

PRESERVATION

**FACTORS ASSOCIATED WITH THE SERIOUS
ILL-TREATMENT OF CHILDREN**

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A more detailed but technical discussion of the findings presented in this report is given in Technical Report No. I - "The Correlates of Severe Child Abuse".

Copies of this report can be obtained free of charge on application to the Research Division, Department of Social Welfare, Private Bag, Wellington, New Zealand.

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ERRATUM

Page 10, para 2, Sub-group 1, first sentence should read: "This group comprised children under the age of five years who were not living with both natural parents".



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PRESERVATIONINTRODUCTION

In 1967 the Child Welfare Division¹ conducted a nationwide survey of the physical ill-treatment of children. The main findings of the research were published in the monograph Child Abuse in New Zealand.² That report revealed that in 1967 a total of 363 children were referred to the Child Welfare Division for incidents of suspected or alleged child abuse. For each child coming to attention in this way Child Welfare Officers were asked to complete an extensive recording form which described the details of the alleged incident, the characteristics of the child and his family situation, the characteristics of his parent figures and any other persons who were involved, and the outcome of the referral.

Not all the referrals during the year were judged to have involved child abuse. For the purposes of the original study the following definition of child abuse was adopted:

"Non-accidental physical attack or injury, including minimal as well as fatal injury, inflicted upon children by persons caring for them".³

Using this definition each referral during the year was rated on a ten point scale of the extent to which the referral was likely to have involved ill-treatment (ranging from 'certain to have been ill-treated' to 'no ill-treatment indicated'). After these ratings had been made referrals were classified into two groups:

1. Abused children - those children for whom the allegation of abuse was supported by the available evidence.

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1. On 1 April 1972 the Child Welfare Division became part of the new Department of Social Welfare.
 2. Child Abuse in New Zealand, Fergusson, D.M., Fleming, J., O'Neill, D.P., New Zealand Government Printer, Wellington, 1972.
 3. This definition follows that used by Gil in "Incidence of Child Abuse and Demographic Characteristics of Persons Involved", in Helfer, R.E., and Kempe, C.H., (Eds), The Battered Child, University of Chicago Press, Chicago, 1968.

2. Non-abused children - those children for whom the allegation of abuse was not supported by the evidence.

As a result of these procedures 255 of the 363 children referred during the year were classified as abused children. Full details of the methods used to classify referrals are given in Chapter 3 of Child Abuse in New Zealand.

One of the features of the data recorded concerning the 255 children judged to have been abused was the quite considerable variation in the extent of injury sustained by these children. Table 1 below shows the severity of the injuries sustained by the abused children.

Table 1 SEVERITY OF INJURY

Injury Severity	Number of Children	Percentage
Died, directly or indirectly as a result of abuse	7	2.7%
Serious and permanent injury	5	2.0%
Serious but not permanent injury	30	11.8%
Non-serious injury	182	71.4%
No injury	31	12.2%
Total	255	100.0%

In view of this variability in injury severity within the sample of abused children it seemed reasonable to ask whether the children who died or were seriously injured as a result of abuse differed in any way from the children who experienced only minor injuries. A recent report published by the Department of Social Welfare¹ presents a detailed analysis of this question. It is the purpose of this report to review the results of this study and to point to the practical implications of the findings.

DESCRIPTION OF THE STUDY

In broad terms, the aim of this investigation was to find the

1. The Correlates of Severe Child Abuse, Fergusson, D.M., Technical Report No. 1., Department of Social Welfare, Wellington, 1973.

background features that distinguished children who were severely abused from those who suffered comparatively minor injuries.

The first stage of the analysis was to classify the 255 abused children into two groups according to the severity of the injury sustained:

1. Cases of serious abuse. This group comprised those 42 children who died, or suffered serious injuries.
2. Cases of non-serious abuse. This group comprised those 213 children who suffered other than serious injury as a result of abuse.

