study Program.

Medical Service Component

The CSP pediatrician was designated to be the primary-care physician for those children enrolled in Groups 2 and 2X. Well-child care, including physical examinations and immunizations, was provided on a regularly scheduled basis.

Sick-child care was provided as needed. Pediatric services were available for sick children on a 24-hour on-call basis. During the day, caretakers contacted the Child Study Program directly and medical concerns were referred to one of the two pediatricians available.

Night and week-end call was shared by the three pediatricians who rotated availability on a weekly basis. During the course of the CSP, the families became familiar with all three physicians. If the need arose, any one of the pediatricians could admit the child to Denver General Hospital and could then follow that child's course of hospitalization as the primary physician. At the time of discharge, the CSP continued to provide medical services to these children.

The CSP pediatricians were often involved in counseling sessions dealing with specific medical and behavioral issues which were of concern to the child's family or his caretakers. The pediatricians were also available for consultation to all agencies working with the child and his family.

Coordination of Services Component

Extensive efforts were made to coordinate services for Groups 2 and 2X. Following referral to Child Study, the child was randomly assigned to one of the two CSP clinicians. This clinician then became responsible for coordinating services for the child and his family.

When notification was sent to the responsible agency, it was requested that the worker assigned to the family contact the CSP clinician. Phone follow-up was initiated by the CSP on a regular, usually weekly, basis until contact with the agency and worker was established. At the time of initial contact, an individual conference was arranged to review pertinent information regarding the child and his family, as well as to plan for appropriate future treatment. Details of the child's developmental testing were discussed.

Any available records were reviewed in order to determine which community agencies were currently involved with the child and/or his family. The clinician then established contact with those agencies' workers. Again, conference times were scheduled to discuss: 1) services available through

the Child Study Program and how the program relates to the individual child, 2) possible treatment plans for the family and child, and, 3) plans for developing respective agency and CSP roles in order to best meet the needs of the family and child. These conferences with community agencies were held by the CSP clinician in conjunction with the designated primary worker.

In order to keep various workers aware of current treatment plans, it was important to maintain open communication between agencies. Case conferences were scheduled to discuss results of developmental testing, medical concerns, changes in treatment plans, and changes in the family's environment. The goals of treatment were outlined and the therapeutic roles defined.

The CSP clinician also arranged for necessary consultation. If, during CSP involvement, a child was found to be lagging or otherwise deficient in his over-all development, consultation services were requested. For example, specific concerns regarding a child's motor development, speech and language development, perceptual abilities or behavioral patterns were referred for further evaluation and treatment recommendations. Consultant findings were shared and discussed with all workers involved with the child and/or family and treatment plans modified as needed.

Consultation was provided primarily by the staff of the Developmental Evaluation Center (DEC). By maintaining working relationships with the DEC, such services could be obtained quickly and directly. Among the consultative services requested from the DEC were referrals to the Home Services Program which utilized Parent Counselors. This program provided services to families felt to be at high risk for not providing nurturing, stimulating environments for their children. When needed consultation was not available through the DEC, services were obtained from other specialties within the Department of Health and Hospitals or from another appropriate community agency.

Coordination duties included arranging for any necessary transportation that the family or child required in order to keep appointments or attend conferences.

The CSP clinician developed an awareness of the community resources available to the child and his family and acted as a liaison with those resources when needed. Efforts included helping families obtain food stamps, food supplements, housing, welfare assistance, necessary household items, and legal aid. For those children enrolled in Group 2, the CSP clinician related, not to the family directly, but to the family's primary worker. For those children in Group 2X, efforts to obtain needed services involved direct contacts between the family and the CSP clinician.

Appropriate CSP staff were available to the court system to provide such information as was required for the legal evaluation of the family situation. Results of a child's developmental evaluations, recommended treatment plans, as well as reports regarding the family's involvement in such treatment plans were frequently requested by the court. CSP court involvement was more extensive for Group 2X, and often included emotional support for the family during this experience. This support included helping families understand the reasons for court involvement, courtroom procedures, and the rationale for court-ordered dispositional decisions.

Services included extensive planning for the eventual termination of the CSP. The CSP clinician was involved in locating appropriate community programs which could provide those services needed by the child and his family once termination occurred. Specific referrals to these agencies were made, followed by case conferences with workers to discuss past treatment plans and future needs. For those children in Group 2, recommendations and plans for future care were discussed with the family's primary worker, rather

than with the family directly. In Group 2X, the termination process was worked through with the family directly. Plans were discussed months prior to the actual termination date so that appropriate resources for future care could be located. Families were helped to develop working relationships with new agencies prior to CSP closure. Parents were given opportunities to choose between different resources which offered similar services. Intensive involvement was provided to facilitate a positive transfer to the new program. All agencies working with the family were involved in CSP termination plans. Copies of pertinent CSP records were shared with appropriate agencies pending parents' approval.

The CSP maintained current, complete records for each child throughout their program involvement. All CSP staff members were kept aware of major changes in case status. Information regarding medical concerns, developmental needs, behavioral patterns, psychiatric problems, and crisis situations was discussed.

Direct Therapeutic Intervention Component

Children and families enrolled in Group 2X received direct therapeutic intervention services, in addition to the medical and coordination services previously described. This direct intervention was provided by the CSP clinician assigned to the family at the time of the child's initial enrollment into the program. The term, direct therapeutic intervention, can best be defined by describing, specifically, what services were provided.

In Group 2X specific counseling was provided, directly, in response to the family's needs. Marital counseling, family planning, and financial counseling are examples. Counseling directed toward helping families feel comfortable and secure in their everyday community interactions as well as in individual social situations was also provided.

Often, it was necessary to help families learn how to cope with crisis situations in an appropriate, non-destructive manner. Anticipatory guidance was utilized in order to help families plan for and deal with possible problem situations before they reached crisis proportions. Appropriate problem-solving techniques were developed and demonstrated with parents. Role-modeling and structured discussion were frequently utilized to facilitate positive learning experiences. By solving some problems successfully, with intensive help from the CSP clinician, families could be encouraged to transfer this learning to new situations and experiences.

When indicated, counseling also included assertiveness training directed towards helping parents realize that they can and do have control over what happens to them. Emphasis was placed on encouraging parents to begin to take responsibility for their own actions and learn ways to deal with the ensuing consequences.

Counseling was also provided in the areas of personal-awareness and self concept. Efforts were directed toward helping parents to realistically develop a sense of self-worth as well as a sense of pride with respect to their individual abilities, skills, and past and present accomplishments.

Intervention services also included educational counseling and information-sharing sessions. Over-all child-care techniques were demonstrated and discussed to help families develop more appropriate and, hopefully, less stress-producing child rearing skills. Such counseling centered around parental concerns; such as feeding, toilet training, child safety and protection, limit-setting, and discipline. Other areas discussed included preventive medical care, developmental milestones, and stimulation needs.

Developmental test results were discussed directly with parents. Treatment recommendations, based on test results, were explained in detail

in order to increase parental understanding of the child's developmental needs. For example, a child two years of age who demonstrated language delays on developmental testing was seen by the speech and language consultant. Parents were included in these evaluations and concerns about the child's language skills were explained in detail. It was viewed as important that parents develop an awareness of age-appropriate language skills. Parents were also taught ways they could encourage and stimulate their child's language usage. Such educational-counseling efforts were aimed towards helping families: 1) recognize and understand the child's specific needs and 2) learn how to meet those needs appropriately.

When indicated, specific home stimulation programs were developed with parents. Such programs were based on the results and recommendations of developmental testing. For example, if a child was found to be delayed in his gross motor development, the CSP clinician, working with the physical therapist and the parents, discussed the child's special needs and planned home programs designed to stimulate gross motor development. Specific stimulation techniques were taught to the parents. The CSP clinician worked closely with the child and his family in the home setting to teach those techniques.

Home programs were also developed to help parents deal with behavioral problems. Usually, such programs were initiated as a result of parental concerns. Emphasis was placed on helping parents develop: 1) appropriate expectations for their children, 2) consistency within the parent-child interactions, and, 3) ways to recognize and reward positive behaviors.

The CSP clinicians were available to their respective Group 2X families on a 24-hour, on-call basis. This call system was made available in addition to the medical call system previously described.

Home visits, as an intervention technique, were provided to the families and children in Group 2X. Direct therapeutic intervention, as described, frequently took place in the home setting. When necessary, the pediatrician would also make home visits. On occasion, parents would benefit from counseling sessions outside the home, and seemed to function more productively in the more formal, structured, clinic setting. These families did, however, continue to receive home visits.

All direct services provided to the natural families were also provided to foster families while caring for Group 2X children.

A number of mothers participated in a socialization group. No formal discussion agenda was followed, rather, the group setting provided parents an opportunity to spend time with other mothers. Baby-sitting and transportation were provided by the CSP. This group met weekly over a five-month period.

When providing direct service it was important for the clinician to be flexible and open with families. Maintaining working, trusting interpersonal relationships with the parents was vital to the attainment of treatment goals.

RESULTS

The data collected during the course of the Child Study Program will be presented in three sections. The first section will present descriptive data. Information regarding the study children, their parents, environmental factors, the abusive incident, and the abuser will be included in this section. The second section will present data pertaining to the three study objectives. The third section will present miscellaneous outcome measures reflecting the program's influence on the child and/or family.

Three statistical measurements were utilized to analyze the study data. Dependent T tests were applied when two groups of data were being analyzed. When more than two groups of data were compared, an analysis of variance was used. Where appropriate, Chi Squares were applied to the data. All statistical procedures were utilized to determine if the results obtained were greater than chance probability.

There was a total of 140 children involved in the CSP. These children were randomly divided into one of the four treatment groups. Group 1 consisted of 46 children, Group 2 - 21 children, Group 2X - 39 children, and Group 3 - 34 children.

Of the 106 abused children, 64 had experienced non-accidental trauma and 35 had failed to thrive. In addition, seven children had suffered both NAT and FTT. It should be noted that the CSP began accepting NAT children six months prior to the acceptance of FTT children. This may partially explain the greater representation of NAT children.

Descriptive Data

The Child

Age, Sex and Ethnic Background

The ages of the study children, at the time of initial involvement in the Child Study Program, ranged from one month to 72 months. Table 1

illustrates the age distribution according to the four treatment groups and abuse type.

Table 1 - Age Ranges, in Months, of Study Children at Time of Initial Involvement in the CSP

Age Range	Group 1	Group 2	Group 2X	Total Abuse Group	Normal Control Group 3	NAT	FTT	Both NAT and FTT
0-3	8	5	7	20	5	6	12	2
4-6	7	6	7	20	5	7	12	1
7-12	11	4	5	20	9	10	9	1
13-18	5	2	4	11	4	9	1	1
19-24	6	1	6	13	3	11	1	1
25-36	3	1	6	10	4	10	0	0
Over 36	6	2	4	12	4	11	0	1
Total N	46	21	39	106	34	64	35	7
Mean Age (In months)	15.8	14.0	17.2	16.0	17.7	21.9	5.7	13.1

Seventy-nine and two-tenths percent of the abused children were under 24 months of age at time of hospitalization. There was no significant difference between mean ages for the treatment groups. However, there was a significant age difference, at the .001 level, between abuse types. The mean age for the FTT children was 5.7 months as compared to 21.9 months for the NAT children.

Of the total abused children, 69 were male and 37 were female. Among the NAT children, there were 42 males and 22 females. The FTT category consisted of 23 males and 12 females. In addition, four males and three females were classified as both NAT and FTT. The normal control group had 18 males and 16 females.

It should be noted that there are approximately twice as many males as females within the total abused group. Furthermore, this sex imbalance remains constant when looking at either the NAT or FTT classifications. However, the normal control group had a higher proportion of females than did the total abused group.

The ethnic background of the children in the program is presented in Table 2 according to abuse type.

Table 2 - Ethnic Background of Children in the CSP

Ethnic Background	Total Abuse Group		Normal Control Group		NAT		FTT		Both NAT & FTT	
	N	%	N	%	N	%	N	%	N	%
Anglo	45	42.5	14	41.2	28	43.8	13	37.1	4	57.1
Chicano	25	23.6	12	35.3	14	21.8	10	28.6	1	14.3
Black	23	21.6	5	14.7	13	20.3	8	22.9	2	28.6
Other	13	12.3	3	8.8	9	14.1	4	11.4	0	
Total	106	100.0	34	100.0	64	100.0	35	100.0	7	100.0

Table 2 indicates that Black children are slightly under represented in the normal control group, whereas Chicano children are slightly over represented. Excluding the Both category, it should be noted that 62.2% of the Anglo children were victims of NAT, as compared to 56% of the Chicano children. This difference is not significant.

The 1973 DGH statistics[3] report on the ethnic background of hospitalized children. In the zero to six age range, 31.4% of the hospitalized children were Anglo, 47.7% were Chicano, and 19.2% were Black. As reported in Table 2, in the CSP, Anglo children comprised 42.5% of the total abuse group. A Goodness of Fit Chi Square Analysis was applied to compare the CSP total abused group with the 1973 DGH pediatric ward population. This analysis yielded a significant difference in ethnic background at the .01 level.

Birth Weight and Five-Minute Apgar Scores

Birth weight ranges of the study children are reported in Table 3 according to abuse type.

[3]The 1973 statistics are the most recent statistics available.

Table 3 - Birth Weight Ranges, in Grams, of Children Involved in the CSP

Birth Weight in Grams	Total Abuse Group	Normal Control Group 3	NAT	FTT	Both NAT and FTT
<1200	2	0	2	0	0
1200-1999	4	1	2	2	0
2000-2249	7	1	5	2	0
2250-2499	7	0	4	3	0
2500-3499	59	22	32	22	5
3500-3999	10	5	5	3	2
>4000	3	2	2	1	0
Total Known	92	31	52	33	7
Unknown	14	3	12	2	0
Total	106	34	64	35	7

Twenty-one and seven-tenths percent of the total abuse group had known birth weights below 2500 grams as compared to 6.5% of the normal control group. This difference is significant at the .05 level. The seven FTT children who had birth weights below 2500 grams were accepted into the CSP as they did meet the requirements of the operational definition.

The CSP, through utilization of medical records, obtained Apgar scores recorded at five minutes after birth. The Apgar score is a rating of the infants' functioning on a 0-2 scale in appearance, pulse, grimace, activity, and respiration. Data were collected on 67 of the abused children and 26 of the normal control children.

Ninety-six and two-tenths percent of the normal control group had five minute Apgar scores of 9 or 10 as compared to 79.1% of the total abused group. Seventy-six and three-tenths percent of the NAT children and 80% of the FTT children had Apgar scores of 9 or 10.

Prenatal Care, Desire to Breast-feed, and Breast-feeding Success

Adequate prenatal care was defined as five or more obstetrical contacts. In the total abuse group, 82.9% of the mothers obtained adequate prenatal care as compared to 96.9% of the normal control mothers. The normal control

percentage seems spuriously high as only 74.2% of the mothers delivering at DGH in 1973 obtained five or more prenatal examinations. In addition, the data indicated that 85.7% of the mothers of NAT children received adequate prenatal care as opposed to 77.8% of the mothers of FTT children. This difference is not significant.

Mothers were asked whether or not they had wanted to breast-feed the study child. Information was obtained for 79 of the abused children and 33 of the normal control children.

In the normal control group 60.6% of the mothers indicated a desire to breast-feed. In the total abused group only 25.3% of the mothers indicated such a desire. This difference in mothers' desire to breast-feed was significant at the .01 level.

Among mothers of NAT children 31.3% expressed a desire to breast-feed the abused child, whereas, only 19.2% of mothers of FTT children had wanted to breast-feed. This deference between NAT mothers and FTT mothers was not significant.

Those mothers who had expressed a desire to breast-feed the study child, were asked whether or not they felt this experience had been successful. Of the 20 mothers in the total abused group, 35% felt breast-feeding had been successful as compared to 50% of breast-feeding mothers in the normal control group. This difference was not significant.

Six out of twelve mothers in the NAT classification felt breast-feeding had been a successful experience. However, only one out of six mother in the FTT classification felt breast-feeding had been successful.

The Biological Parents

Age at Time of Birth

Data were gathered concerning the ages of the biological parents at the time of the birth of the CSP child. Table 4 reports the age ranges of both

Table 4 - Age Ranges, in Years, of Mothers and Fathers at the Time of Birth of the CSP Child.

Age Ranges (in years)	Total Abuse Group		Normal Control Group 3		NAT		FIT		Both NAT & FIT	
	Mother	Father	Mother	Father	Mother	Father	Mother	Father	Mother	Father
14 or less	1	0	1	1	1	0	0	0	0	0
15-17	14	2	0	0	9	2	5	0	0	0
18-20	40	14	8	2	27	8	10	6	3	0
21-23	29	19	4	6	15	13	12	3	2	3
24-26	10	14	12	9	6	6	3	8	1	0
27-29	4	14	6	5	3	8	1	4	0	2
30-33	3	6	2	7	0	4	3	2	0	0
over 33	2	5	1	3	1	3	1	2	0	0
Total of Known	103	74	34	33	62	44	35	25	6	5
Unknown	3	32	0	1	2	20	0	10	1	2
Total	106	106	34	34	64	64	35	35	7	7

biological mothers and bi ogical fathers. These data are presented by abuse type.

The majority of the biological mothers were between 18 and 29 years of age at the birth of the study child. As Table 4 indicates, there appears to be no appreciable differences in age range patterns between the total abuse group mothers and the normal control group mothers or between the mothers of NAT or FTT children.

The majority of the biological fathers were also within the 18-29 year age range. However, the normal control group fathers tended to be slightly older than were the fathers of the abused children. In the total abuse group, 82.4% of the fathers were between 18 and 29 years of age. Likewise, 79.5% of the fathers of NAT children and 84% of the fathers of FTT children were in this same age range. However, only 66.7% of the normal control group fathers were between 18 and 29.

Age at Time of Abuse

Age ranges of the child's biological parents, at the time of initial involvement in the Child Study Program are illustrated in Table 5 according to abuse type.

At the time of initial CSP involvement, 73.5% of the biological mothers of normal control children were between 18 and 29 years of age. In the total abuse group, 85.6% of the biological mothers were also within this age range. Ninety and three-tenths percent of mothers of NAT children were between 18 and 29 as opposed to only 74.3% of the mothers of FTT children. However, there was no significant difference between the mean age of mothers of NAT children as compared to the mean age of mothers of FTT children.

Likewise, at the time of initial program enrollment, the majority of biological fathers in the total abuse group, in the NAT category and in the

Table 5 - Age Ranges, in Years, of Mothers and Fathers at Time of Initial Enrollment in CSP

Age Ranges (in years)	Total Abuse Group		Normal Control Group 3		NAT		FTT		Both NAT & FTT	
	Mother	Father	Mother	Father	Mother	Father	Mother	Father	Mother	Father
14 or less	1	0	1	1	1	0	0	0	0	0
15-17	7	1	0	0	2	1	5	0	0	0
18-20	31	7	6	2	20	3	8	4	3	0
21-23	33	19	5	3	21	12	11	4	1	3
24-26	22	14	4	8	13	8	6	6	3	0
27-29	3	11	10	5	2	5	1	5	0	1
30-33	5	6	7	10	2	3	3	3	0	0
Over 33	2	5	1	4	1	3	1	2	0	0
Total of Known	104	63	34	33	62	35	35	24	7	4
Unknown	2	43	0	1	2	29	0	11	0	3
Total	106	106	34	34	64	64	35	35	7	7

FTT category were between 19 and 29. However, only 54.5% of the normal control group fathers were within this same age range. Again, the normal control group fathers tended to be older than did the fathers of the abused children.

Educational Level

The educational level of the child's biological parents is presented in Table 6 according to abuse type.

In the total abuse group, 63% of the mothers attended 10th, 11th, and/or 12th grade, as compared to 57.6% of the normal control group mothers. In the NAT classification 62.1% of the mothers were in school a similar length of time. Sixty-three percent of the mothers of FTT children attended 10th, 11th, and/or 12th grade. Comparison of mean years of education between normal control group mothers and total abuse group mothers yielded a difference of 1.2 years. The mean education level for mothers of NAT children was 10.6 years as opposed to a mean of 10.0 years for the mothers of FTT children. The difference in educational levels between NAT and FTT mothers was not significant.

As can be seen in Table 6, the majority of biological fathers also attended 10th, 11th, and/or 12th grade. The mean educational level of fathers in the total abuse group was 11.7 years as compared to 12.6 years for fathers of the normal control children. This difference in mean years of education was not significant. However, there was a significant difference in mean years of education between fathers of NAT children and fathers of FTT children. Fathers in the NAT category had a mean educational level of 12.6 years while fathers in the FTT category had a mean educational level of 10.1 years.

Table 6 - Educational Level, in Years, of Mothers and Fathers at Time of Initial Involvement with CSP.

Educational Level (in years)	Total Abuse Group		Normal Control Group 3		NAT		FTT		Both NAT & FTT	
	Mother	Father	Mother	Father	Mother	Father	Mother	Father	Mother	Father
0-2	1	1	0	0	0	1	1	0	0	0
3-6	3	4	0	0	2	3	0	1	1	0
7-9	21	12	6	5	14	7	7	3	0	2
10-12	58	33	19	16	36	18	17	14	5	1
Over 12	9	6	8	11	6	4	2	0	1	2
Total of Known	92	56	33	32	58	33	27	18	7	5
Unknown	14	50	1	2	6	31	8	17	0	2
Total	106	106	34	34	64	64	35	35	7	7

Employment Status

The employment status of the child's biological parents was recorded at the time of initial CSP involvement. Table 7 presents this employment data according to abuse type.