This classification was constructed in the following way: a case was classified as involving serious abuse if the child died, suffered head injury or brain damage, fractures, extensive serious bruising or severe burns or scalds as a consequence of abusive behaviour. All other cases were classified as non-serious abuse. The mode of classification can perhaps best be illustrated by considering two case histories: the first is illustrative of incidents of non-serious abuse and the second is illustrative of incidents of serious abuse.

Case History 1 (non-serious abuse) Child A (Female, European, aged 1 year) was admitted to hospital with widespread and discrete bruising over her body and a series of scratches upon her chest. In view of the child's age and the nature of the injury, the attending physician was of the view that the injuries were a result of indiscriminate striking of the child.

Case History 2 (serious abuse) Child B (Male, European, aged 1 year) was admitted to his local hospital displaying serious head injuries. X-ray examination revealed that he was suffering from multiple fractures of the skull and sub-dural haematoma.¹ Further examination showed the presence of a several weeks old healing fracture of the left arm. In view of the age of the child and the extensive nature of his

1. Sub-dural haematoma is a condition involving bleeding between the brain and its protective membrane.

injuries, the attending physician was strongly of the opinion that the injuries had been deliberately inflicted. This opinion was further reinforced by the fact that the child had suffered a similar set of injuries at the age of six months.

As a further aid to the interpretation of the results, Appendix 1 gives a summary of the injuries sustained by the 42 children who were classified as seriously injured. Inspection of the Appendix shows that many, but not all, of the cases conformed to typical symptoms of the so called "battered baby syndrome". This syndrome first came to medical attention during the 1940's when radiological examination revealed that there was a close association between fractures of the long bones and sub-dural haematoma in young children. Initially, it was thought that this association was due to some form of pathological condition, but later investigation revealed that the symptoms were due to deliberate physical ill-treatment. A general description of the syndrome and its characteristics are presented in the Battered Child Syndrome.¹

After the sample had been classified into the two injury severity groups, a computer procedure was employed to locate those conditions which best distinguished between children who had been seriously abused and children who had suffered only minor injury. Full details of the logic of this computer procedure (the Sonquist and Morgan AID - Automatic Detection of Interaction Effects - procedure) are given in The Correlates of Severe Child Abuse. The procedure can be described briefly as follows. The technique examines the relationship between a number of selected background variables² and whether or not the child sustained a serious injury. The sample is divided into two sub-groups on the variable which best distinguishes seriously abused children from non-seriously abused children. Thus two sub-groups are formed, one characterised by an increased likelihood of serious abuse relative to the total sample and the other characterised by a reduced likelihood of serious abuse. This partitioning procedure is repeated on the two sub-groups with the

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1. "The Battered Child Syndrome", Kempe, C.H. et al, in Journal of the American Medical Association, 1962, 181, p 17 - 24.
 2. In the present study, 28 background variables were included in the analysis. A full specification of these variables is given in Appendix 1 of The Correlates of Severe Child Abuse.

remaining background variables being used to break down each of the two sub-groups into further sub-groups. The four sub-groups so formed are then subjected to further partitioning, and so on. The computer procedure also involves a series of 'stopping rules' (the most important one being the size of the sub-group) which determine whether or not any particular sub-group should be partitioned further.

Thus the end result of the procedure is to produce a series of successive two-way splits of the sample such that the sub-groups formed by these splits tend to contain either a high frequency of cases of serious abuse or a low frequency of cases of serious abuse. The results of such analyses are generally represented in the form of a dendrogram or 'tree' showing the characteristics of the successive splits made on the sample.