Table 7 - Employment Status of Mothers and Fathers at Time of Initial CSP Enrollment

Employment Status	Total Abuse Group		Normal Control Group		NAT		FTT	
Mothers	N	%	N	%	N	%	N	%
Employed	24	22.5	8	23.5	18	28.1	2	5.7
Not Employed	78	73.5	26	76.5	43	67.2	32	91.4
Unknown	4	4.0	0		3	4.7	1	2.9
Total	106	100.0	34	100.0	64	100.0	35	100.0
Fathers	N	%	N	%	N	%	N	%
Employed	35	33.0	29	85.3	21	32.8	11	31.4
Not Employed	26	24.5	4	11.8	12	18.7	11	31.4
Unknown	45++	42.5	1	2.9	31	48.5	13	37.2
Total	106	100.0	34	100.0	64	100.0	35	100.0

++Includes the Both NAT & FTT classification.

When reviewing the employment status of biological mothers, the only appreciable difference occurred between the NAT and FTT classifications. Ninety-one and four-tenths percent of the mothers of FTT children were unemployed as compared to 67.2% for mothers of NAT children.

Although the employment status of biological fathers is reported in Table 7, it should be noted that these results include a large number of unknowns. Excluding these unknowns, information was obtained for 61 fathers in the total abuse group and for 33 fathers in the normal control group. Fifty-seven and four-tenths percent of the total abuse group fathers were employed as opposed to 87.9% of the normal control group fathers.

History of Mistreatment, Drug Misuse, Drinking Problems, Emotional Problems, and Arrest

The child's biological parents were asked whether or not their parents had mistreated them as children. Responses to this question were based on

the parent's subjective impressions of his/her earlier life experiences. These responses are presented in Table 8 according to abuse type.

Table 8 - History of Mistreatment as Child in Mothers and Fathers of CSP Children

Mistreatment	Total Abuse Group		Normal Control Group 3		NAT		FTT	
Mothers	N	%	N	%	N	%	N	%
Yes	45	42.5	6	17.6	24	37.5	18	51.4
No	48	45.2	27	79.4	32	50.0	12	34.3
Unknown	13	12.3	1	3.0	8	12.5	5	14.3
Total	106	100.0	34	100.0	64	100.0	35	100.0
Fathers	N	%	N	%	N	%	N	%
Yes	24	22.6	5	14.7	13	20.3	8	22.9
No	24	22.6	26	76.5	13	20.3	9	25.6
Unknown	58++	54.8	3	8.8	38	59.4	18	51.5
Total	106	100.0	34	100.0	64	100.0	35	100.0

++Includes the Both NAT & FTT classification.

In the total abuse group, 42.5% of the mothers thought that they had been mistreated by their own parents. On the other hand, only 17.6% of the normal control group mothers thought they had been mistreated. In addition, a slightly higher proportion of mothers of FTT children felt they had been mistreated than did the mothers of NAT children.

Data were obtained for 43 biological fathers of abused children and 34 fathers of normal control children. In the total abuse group, 50% of the fathers indicated that they thought they had been mistreated as compared to only 16.1% of the normal control group fathers.

Table 9 shows, according to abuse type, the number of biological parents who had a history of drug misusage prior to their initial involvement with CSP. Any excessive or illegal use of narcotics, sedatives, depressants, hallucinogenics, or central nervous system stimulants was considered drug misuse.

Table 9 - Number of Mothers and Fathers who Misused Drugs Prior to their Child's Involvement with CSP

Drug Misuse	Total Abuse Group		Normal Control Group 3		NAT		FTT	
Mothers	N	%	N	%	N	%	N	%
Yes	11	10.3	1	2.9	7	11.0	4	11.4
No	82	77.4	31	91.2	47	73.4	28	80.0
Unknown	13	12.3	2	5.9	10	15.6	3	8.6
Total	106	100.0	34	100.0	64	100.0	35	100.0
Fathers	N	%	N	%	N	%	N	%
Yes	14	13.2	0		6	9.4	7	20.0
No	39	36.8	31	91.2	22	34.4	13	37.1
Unknown	53++	50.0	3	8.8	36	56.2	15	42.9
Total	106	100.0	34	100.0	64	100.0	35	100.0

++Includes the Both NAT & FTT classification.

Of those biological fathers for whom information was obtained, 24.6% in the total abuse group had misused drugs. None of the normal control group fathers reported that they had misused drugs. In addition, a comparison of known information revealed that 11.8% of the mothers in the total abuse group had misused drugs while only 3.1% of normal control group mothers reported they had misused drugs.

Information was collected as to whether or not the biological parents had ever had a drinking problem prior to their child's involvement with the CSP. Drinking problem was defined as the use of alcohol to such an extent as to negatively influence the parent's interpersonal relationships and everyday functioning. Table 10 reports, according to abuse type, the number of biological parents who had a drinking problem.

Of the 33 normal control group mothers for whom information was obtained, there were none who had drinking problems. However, 9.8% of the 92 mothers in the total abuse group did have a drinking problem. Utilizing only known information, 36.8% of the fathers of abused children did have drinking problems as opposed to 9.1% of the fathers of the normal control children.

Table 10 - Number of Mothers and Fathers Who Had a History of Drinking Problems Prior to Initial CSP Enrollment

Drinking Problem	Total Abuse Group		Normal Control Group 3		NAT		FTT	
Mothers	N	%	N	%	N	%	N	%
Yes	9	8.5	0		4	6.3	5	14.3
No	83	78.3	33	97.1	51	79.6	25	71.4
Unknown	14	13.2	1	2.9	9	14.1	5	14.3
Total	106	100.0	34	100.0	64	100.0	35	100.0
Fathers	N	%	N	%	N	%	N	%
Yes	21	19.8	3	8.9	11	17.2	9	25.7
No	36	34.0	30	88.2	20	31.3	12	34.3
Unknown	49++	46.2	1	2.9	33	51.5	14	40.0
Total	106	100.0	34	100.0	64	100.0	35	100.0

++Includes the Both NAT & FTT classification.

Assessments were made as to whether or not biological parents had experienced emotional problems prior to their child's initial involvement in the CSP. This assessment was based upon information indicating that the parent had been dissatisfied with his/her personal functioning and sought counseling or someone else had encouraged the parent to seek counseling. Information indicating whether or not biological parents had emotional problems is presented in Table 11 according to abuse type.

Table 11 - Number of Mothers and Fathers Who Had a History of Emotional Problems Prior to CSP Enrollment

Emotional Problems	Total Abuse Group		Normal Control Group 3		NAT		FTT	
Mothers	N	%	N	%	N	%	N	%
Yes	49	46.3	3	8.8	29	45.3	17	48.6
No	47	44.3	30	88.3	30	46.9	14	40.0
Unknown	10++	9.4	1	2.9	5	7.8	4	11.4
Total	106	100.0	34	100.0	64	100.0	35	100.0
Fathers	N	%	N	%	N	%	N	%
Yes	23	21.7	6	17.7	14	21.9	7	20.0
No	29	27.3	27	79.4	16	25.0	11	31.4
Unknown	54++	51.0	1	2.9	34	53.1	17	48.6
Total	106	100.0	34	100.0	64	100.0	35	100.0

++Includes the Both NAT & FTT classification.

Examining known information only for both mothers and fathers, the following is noteworthy. In the total abuse group, 51% of the mothers had a history of emotional problems, while only 9.1% of the normal control group mothers had such a history. Furthermore, 44.2% of the fathers of abused children had a history of emotional problems as compared to 18.2% of the normal control group fathers.

Data were gathered concerning the arrest history of the child's biological parents. The parent must have been arrested and charged with a crime at least one time. Table 12 reports the number of biological parents who had a history of arrest.

Table 12 - Number of Mothers and Fathers Who Had Been Arrested Prior to Their Child's Enrollment to CSP

Arrest History	Total Abuse Group		Normal Control Group 3		NAT		FTT	
Mothers	N	%	N	%	N	%	N	%
Yes	19	18.0	1	2.9	13	20.3	5	14.3
No	70	66.0	32	94.2	41	64.1	24	68.6
Unknown	17++	16.0	1	2.9	10	15.6	6	17.1
Total	106	100.0	34	100.0	64	100.0	35	100.0
Fathers	N	%	N	%	N	%	N	%
Yes	27	25.5	7	20.6	14	21.9	12	34.3
No	25	23.6	26	76.5	14	21.9	8	22.8
Unknown	54	50.9	1	2.9	36	56.2	15	42.9
Total	106	100.0	34	100.0	64	100.0	35	100.0

++Includes the Both NAT & FTT classification.

Again, utilizing only known information, comparisons between the total abuse group and the normal control group revealed that 21.3% of the mothers of abused children had been arrested versus only 3% of the mothers of normal control children. Fifty-one and nine-tenths percent of total abuse group fathers had a history of arrest and 21.2% of the normal control group fathers also had a history of arrest.

Environmental Factors

Neighborhood Condition

Data were collected concerning the condition of the neighborhood in which the child lived at the time of abuse. Neighborhood conditions were recorded according to the standards set by the Denver Community Renewal Program, March 1973. This neighborhood condition analysis provided a measure of blight symptoms. The analysis indicated those areas of the city which currently have more problems than do other areas. Examples of neighborhood characteristics rated were housing value, overcrowding, unemployment, crime rate, infectious disease rate, and educational level. Conditions were quantified for each neighborhood. A safe neighborhood was better than most neighborhoods and had no particular problems. An endangered neighborhood was worse than most neighborhoods and had a number of problems. A blighted neighborhood was among the worst in the city and had problems requiring a high priority of attention.

In the total abuse group 51.5% of the families were living in blighted neighborhoods, 32.0% were living in endangered neighborhoods, and 16.5% were living in safe neighborhoods. In contrast, 24.2% of the normal control group families were living in blighted neighborhoods, 27.3% in endangered neighborhoods, and 48.5% in safe neighborhoods. These results indicate that there was a significant difference at the .002 level between the total abuse group and the normal control group in terms of neighborhood condition.

A comparison of neighborhood conditions between families of NAT children and families of FTT children revealed no significant differences. Forty-two and six-tenths percent of the families of NAT children lived in blighted neighborhoods, 37.7% in endangered neighborhoods, and, 18.0% in safe

neighborhoods. The families of FTT children had 65.7% in blighted neighborhoods, 17.1% in endangered neighborhoods, and 17.1% in safe neighborhoods.

Income Level

Family income levels were obtained at the time of the child's initial involvement in the CSP. Family income was recorded according to the Family Income Categories as defined by the Denver Community Renewal Program, March 1973. Table 13 indicates the income levels of CSP families by abuse type.

Table 13 - Income Levels, at Time of Initial Program Involvement, of CSP Families

Income Levels	Total Abuse Group	Normal Control Group 3	NAT	FTT	Both NAT & FTT
24,300-9,487	5	14	5	0	0
9,486-7,677	3	8	1	2	0
7,676-3,690	29	6	19	7	3
Below 3,690	43	5	22	20	1
Total of Known Income Levels	80	33	47	29	4

There was a significant difference ($p < .001$) in family income levels between the total abuse group and the normal control group. The income levels of families of NAT children are not significantly different from the income levels of families of FTT children. However, it is noteworthy that 68.9% of the families of FTT children had incomes below $3,690. In comparison, 46.8% of the families of NAT children had similar incomes.

Number of People in the Home and Number of Rooms in the Home

The number of people living in the child's home, at the time of initial involvement with the CSP, was recorded. The mean number of people in the home for the total abuse group was 4.17 as compared to 4.47 for the normal control group. This difference was not significant. When the NAT and FTT categories were compared, there were no significant differences.

Information was also collected concerning the number of rooms in each child's home at the time of CSP enrollment. Thirty and four-tenths percent of the total abuse group families were living in homes with less than four rooms. In contrast, all of the normal control group families lived in homes with four or more rooms. Twenty-eight and six-tenths percent of the families of NAT children had less than four rooms in their home. Likewise, 31.8% of the families of FTT children had less than four rooms.

Order of the Child in the Sibling Line

Table 14 represents the order of the abused child in his sibling line according to abuse type.

Table 14 - Order of the Abused Child in Sibling Line at Time of CSP Enrollment

Numerical Order	Total Abuse Group	Normal Control Group 3	NAT	FTT	Both NAT & FTT
1	39	13	26	9	4
2	39	11	25	11	3
3	9	8	4	5	0
4	7	1	4	3	0
5	4	1	2	2	0
6	2	0	0	2	0
Unknown	6	0	3	3	0
Total	106	34	64	35	7

Table 14 reveals no significant difference between the total abuse group and the normal control group regarding order of the abused child in his sibling line. However, notable differences exist between the NAT and FTT categories. The FTT children appear to be more evenly distributed along the sibling line than do the NAT children. Furthermore, 42.6% of the NAT children were first-born while only 28.1% of the FTT children were first-born. This difference is not significant.

The Abusive Incident

History of Abuse

A definite medical diagnosis of abuse must have been reported in the child's medical record in order for that child to have had a positive history of abuse. Twenty-nine and three-tenths percent of the NAT children had documented histories of abuse. In comparison, 9.1% of the FTT children had suffered prior abuse.

Where Child was Living

Data were collected on the 106 abused children as to where they were living at the time the abuse occurred. Ninety-four children were living in their natural home and one child was living with friends of his family. It was unknown where the remaining 11 children were living at the time the abuse occurred.

Nature of Abuse and Type of Injury

Of the 106 abused children, 64 had experienced non-accidental trauma, 35 had failed to thrive, and, 7 had suffered both NAT and FTT. Table 15 illustrates the nature of the abuse according to the child's treatment group placement.

Table 15 - Nature of Abuse and Treatment Group Placement of Children in CSP

Nature of Abuse	Group 1	Group 2	Group 2X	Total of the Abused Groups
NAT	28	9	27	64
FTT	13	12	10	35
Both NAT & FTT	5	0	2	7
Total	46	21	39	106

For those children diagnosed as NAT the type(s) of injury the child sustained was specified. A total of 105 injuries were recorded for 71 children - 64 NAT and 7 both NAT and FTT. Some children had suffered more than one type of injury. Bruising accounted for 48 of the injuries,

fractures for 20, burns for 16, and lacerations for 14. There was also one near drowning reported, one sexual molestation, and five other unspecified injuries.

Comparisons were made between the type of injury the child sustained and the sex of the child. Significantly more fractures and bruises occurred in the male population than in the female population ($p<.05$).

Comparisons were also made between the ethnic background of the child and the type of injury sustained. No one type of injury occurred significantly more often in any of the racial categories.

Month Abuse Occurred

The month in which the child was abused was recorded for only those children who had suffered NAT. FTT children were not included as the abuse occurred over a period of weeks or months so that the actual time of the abusive incident could not be pinpointed. For the seven children suffering both NAT and FTT the month the NAT occurred has been included in this data.

June, July, August, September, and December were the months in which the fewest abuse incidences were recorded. January through May, October, and November were the months in which 73.2% of the NAT cases occurred.

The Abuser(s)

Identification and Relationship to the Child

One hundred and nine abusers were identified in 83 abusive incidences. In many instances, there was more than one abuser involved per child. In 21 cases the abuser was never identified.

The relationship of the abuser(s) to the study child is presented in Table 16 according to abuse type.

Table 16 - Relationship of the Identified Abuser(s) to the Abused Child

Abuser	Total Abuse Group	NAT	FTT	Both NAT & FTT
Biological Mother	47	11	34	2
Biological Father	37	15	18	4
Step-Mother	1	1	0	0
Step-Father	7	7	0	0
Relative	2	2	0	0
Boyfriend of Parent	11	9	2	0
Girlfriend of Parent	1	1	0	0
Babysitter	3	3	0	0
Total of Known	109	49	54	6
Not Identified	21	19	1	1

Of the 109 identified abusers, 43.1% were biological mothers and 33.9% were biological fathers. Biological fathers, stepfathers, and boyfriends of the biological parent were identified as the abusers in 63.3% of the NAT cases. On the other hand, biological mothers were identified as responsible in 63% of the FTT cases.

Age

Table 17 illustrates age ranges, at the time of the abusive incident, of the identified abuser(s) according to the abuse type.

Table 17 - Age Ranges, in Years, of Identified Abuser(s) at the Time the Abuse Occurred

Age Range (in years)	Total Abuse Group	NAT	FTT	Both NAT & FTT
14 or less	3	3	0	0
15-17	5	0	5	0
18-20	23	11	11	1
21-23	32	16	13	3
24-26	18	7	11	0
27-29	11	5	4	2
30-33	8	2	6	0
Over 33	7	4	3	0
Total of Known	107	48	53	6
Unknown	2	1	1	0
Total	109	49	54	6

As can be seen in Table 17, the vast majority of the abusers are included in the 18 through 29 year age range. The majority of abusers in the NAT and FTT categories fall into this same age range.

Educational Level

The educational level of the identified abuser(s) is presented in Table 18 according to abuse type.

Table 18 - Educational Level, in Years, at Time of Abuse, of Identified Abuser(s)

Educational Level (in years)	Total Abuse Group	NAT	FTT	Both NAT & FTT
0-2	2	0	2	0
3-6	4	3	1	0
7-9	22	11	10	1
10-12	52	22	27	3
Over 12	8	5	1	2
Total of Known	88	41	41	6
Unknown	21	8	13	0
Total	109	49	54	6

It is interesting to note that 59.1% of the identified abusers in the total abuse group attended 10th, 11th, and/or 12th grade. The mean educational level of the abusers in the NAT category was 10.4 years as compared to 9.6 years for abusers in the FTT category. This difference in mean years of education is not significant.

Employment Status

The employment status of the abusers at the time of the abusive incident was recorded. In the total abuse group, 67 of the 109 identified abusers were not employed. The employment status of four abusers was unknown.

Of the 49 identified abusers in the NAT classification, 26 were not employed, 22 were employed, and the employment status of the other one was not known. Of the 54 abusers in the FTT classification, 36 were not employed, 12 were employed, and three were unknown.

When comparing between abuse types, in only those cases where employment status was known, it was found that 53.1% of the abusers in the NAT category were unemployed whereas 72.2% of the abusers in the FTT category were unemployed.

History of Mistreatment, Drug Misusage, Drinking Problems, Emotional Problems, and Arrest

Identified abusers were asked their subjective impression as to whether or not they, themselves, had been mistreated as children.

In the total abuse group, 56 of th identified abusers thought that they had been mistreated while 32 thought they had not been mistreated. Data were not available for 21 of the abusers. In the NAT classification, information was obtained from 41 abusers. Of these 41 abusers, 29 or 70.7% felt they had been mistreated. In the FTT classification, information was available on 41 identified abusers. Of these, 24 or 59% thought they had been mistreated. No significant difference was found between abusers in the NAT and FTT categories regarding perception of mistreatment.

Data were gathered as to whether or not the abusers had ever misused drugs prior to the child's hospitalization. Drug misusage was defined as it was for biological parents.

In the total abuse group, 21 out of the 109 identified abusers had misused drugs while 65 had not. Data were not obtainable for 23 of the abusers. Information was collected for 35 of the 49 identified abusers of NAT children. Twelve or 34.2% of these abusers had misused drugs. Data were available for 45 of the 54 abusers of FTT children, and revealed that nine or 20% of these people had misused drugs. These differences in drug misusage were not significant.

Information was collected as to whether or not the abusers had ever had a drinking problem prior to the child's hospitalization. Criteria

utilized to define the term drinking problem was presented in the biological parent section.

Within the total abuse group, 29 of the identified abusers had a drinking problem, 64 did not, and information was not available for the remaining 16. Data was obtained for 43 abusers of NAT children and 44 abusers of FTT children. Sixteen or 37.2% of the abusers in the NAT category had drinking problems as compared to 12 or 27.3% in the FTT category.

An assessment was made as to whether or not the abuser had experienced emotional problems prior to the child's hospitalization. The definition of emotional problems was specified in the biological parent section.

Information was obtained for 56 out of a total of 109 abusers. Thirty-two or 57.1% of these abusers had emotional problems while 24 or 42.9% did not. Data were available for only 26 abusers of NAT children. Of these, 17 or 65.4% had emotional problems. In the FTT classification, data was obtained on 30 abusers, 15 or 50% of whom had emotional problems. Significance tests were not utilized for these comparisons because of the large number of abusers for whom information did not exist.

Data were gathered concerning the arrest history of the identified abusers. Information was available on 92 out of 109 abusers in the total abuse group. Thirty-five or 38.0% of these abusers had been arrested while 57 or 62.0% had not. Again, excluded those abusers for whom information was unknown, 22 or 52.4% of the 42 abusers in the NAT category had been arrested. Thirteen or 28.9% of the 45 abusers in the FTT category had histories of arrest.

Data Pertaining to the Three Study Objectives

The First Study Objective

The first study objective of the CSP was to determine, at the time of initial program involvement, whether or not abused children were developmentally different in the physical, social, and cognitive areas than were their non-abused counterparts. Data will be presented concerning developmental testing, the Infant Behavior Record (IBR), the Child Behavior Characteristics (CBC), height, weight and head circumference. These data were obtained from the child's first evaluation only. In addition, these data will be reported for the total abuse group and the normal control group.

Initial developmental test results are presented in Tables 19 and 20. The Bayley Mental Scale, the Bayley Motor Scale and the McCarthy Scales were the developmental tests used.

Table 19 - Mean Scores on the Bayley Mental Scale and Bayley Motor Scale, at Time of Initial Enrollment in CSP for Abused and Normal Control Children

Bayley Mental Scales	Total Abuse Group	Normal Control Group 3	F-Value
N	79	28	
Mean	87.9	106.6	22.4**
S.D.	18.6	15.4	
Bayley Motor Scales			
N	76+	28	
Mean	87.6	105.6	17.11**
S.D.	19.7	19.8	

+Some children's injuries prevented them from being able to perform the motor items required.

**Significance at the .01 level

Table 20 - Mean Scores on the McCarthy Scales, at Time of Initial Enrollment in CSP for Abused and Normal Control Children

McCarthy Scales	Total Abuse Group	Normal Control Group 3	F-Value
Verbal			
N	15	6	
Mean	38.1	42.7	.98
S.D.	9.4	10.3	
Perceptual			
N	15	6	
Mean	41.9	46.8	1.6
S.D.	7.2	10.3	
Quantitative			
N	15	6	
Mean	39.4	40.8	.13
S.D.	7.6	10.3	
GCI			
N	15	6	
Mean	80.2	87.7	.69
S.D.	14.4	20.1	
Memory			
N	15	6	
Mean	40.3	45.2	1.7
S.D.	6.4	10.5	
Motor			
N	9+	6	
Mean	41.4	46.3	1.0
S.D.	8.7	10.1	

+Some children's injuries prevented them from being able to perform the motor items required.