RESULTS

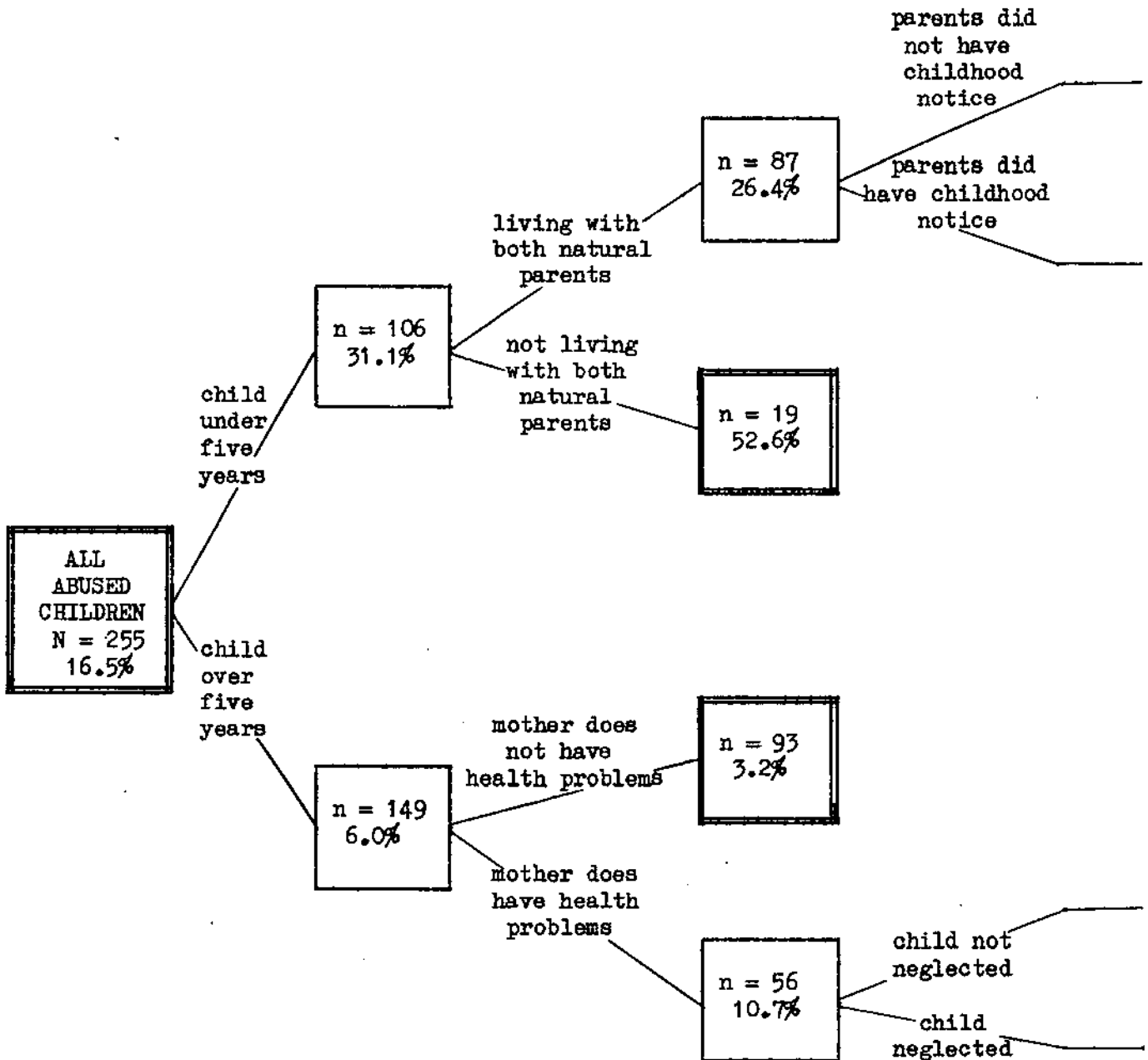
Figure 1 shows the dendrogram or tree produced for this analysis. The figure shows the variables which were involved in each of the partitions made and the sub-groups that resulted from these partitions. Each box in the figure represents a sub-group, and for each sub-group two statistics are presented - the size of the group (n) and the proportion of children in the group who sustained a serious injury. The following interpretation of the tree is offered.