As Table 19 indicates there is a significant difference, at the .01 level, between the total abuse group and the normal control group on both the Bayley Mental Scale and the Bayley Motor Scale. The normal control mean scores on the Mental Scale and the Motor Scale were higher than were the mean scores for the abused children.

As can be seen in Table 20, the normal control group scored higher on all subscales of the McCarthy than did the total abuse group. However, this difference in mean scale scores was not significant.

The IBR, which measures the child's behavior at the time of developmental testing, was completed during each evaluation. The mean IBR scale scores are presented in Table 21.

Table 21 - Mean IBR Scores for CSP Children at Time of First Examination

IBR Scales	Mean Scores Total Abuse Group	Mean Scores Normal Control Group 3	F-Value
Response to Persons	5.9	6.6	5.7*
Response to Examiner	3.0	3.4	3.8
Response to Mother	3.1	3.9	16.4**
Cooperativeness	4.7	5.5	7.4**
Fearfulness	3.0	2.5	2.0
Tension	3.8	3.7	0.1
Emotional Tone	5.2	6.6	16.0**
Response to Objects	4.7	5.3	3.3
Plays Imaginatively	1.8	1.7	0.1
Object Attachment	2.0	1.9	0.5
Goal Directed	3.2	3.8	3.3
Attention Span	3.7	4.3	3.0
Endurance	4.9	5.8	7.4**
Activity	4.2	5.3	11.4**
Reactivity	5.0	5.9	7.0**
Looking	5.4	5.6	0.6
Listening	4.7	5.2	4.6*
Vocalizations	3.6	4.4	6.1*
Banging-Throwing	3.0	3.5	1.4
Hand Manipulation	3.5	4.2	2.8**
Body Motion	4.2	5.0	7.8
Mouthing-Hand	2.3	2.9	1.7
Mouthing-Pacifier	1.7	2.0	0.3
Mouthing-Toys	3.1	4.1	4.1*
Energy	2.8	3.1	4.7*
Gross Motor Coordination	3.5	3.0	6.1*
Fine Motor Coordination	3.5	2.9	10.9**
Test Adequacy	2.9	2.8	0.6
Other Unusual Behavior	1.9	2.0	0.1

*Significant at the .05 level
**Significant at the .01 level

When reviewing the IBR data is is important to note mean scores were used for comparison purposes between abused and normal control children. Furthermore, these mean scores are a result of a combination of various age groups. It is known that a child's age would affect his score on each subscale of the IBR. To determine if age differences affect mean scale scores, specific age range comparisons were made between the abused and normal control children. The age ranges compared were 1) from birth through five months, 2) from six months through 11 months, 3) from 12 through 23 months, 4) from 24 through 48 months, and 5) greater than 48 months. These comparisons revealed no significant differences between the abused and normal control children in any of the age categories. Therefore, the mean IBR scores reported are a valid and useful comparison for the purposes of this study.

As Table 21 indicates, there were significant differences in mean scores on 14 of the 29 IBR subscales. With the exception of Gross and Fine Motor Coordination, the normal control group was functioning more optimally than was the total abuse group.

The data obtained through the use of the CBC which measures the biological mother's perception of her child's behavior are presented in Table 22.

Comparison of mean CBC scores for the 27 subscales between the abused children and the non-abused children revealed significant differences between these two groups in Compliance, Agreeableness, and Gloomy-Sourness.

The normal control group mothers perceived their children as being easier to quiet, less difficult to care for, and more easily pacified. Normal control mothers also saw their children as having a more agreeable disposition. On the other hand, mothers of the abused group viewed their children as being less sulky, less sad looking, and less moody.

Table 22 - Mean CBC Scale Scores for CSP Children at Time of First Evaluation

CBC Scales	Mean Scores Total Abuse Group	Mean Scores Normal Control Group 3	F-Value
Distractibility	6.1	6.0	0.1
Learning Difficulty	4.5	4.9	0.3
Alertness	14.8	13.0	0.6
Intelligence	14.0	9.7	1.8
Attention-Curiosity	13.2	13.4	0.3
Responsibility	11.7	14.0	3.8
Unmotivated-Lazy	3.3	2.9	0.2
Cooperativeness	13.8	14.8	1.6
Compliance	11.8	13.3	6.1*
Defiance	8.4	8.3	0.1
Hostility	8.0	11.0	1.9
Unsocialized	6.0	7.7	0.3
Lies, Steals, Destroys	5.7	5.3	0.1
Likeability	29.9	31.2	1.8
Agreeableness	7.9	8.6	4.2*
Gloomy-Sourness	6.8	5.7	3.8*
Irritability-Tension	17.9	16.9	1.0
Tension-Anxiety	8.5	8.5	0.0
Withdrawal B	9.9	9.7	0.1
Withdrawal C	8.7	12.3	1.9
Infantilism	8.3	10.0	0.5
Appetite	8.6	9.0	1.1
Sex Precocious	7.3	7.0	0.1
Over-Cleanliness	10.7	10.3	0.1
Sex-Inhibition	3.7	2.5	0.9
Activity	8.7	9.1	1.5
Assertiveness	13.0	12.3	0.1

*Significant at the .05 level

Height, weight, and head circumference for each study child was measured at the time of each developmental evaluation. These measurements are reported according to mean percentiles in Table 23.

The mean percentile of head circumference measurements between the abused children and the normal control children were significantly different at the .05 level. The normal control children had a greater head circumference at time of first evaluation than did the abused children. The mean percentile of weight measurements between the abused and normal

populations were significantly different at the .01 level. Again, the normal control children weighed more than did the abused children. No significant difference was found in mean percentile height measurements between the abuse and normal control groups.

Table 23 - Mean Percentiles of Height, Weight, and Head Circumference Measurements for Abused and Normal Control Children at Time of First Evaluation

Groups	Height		Weight		Head Circumference	
	Mean %	N	Mean %	N	Mean %	N
Total Abuse Group	30.8	75	15.2	80	26.2	73
Normal Control Group 3	39.3	29	32.9	29	38.6	25
F-Values	1.7		11.7**		4.6*	
Total N		104		109		98
Unknown		36		31		42
Total N		140		140		140

*Significant at the .05 level
**Significant at the .01 level

The Second Study Objective

The second objective of the CSP was to determine whether or not there are differences between children who sustained NAT and those who failed to thrive. Data obtained from developmental testing, the IBR, the CBC, measurements of height, weight, and head circumference will be presented. These data, comparing NAT and FTT children, were based upon the child's first evaluation only.

Initial developmental test results comparing NAT children to FTT children are presented in Table 24. The Bayley Mental Scale and the Bayley Motor Scale were statistically compared for this second objective. Although some children were tested with the McCarthy Scales, these children were all victims of NAT. Therefore, these test results are not presented for comparison as no FTT children, because of age, were administered the McCarthy.

Table 24 - Mean Scores for the Bayley Mental Scale and Bayley Motor Scale at Time of Initial Enrollment in CSP for NAT and FTT Children

Bayley Mental Scale	NAT	FTT	Significance
N	39	35	
Mean	86.9	89.5	N.S.
S.D.	19.2	18.5	
Bayley Motor Scale			
N	37 +	35	
Mean	88.3	85.5	N.S.
S.D.	20.6	18.3	

+Some children's injuries prevented them from performing the motor items required.

As can be seen in Table 24, there were no significant differences in mean scores on either the Bayley Mental Scale or the Bayley Motor Scale for first evaluation between NAT children and FTT children.

A comparison of mean IBR scores between NAT and FTT children revealed significant differences on 11 of the 29 subscales. The NAT children performed more adequately than did the FTT children in the following areas: Response to Objects; Goal Directed; Attention Span; Activity; Reactivity; Vocalizations; Hand Manipulation; and, Body Motion. The FTT children engaged in more mouthing and sucking of fingers, pacifiers, and toys than did the NAT children.

The mean CBC scale scores for NAT children and FTT children were compared and showed a significant difference, at the .05 level, on one subscale only. The mothers in the NAT category perceived their children as being more Defiant than did the mothers of the FTT children.

Measurements of height, weight, and head circumference were obtained at the time of the child's first developmental evaluation. Table 25 reports these measurements in mean percentiles for the NAT and FTT children.

Table 25 - Mean Percentiles of Height, Weight, and Head Circumference Measurements for NAT and FTT Children

Abuse Type	Height		Weight		Head Circumference	
	Mean %	N	Mean %	N	Mean %	N
NAT	34.8	41	20.0	46	30.2	41
FTT	22.4	29	7.7	29	19.2	27
F-Value	3.0		5.9*		3.0	
Total N		70		75		68
Unknown		36		31		38
Total N		106		106		106

*Significant at the .05 level

The comparison of mean percentile weight measurements yielded a significant difference at the .05 level between NAT and FTT children. At the time of the first evaluation, the NAT children weighed more than the FTT children. No significant differences in mean percentile height or head circumference measurements existed between these two categories.

The Third Study Objective

The third objective of the CSP was to determine the effectiveness of an intervention program. Effectiveness was measured by examining the children's sequential scores on 1) developmental testings, 2) the IBRs, 3) the CBCs, 4) height, weight, and head circumference measurements, and, 5) whether or not reabuse occurred. These data will be presented for both the four treatment groups and the two abuse types. Data were gathered from the child's first, second, third, and fourth evaluations. However, results from the fourth evaluation are seldom used for comparison purposes because the sample size was often too small.

To test this third program objective, the Bayley Mental and Motor Scales and the McCarthy Scales were used. However, due to lack of correlational data, performance on the Bayley will not be directly compared

Table 26 - Mean Score Changes on Bayley Mental and Motor Scales Between Testings 1, 2, and 3 for CSP Children by Treatment Group and Abuse Type

	Test 1 vs. Test 2 (6 mos.)						Test 1 vs. Test 3 (18 mos.)					
	Mental Scale			Motor Scale			Mental Scale			Motor Scale		
Treatment Group	N	Mean Change	S.D.	N	Mean Change	S.D.	N	Mean Change	S.D.	N	Mean Change	S.D.
1	24	-1.2	17.9	23+	+2.8	15.8	8	-10.8	13.9	8	-8.1	18.8
2	14	-4.3	23.4	14	+2.1	21.6						
2X	23	+1.8	20.6	21+	-2.6	18.5	8	-3.0	29.0	8	+7.2	26.8
3	25	-4.2	15.7	25	-1.2	17.1	8	-7.2	21.6	8	-2.1	36.2
Total N	86			83+			24			24		
F-Values		0.5			0.4			0.2			0.6	
Abuse Type												
NAT	29	+3.0	20.2	27+	+1.4	16.6	6	-8.7	32.0	6	+0.2	30.9
FTT	29	-5.1	19.4	29	-0.1	20.3	9	-8.3	14.8	9	-0.9	21.4
Total N	58			56+			15			15		
F-Values		1.6			0.1			0.0			0.01	

+Some children's injuries prevented them from being able to perform the motor items required.

to performance on the McCarthy. Table 26 presents changes in mean Bayley scores between test periods.