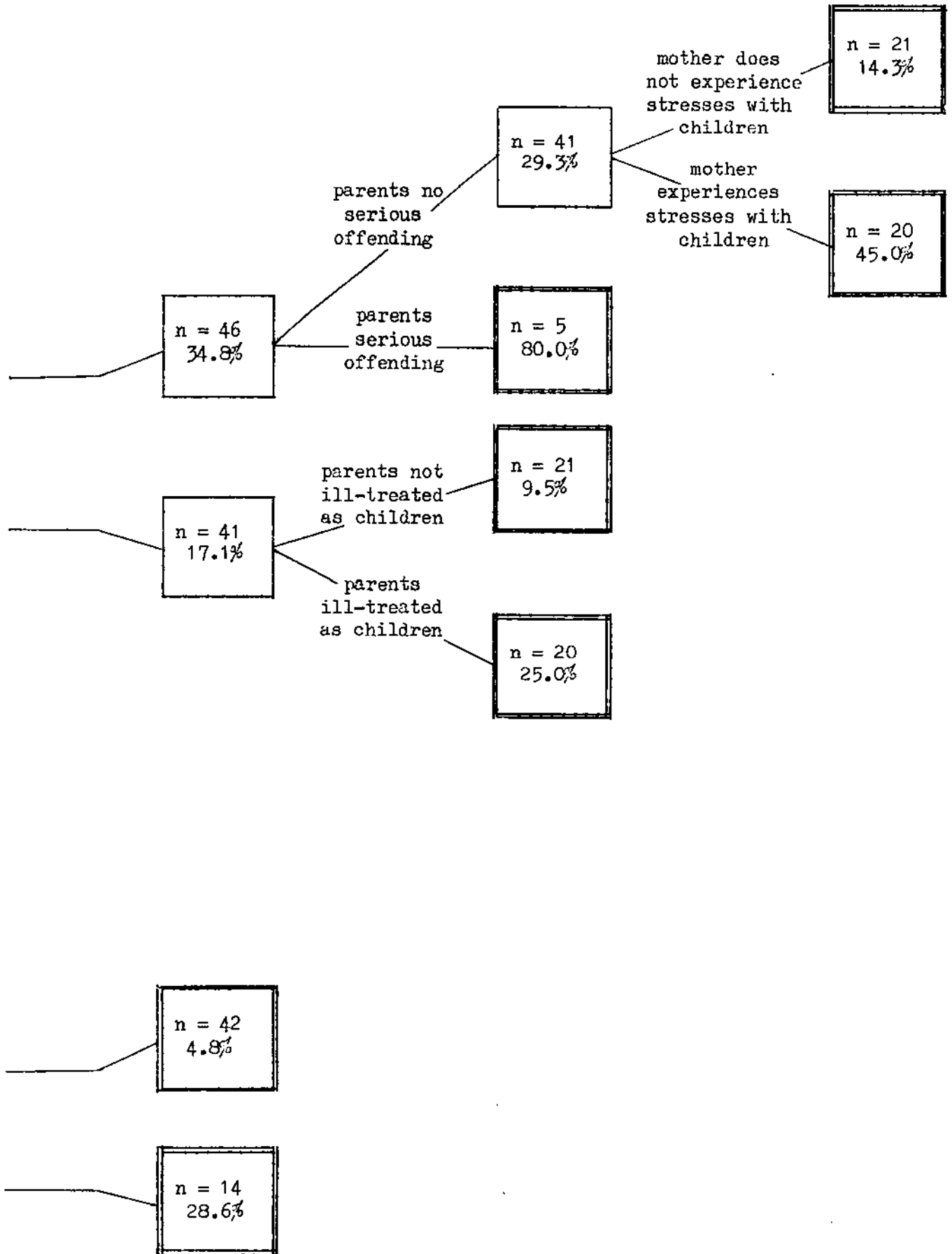
In the total sample of 255 abused children the likelihood of any individual child being seriously abused was 16.5%. Of all the background variables included in the analysis the one which best distinguished between seriously abused and non-seriously abused children was the age of the child. Abused children of less than five years of age had more than five times the likelihood of sustaining serious injury than had children aged five years or older: the percentages were 31% and 6% respectively. In fact, 33 of the 42 seriously abused children were less than five years of age. The most likely explanation for this finding is simply that younger children are more vulnerable to injury, with the consequence that if they are abused they are more likely to sustain serious injury than are older children.