As Table 26 illustrates there were no significant changes in mean Bayley Mental or Motor Scores across testings between treatment groups. The largest positive mean change occurred in Group 2X between Tests 1 and 3 on the Motor Scale (+7.2 points). Due to the small number of subjects in Groups 1 and 2, by the time of the third testing these groups were combined for statistical purposes. The largest decrease in both Mental and Motor mean scores occurred in the combined Groups 1 and 2 between the first and third testings.

In addition, there were no significant differences in mean score changes on either Bayley Scale across testings between NAT and FTT children. Between Tests 1 and 2, the mean FTT Mental Scale score dropped 5.1 points while the NAT mean Mental Scale score increased 3.0 points. However, on Test 1 versus Test 3, the mean scores on the Mental Scale dropped similarly for both NAT and FTT children (-8.7 points and -8.3 points).

Table 27 reports changes in mean scores on the McCarthy Scales across testings. These data were obtained on the total abuse group and compared to the normal control group. Comparisons were not made between treatment groups or abuse type because of the insufficient number of children who were old enough to be administered the McCarthy. Of the 12 abused children who were tested on the McCarthy, 11 were NAT and one was both NAT and FTT. Although it was possible to compare Test 1 separately with Tests 2 and 3 on the Bayley, these same comparisons were not possible on the McCarthy. The 15 abused and control children who were tested with the McCarthy for Tests 2 and 3 were not necessarily the same children who had the McCarthy

Table 27 - Mean Score Changes on McCarthy Subscales Between 1st and 2nd Testings and Between 2nd and 3rd Testings for Abused and Normal Control Children

McCarthy Subscales	Test 1 vs. Test 2 (6 mos.)						Test 2 vs. Test 3 (12 mos.)					
	Total Abuse Group			Normal Control Group 3			Total Abuse Group			Normal Control Group 3		
	N	Mean Change	S.D.	N	Mean Change	S.D.	N	Mean Change	S.D.	N	Mean Change	S.D.
Verbal	12	+4.6	8.5	6	+2.8	4.2	9	+1.8	10.3	6	+2.0	10.7
Perceptual Performance	12	+1.1	9.3	6	+1.3	5.3	9	-3.0	6.1	6	+2.2	4.8
Quantitative	12	-1.6	10.7	6	+3.2	7.1	9	+2.4	10.1	6	-1.5	5.0
GCI	12	+2.9	14.6	6	+4.7	6.5	9	+1.1	15.1	6	+1.8	7.6
Memory	12	+2.5	9.3	6	+0.5	8.2	9	-3.4	7.3	6	-3.2	12.8
Motor	9+	+0.1	10.4	6	+1.7	5.9	9	-2.8	13.1	6	-1.3	4.1

+Some children's injuries prevented them from being able to perform the motor items required.

for Test 1. Some of these 15 children were too young for the McCarthy at Test 1.

On the McCarthy, there were no significant differences between the abused and normal control children in mean score changes across testings.

For the purpose of this third objective, changes in IBR scores between Tests 1 and 2 and Tests 1 and 3 will be presented according to the four treatment groups and the two abuse types. Data were analyzed for only those children whose IBR scores increased or decreased between these test periods.

Among treatment groups, between the first and second testings, significant differences were found on three of the 29 IBR Subscales. No children in Groups 1, 2, or 2X were less responsive to their mothers at Test 2 than they had been at Test 1. On the other hand, of the 12 children in Group 3 whose scores changed, eight were less responsive to their mothers at the time of the second testing. This difference in Response to Mother was significant at the .05 level. In Groups 2, 2X, and 3, the majority of the children whose scores changed demonstrated less mouthing of the hand at the second testing. However, 54.5% of the Group 1 children exhibited more mouthing of the hand at Test 2 than they had at Test 1. This difference in Mouthing of the Hand was significant beyond the .05 level. In the area of gross motor coordination, Group 2X children improved their gross motor skills between these test periods while Groups 1, 2, and 3 demonstrated less adequate abilities. This difference in Gross Motor Coordination was significant at the .05 level.

Among treatment groups, between first and third testings, no significant differences were found.

Comparisons of the NAT and FTT categories revealed a significant difference on only one of the IBR Subscales between Test 1 and Test 2. Of the 23 FTT children whose scores changed on this subscale, 19 exhibited more fearfulness and four exhibited less fearfulness. Of the 43 NAT children whose scores changed, 23 were rated as being more fearful at Test 2 than they had been at Test 1. This difference in Fearfulness between NAT and FTT children was significant at the .05 level.

Among abuse types, between Test 1 and Test 3, significant differences were found on two of the 29 IBR Subscales. Considering only those children whose scores changed, nine of the 12 NAT children demonstrated less banging and throwing at the time of the third testing, while five of the six FTT children exhibited more banging and throwing. This difference in Banging and Throwing was significant beyond the .05 level. A significant difference was also found in Test Adequacy at the .05 level between these test periods. Of the 12 NAT children whose scores changed, only three were rated as having had a less adequate third test than first test. However, all four of the FTT children whose scores changed were rated as having had a less adequate third test.

Mean changes in CBC scores were also compared between Tests 1 and 2 and Tests 1 and 3 for the total abuse group and the normal control group. No significant differences existed between these two groups of children. Comparisons of mean change scores between the four treatment groups and the two abuse types were not possible because many natural mothers, particularly in Groups 1 and 2, were either unavailable or refused to complete the form.

Mean percentile changes in height measurements between Tests 1 and 2 and Tests 1 and 3 are presented in Table 28 according to treatment groups and abuse type.

Table 28 - Mean Percentile Changes in Height Measurements Across Testings

Treatment Group	Test 1 vs. Test 2 (6 mos.)			Test 1 vs. Test 3 (18 mos.)		
	N	Mean % Change	S.D.	N	Mean % Change	S.D.
1	18	-5.7	11.7	3	-4.3	32.0
2	9	+10.1	44.0	6	-9.2	11.0
2X	30	-0.8	30.2	19	-3.0	26.3
3	25	+3.4	32.2	12	+4.1	20.0
Total N	82			40		
F-Value		0.7			0.5	
Abuse Type						
NAT	33	-2.3	20.4	20	-7.6	26.5
FTT	21	+6.7	35.5	7	+3.0	14.8
Normal Control Group 3	25	+3.4	32.2	12	+4.1	20.0
Total N	79			39		
F-Value		0.7			1.2	

There were no significant mean percentile changes in height across testings between the four treatment groups or between the two abuse types. However, the FTT children show an increase in mean percentile change across the six and eighteen month intervals whereas the NAT children show a decrease over these same time intervals.

Table 29 shows mean percentile changes in weight measurements between Tests 1 and 2 and Tests 1 and 3.

Again, there were no significant differences in mean percentile weight changes between first and second testings or between first and third testings for either the four treatment groups or the two abuse types. However, Group 2X children increased in mean weight 13.2 percentile points over the eighteen month interval reported. NAT children demonstrated a mean percentile weight increase across each time period. On the other hand, FTT children showed very little mean percentile change at either the six or eighteen month evaluations.

Mean percentile changes in head circumference measurements between Tests 1 and 2 and Tests 1 and 3 are presented in Table 30 according to treatment groups and abuse type.

No significant mean percentile changes were found in head circumference measurements across testings for any of the treatment groups or either of the abuse types. Mean percentile changes at both the six and eighteen month evaluations were greater for FTT children than for NAT children.

For the purpose of this third objective, it was necessary to determine the number of children who suffered reabuse while they were involved with the CSP. Five of the 106 abused children had been reabused. Of these five children, four were in Group 1 and one was in Group 2X. When

Table 29 - Mean Percentile Changes in Weight Measurements Across Testings Between Treatment Groups and Abuse Types

Treatment Group	Test 1 vs. Test 2 (6 mos.)			Test 1 vs. Test 3 (18 mos.)		
	N	Mean % Change	S.D.	N	Mean % Change	S.D.
1	19	+0.1	19.7	4	-0.5	2.5
2	10	+10.2	9.8	6	+5.0	5.3
2X	31	+8.8	24.5	21	+13.2	13.8
3	25	+4.7	21.0	12	-3.5	16.3
Total N	85			43		
F-Value		0.8			1.0	
Abuse Type						
NAT	35	+7.5	19.8	23	+10.0	28.9
FTT	22	+2.8	24.4	7	-0.4	30.5
Normal Control 3	25	+4.7	21.0	12	-3.5	16.3
Total N	82			42		
F-Value		0.3			1.2	

Table 30 - Mean Percentile Changes in Head Circumference Measurements Across Testings

Treatment Group	Test 1 vs. Test 2 (6 mos.)			Test 1 vs. Test 3 (18 mos.)		
	N	Mean % Change	S.D.	N	Mean % Change	S.D.
1	18	+4.7	17.7	3	+0.7	1.2
2	8	+13.0	24.4	4	+29.3	13.2
2X	29	+3.3	20.8	18	+5.6	29.5
3	21	+2.3	26.9	9	-2.6	39.1
Total N	76			34		
F-Value		0.5			1.1	
Abuse Type						
NAT	32	+5.4	15.9	18	+7.0	30.0
FTT	20	+7.3	24.3	6	+15.7	18.2
Normal Control 3	21	+2.3	26.9	9	-2.6	39.1
Total N	73			33		
F-Value		0.3			0.3	

considering these five children according to abuse type, three were in the NAT category and two were in the Both NAT and FTT category.

Miscellaneous Outcome Measures

Foster Care

Information was recorded as to whether or not a study child had spent any time in foster care. None of the normal control children spent time in foster care during the course of the Child Study Program. Of the 106 abused children, 55 spent some time in fosterage, 35 did not have any foster care experiences, and information was unknown regarding the remaining 16 children. Utilizing only those children for whom data was available, 50% of the 54 NAT children had been in foster care at some time during CSP involvement as compared to 74.2% of the 31 FTT children.

Number of Times Family Moved

Information was gathered as to the number of times each family changed addresses during involvement with the CSP. None of the normal control families moved more than three times. Utilizing known information only, in the total abuse group, 21% of the families moved more than three times. Twenty-six and five-tenths percent of the families of NAT children had more than three moves. Of the families of FTT children, 11.5% moved more than three times.

Where Child was Living at Time of CSP Closure

All of the normal control children were living with their natural parents at the time of their termination with the Child Study Program. Out of the 106 abused children, 68 were living with their natural parents, 21 were with foster parents, six had been adopted, seven were with relatives, and the whereabouts of the remaining four children was unknown. Excluding the four unknowns, 33.3% of the children in the total abuse group were not

with their natural parents. Of the 61 NAT children, 32.8% were not living with their natural parents, as compared to 32.4% of the 34 FTT children.

Time Child was Followed

The length of time each child spent involved with the CSP was recorded. Table 31 presents, by treatment groups and by abuse type, the length of time, in months, that study children were followed.

As Table 31 indicates, 84.6% of the children in Group 2X were followed by the CSP for over one year. In comparison, 42.9% of Group 2 and 15.2% of Group 1 were followed for more than 12 months. Furthermore, 56.3% of the NAT children were followed for over one year as compared to only 31.4% of the FTT children.

Total Number of Program Contacts

The total number of contacts between the CSP, the child, and his family were recorded. These contacts included any interaction between CSP personnel and the family including medical services, therapy contacts, crises intervention, counseling, testing, and conferences. Table 32 illustrates, by treatment group and abuse type, the total number of contacts each child and his family had with the CSP.

As can be seen in Table 32, Group 2X children and families did, indeed, have the highest number of contacts with CSP personnel. In the NAT classification, 15.6% of the children and families had more than 100 contacts. In the FTT classification only 5.7% of children and families had over 100 contacts.

Reasons for Program Termination

Specific reasons for termination of CSP involvement were identified for each study child and his family. Reasons for termination of program involvement included 1) family moved of the area accessible to CSP,

Table 31 - Length of Time, in Six-Month Intervals, Each Child was Followed by CSP

Time Period	Group 1	Group 2	Group 2X	Total Abuse Group	Normal Control Group 3	NAT	FTT	Both NAT & FTT
0-6 Mos.	39	9	3	51	17	28	18	5
7-12 Mos.	0	3	3	6	0	0	6	0
13-18 Mos.	6	4	10	20	6	13	7	0
19-24 Mos.	0	3	7	10	0	5	3	2
25-30 Mos.	1	0	11	12	9	11	1	0
31-36 Mos.	0	2	5	7	1	7	0	0
37-42 Mos.	0	0	0	0	1	0	0	0
Total	46	21	39	106	34	64	35	7

Table 32 - Number of Contacts, in units of 25, Between CSP Personnel, the Child, and the Family

Number of Contacts	Group 1	Group 2	Group 2X	Total Abuse Group	Normal Control Group 3	NAT	FTT	Both NAT & FTT
0-25	46	19	5	70	34	42	23	5
26-50	0	1	6	7	0	5	2	0
51-75	0	1	7	8	0	4	3	1
76-100	0	0	8	8	0	3	5	0
101-125	0	0	4	4	0	4	0	0
126-150	0	0	5	5	0	5	0	0
151-175	0	0	1	1	0	0	1	0
176-200	0	0	2	2	0	1	0	1
201-225	0	0	1	1	0	0	1	0
Total	46	21	39	106	34	64	35	7

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1 OF 2

2) CSP unable to locate family's whereabouts, 3) child deceased, 4) family refused CSP involvement, 5) CSP closure requested by family's primary worker or agency, and 6) termination of the CSP. Table 33 presents, by treatment group and by abuse type, the reasons identified for CSP closure.

In the total abuse group, only three families refused to become involved with the CSP. Seventy-one abused children out of the total 106 remained involved with the CSP until the program, itself, ceased to exist. In addition, 70.3% of the NAT children remained involved in the CSP until the program terminated as compared to only 60% of the FTT children.

Table 33 - Identified Reasons for Termination of Families and Children From CSP

Reasons for Termination	Group 1	Group 2	Group 2X	Total Abuse Group	Normal Control Group 3	NAT	FTT	Both NAT & FTT
Moved	6	7	10	23	1	9	12	2
Unable to Locate	4	1	1	6	3	6	0	0
Refused CSP	1	2	0	3	0	1	2	0
Agency Request	1	0	0	1	0	1	0	0
CSP Termination	32	11	28	71	30	45	21	5
Unknown	2	0	0	2	0	2	0	0
Total	46	21	39	106	34	64	35	7

DISCUSSION

This portion of the report is concerned with discussing the results of the Child Study Program and will be presented in four sections. The first section addresses the issue of the comparability between the abused and the normal control populations participating in this study. The second, third, and fourth sections will discuss the three study objectives.

Comparability of the Study Children

The normal control children were matched with the abused children on the basis of age and ethnic background. Although an attempt was made to match the abused and normal control children with respect to sex, the normal control group had a higher proportion of females than did the total abuse group. However, this sex disproportion should not have influenced the test results since the developmental scales utilized are not sex-biased.

Because the normal control group and the total abuse group were both utilizing the Denver Department of Health and Hospitals facilities, it was thought that these groups would be matched regarding socio-economic status. However, this did not prove to be correct. The data revealed that significantly more normal control group families lived in safer neighborhoods and had higher income levels than did the families of the abused children. This difference in socio-economic status could, in part, have influenced the test results.

If abuse is not influenced by ethnicity, one would anticipate that the ethnic distribution of the CSP abused children would reflect the ethnic distribution of the children hospitalized at DGH. Therefore, it was anticipated that more Chicano children would be involved with the CSP than Anglo or Black children. The opposite, however, was the case. There was

proportionately more abuse diagnosed among Anglo children than among the other groups. These results could lead one to question whether or not a relationship exists between abuse and ethnicity. Is abuse reported differently among ethnic groups? Does abuse occur with less frequency among different ethnic groups? Do certain ethnic groups have less control of their aggressive impulses? Are expectations for children among various ethnic groups different? How much does family structure and/or social mores influence child rearing practices among various ethnic groups?

The First Study Objective

The first objective was to determine whether or not abused children would differ with respect to various developmental parameters from their non-abused counterparts at the time of initial program involvement. The results indicated that there were differences between these two populations.

One of the major differences found was that the abused children scored significantly lower on both Bayley Scales. On the McCarthy Scales the abused children scored lower, but not significantly so. Between these two populations, there were significant differences on 14 IBR Subscales with the normal control group functioning more optimally on all except for gross and fine motor coordination. On the three CBC Subscales which demonstrated significant differences, the non-abused children were perceived as being more Compliant and Agreeable. The abused children, however, were viewed as less Gloomy-Sour. Furthermore, the abused children were significantly lower on measurements of weight and head circumference.

It is possible that these results were confounded by factors other than abuse. First, the low initial scores of the abused children could have been related to the hospital experience. However, as was reported

in the results section concerning Objective Three, the differences in mean scores between abused and normal control children did not change significantly on sequential testing despite the absence of hospitalization. Secondly, significantly more abused children had birth weights below 2500 grams. It should be noted that low birth weight may adversely affect a child's development. Thirdly, the incomplete comparability between the abused and normal control children regarding socio-economic status could have influenced the differences found between these two groups. Lastly, the abused children were not evaluated prior to the abusive incident. Therefore, it is possible that these children may have been developmentally handicapped from birth.

It was anticipated that specific environmental factors would influence the child's development. The majority of both the normal control children and the abused children were living with their biological parents at the time of introduction to the CSP. Therefore, the environmental factors discussed pertain to the child's natural home.

Those environmental factors which differ between the abused and normal control groups include parental histories of mistreatment, drug misuse, drinking problems, emotional problems, arrest, paternal employment status, and age of parents at the time of the birth of the study child. Although the majority of the biological mothers in both the abused and normal control groups were between 18 and 29 years of age, a large percentage of the mothers of the abused children were clustered in the 18 to 20 year age range. Fathers of the normal control children tended to be slightly older than the fathers of the abused children. Those environmental factors which do not differ between these two populations include maternal employment status, parental educational levels, and order of the child in his sibling line.

Parental histories of drug misuse, drinking problems, emotional problems, arrest, and perceptions of mistreatment were more prevalent among the parents of the abused children. Parental perceptions of mistreatment may be based upon fact, fantasy, or both. Nevertheless, among many of these parents early experiences with inadequate parenting models has resulted in the development of deviant child-rearing skills. Inadequate parental modeling may not have taught adequate impulse control. Furthermore, these parents may have learned to utilize passive or active aggressive behavior as a means of dealing with problems. In addition, isolation of these parents may decrease the opportunity for exposure to counteractive influences.

Drug misuse and drinking problems were somewhat more prevalent among the abuse group parents. Many people who misuse drugs and/or alcohol are dependent and feel inadequate in a number of aspects of their lives. Drugs and alcohol may represent a dysfunctional means of coping with life situations. Such usage may serve as a means of escape which prevents and protects them from having to deal with life situations directly. These people, as parents, may have difficulty meeting their child's needs especially when the child's needs interfere or conflict with their own.

Considerably more of the parents of abused children had been arrested and charged with a crime. The behavior leading to the arrest may have resulted from lack of impulse control and/or may have represented negative attitudes toward authority. In addition, this behavior may serve to draw attention to themselves as well as attention to their problems.

A high proportion of the parents of abused children had emotional problems as compared to the parents of the normal control children. This finding indicates that a number of these parents have had difficulty in

coping with many life situations including their parenting interactions with their children.

Significantly fewer mothers of the abused children reported a desire to breast-feed the study child. Among those mothers who indicated a lack of desire to breast-feed, there may be a deficit in the attachment relationship. Maccoby and Masters (1970) suggest that maternal feelings about breast-feeding appear to be one index of a mother's feelings about her infant. The relationship being suggested here is that when a deficit in attachment occurs, the child may be at high risk for abuse.

It would appear from the foregoing discussion that the hypothesis of the first objective has been supported by the data. Significant differences do exist between these abused and non-abused children in the cognitive, physical, social, and emotional areas with the abused children functioning less optimally. Furthermore, the environments and the families of the abused and non-abused children are different with the abused children living under more adverse conditions.

The Second Study Objective

The second objective was to determine whether or not children who sustained NAT differed from children who failed to thrive with respect to various developmental parameters at the time of initial hospitalization. The results indicated that there were some differences between these two populations.

There were no significant differences between NAT and FTT children with respect to Bayley scores, height, and head circumference measurements. Between these two populations, the NAT children functioned more optimally on all 11 of the IBR Subscales which showed significant differences. On the only CBC Subscale which demonstrated a significant difference, the NAT

children were seen as more Defiant. As one would expect, FTT children weighed significantly less than the NAT children.

The confounding factors discussed in Objective One were not of issue when comparing differences between the NAT and FTT children. Hospital experience, birth weight, and socio-economic status were not significantly different and therefore did not influence developmental outcomes.

It was anticipated that specific environmental factors would discriminate between NAT children and FTT children. Those environmental factors which did differ between these two populations included order of the child in his sibling line, paternal educational level, maternal and paternal employment status, maternal perceptions of mistreatment, paternal histories of drug misuse, drinking problems, and arrest. Those environmental factors which did not differ between the NAT and FTT classifications were number of people in the home, maternal educational level, paternal perceptions of mistreatment, maternal histories of drug misuse, drinking problems, and arrest, parental histories of emotional problems, and maternal and paternal age at time of abuse.

Contrary to our initial expectations, children who failed to thrive were not necessarily first in the sibling line. In addition, parents of FTT children were not younger than the parents of NAT children. This suggests that the child's failure-to-thrive does not particularly reflect parental youth or inexperience with child care, but may indicate a lack of parental sensitivity, knowledge, and/or responsiveness to the child's needs.