For the older children (i.e. those aged five years or more) two

FIGURE 1 : AID DENDROGRAM (OR "TREE")

- Notes: 1. Each group formed by the AID partitioning procedure is represented by a box.
2. For each group two figures are reported
 - the size of the group (n)
 - the proportion of children in the group who sustained a serious injury.
3. Terminal groups in the AID analysis are represented by boxes with heavy borders.





variables gave rise to partitions: the presence of health problems of the mother, and neglect of the child. Serious abuse was most likely when both these features were present: abused children with this combination of circumstances (which defines a terminal group of the tree) had a likelihood of 29% of being seriously abused. In contrast, the percentages for the two other terminal groups relating to older children were 3.2% and 4.8%; overall, older children not displaying this particular combination of home circumstances had a likelihood of less than 4% of being seriously abused. In the absence of more extensive information it is not possible to offer any conclusive interpretation of these findings, but it might very tentatively be suggested that the serious abuse of older children most commonly arises from incapacity of the mother, because of poor health, to cope with the demands which are placed on her.

For younger children (i.e. those aged less than five years) a somewhat different pattern emerges. The variable which most strongly discriminated with respect to seriousness of abuse was the living situation of the child. Children who were not living with both natural parents were approximately twice as likely to be seriously abused as were children living with both natural parents; the percentages were 53% and 26% respectively. Children not with both natural parents can be regarded as falling into two broad categories: children living with only one parent (e.g. an unmarried mother, a widow, or a deserted wife) and children living in two parent situations in which one or both of the parent figures is not the natural parent. Children in both these categories might be expected to be prone to serious abuse - in the first instance, because of the stresses on the mother which are likely to arise through her being a sole parent, and in the second instance because of the weaker bonds of affection between parent figure and child which might be expected in some cases when the parent figure is not a natural parent. Unfortunately, it has not been possible to examine this line of speculation in relation to the data obtained in the survey, because the number of younger children not living with both natural parents was too small (19 children) to permit further analysis, and these children in fact formed a terminal group of the AID tree. However, the effect being discussed - by which such children were especially prone to serious abuse - was very strong; the likelihood of serious abuse amongst such children (i.e. 53%) was more than three times the "base rate" for the whole sample. It is a striking finding that only two crude variables - age of child and living situation - should give rise to such a comparatively high level of discrimination.

It has already been noted that children under five years of age who were not living with both natural parents formed a terminal group, which was not subjected to further partitioning. However, this was not the case for the younger children who were living with both natural parents. The variable which best discriminated with respect to this group was one which related to whether either of the parents of the abused child had themselves come to the notice of the Child Welfare Division when children. However there is a curious feature about the relation of this variable to the severity of abuse. It might have been anticipated, a priori, that the direction of the relationship would be such that parents with childhood notice would be more prone to serious abuse of their own children than would parents without childhood notice. In fact the relationship is in the reverse direction. Of the children of parents with childhood notice, 17% were seriously abused; for the children of parents without childhood notice, the proportion was 35%, more than double the former proportion.

How can this result be interpreted? One possibility is that the result arises simply through chance variation in the data. Examination of the "reversed" relationship suggests that this would be a tenable explanation, although conventional techniques of statistical hypothesis testing cannot be applied in any straightforward way to partitions of an AID tree. However, such "reversed" relationships also have been found in a separate study concerning the incidence of cases of established ill-treatment amongst referrals for abuse. An explanation which could account for the "reversed" relationships in both studies is that certain groups of people (such as those currently in contact with social work agencies, and those who have been in contact in the past) are, through a variety of mechanisms, more likely to come to attention, even when the basis of the referral is tenuous or relates to a comparatively minor problem. If this effect occurred it would give rise to sub-groups within the sample which contained a comparatively high incidence of spurious referrals and of referrals for incidents of a trivial nature. Thus variables related to an elevated likelihood of referral could emerge in a statistical analysis as having a negative relationship to the severity of the problem being studied. In the absence of further evidence for such an effect this hypothesis must be regarded as being highly speculative, but it is of some intrinsic interest and probably is worthy of examination in the context of future research studies if and when the opportunity

arises.

The rest of the AID tree will not be examined in the detail which has been accorded the partitions discussed above. It is sufficient to note that for the younger children not living with both natural parents the other variables which gave rise to partitioning were: serious offending by parents; ill-treatment of the parents themselves when children; and stresses on the mother connected with child-rearing. The first two of these variables might be taken as indicating some degree of underlying psychopathology of which abusive behaviour is only one aspect. The third variable - stresses on the mother connected with child-rearing - is a factor which has emerged repeatedly in the literature on child abuse, and does not require further comment. The relationship between each of these variables and the likelihood of serious abuse was in the anticipated direction.

Taken as a whole, the AID analysis suggested that seriously abused children tended to concentrate in five of the nine terminal groups of the tree. The five groups are described below:

Sub-group 1

This group comprised children under the age of five years who were living with at least one substitute parent. Of this group 53% suffered serious injury, in contrast to the rate of serious abuse for the whole sample which was 16.5%.

Sub-group 2

This group comprised children under the age of five years who were living with both natural parents; neither parent had come to Child Welfare notice as children, but they did have a history of serious criminal offending. The risk of serious ill-treatment for this group was 80%. However, it should be noted that the group was rather small (only five cases) and thus the estimate of 80% is likely to be rather unreliable.

Sub-group 3

This group comprised children under the age of five years who were living with both natural parents; these parents had not come to the attention of Child Welfare as children and they did not have a history of serious criminal offending; but it was shown that the mothers were experiencing stresses associated

with child rearing. The risk of serious ill-treatment for this group was 45%.

Sub-group 4

This group comprised children under the age of five years who were living with both natural parents; whose parents had come to the attention of Child Welfare as children and whose parents had also been subject to ill-treatment or neglect during childhood. Of this group 25% suffered serious injury.

Sub-group 5

This group comprised children aged five years or older who also had a history of physical neglect and whose mother figures were experiencing health problems. Of this group 28% were seriously injured.

In summary, it was found that the variable which best discriminated between serious abuse and non-serious abuse was the age of the child, with younger children (aged less than five years) displaying a higher likelihood of having sustained serious abuse. For the older children (aged five or more years) serious abuse was most common when the mother both suffered from health problems and had neglected the child. For the younger children, those not living with both natural parents had a high incidence of serious abuse. Variables related to the seriousness of abuse amongst younger children living with both natural parents were: childhood notice of the parents (acting in the reverse direction from that anticipated), serious offending by the parents, ill-treatment of the parents as children, and stresses on the mother associated with child-rearing. The last-mentioned three variables all acted in the expected direction. The results might be taken to suggest that in relation to older children an important determinant of serious abuse is the mother's difficulty in coping because of poor health, while in relation to younger children important determinants are atypical family situations such that the child is not living with both natural parents, and some degree of pathology of parents or parent figures, as indicated by criminal offending and family backgrounds in which the parents themselves had been abused as children.

PRACTICAL IMPLICATIONS OF THE RESULTS

Besides being of intrinsic interest the preceding results do have

some degree of practical application in the management of cases of child abuse. Social workers and doctors are often required to make decisions about the treatment and management of families showing signs of incipient child abuse. In such circumstances one of the prime considerations for the caseworker must be the likely harm that will befall the child should ill-treatment occur. In this respect the findings of the study could be of some value in identifying the kinds of circumstances in which any ill-treatment that takes place is likely to be serious. Such information could have obvious practical implications for the degree of supervision and support given to the family. A practical example may help to illustrate the use of the results.

Imagine that a family has been referred to a social worker because it is suspected that the parents may abuse one of their children. Also, assume that it is known that the child in question is under five years of age and is living with one step-parent and one natural parent. From the results presented above it can be seen that if the child is abused there is a 50-50 chance that he will sustain serious injuries. This information has obvious practical implications for the management of the case as it is clear that the family would require close supervision and support.