Although the educational level of mothers did not differ between these two populations, the employment status did. More mothers of NAT children were employed at the time the abuse occurred. Fathers of NAT children achieved higher educational levels than fathers of FTT children. Furthermore,

more fathers of NAT children were employed. In addition, family income levels in the NAT category were slightly higher. It is difficult to establish specific relationships between education, employment, income, and the nature of the abuse. Although the educational level of fathers may affect their employability, such may not be the case with mothers. Overall, many more parents of FTT children are not employed, and therefore, it could be expected that these parents actually had more opportunity to be home with their children. Nevertheless, these children still failed to thrive.

It is interesting that more FTT mothers perceived that they had been mistreated by their own parents than did mothers of NAT children. It appears that mothers of FTT children have had either less adequate or different parental modeling themselves and this may be reflected in their child-rearing practices. Although there were no differences in fathers' perception of mistreatment between these two abuse types, fewer of the fathers reported thoughts of being mistreated than did the mothers. This finding may reflect that these fathers were indeed accurate in their perceptions of mistreatment or it may be that the masculine definition of mistreatment is different than the feminine one in our society.

Fathers in both the NAT and FTT categories engaged in more drug and alcohol use than did mothers. However, fathers of FTT children had more problems with drugs and alcohol than did fathers of NAT children. One might speculate that fathers of FTT children are more concerned with meeting their own dependency needs and have difficulty meeting the needs of a dependent child.

Comparatively, fathers of FTT children had the highest arrest rate. Aside from their inability to parent adequately, this finding may represent another divergence from society's expectations.

When considering the issue of emotional problems in the NAT and FTT categories, there were no differences between the mothers and no differences between the fathers. However, in both groups, more mothers than fathers had histories of emotional problems. One might speculate that these women may be more willing to admit problems exist. In addition, functioning in the mothering role, they may be more visible to agencies able to identify such problems. Finally, these women may indeed have more emotional problems.

The occurrence of abuse may be the result of faulty parenting. The process of attachment is an important component that affects parenting ability, and when a deviancy occurs in the attachment process, the child may be at risk for abuse. Deviancy within the attachment process may take several forms and may be a determining factor as to whether NAT or FTT occurs.

How mothers felt they had been treated as children by their parents may affect their ability to form attachment relationships with their own children. One might speculate that if a mother feels that she had been mistreated, it is possible that the attachment process between her and her parents was faulty. When a mother does not have early experiences with emotional bonding she may not be able to attach to her own infant because of inability to develop or fear of being involved in intimate relationships. A second outcome of lack of affective bonding may be the development of a deviant attachment pattern between the mother and her infant whereby the mother may attempt to fulfill her own attachment needs. Mothers of FTT children may have difficulty bonding because of their own lack of experience with attachments. On the other hand, mothers of NAT children may physically harm the child when the child does not meet the adult's attachment needs and expectations. Mothers of FTT children may totally neglect the child rather

than physically harming him when the child fails to meet that parent's own emotional needs.

To support the speculations made concerning attachment behaviors, the works of Harlow and Harlow (1965) and Wachtel (1975) must be considered. It was found that monkeys who had been raised with surrogate mothers were unable to display attachment behavior with their own offspring. Furthermore, some of these motherless monkeys, as mothers, physically abused their infants.

Attachment relationship problems between the mother and her child may show their effect shortly after the birth of the infant as reflected by the extremely young age at which the FTT children were identified. It should be noted that the majority of the NAT and FTT children were under two years of age. Younger children may be less able to meet unreasonable parental expectations and in the case of NAT children, may be less able to defend themselves from violent attack.

Again referring to the writings of Maccoby and Masters (1970), who indicate that breast-feeding may reflect the mother's feelings about her infant, it is noteworthy that fewer mothers of FTT children expressed a desire to breast-feed than did mothers of NAT children. Moreover, in the FTT category, only one mother felt breast-feeding had been successful. If breast-feeding does reflect a mother's feelings about her infant, and if the attachment process is dependent upon the mothers' feelings, then one could speculate that the mothers of NAT children exhibit more attachment behavior toward their offspring than do the mothers of FTT children.

It would appear from the results and discussion of Objective Two that there are indeed some differences bwtween NAT and FTT children. Although no differences were demonstrated on developmental testing, the NAT children did function more optimally on behavioral indices. Furthermore, there do

seem to be differences in mother-infant attachment patterns between the NAT and FTT categories. Lastly, comparisons of environmental factors between these two abuse types indicated a higher percentage of social problems in families of FTT children.

The Third Study Objective

The third objective was to determine the effectiveness of an intervention program as reflected by children's changes on sequential developmental parameters, incidence of reabuse, and miscellaneous outcome measures. The results indicated few differences, either between Treatment Groups 1, 2, and 2X or between the FTT and NAT categories.

Sequential developmental testing revealed no significant differences between treatment groups or between abuse types. On the three IBR Subscales where mean scores changed significantly between Tests 1 and 2, Group 2X children consistently showed improvement. In addition, the FTT children exhibited more Fearfulness at time of second testing. On the two IBR Subscales which showed significant differences between test periods 1 and 3, the NAT children were rated as functioning more optimally than were the FTT children CBC mean scores and mean percentile changes on physical measurements did not change significantly between test periods.

One issue which could have confounded these results was the non-randomization of Groups 2 and 2X. Had Group 2X children improved significantly on sequential developmental testing, the non-randomization factor might have been influential. Since no significant differences occurred, this factor need not be considered. Another confounding factor which must be considered is that all of the abused children had access to available community programs. The measurement techniques utilized by the CSP may

have been influenced by these other intervention programs. This confounding factor may have reduced the chances of finding significant differences between treatment groups. The last confounding factor which may have influenced the results was the decreased number of children available over the duration of the study period. This decrease in numbers can be attributed to the expected attrition rate, the necessity to utilize two separate developmental tests in order to assess the age ranges under study, and the dividing of the abused children into three separate treatment groups. Therefore, the chances of finding significant differences between these treatment groups was diminished.

The occurrence of reabuse was recorded for only that period of time, during which the child was followed by the CSP. Of the 106 abused children, five were reabused. Four of these children were part of Group 1 while the other child was in Group 2X. Since four-fifths of the children who were reabused did not receive CSP interventive services, one might speculate that the CSP treatment program may have helped in preventing reabuse in Groups 2 and 2X.

A main focus of the CSP treatment plans had been to maintain long-term intensive involvement with Group 2X children and families. This goal was achieved as reflected by the high percentage of Group 2X who were followed for more than one year. These children also had the greatest number of contacts with the CSP staff. On the other hand, Group 1 had the lowest percentage of children followed for over one year, had the fewest number of contacts with the CSP, and had the highest incidence of reabuse.

Interestingly, 25% more NAT children were involved with the treatment program for over one year than were FTT children. NAT children also had a greater number of program contacts. One might speculate that FTT families are less amenable to involvement in a treatment program.

Although 51.9% of the abused children were known to have spent some time in foster care, the CSP had not been designed to evaluate the effects of foster placement on a child's development. Knowledge of the length of time in fosterage and the quality of care provided would be essential for such an assessment to be meaningful.

The main hypothesis of the Third Objective had been that intensive treatment would be reflected by improved developmental functioning. Although the CSP treatment techniques may have been effective in helping to prevent reabuse, the same treatment techniques did not significantly alter the sequential developmental performance of the abused children. One might speculate that the environment exerts an extremely powerful influence on a child's development. Accepting this notion, it follows that unless a treatment program can significantly alter the child's environment, it can not positively influence the course of that child's development.

Environmental similarities between NAT and FTT children may be one reason why no significant differences were found on sequential developmental assessments between these two abuse types. Despite these environmental similarities, one should consider that there are differences in quality within these environments. On the whole, FTT children consistently functioned less maturely and adequately on behavioral measures. Furthermore, their families had more social problems, exhibited less attachment behavior, and were more difficult to follow.

CONCLUSIONS

This concluding section will present three profiles. Drawing from our population, descriptions of the abused child, the child's family, and the abuser will be portrayed.

The abused child is usually less than two years of age, male, Anglo, with a history of low birth weight, and is living with his biological parents. The abused child is developmentally delayed with respect to his cognitive, social, and emotional functioning.

The NAT child is older and more likely to have been first born than is the FTT child. Most NAT children are abused in late winter, early spring, or fall. Furthermore, the NAT child is more likely to have a history of prior abuse and is at higher risk for being reabused. Finally, the NAT child demonstrates more mature and adequate behavior than does the FTT child.

The abused child's family is likely to live under more crowded conditions and in blighted neighborhoods. However, more families of FTT children live in blighted neighborhoods than do families of NAT children. The family is likely to have an annual income below $3690, with more families of FTT children at or below this income level. Although the family of the NAT child tends to move more frequently, overall, this family is more accessible to long-term follow-up and more amenable to treatment than is the family of the FTT child.

The abuser is likely to be between 21 and 23 years of age, have a 10th to 12th grade education, and to be unemployed. The abuser of the NAT child is frequently his father, his stepfather, or a boyfriend of his mother. The abuser of the FTT child is usually his mother. As in the case of the child's parents, the abuser has numerous social and emotional problems.

IMPLICATIONS

A number of implications for further research are suggested by the data gathered during the course of the Child Study Program. The two major areas for further study must evaluate the phenomenon of child abuse from both the preventive and treatment points of view.

Research into prevention must encompass the development of techniques for early identification of children and parents who may be at high-risk for being involved in an abusive situation. Research should be directed towards the investigation of those pre-natal, peri-natal, and post-natal factors which may contribute to child abuse. In addition, it would be important to examine those factors which predispose the parents and child to the occurrence of non-accidental trauma or failure-to-thrive. It is our opinion that the dynamics of NAT and FTT are different and therefore warrant in-depth investigation. Furthermore, research needs to be designed to evaluate whether or not abused children are developmentally different prior to abuse.

Research must begin to look at etiologies rather than focusing on symptoms alone. It may also be necessary to design treatment programs for specific types of abuse. Research is needed to determine the needs of different socio-economic and ethnic groups so that treatment programs can be provided on an individual basis.

Another area requiring investigation relates to the child's cognitive performance. Are there certain cognitive functions which are particularly vulnerable to specific types of abuse?

Lastly, it is important to examine the long-term effects of foster care. To what degree does foster care affect, either positively or negatively, the child's development, the effect of treatment, and the attachment process.

We believe that the effectiveness of any treatment program will be limited until basic underlying social changes occur within our society. As David Gil (1975) states:

> Some or many members of our society may even be consciously committed to the perpetuation of the existing order, not realizing how destructive that order may be to their own real interests.
>
> Whatever one's attitude may be toward these fundamental political issues, one needs to recognize and face the dilemmas implicit in them and, hence, in primary prevention of child abuse. If one's priority is to prevent all child abuse, one must be ready to part with its many causes, even when one is attached to some of them such as the apparent blessings, advantages, and privileges of inequality. If, on the other hand, one is reluctant to give up all aspects of the causal context of child abuse, one must be content to continue living with this social problem. In that latter case, one ought to stop talking about primary prevention and face the fact that all one may be ready for is some measure of amelioration.

Nevertheless, treatment programs must do what they can until social changes occur.

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