It must be stressed that it is not intended that the results of this study should be used in any rigid fashion as a prediction instrument or that excessive weight should be placed upon the results as determinants of casework action. Rather, it is intended that the results should serve as a guide to social caseworkers about the likely relative risks of various situations; such guidance should be seen as providing extra information to caseworkers and should in no way be treated as a substitute for thorough casework investigation of the particular circumstances of the family concerned.

At a more general level, the analysis indicates that, in one way or another, the following factors are likely to be associated with cases of serious abuse:

- younger children
- children who are not living with both natural parents
- children who are also subjected to neglect
- children whose parent figures were themselves ill-treated
as children

- children whose parent figures have a history of serious criminal offending
- children whose mother figure experiences stresses associated with her own health
- children whose mother figure experiences stresses associated with the rearing of her children.

This is not to say that these are the only factors likely to be associated with incidents of serious abuse - merely that these were the factors identified in this particular analysis as being associated, in one way or another, with serious abuse.

It should be pointed out that the results relate to data collected in the 1967 survey of ill-treatment cases and that they might not apply with equal force to the present day situation. Nonetheless, it would be expected that the results would give at least a rough and ready indication of the type of family circumstances which are associated with serious child abuse.

In this connection it is worth mentioning that the children who were the subjects of the 1967 ill-treatment survey have been followed up for several years in an attempt to isolate those factors that appear to be associated with repeated incidents of child abuse. One of the disturbing features of the ill-treatment of children is the frequency with which children are subjected to repeated abuse. A similar analysis of the follow-up data obtained may well prove to be of considerable assistance to social caseworkers faced with the problem of deciding whether to recommend the removal of an abused child from his home environment. Factors associated with the repeated ill-treatment of children will be the subject of a subsequent research report.

APPENDIX 1PRESENTING SYMPTOMS IN CASES OF SERIOUS CHILD ABUSE

This appendix describes the injuries sustained by each of the 42 seriously abused children. The cases are grouped into three categories of injury severity, based on the classification described in Table 1. The three categories are as follows:

1. Cases in which the child died, directly or indirectly as a result of abuse.
2. Cases involving serious injury with permanent effect.
3. Cases involving serious injury without permanent effect.

For each case, data on the child's age, sex and race are given together with a brief description of the nature of the injuries, the parent figures' explanations of the incident, and the outcome of the incident in terms of medical treatment.

The description of injuries is not always based on a medical diagnosis, as these were sometimes not available. In such cases the description is based on the investigating Child Welfare Officer's account of the injuries. These statements varied considerably in the detail with which injuries were described, and as a consequence the descriptions given here are somewhat uneven.

Similar descriptions of the presenting symptoms for the 213 cases of abuse which did not involve serious injury are given in Appendix 4 of Child Abuse in New Zealand.

1. INJURIES RESULTING IN DEATH (N = 7)

Race, Sex, Age	Type of Injury	Explanation	Outcome
Pacific Islander Male 3 years	Brain haemorrhage, extensive bruising to face, arms, legs and buttocks. Healing fractures of collar bone and elbow.	Parents claimed the child fell out of a window.	Child died
Maori Female 11 months	Head injury and brain haemorrhage. Small bruises to head, back and legs. Three fractures in left arm and fractured left leg.	Foster mother claimed the child fell off a bed.	Child died
Maori Female 3 years	Extensive bruising to body and subdural haemorrhage.	Mother admitted ill-treatment.	Child died
Pacific Islander Female 4 years	Bruising to left eye and back of the head, allegedly caused by a fall. Bruising to arms, legs and buttocks, healing fractures of two ribs and healing blister on left heel.	Father admitted punishing the child but denied that he was overly severe or that he caused her death.	Child died
Part Maori Female 9 months	Extensive bruising all over body, large bruise on abdomen in the shape of an adult hand, pin pricks on buttocks, scalds and scabies.	Parents offered no explanation.	Child died.
European Male 11 months	Subdural haemorrhage and bruising on cheek and above eye.	Mother hit the child's head on the floor because he would not eat.	Child died
European Female 3 years	Fractured skull, fractured jaw, broken ribs, bruising to stomach, buttocks, left arm and face.	Father admitted losing control and beating the child severely.	Child died

2. SERIOUS INJURY WITH PERMANENT EFFECT (N = 5)

Race, Sex, Age	Type of Injury	Explanation	Outcome
European Male 1 year	Multiple fractures of right parietal bone and occipital bones on both sides. Haematoma on back of head and lump on right frontal parietal region. Healing fracture to left arm several weeks old. Bruises and abrasions to body. Small haemorrhage in right eye. Bite mark on tongue.	Mother claimed that the head injury was caused by a plastic toy thrown by another child.	Hospitalised.
Maori Female 7 months	Brain haemorrhage. Neighbour stated that mother had repeatedly struck the baby's head on the floor.	Mother initially claimed that she had shaken the baby, but later stated that her pre-school child had struck the infant's head on the floor.	Hospitalised.
Maori Male 5 months	Brain damage, and bruising over right eye.	Mother stated that the child had struck his head on the cot or the floor.	Hospitalised.
Pacific Islander Male 6 years	Extensive bruising to body and both cheeks. Complete destruction of all tissues down to the muscle of the left elbow. Beaten with a piece of firewood.	Mother claimed the injuries were the result of a hot water burn.	Hospitalised.
Part Maori Male 2 months	Brain haemorrhage and bruise on cheek. Injury method unknown.	Parents denied ill-treatment.	Hospitalised.

3. SERIOUS INJURY WITHOUT PERMANENT EFFECT (N = 30)

Race, Sex, Age	Type of Injury	Explanation	Outcome
European Male 8 years	Extensive burn to forearm, resulting from the application of a hot iron.	Mother punished the child for burning one of his sibs.	No medical treatment.
Part Maori Male 3 months	Doctor reported that the child had fractures of the legs, ribs and arms. Presumed due to rough handling and direct ill-treatment.	Parents considered their daughter may have been responsible.	Hospitalised.
European Female 3 months	Multiple fractures of femur and tibia. Bruising to the arms and legs. Fractured ribs (healing).	Parents could not explain injuries.	Hospitalised.
Part Maori Male 1 year	Fractured skull (some weeks old), fractured lower left forearm, bruises to face and knees.	Parents claimed the child fell down steps.	Hospitalised.
European Female 5 months	Clot of blood on brain, bruised face and chin. Injury method unknown.	Parents stated that the child fell off a table.	Hospitalised.
Maori Female 14 years	Bruising to left thigh, scratched left cheek (healed), burn scars to lower left leg. Painful left ear and shoulders. Healing shoulder fracture. Mother had beaten child on one occasion with a piece of wood and on another with a mop handle.	Mother admitted assaulting child.	Treated by general practitioner (G.P.)
European Male 9 years	Deep-seated bruising to the buttocks, arms and legs. Beaten with broom handle.	Mother lost her temper when child soiled.	Hospitalised.

Race, Sex, Age	Type of Injury	Explanation	Outcome
Pacific Islander Female 4 years	Abrasions to the face. Sores on the face, scalp and chin. Black eye, bruises on trunk and arms. Fractures to the shoulder bone, lower end of the humerus, cheek bone and jaw bone. Burned tongue and palate. Beaten with belt.	Mother said she was attempting to toilet train the (mentally retarded) child.	Hospitalised.
Part Maori Male 2 years	Extensive skull fracture. Numerous bruises on head and back. Possible fractured arm. Burned foot and abrasions.	Foster parents stated that the child fell off a tricycle, or was hit by another child.	Hospitalised.
European Female 7 months	Bruised cheek, split upper lip, fractures of the ribs and both arms. Doctor considered that the fractures had been deliberately inflicted.	Parents stated that the fractures resulted from a fall.	Hospitalised.
European	Fractured skull. fractures to both legs.	Father stated that he ill-treated	Hospitalised

